

ADRIEN M. MCKENZIE WORKPAPERS

INDEX

NO.	Title	Page
WP-1	Standard & Poor’s Corporation, “Pacific Northwest Hydrology And Its Impact On Investor-Owned Utilities’ Credit Quality,” <i>RatingsDirect</i> (Jan. 28, 2008).	1-18
WP-2	S&P Global Ratings, <i>Avista Corp.</i> , <i>RatingsDirect</i> (May 29, 2020).	19-29
WP-3	Moody’s Investors Service, <i>Credit Opinion: Avista Corp.</i> , Global Credit Research (Mar. 17, 2011).	30-34
WP-4	Moody’s Investors Service, <i>Credit Opinion: Avista Corp, Update to Credit Analysis</i> (July 28, 2020).	35-47
WP-5	S&P Global Ratings, <i>Avista Corp. Ratings Affirmed; Off Watch Positive; Outlook Stable</i> , Research Update (Dec. 10, 2018).	48-54
WP-6	Eugene F. Fama and Kenneth R. French, “The Cross-Section of Expected Stock Returns”, <i>The Journal of Finance</i> (June 1992).	55-94
WP-7	George E. Pinches, J. Clay Singleton, and Ali Jahankhani, “Fixed Coverage as a Determinant of Electric Utility Bond Ratings”, <i>Financial Management</i> (Summer 1978).	95-106
WP-8	Rolf W. Banz, “The Relationship Between Return and Market Value of Common Stocks”, <i>Journal of Financial Economics</i> (September 1981).	107-115
WP-9	Moody’s Investors Service, “Moody’s downgrades Avista Corp. to Baa2, outlook stable,” <i>Rating Action</i> (Dec. 20, 2018).	116-120
WP-10	Moody’s Investors Service, “Regulation Will Keep Cash Flow Stable As Major Tax Break Ends,” <i>Industry Outlook</i> (Feb. 19, 2014)	121-133
WP-11	S&P Global Ratings, <i>Assessing U.S. Investors-Owned Utility Regulatory Environments</i> , <i>RatingsExpress</i> (Aug. 10, 2016).	134-143
WP-12	Value Line Investment Survey, <i>Water Utility Industry</i> (Jan. 13, 2017) at p. 1780.	144
WP-13	S&P Global Ratings, <i>Puget Energy Inc. And Subsidiary Ratings Placed On CreditWatch Negative Over Regulatory Concerns</i> , <i>RatingsDirect</i> (Jul. 23, 2020).	145-147
WP-14	Moody’s Investors Service, <i>Puget Sound Energy, Inc.</i> Issuer Comment (Jul. 17, 2020).	148-151
WP-15	S&P Global Ratings, <i>COVID-10: The Outlook For North American Regulated Utilities Turns Negative</i> , <i>RatingsDirect</i> (Apr. 2, 2020).	152-161
WP-16	S&P Global Ratings, <i>North American Regulated Utilities Face Tough Financial Policy Tradeoffs To Avoid Ratings Pressure Amid The COVID-19 Pandemic</i> , <i>RatingsDirect</i> (May 11, 2020).	162-168
WP-17	S&P Global Market Intelligence, <i>State Regulatory Evaluations, RRA Regulatory Focus</i> (Mar. 25, 2020).	169-192
WP-18	Moody’s Investors Service, <i>FAQ on credit implications of the coronavirus outbreak</i> , Sector Comment (Mar. 26, 2020).	193-202
WP-19	Moody’s Investors Service, <i>Moody’s assigns Baa3 rating to</i>	203-210

## ADRIEN M. MCKENZIE WORKPAPERS

### INDEX

	<i>Pacific Gas &amp; Electric's first mortgage bonds and BI rating to PG&amp;E Corp's senior secured debt; outlooks stable</i> , Rating Action (Jun. 15, 2020).	
WP-20	S&P Global Ratings, <i>Credit Conditions North America: Unprecedented Uncertainty Slams Credit</i> (Mar. 31, 2020).	211-222
WP-21	Standard & Poor's Corporation, <i>Utilities: Key Credit Factors For The Regulated Utilities Industry</i> , RatingsDirect (Nov. 19, 2013).	223-245
WP-22	Brigham, E.F., Aberwald, D.A., and Gapenski, L.C., "Common Equity Flotation Costs and Rate Making," <i>Public Utilities Fortnightly</i> , May, 2, 1985.	246-254
WP-23	Morin, Roger A., "New Regulatory Finance," <i>Public Utilities Reports, Inc.</i> (2006) at 335.	255-257
WP-24	Standard & Poor's Corporation, <i>Avista Corp.</i> , RatingsDirect (Jul. 26, 2011).	258-265
WP-25	Moody's Investors Service, <i>US utility sector upgrades driven by stable and transparent regulatory frameworks</i> , Sector Comment (Feb. 3, 2014).	266-289
WP-26	S&P Global Market Intelligence, <i>Adjustment Clauses, A State-by-State Overview</i> , RRA Regulatory Focus (Nov. 12, 2019).	290-328
WP-27	David C. Parcell, <i>The Cost of Capital – A Practitioner's Guide</i> , Society of Utility and Regulatory Financial Analysts (2010) at 84.	329-331
WP-28	Roger A. Morin, <i>New Regulatory Finance</i> , Pub. Util. Reports, Inc. (2006) at 429.	332-335
WP-29	The Value Line Investment Survey (Mar. 20, 2020).	336
WP-30	S&P Global Ratings, <i>Emera Inc. And Subsidiaries 'BBB+' Ratings Affirmed; Outlooks Remain Negative</i> , RatingsDirect (Mar. 26, 2019).	337-345
WP-31	S&P Global Ratings, <i>Emera Inc. And TECO Downgraded On Weak Financials, Outlook Stable; Subsidiaries Ratings Affirmed</i> , Research Update (Mar. 24, 2020).	346-348
WP-32	Roger A. Morin, "New Regulatory Finance," <i>Public Utilities Reports</i> (2006) at 71.	349-350
WP-33	Myron J. Gordon, "The Cost of Capital to a Public Utility," <i>MSU Public Utilities Studies</i> at 89 (1974).	351-352
WP-34	Roger A. Morin, "New Regulatory Finance," <i>Public Utilities Reports, Inc.</i> (2006) at 298.	353-354
WP-35	Morningstar, <i>2015 Ibbotson SBBI Classic Yearbook</i> , at p. 99.	355-357
WP-36	Roger A. Morin, "New Regulatory Finance," <i>Public Utilities Reports</i> (2006) at 189, 190.	358-361
WP-37	Marshall E. Blume, <i>Betas and Their Regression Tendencies</i> , <i>Journal of Finance</i> (Jun. 1975), pp. 785-795.	362-373
WP-38	Roger A. Morin, <i>New Regulatory Finance</i> , Pub. Util. Reports (2006) at 128.	374-378
WP-39	Edison Electric Institute, <i>Alternative Regulation for Emerging Utility Challenges: 2015 Update</i> (Nov. 11, 2015).	379-437

## ADRIEN M. MCKENZIE WORKPAPERS

### INDEX

WP-40	U.S. Department of Energy, <i>State Performance-Based Regulation Using Multiyear Rate Plans for U.S. Electric Utilities</i> , Grid Modernization Laboratory Consortium (Jul. 2017).	438-571
WP-41	The Brattle Group, <i>Exploring the Use of Regulatory Mechanisms to Establish New Base Rates</i> , Joint Utilities of Maryland (Mar. 29, 2018).	572-610
WP-42	Wolters Kluwer, <i>Blue Chip Financial Forecasts</i> (Jun. 1, 2020).	611-613
WP-43	Value Line Investment Survey, <i>Forecast for the U.S. Economy</i> (Aug. 28, 2020).	614
WP-44	IHS Markit, Long-Term Macro Forecast – Baseline (Jun. 29, 2020).	615-617
WP-45	Energy Information Administration, <i>Annual Energy Outlook 2020</i> (Jan. 29, 2020)	618-620
WP-46	Value Line <i>Summary &amp; Index</i> (Oct. 2, 2020)	621-660
WP-47	Value Line Source Documents – Utility Group	661-681
WP-48	IBES Source Documents – Utility Group	682-719
WP-49	Zacks Source Documents – Utility Group	720-756
WP-50	Value Line Source Documents – Non-Utility Group	757-801
WP-51	IBES Source Documents – Non-Utility Group	802-836
WP-52	Zacks Source Documents – Non-Utility Group	837-867
WP-53	Duff & Phelps, 2020 CRSP Deciles Size Study – Supplementary Data Exhibits, Cost of Capital Navigator	868
WP-54	Utility Risk Premium – Regulatory Research Assoc. data 1974-2019	869-873
WP-55	Excel Workbook	874-957

January 28, 2008

# Pacific Northwest Hydrology And Its Impact On Investor-Owned Utilities' Credit Quality

**Primary Credit Analysts:**

Anne Selting, San Francisco (1) 415-371-5009; [anne\\_selting@standardandpoors.com](mailto:anne_selting@standardandpoors.com)

Antonio Bettinelli, San Francisco (1) 415-371-5067; [antonio\\_bettinelli@standardandpoors.com](mailto:antonio_bettinelli@standardandpoors.com)

## Table Of Contents

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The Financial Impact of Pacific Northwest Hydro Flows On Electric Utilities

Role Of Regulatory Mechanisms To Protect Hydro-Dependent Co.s' Credit Quality

Idaho Power Company

Avista Corp.

Portland General Electric

Puget Sound Energy

PacifiCorp

Hydro Predictions -- And Credit Implications -- For 2008 And Beyond

Notes

# Pacific Northwest Hydrology And Its Impact On Investor-Owned Utilities' Credit Quality

The Pacific Northwest has the greatest abundance of hydroelectric generation in the nation. Of the 77,419 MW\* of U.S. nameplate hydro capacity, 43%, or 32,908 MW, is located in Washington, Oregon, and Idaho. Hydroelectric generation projects on the Columbia River provide more than 50% of the region's electrical power needs<sup>¶</sup>.

The region has certainly benefited from such plentiful hydro power; its electric power consumers enjoy some of the lowest cost electricity in the U.S. Further, if carbon regulation is enacted, hydro plants may become ever-more-valuable assets for utilities. However, hydro stream flows have not recently been kind to the region, recording below-normal flows in seven of the past eight years. Predictions for 2008 do not suggest significant improvement.

A reduction in hydro generation typically increases an electric utility's costs by requiring it to buy replacement power or run more expensive generation to serve customer loads. Low hydro generation can also reduce utilities' opportunity to make off-system sales. At the same time, low hydro years increase regional wholesale power prices, creating potentially a double impact--companies have to buy more power than under normal conditions, paying higher prices.

While all load-serving utilities in the Pacific Northwest are affected, investor-owned utilities (IOUs) are particularly so. Unlike public utility districts, IOUs do not have the autonomy to contemporaneously increase electric rates when faced with higher production costs. Instead, they rely on state regulatory commissions to provide rate relief for rising costs through power cost adjusters (PCAs) or other mechanisms, often on a lagged basis.

This article examines the exposure to hydro variability for five IOUs summarized in Table 1 below. We discuss hydrology conditions in the Pacific Northwest, describe the relative reliance of each of these utilities on hydro generation, and compare the strength of the regulatory mechanisms that mitigate utility cash flow volatility that can result from below-average hydro conditions.

**Table 1**

Pacific Northwest Hydro-Dependent Utilities*					
	IDACORP/Idaho Power	Avista Corp.	Puget Energy <sup>¶</sup>	Portland General	PacifiCorp
Rating	BBB+/Negative/A-2	BB+/Positive/B-1	BBB-/Watch Neg/A-3	BBB+/Negative/A-2	A-/Stable/A-1
Electric markets served and % of revenues by market	Idaho--95%, Oregon--5%	Washington--65%, Idaho--34%	Washington--100%	Oregon--100%	Utah--42%, Oregon--29%, Washington--8%, Idaho--6%, Wyoming--13%, California--2%
Primary source of hydro (River)	Snake	Spokane/Clark Fork	Mid-Columbia	Deschutes	Lewis River
Dependence on hydro	High	High	Moderate	Moderate	Minimal
<b>Customer Data</b>					
Retail electric	472,000	345,000	1,309,400	783,000	1,668,000
Retail natural gas	N/A	304,000	713,000	N/A	N/A
Customer growth (electric %)	3.6	2.2	2.1	1.6	2.0

**Table 1**

<b>Pacific Northwest Hydro-Dependent Utilities*(cont.)</b>					
<b>Financial Data</b>					
Cash flow from operations (\$ mil.)	170	201	186	106	752
Debt (\$ mil.)	946	950	2,608	937	3,967
<b>Generation Stats</b>					
Owned generation (MW)	3,085	1,805	2,194	1,974	8,588
Retail peak demand (MW)	3,084	1,656	4,847	3,706	9,322
Hydro capacity (MW)	1,697	975	1,566	513	1,160

Source: 2006 SEC Form 10-K. \*The largest company in our survey is PacifiCorp, but because it serves portions of six states, only 44% of its electric revenues are earned in Oregon, Washington, and Idaho. †Puget's hydro generation includes long-term Mid-Columbia contracts.

## The Financial Impact of Pacific Northwest Hydro Flows On Electric Utilities

The Columbia River is the fourth-largest in North America and the primary water basin in the Pacific Northwest. The main branch of the river begins in the Canadian Rocky Mountains and flows some 1,200 miles before it meets the Pacific Ocean on the Oregon coast.

With its extreme drop in elevation, the Columbia River Basin is well suited for hydroelectric generation. While most Pacific Northwest utilities rely predominately on hydroelectric generation produced along the Colombia River, hydro projects are also found along the major tributaries that feed into the Columbia. For example, Idaho Power Company obtains most of its hydro power from resources on the Snake River, and Avista Corp. relies significantly on plants on the Clark Fork River in Montana and Idaho, and also has some hydro assets in Washington along the Spokane River in Idaho and Washington.

Chart 1 illustrates the major dams on the Columbia and Snake Rivers. Roughly 5,910 MW of these hydro projects are owned or under long-term contract by Avista, Idaho Power, Portland General Electric, Puget, and PacifiCorp. The balance of projects are owned and operated by government entities, including the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation, municipalities, or by public utility districts.



The hydrological cycle, or water year, is measured from Oct. 1 through Sept. 30. Hydro flows are highly seasonal, with the majority of regional precipitation occurring during winter. Accumulated snow in the mountains is stored in deep snow packs that are released as runoff with the warmth of spring. Because of this, winter stream flows are generally low, with high and sustained runoff occurring in the spring and early summer. In fact, about 60% of the natural runoff of the Columbia occurs from May through July.

The availability of water to create hydro power is a function of both natural stream flow and human intervention.

Stream flows are gauged at many points in the river system, but the four primary points used to measure flows are§:

- The massive Grand Coulee dam measures water flows in the upper Columbia basin;
- The Brownlee reservoir, which is on the Snake River, the largest tributary of the Columbia, and precedes three major generating facilities;
- Cabinet Gorge on the Clark Fork River; and
- The Dalles, in the lower Columbia basin, is the second-to-last dam on the river before it meets the ocean; this point measures the stream flow coming from all areas of the basin.

Regional stream flow is highly variable. Table 2 below illustrates how stream flows since 1997 compare to average stream flow. While 2006 marked the first year in seven that stream flows were above normal, well-above-average years have not been seen since the 1997-1999 period, when all-time stream flow records were set, ending what had been a sustained drought.

While Grand Coulee and Dalles stream flows tend to be strongly correlated, Snake River stream flow patterns exhibit some independence. The Snake River basin, which Idaho Power is dependent on, has been experiencing a severe drought since 2001 (with the exception of 2006). Spring run-off there averaged only 57% of normal in 2007, reducing the rolling five-year average to only 69% of normal. Drought conditions have been less severe for the Columbia River projects, because precipitation levels in the Canadian headwaters of the Columbia have been closer to normal, resulting in near-average storage levels at Grand Coulee. However, hydro projects below the Grand Coulee have relatively little storage and are typically operated on a "run-of-the-river" basis. A utility's own hydro portfolio can diverge from these trends, depending on the location of its plants. For example, while in 2007 the Dalles experienced below average conditions, Portland General Electric's resources, located on four different rivers were close to normal for all but the Deschutes River system.

**Table 2**

Northwest Stream Flow Conditions (% of Long-Term Averages)				
	River			
	Columbia R.	Mid-Columbia	Clark Fork	Snake R.
Site	Dalles	Grand Coulee	Cabinet Gorge	Brownlee
State	Wash.	Wash.	Idaho	Idaho
Year*	%			
1997	142	133	145	166
1998	100	97	84	131
1999	115	112	94	129
2000	95	99	80	87
2001	58	61	49	55
2002	92	101	99	57
2003	78	81	73	59
2004	81	86	72	58
2005	79	89	78	57
2006	102	102	96	112
2007	89	97	81	57
2008 ¶	83	88	68	65
Long-term average (KAF/Year)§	138,058	81,357	16,206	15,279

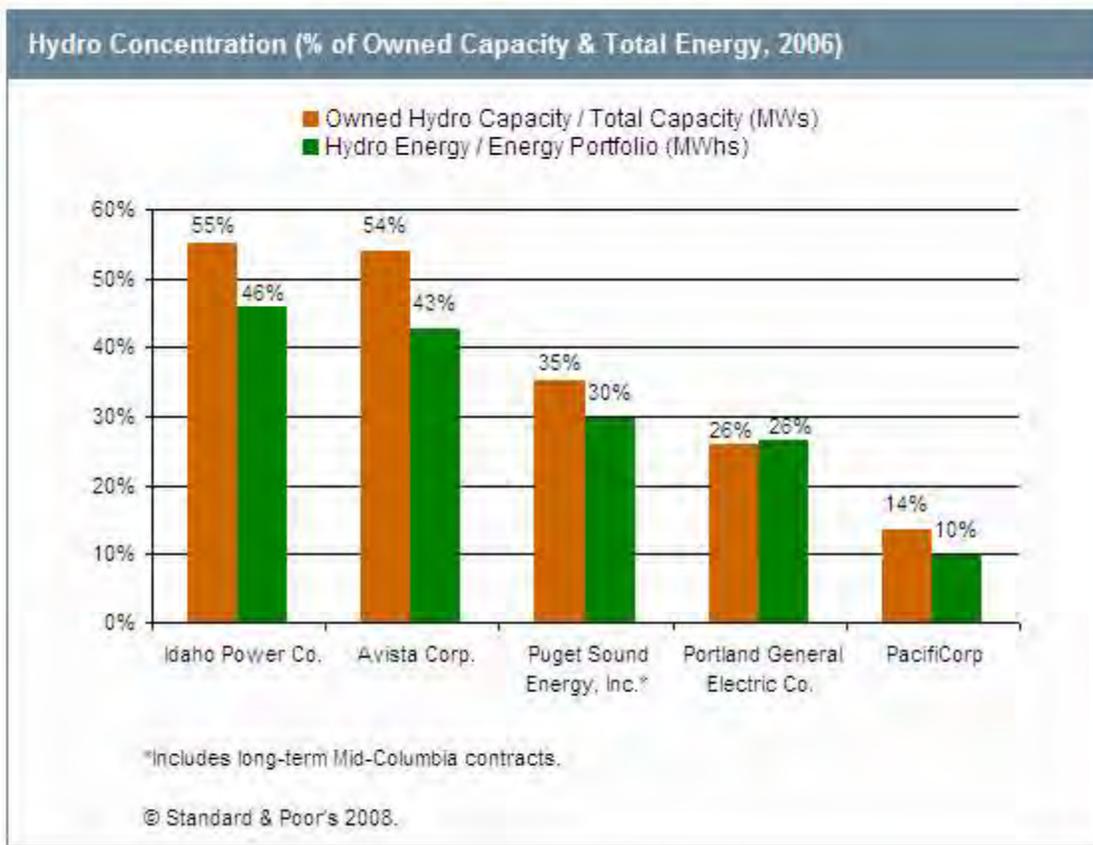
**Table 2**

**Northwest Stream Flow Conditions (% of Long-Term Averages)(cont.)**

Source: Northwest River Forecast Center (NWRFC). \* Water year Oct. 1-Sept. 30. † Oct-Jan 6, 2008. § KAF = Thousand acre-feet, 30-year (1971-2000) average. Prior to 2002, 30-year averages are based on 1961-1990.

Chart 2 illustrates each company's hydro exposure, both for capacity and overall energy (including purchases), based on 2006 data\*\*. Idaho Power has the greatest hydro exposure, but is closely followed by Avista. Although Portland General Electric owns slightly more hydro capacity than Puget Sound Energy, the inclusion of both companies' long-term hydro power purchase agreements (PPAs) results in a slightly greater exposure for Puget, with about 30% of Puget's total energy resources derived from hydro generation in 2006, versus 26% for Portland. PacifiCorp is the least hydro exposed utility in our survey.

**Chart 2**



Significant reliance on hydro generation has mixed consequences for credit quality. Because of its low cost and limited carbon footprint, we see hydro generation as beneficial to a utility's business risk profile, providing it with fuel diversity and a competitive electric rate structure. At the same time, reliance on hydro generation can produce variability in financial performance. This occurs because utility fuel and purchased power costs approved in base retail rates are set based on normal water, when, in fact, stream flows vary each year, sometimes substantially. As a result, below-normal stream flows often drive up a utility's power costs, either through increased market purchases or the dispatch of more expensive owned, thermal generation to bridge the hydro shortfall. Chart 3 illustrates the generally inverse relationship between regional power prices and stream flow.

Chart 3



As discussed in the next section, Idaho Power's regulatory mechanisms are stronger, but it relies on a river basin that in the past decade has been weaker, and its swings in deferral balances have been large (although are not entirely due to hydro conditions). In contrast, Avista's recent additions to its deferral balances have not been as large, but this is somewhat masked by the fact that it continues to work down legacy deferral balances stemming from the Western energy crisis.

Because increased purchases and higher prices are not immediately met by increased retail revenues from customers, cash flows can decline in low water years. While PCAs and annual power cost updates can mitigate these effects (as discussed in detail in the next section), they are not designed to completely insulate a utility from poor hydro conditions. As a result, a large annual deviation from normal stream flow typically weakens cash coverage of debt and interest for a utility. Back-to-back poor stream flows can suppress these metrics for multiple years. The most devastating financial consequences related to low hydro occurred in 2001, when well-below-normal stream flows occurred simultaneously with the Western energy crisis, resulting in resource short utilities incurring significant power cost deferrals.

For the most hydro-dependant companies, deferral balances proxy the cash flow impacts attributable to changes in hydro conditions. Table 3 compares Avista and Idaho Power's deferral balances with stream flow data. In Avista's case, poor water contributed to a slower repayment of deferral balances accumulated during the Western energy crisis. In Idaho Power's case, energy crisis deferrals were recouped sooner but new balances were booked in each

subsequent year due to sustained low water on the Snake River.

**Table 3**

<b>Stream Flows And Deferrals</b>							
	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Stream flow on Clark Fork(% of normal)*	80	49	99	73	72	78	96
Stream flow on Snake River(% of normal)*	87	55	57	59	58	57	112
Average Mid-C \$/MWh (on-peak)	117	130	22	40	45	64	50
<b>Power deferral (refund) balance (\$ mil.)</b>							
Avista Corp.	34	140	155	156	123	104	80
Idaho Power Co.¶	15	220	255	81	71	75	(47)
<b>Cash From Operations (\$ mil.)</b>							
Avista Corp.	76	(104)	332	123	110	129	202
Idaho Power Co.	161	(8)	348	311	203	184	163
<b>Credit Ratings</b>							
Avista Corp.	BBB/Negative	BB+/Negative	BB+/Stable	BB+/Stable	BB+/Stable	BB+/Stable	BB+/Stable
Idaho Power Co.	A+/Stable	A+/Negative	A-/Positive	A-/Stable	BBB+/Stable	BBB+/Stable	BBB+/Negative

Source: Platt's PowerDat, SEC Form 10-K. \*Water year Oct. 1 - Sept. 30. Snake River at Brownlee. Clark Fork at Cabinet Gorge. ¶ PCA year ending May 31.

## Role Of Regulatory Mechanisms To Protect Hydro-Dependent Co.s' Credit Quality

Many regulators have responded to hydro variability, volatile gas prices and other cost pressures by authorizing the increased use and strength of PCAs. PCAs are in place for four of the five IOUs in the Pacific Northwest region (the exception is PacifiCorp). Commissions have also begun to afford utilities with procedures to reset their base fuel and purchase power rates outside of a general rate case (GRC).

PCAs track actual fuel and purchased power costs incurred by utilities and compare these amounts to costs being recovered in retail rates, allowing companies to defer any shortfalls for collection from customers in a later period¶¶. A notable feature of all PCAs is that they are not designed to protect current-period credit quality. That is, if a company incurs in 2008 a significant cash outlay for fuel and purchased power costs relative to what it is collecting from customers in retail rates, the recovery of these costs via a rate increase does not occur until the following year, and in some instances recovery can be spread out over multiple years. Amounts slated for recovery in future periods are also subject to prudence review, although disallowances of costs have not been a recent credit concern.

PCAs also do not allow utilities to defer the full amount of the cost overruns that result from low hydro (or other causes) but instead require companies to absorb a portion of these losses before ratepayers are required to help. This is often referred to as the "share" or "sharing mechanism." Typically, these amounts are based on dead bands, and the lower the level of cost overrun, the more the utility is required to absorb before a deferral can be booked. For example, Avista has three dead bands in its Washington PCA. It must absorb all of the first \$4 million in power costs overruns it incurs; 50% of any amounts above \$4 million but below \$10 million, and 10% of deferrals over \$10 million. Sharing mechanisms are usually symmetric, meaning that the rules to book a deferral (i.e., the utility is owed money from the customer) apply equally to overcollection (i.e., the customer is owed a refund). For example,

if Avista's power costs are lower than expected and it collects more in rates than it pays in fuel and purchased power costs, it may keep all of the first \$4 million in "excess" profit, but must rebate any amounts above that according to the same dead bands formula.

There is significant diversity amongst of PCAs in place in the Pacific Northwest. In gauging the relative strength of these mechanisms, we consider:

- When a deferral is triggered;
- The amount of sharing of cost overruns between the company and the ratepayer;
- How long it takes to authorize cost recovery and the length of time it actually takes to collect the cash§§;
- The potential for disallowance of deferred costs as part of a prudence review; and
- How well the mechanisms protect the company if fuel and purchased power costs experience a significant and rapid run up, e.g., a catastrophic price event.

The protections provided to utilities are not limited to PCAs. We also consider the ability of a utility to routinely update its fuel and purchased power costs annually based on changes in projected costs outside of a general rate case. While this process does little to protect against a low water year (because none of the mechanisms we examined actually forecast to anything but normal water), it reduces the likelihood that a company will experience lags in cost collection aside from poor hydro conditions, lessening the chance of multiple financial impacts hitting a company at once. They also help to minimize the dollars flowing through the sharing mechanisms of the PCA. This can be as important as having a PCA, because, given volatile and generally rising fuel and power costs, retail rates can quickly lag actual costs, and a PCA is not wholly protective if the change is sustained.

Taking these issues into consideration, Table 4 characterizes each of the five company's relative exposure to hydro risk, and considers the differences in the level of each company's regulatory protections.

We find that Avista and Idaho Power, which are comparably sized companies, face the most substantial risks despite their PCAs and cost-update mechanisms. PacifiCorp's risks are minimal, mainly due to low hydro dependence, and Puget and Portland General Electric fall between these two extremes. A detailed discussion of the strengths and weaknesses of each utility's mechanisms follows.

**Table 4**

Comparison of Regulatory Mechanisms						
	Idaho Power	Avista		Portland General Electric	Puget Sound Energy	PacifiCorp*
Hydro Exposure	High	High	High	Moderate	Moderate	Minimal
Regulatory protection	Strong	Good	Good	Good	Strong	Weak
Revenues by state	ID--95%, OR--5%	WA--65%	ID--34%	OR--100%	WA--100%	UT--41%, OR--30%, WA--8%, ID--6%, WY--13%, CA--2%
Mechanism to true-up actual costs	Power Cost Adjustment	Energy Recovery Mechanism (ERM)	Power Cost Adjustment	Power Cost Adjustment	Power Cost Adjustment --\$30 million trigger (customer share)	N/A

Table 4

Comparison of Regulatory Mechanisms(cont.)						
How much must company absorb before eligible for deferral?	10%, regardless of amount	\$0 mil.-\$4 mil., 100%; \$4 mil.-\$10 mil., 50%; >\$10 mil., 10%	10%, regardless of amount	\$0-\$23.4 mil., 100%; >\$23.4 mil., 10% <sup>¶</sup>	\$0-\$20 mil., 100%; >\$20 mil.-\$40 mil., 50%; >\$40 mil.-\$120 mil., 10%; >\$120 mil., 5%	N/A
PCA year ends	March 31	Dec. 31	Jun. 30	Dec. 31	Dec. 31	N/A
True-up lag after end of PCA year	2 months	6 months	3 months	12 months	~1 month	N/A
Collection period	12 months	Negotiated	Negotiated	Negotiated	12 months	N/A
Company share of 10% overrun vs. Avg. FFO \$	3%	7%**	7%**	10%	9%	N/A
Annual rate update for power costs?	Yes, in June	N/A	N/A	Yes, in Jan.	Anytime \$30 million trigger is reached, 5 month process	Yes, in Jan (OR only)

\*Our focus is on the Pacific Northwest, and thus we do not reference mechanisms in states that PacifiCorp serves outside of this region. <sup>¶</sup> The company's PCA is complex. The company may only collect on deferrals if it passes an earnings test, which would require return on equity to fall below 100 basis points of authorized ROE (currently 10.1%) to collect any over-runs. Sharing is asymmetric. \$ Fuel and purchased power expensed relative to three year average Funds From Operations (FFO).

\*\*This result is derived from applying the more stringent Washington method. Actual deferrals would be lower due to the Idaho 90/10 split. Based on each company's fuel and purchased power costs expensed on its 2006 income statement, unadjusted for existing deferrals. If the deferral occurred through July through December, they would have had to absorb \$21 million or 20%.

## Idaho Power Company

### Heavy reliance on the Snake River is not fully insulated by regulatory protections

Idaho Power's regulatory mechanisms are strong, relative to the other companies in our survey, but not strong enough to overcome significant exposure to the variable flows of the Snake River. Benefits of Idaho Power's regulatory mechanisms are:

- The requirement that it absorb a modest 10% of cost overruns, with the balance eligible for deferral.
- Good projection in the event of a catastrophic price swing (if the company's 2006 fuel and purchased power expenses increased by 10%, we calculate that Idaho Power would incur about 3% of the total cost).
- An annual update process for retail rates that is part of the PCA and uses projected costs.
- Little lag in implementing rate adjustments, which take effect two months after the end of the PCA year.

Despite these benefits, regulatory weaknesses are:

- Absorbing 10% of cost overruns is clearly positive under typical deviations above and below normal, but for very large cost overruns the uncollectible share becomes meaningful and for multiyear poor hydro conditions it still creates a drag on financial ratios.
- The PCA can create higher cash flow volatility when a strong hydro year is followed by a poor one (as occurred in 2006 and 2007). Because retail rates that go into effect on June 1 reflect both an update based on forecast power costs and a true-up to collect balances from the prior 12 months, Idaho Power can be flowing back refunds to customers at the same time it is incurring significant new deferrals.

Despite having both a PCA and an update process, the mechanisms have not been able to fully insulate the company from the highly variable and generally low flow conditions that have persisted on the Snake River for the greater part of the past decade. Idaho Power's financial performance has been also hampered by a load growth adjustment

mechanism that has resulted in a loss of new customers, and regulatory lag due to the use of a historical test year for the non-fuel component of rates.

## **Avista Corp.**

### **High exposure to hydro generation, a modest PCA in Washington, and weaknesses in its ability to update fuel and purchased power costs**

Avista has a comparable reliance to Idaho Power on hydro, but given that its resources are concentrated on the Clark Fork River, recent flows have been better than Idaho Power's. While Avista's electric operations are heavily reliant on hydro generation, the existence of regulated natural gas operations provides some offsetting cash flow stability. Nevertheless, its recovery mechanisms are not as strong as Idaho Power's for the following reasons:

- It has dead bands in Washington, where the majority of its customers are, and these dead bands in recent years have resulted in it absorbing the majority of its cost undercollections.
- In both Idaho and Washington, it has no opportunity to reset base rates without filing a general rate case, although it can use forecast fuel and purchased power costs in its application, and in Washington rate cases must be processed within 11 months.
- Collection of deferral balances can be lagged, exceeding a year.
- The company has legacy deferral balances that, while declining, are still sizable – about \$75 million as of Sept. 30. The company estimates that under normal water conditions, it will take about two years to complete recovery.

Avista 2007 cash flows are expected to be below those of 2006, principally from low hydro generation. In 2007, the company expects to absorb about \$8 million in cost undercollections in Washington. Deferrals expected in Idaho for 2007 have not been made public.

## **Portland General Electric**

### **Modest hydro exposure, wide and asymmetric dead bands are not protective, but flexibility to update rates annually is beneficial**

In contrast to Avista and Idaho Power, Portland General Electric's fundamental exposure to hydro variability is more modest. Its PCA mechanism is weaker than both Idaho Power and Avista's, but it has a better update mechanism than Avista's. PCA weaknesses include:

- Wide dead bands that are linked to return on equity targets expose it cost overruns of more than \$23 million (based on 2007 numbers) before it would be eligible to book a deferral.
- It is the only utility in our survey that does not have a symmetric dead band (e.g., the amount it may keep before it must provide a rebate to customers in good hydro years is less than the amount it must absorb in poor ones).
- Because net income and cash flow are not always correlated, the use of a return on equity target to set the dead band is not ideal from a bondholder's perspective.
- There is significant lag in recovery of power cost deferrals, which are tracked on a calendar year basis. The company must file its earnings test by July of the following year for a rate adjustment, which intervenors can challenge. The collection does not go into effect until the next year, or a one year lag.

At the same time, the company has a favorable annual power cost update tariff. The proceeding establishes forecast

net power costs for the coming year based on forward price curves, new contracts and plant additions. The application is filed in April, and updated in August and November, with power costs utilizing forward price curves as of Nov. 15. In 2007, the company requested \$776.3 million for fuel and purchased power expense and was awarded \$765.7 million.

Hydro conditions in 2007 for Portland, while not quite normal, were closer to average than for Avista and Idaho Power. The company expects that due to other favorable factors, it will be overcollected at year-end 2007 by about \$14 million, which, if authorized, would mean that its customers would receive a rebate beginning in early 2009.

## **Puget Sound Energy**

### **Modest hydro exposure, strong regulatory protections**

Puget's hydro exposure is comparable to that of Portland General Electric's and lower than either Idaho Power or Avista's. It has good protection from catastrophic events due to progressive sharing bands, but must absorb a large portion of deferrals at lower ranges of cost overruns. It has a great degree of flexibility in implementing rate changes through its PCA, but the threshold it must meet to update rates is high and deferred costs are not automatically collected. Each year, uncollected costs are subject to defined sharing bands, allowing the company to defer certain portions for collection from customer. However, the PCA mechanism does not trigger a rate increase until the minimum deferral balance is reached.

Puget is also able to update rates for changes in projected costs by filing a power cost only rate case (PCORC), which gives it the flexibility to file for changes in variable and fixed costs whenever there is a projected deferral balance of \$30 million or more. The PCORC functions as a "mini" rate case that takes about five months and is especially useful for new plant additions or contracts.

Benefits of Puget's regulatory mechanisms are:

- The ability to file updated rates through its PCA any time at which the deferral balance owed by customers reaches \$30 million, which allows for a quicker response than a defined once-a-year power cost updates.
- A short lag time to implement rate changes once the PCA mechanism is triggered. New rates go into effect quickly and are collected over 12 months.
- Its PCA requires it to absorb only 5% of costs over \$120 million. While this provides Puget significant insulation during an extreme cost shock, the company must absorb significant portions of smaller deferrals.

Weaknesses:

- The company must absorb a larger share of uncollected costs for lower sharing bands.
- The PCORC works well for planned changes but moves more slowly than some mechanisms for updating other projected costs and it must be followed-up with general rate case if the increase is greater than 5%.

Puget, as with Avista, also benefits from serving natural gas customers, and this is an offsetting overall credit benefit, due to added operational diversity, in addition to its otherwise moderate hydro exposure.

## **PacifiCorp**

### **Low hydro exposure, but also minimal regulatory protections**

PacifiCorp's exposure to hydro is low, which is fortunate as its regulatory mechanisms are the weakest in this survey. The company lacks power supply adjusters in all three Pacific Northwest states, which accounts for about 43% of its total retail electric revenues over the six states it serves.

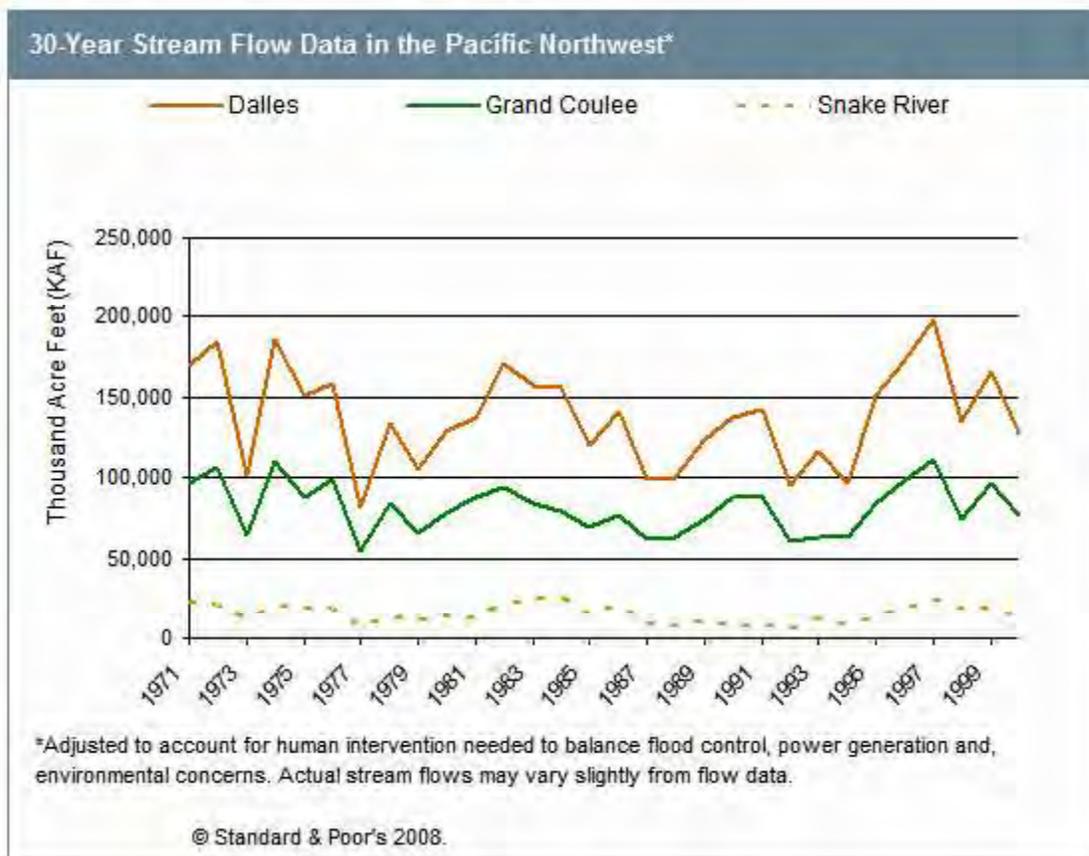
However, in Oregon, its second-largest market, it has the ability to true-up its retail rates to reflect forecast fuel and purchased costs on an annual basis. The annual update process is referred to as transition adjustment mechanism (TAM). In July, PacifiCorp files a TAM application with the Oregon Public Utilities Commission (OPUC) in which it updates forecast power costs, and allows for the inclusion of new power contracts. Final rates include forward power prices finalized in November of each year. PacifiCorp requested a \$30 million increase for 2008; the OPUC provided the company with a \$22 million increase in November 2007. Because of this mechanism, the difference between actual and forecast power costs is likely to be modest because power costs are annually updated in Oregon, but we would note that the company may not defer any costs above what are set in the TAM, and thus is at risk for cost overruns due to hydro or other factors.

## **Hydro Predictions -- And Credit Implications -- For 2008 And Beyond**

We expect future stream flows to continue to be a significant rating factor for Pacific Northwest utilities. Despite their benefits, PCAs and annual update mechanisms cannot fully protect a utility from very poor water years because they are not designed to recover increased cash outlays in the year that higher costs are sustained.

It is occasionally argued that utility financial weakness due to low hydro can be ignored as temporary because: 1) outflows in any given year are eventually recovered from ratepayers in future periods; and 2) while the generally symmetric nature of PCAs requires utilities to absorb the financial consequences of low stream flow in some years, it also allows them to retain an equal amount of upside in years with strong hydro conditions\*\*\*. These arguments are not wholly satisfying from a bondholder perspective. Repayment of debt is an annual obligation, and a utility must generate sufficient operational cash flow to cover its costs, including its debt obligations every year, not just on average. Second, as shown in Chart 4, the hydro record does not suggest that poor hydro years are necessarily followed by strong ones. Thus, a utility has no assurance that the financial consequences of below average stream flow are temporary and quickly rectified with subsequent good water years.

Chart 4



For 2008, early predictions suggest that stream flows will continue to be slightly below normal for the Columbia basin. The Northwest River Forecasting Center's projections for January 2008 through September 2008 suggest the Upper Columbia basin will be 92% and 98% of normal (using two different modeling approaches) and 95% and 97% of normal for the Lower Columbia basin. Snake River projections suggest as low as 70% of normal for 2008, although, if realized, these flows would be a notable improvement from recent years.

The long-run prospects for Pacific Northwest stream flows are the subject of significant debate, and one that should concern bondholders given that utilities typically issue mortgage bonds with maturities of between one and three decades. Past stream flows provide some evidence that we should be cautious in assuming that recent drought conditions will end with a return to normal or robust stream flows. Scientific research suggests that the region is capable of having more intense and longer droughts than recent experience. A 2004 study published in the Journal of the American Water Resources Association (JAWA) examined 250 years of data, looking for periods when stream flows at the Dalles fell into the lowest 15% of all observations. The study found that from 1840 to 1855 the region likely experienced a severe multiyear drought, and that the 1890s were also a period of sustained and low stream flows. Flows were estimated to be at least 20% below average; however, the authors noted that their model underestimated the magnitude of very low water years. Earlier studies have found similar, although not identical patterns.

In addition, there are questions as to whether what constitutes normal hydro conditions today will continue to

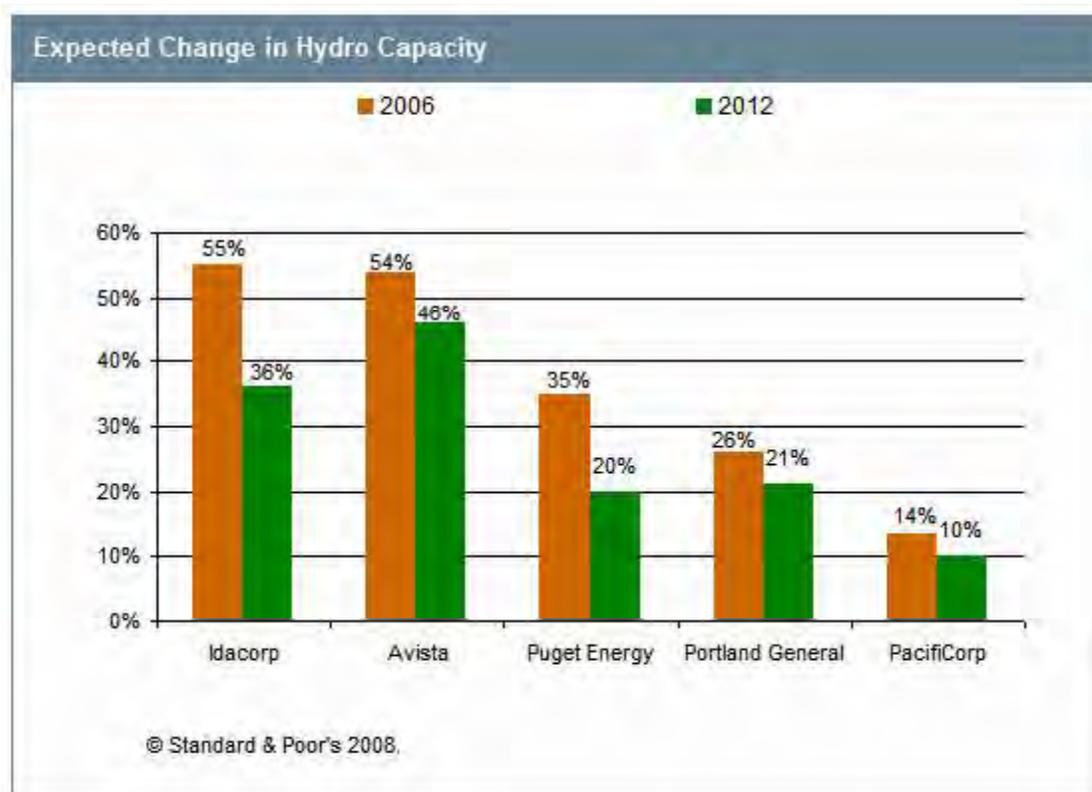
persist in the future. Researchers have concluded that the last half of the 20th century has been notable for its absence of multiyear droughts, as both temperature and precipitation have been increasing on average since 1900\*\*\*\*. Even when considering the 1930s (the period of the Great Dust Bowl, in which virtually the entire U.S. experienced devastating drought), the JAWA study concluded that the event "should not be regarded as an anomalous event, but is likely a typical fluctuation of the Columbia River system."

Future predictions are also clouded by the uncertainties related to global warming. Substantial disruption in the already variable Pacific Northwest hydro cycle is predicted if temperatures rise, as global warming experts suggest. Due to the complexity of the modeling, we will not attempt a robust discussion of findings here, but would note that the scientific consensus appears to be that if global warming is a reality, the long-run trend will be toward warmer regional temperatures, and greater precipitation. But even in projections that show annual precipitation rising, hydro availability is expected to decrease because higher temperatures will lead to lower snow pack and earlier spring run off (\*\*\*\* and ¶¶¶¶¶¶). By how much depends on which climate model is used.

The prospect of unpredictability and possibly sustained lower stream flows could require a new regulatory approach to maintain credit quality. While current mechanisms do insulate utility credit quality from low hydro conditions, they function best when small variances occur in hydro flows year over year, which have an equal chance of being below or above normal. This may not be the case in the future.

Balancing this concern, however, is the fact that the reliance on Pacific Northwest utilities on hydro generation is expected to slowly decline. A lack of suitable sites, combined with environmental concerns regarding fish passage and related habitat issues suggests minimal new hydro capacity will be added to the region§§§§§. As a result, customer load growth will likely be met by a combination of conventional thermal generation, mandated renewable energy capacity and conservation, which will tend to have a dilutive effect on the prominence of hydro in the overall power supply portfolio of all of these utilities. In fact, Chart 5 suggests that in five years, all utilities' hydro dependence will shrink, and the relative ranking of hydro dependence could change\*\*\*\*\*.

Chart 5



## Notes

\* Nameplate Capacity, Energy Information Administration, Form EIA-860, "Annual Electric Generator Report." <http://www.eia.doe.gov/cneaf/electricity/page/capacity/capacity.html>

¶ Bonneville Power Administration, 2005.

§ Three of these points are shown on Chart 1. Cabinet Gorge is not shown, but is downstream from Noxon, on the Clark Fork tributary.

\*\* In terms of the generation statistics, 2006 hydro flows were close to normal, and thus hydro generation by utility for this year is a reasonable representation of "average" hydro by company.

¶¶ FAS 71 allows regulated utilities to book as a regulatory asset on its balance sheet the cost over-runs related to fuel and purchased power, rather than expensing it on its income statement. When the PCA surcharge is imposed on customers, the utility recognizes this revenue on its income statement, and the amortized fuel and purchased deferral is expensed over time. Operating cash flows are increased by the amount of the surcharge while the collection is being made to recover the past deferrals.

§§ The time it takes to recover the amounts is either fixed (typically a year) or subject to negotiation. Those that are subject to negotiation are not as strong, as the deferral may be stretched over a multi-year period, and while the utility usually collects interest on the balances, it effectively is having to wait longer to be made whole for a given

deferral year.

\*\*\* That is, sharing bands are symmetric in all but Portland General's case, which means that while a utility may be required to absorb the first \$10 million in deferrals, for example, it is not required to rebate to customers the first \$10 million of revenue in excess of costs that result from a good water year.

¶¶¶ The center uses two approaches to forecast regional water supplies. The official, or regression, results are updated approximately three times a month, and relate seasonal volumes to snow water equivalent, monthly precipitation and, in some cases, previous stream flow volumes. It also prepares the Ensemble Stream flow Prediction (ESP) forecast, a different approach from the official forecast that compares historical with current data and runs scenario projections (both are available at [http://www.nwrhc.noaa.gov/water\\_supply/ws\\_fcst.cgi](http://www.nwrhc.noaa.gov/water_supply/ws_fcst.cgi) .)

§§§ Predictions this early into the hydro season typically lack precision because of the limited amount of data available this time of year for important variables such as snow pack levels. For example, when the Northwest River Forecasting Center began forecasting 2004 peak season stream flows in mid-December 2003, the expectation was for near normal stream flows. Actual stream flow fell well short of this. Thus, these forecasts should be taken as preliminary.

\*\*\*\* Gedalof, Ze'ev, David L. Peterson, and Nathan J. Mantua, Columbia River Flow and Drought Since 1750, *Journal of the American Water Resources Association* (JAWRA) 40(6): 1579-1592, December 2004.

¶¶¶¶ Stream flow data before 1933 is either absent or unreliable because it did not adjust for changes in flows due to water diversion and storage. A number of studies have examined average water flows using tree ring data because tree growth is sensitive to winter snow pack, which is highly correlated to stream flow. Thus, tree ring growth is used to proxy stream flows for years in which modern measurement techniques are not available.

§§§§ Graumlich, L.J., Precipitation Variation in the Pacific Northwest, (1675-1975) as Reconstructed from Tree Rings, *Annals of the Association of American Geographers*, 77:19-29, 1987.

\*\*\*\*\* Mote, P. et al., Impacts of Climate Variability and Change, Pacific Northwest. National Atmospheric and Oceanic Administration, Office of Global Programs, and JISAO/SMA Climate Impacts Group, Seattle, WA. 1999.

¶¶¶¶¶ Hamlet, Alan F. and Dennis P. Lettenmaier, Effects Of Climate Change On Hydrology And Water Resources In The Columbia River Basin, *Journal of the American Water Resources Association* 35 (6), 1597-1623, 1999.

§§§§§ Federal re-licensing is occurring throughout the region, a process that the Federal Energy Regulatory Commission oversees. As part of settlement agreements with stakeholders, de-rates of hydro facilities have occurred as part of the license extension process. For example, Portland General Electric surrendered the license of the 22 MW Bull Run facility and is expected to decommission the dam in 2007 and 2008. But small increases are also possible. As part of Avista's 2007 integrated resource plan, it expects to begin upgrades in 2009 on some of its facilities that by 2012 will yield an increase of about 38 MW.

\*\*\*\*\* Based on filed integrated resource plans. Above average growth rates at Idaho Power may lead to a lower exposure to hydro risk than Avista, which has no need to add base load capacity until 2014. For example, due to Puget's plans to reduce its reliance on power purchases by building new generation, by 2012 its reliance on hydro capacity could fall below Portland General Electric's.

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## Avista Corp.

**Primary Credit Analyst:**

Obioma Ugboaja, New York + 1 (212) 438 7406; obioma.ugboaja@spglobal.com

**Secondary Contact:**

Kevin M Sheridan, New York + 1 (212) 438 3022; kevin.sheridan@spglobal.com

### Table Of Contents

---

Credit Highlights

Outlook

Our Base-Case Scenario

Company Description

Business Risk

Financial Risk

Liquidity

Environmental, Social, And Governance

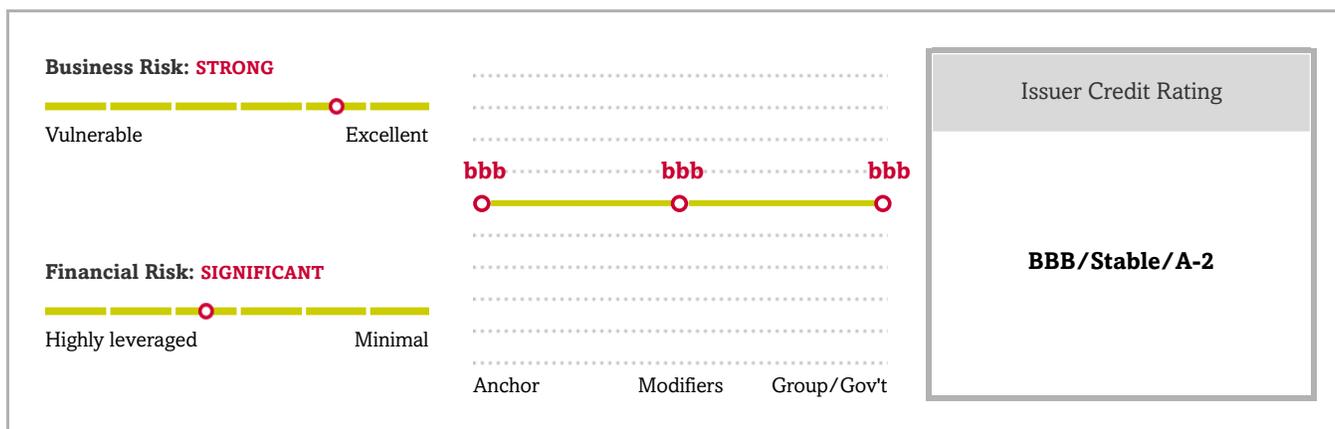
Reconciliation

Issue Ratings - Recovery Analysis

Ratings Score Snapshot

Related Criteria

# Avista Corp.



## Credit Highlights

### Overview

Key strengths	Key risks
Mostly lower risk regulated utility, with nonregulated operations comprising less than 5% of the company's consolidated EBITDA;	Minimal cushion at the current rating level, and we expect regulatory lag to persist until 2023;
Modest regulatory, operating, and geographic diversity eventhough Washington and Idaho account for most of Avista's regulated footprint; and	Heavy dependence on hydroelectric generation introduces some fuel replacement risk; and
Regulatory mechanisms provide cash flow stability through decoupling and interim adjustments for purchased power and gas costs.	Negative discretionary cash flow over the next few years indicates a reliance on external funding for capital expenditures and dividends.

**The COVID-19 pandemic will likely lead to additional regulatory lag for Avista Corp.** Avista recently delayed its planned Washington and Idaho rate case filings until the fourth quarter of 2020. In addition, per the terms of a March 2020 order from its Washington State regulators, Avista will refund \$40 million in energy recovery mechanism (ERM) balancing account over a two-year amortization period. This effectively offsets approved electric and gas rate increases of \$28.5 million, and \$8 million, both of which became effective in April 2020. Overall, while we expect the company will work with its regulators to mitigate the effects of higher expenses related to the pandemic, it will likely result in additional regulatory lag primarily due to delays in its planned rate case filings, and the uncertain timing for recovering any incremental expenses tied to the outbreak. Partially offsetting, is the availability of decoupling in Washington, Idaho, and Oregon, which provides some downside protection from reduced sales volumes.

**There is potential improvement to Avista's business risk, despite a history of regulatory lag.** Although Avista is currently experiencing a period of regulatory lag, we expect the 2019 passage of a law in Washington State to be favorable for its credit quality. The law allows for the authority for the Washington Utilities and Transportation Commission (WUTC) to approve multiyear rate plans and allow recovery for some utility investments deemed useful up to 48 months after the rate approval. In addition, other factors such as use of its purchased power and gas cost-adjustment mechanisms, and decoupling, support our assessment of the company's current business risk profile.

**We expect forecast credit metrics to remain in the lower end of the significant financial risk category.** We expect that Avista's funds from operations (FFO) to debt will average in the 14%-16% range over the forecast period, assessed under our medial volatility financial benchmark table. As such, there is minimal cushion in Avista's financial measures compared to our current ratings downside trigger.

**Outlook: Stable**

The stable outlook reflects our expectation that the potential improvement to Avista Corp.'s regulatory risk management strengthens its business risk profile, mitigating its modestly weaker financial measures. We also expect Avista to maintain FFO to debt of 14%-16% throughout our forecast period.

**Downside scenario**

We could lower our ratings on Avista during the next two years if adverse regulatory decisions weaken FFO to debt consistently below 14%, without sufficient countermeasures. We could also lower the ratings if Avista shifts its strategic focus to other business activities that weaken its credit quality.

**Upside scenario**

We could raise our rating on Avista if it materially improves its financial measures such that FFO to debt is consistently above 20%.

**Our Base-Case Scenario**

Assumptions	Key Metrics			
<ul style="list-style-type: none"> <li>• Continued use of existing regulatory mechanisms;</li> <li>• Periodic and timely rate case filings;</li> <li>• No material weakening in the company's capital structure;</li> <li>• Capital spending averaging about \$415 million annually;</li> <li>• Dividends in line with historical payout ratio;</li> <li>• Equity issuance of \$70 million in 2020;</li> <li>• Refinancing of all debt maturities; and</li> <li>• Negative discretionary cash flow over the forecast period.</li> </ul>		<b>2019a</b>	<b>2020e</b>	<b>2021f</b>
	FFO/debt (%)	12.3	14	14.6
	Debt/EBITDA (x)	5.7	5.5	5.3
	FFO/cash interest coverage (x)	3.9	4.4	4.5
	a--Actual. e--Estimated. f--Forecast. FFO--Funds from operations.			

**Company Description**

Spokane, Wash.-based Avista is a vertically integrated regulated electric and natural gas utility company. It operates through two segments, Avista Utilities and Alaska Electric Light & Power Co. (AEL&P). Avista Utilities provides

electric distribution and transmission, natural gas distribution services in parts of eastern Washington and northern Idaho, and natural gas distribution services in parts of northeastern and southwestern Oregon. Avista Utilities also generates electricity in Washington, Idaho, Oregon, and Montana. AEL&P offers electric services to approximately 17,000 customers in the city and borough of Juneau, Alaska. Overall, Avista has about 393,000 electricity customers and approximately 361,000 natural gas customers.

## Business Risk: Strong

Avista's business risk profile reflects its low-risk regulated electric and gas utility operations, which contribute more than 95% to the consolidated EBITDA. Our assessment also reflects the company's geographic diversity, with regulated operations across five states, even though Washington and Idaho account for over 90% of its rate base. The company has material exposure to hydroelectric power (roughly 50% of its fuel supply mix), followed by gas-fired generation, both of which help to keep electricity prices competitive compared with the national average. Dependence on hydropower, however, introduces fuel-replacement risk in low water years.

The company regulatory compact includes an ERM in Washington. The ERM is a regulatory accounting mechanism used to track certain differences between Avista's net power supply costs, compared to the amount that is included in base retail rates, and hence, is trued up periodically. Similarly, the company has a power cost adjustment (PCA) mechanism in Idaho, which allows for deferral of 90% of its energy cost differences for future recovery. And for its regulated gas operations, a purchased gas adjustment (PGA) mechanism, available in all its jurisdictions, helps to mitigate gas price risk. Furthermore, Avista benefits from decoupling mechanisms in the majority of its jurisdictions, which provide some downside protection from reduced sales volumes.

Avista regulatory risk management also include it activities in other jurisdictions. In October 2019, Avista received a commission order on its electric rate case in Idaho and gas rate case in Oregon. The Idaho Public Utility Commission (IPUC) approved a \$7.2 million rate decrease and Oregon Public Utility Commission (OPUC) approved a \$3.6 million increase to rates. Overall, we view these outcomes as indicative of the company's regulatory risk management, which is mostly in line with its peers. Other factors we consider in our assessment includes the company's size and track record of safety and service reliability.

## Peer comparison

Table 1

Avista Corp. -- Peer Comparison				
Industry Sector: Combo				
	Avista Corp.	Puget Energy Inc.	IDACORP Inc.	Northwest Natural Gas Co.
Ratings as of May 27, 2020	BBB/Stable/A-2	BBB-/Negative/--	BBB/Stable/A-2	A+/Stable/A-1
	--Fiscal year ended Dec. 31, 2019--			
(Mil. \$)				
Revenue	1,345.6	3,401.1	1,346.4	739.9
EBITDA	447.0	1,332.6	535.4	244.5

Table 1

Avista Corp. -- Peer Comparison (cont.)				
Industry Sector: Combo				
	Avista Corp.	Puget Energy Inc.	IDACORP Inc.	Northwest Natural Gas Co.
Funds from operations (FFO)	314.3	964.2	403.9	202.0
Interest expense	109.1	376.8	117.2	41.4
Cash interest paid	107.0	357.8	117.4	40.0
Cash flow from operations	408.7	549.7	366.0	190.7
Capital expenditure	448.8	967.9	280.6	240.2
Free operating cash flow (FOCF)	(40.1)	(418.2)	85.4	(49.5)
Discretionary cash flow (DCF)	(142.9)	(482.5)	(48.5)	(102.9)
Cash and short-term investments	9.9	45.3	217.3	5.9
Debt	2,560.9	7,123.8	2,327.4	1,066.3
Equity	1,939.3	4,000.3	2,470.6	822.2
<b>Adjusted ratios</b>				
EBITDA margin (%)	33.2	39.2	39.8	33.0
Return on capital (%)	5.5	5.3	8.0	8.3
EBITDA interest coverage (x)	4.1	3.5	4.6	5.9
FFO cash interest coverage (x)	3.9	3.7	4.4	6.0
Debt/EBITDA (x)	5.7	5.3	4.3	4.4
FFO/debt (%)	12.3	13.5	17.4	18.9
Cash flow from operations/debt (%)	16.0	7.7	15.7	17.9
FOCF/debt (%)	(1.6)	(5.9)	3.7	(4.6)
DCF/debt (%)	(5.6)	(6.8)	(2.1)	(9.6)

Sources: S&P Global Ratings, company reports.

## Financial Risk: Significant

We assess Avista's financial risk profile as significant using our medial volatility financial ratio benchmarks given the company's mostly low-risk cash flow sources, and our view of its overall management of regulatory risk. Our base case indicates that capital spending, along with dividend payments, will lead to negative discretionary cash flow over the next few years, necessitating a reliance on external funding for capital expenditures and dividends. Specifically for 2020, we assume about \$415 million in capital spending, \$110 million in dividends, \$70 million in equity issuance, and periodic net electric and gas rate increases.

We expect modestly improving financial measures due to recent rate cases outcomes and our assumptions of favorable tax positions in our forecast, partially offset by continued regulatory lag, including delays in its 2020 rate

case filings. However, we expect regulatory lag to gradually dissipate as the company continues to effectively manage its regulatory activities across all of its service territories, including in Washington State, which accounts for over 60% of Avista's regulated rate base. Our base case indicates that Avista's financial measures will remain at the lower end of the range for a financial risk assessment of significant.

## Financial summary

Table 2

Avista Corp. -- Financial Summary					
Industry Sector: Combo					
	--Fiscal year ended Dec. 31--				
	2019	2018	2017	2016	2015
<b>(Mil. \$)</b>					
Revenue	1,345.6	1,396.9	1,445.9	1,442.5	1,484.8
EBITDA	447.0	474.5	500.4	500.7	439.8
Funds from operations (FFO)	314.3	350.2	435.9	417.6	359.0
Interest expense	109.1	109.9	104.2	99.5	89.4
Cash interest paid	107.0	109.5	106.0	96.5	90.7
Cash flow from operations	408.7	369.7	418.4	368.2	385.2
Capital expenditure	448.8	431.0	419.6	415.6	402.1
Free operating cash flow (FOCF)	(40.1)	(61.3)	(1.1)	(47.4)	(16.8)
Discretionary cash flow (DCF)	(142.9)	(159.3)	(93.6)	(134.6)	(102.4)
Cash and short-term investments	9.9	14.7	16.2	8.5	10.5
Gross available cash	9.9	14.7	16.2	8.5	10.5
Debt	2,560.9	2,463.1	2,177.1	2,110.6	1,945.3
Equity	1,939.3	1,774.0	1,730.5	1,648.5	1,554.1
<b>Adjusted ratios</b>					
EBITDA margin (%)	33.2	34.0	34.6	34.7	29.6
Return on capital (%)	5.5	6.7	8.2	9.0	8.4
EBITDA interest coverage (x)	4.1	4.3	4.8	5.0	4.9
FFO cash interest coverage (x)	3.9	4.2	5.1	5.3	5.0
Debt/EBITDA (x)	5.7	5.2	4.4	4.2	4.4
FFO/debt (%)	12.3	14.2	20.0	19.8	18.5
Cash flow from operations/debt (%)	16.0	15.0	19.2	17.4	19.8
FOCF/debt (%)	(1.6)	(2.5)	(0.1)	(2.2)	(0.9)
DCF/debt (%)	(5.6)	(6.5)	(4.3)	(6.4)	(5.3)

Sources: S&P Global Ratings, company reports.

## Liquidity: Adequate

As of May 2020, we assess Avista's liquidity as adequate. We expect Avista can cover its needs for the next 12 months even if EBITDA declines by 10%. We expect the company's liquidity sources will exceed uses by more than 1.1x over the next 12 months. Under our stress scenario, we do not expect Avista would require access to the capital markets

during that period to meet liquidity needs. Our assessment also reflects the company's generally prudent risk management, sound relationships with banks, and generally satisfactory standing in the credit markets.

Principal Liquidity Sources	Principal Liquidity Uses
<ul style="list-style-type: none"> <li>• Cash balance of \$18.9 million;</li> <li>• Cash FFO of about \$370 million;</li> <li>• Undrawn credit facilities totaling about \$210 million; and</li> <li>• Cash proceeds of \$100 million from a term loan issued in April 2020.</li> </ul>	<ul style="list-style-type: none"> <li>• Current debt maturities of \$152 million;</li> <li>• Maintenance capital spending of about \$300 million; and</li> <li>• Dividend payments of about \$110 million.</li> </ul>

#### Debt maturities

- 2020: \$52 million
- 2022: \$250 million
- 2023: \$13.5 million
- 2024: \$15 million

### Environmental, Social, And Governance

Avista's credit quality is positively influenced by environmental factors compared to peers given its large hydro portfolio. With a total generation fleet capacity of over 2,000 MW, close to 50% of its generation portfolio is from hydro generation. In addition, in 2019, the company announced a goal to serve its customers with 100 percent clean electricity by 2045 and to have a carbon- neutral supply of electricity by the end of 2027. We view social factors as mostly in line with industry peers. This in large part reflects the company's track record of providing safe and reliable electric and gas services for its customers, even though rate affordability is something that we continue to monitor broadly across the sector. Governance factors are also neutral. Avista has independent board of directors, who in our opinion are capably engaged in risk oversight on behalf of its stakeholders.

## Reconciliation

Table 3

## Avista Corp.--Reconciliation Of Reported Amounts With S&amp;P Global Ratings' Adjusted Amounts

--Fiscal year ended Dec. 31, 2019--

## Avista Corp. reported amounts (mil. \$)

	Debt	EBITDA	Operating income	Interest expense	S&P Global Ratings' adjusted EBITDA	Cash flow from operations	Capital expenditure
	2,133.12	416.38	210.39	100.18	446.99	398.21	442.51
<b>S&amp;P Global Ratings' adjustments</b>							
Cash taxes paid	--	--	--	--	(25.79)	--	--
Cash interest paid	--	--	--	--	(99.06)	--	--
Reported lease liabilities	124.24	--	--	--	--	--	--
Operating leases	--	4.43	0.26	0.26	(0.26)	4.16	--
Postretirement benefit obligations/deferred compensation	169.66	--	--	0.15	--	--	--
Accessible cash and liquid investments	(9.90)	--	--	--	--	--	--
Capitalized interest	--	--	--	4.17	(4.17)	(4.17)	(4.17)
Share-based compensation expense	--	11.35	--	--	--	--	--
Power purchase agreements	90.50	13.96	3.46	3.46	(3.46)	10.50	10.50
Asset-retirement obligations	16.07	0.88	0.88	0.88	--	--	--
Nonoperating income (expense)	--	--	23.83	--	--	--	--
Debt: Other	37.24	--	--	--	--	--	--
Total adjustments	427.82	30.61	28.42	8.92	(132.74)	10.49	6.33
<b>S&amp;P Global Ratings' adjusted amounts</b>							
	Debt	EBITDA	EBIT	Interest expense	Funds from operations	Cash flow from operations	Capital expenditure
	2,560.93	446.99	238.81	109.10	314.25	408.70	448.84

Sources: S&amp;P Global Ratings, company reports.

**Capital structure**

Avista's capital structure consists of about \$1.9 billion of long-term debt, most of which is secured.

**Analytical conclusions**

We rate the preferred stock issued by Avista Capital II two notches below the issuer credit rating to reflect the deferability of the dividends, and because it is deeply subordinated to other instruments in the capital structure, consistent with our criteria. The short-term rating on Avista Corp. is 'A-2' based on its issuer credit rating.

**Issue Ratings - Recovery Analysis**

Avista's first-mortgage bonds benefit from a first-priority lien on substantially all of the utility's owned or subsequently

acquired real property. Collateral coverage of more than 1.5x supports a recovery rating of '1+' and an 'A-' issue level rating, two notches above the issuer credit rating.

## Ratings Score Snapshot

### Issuer Credit Rating

BBB/Stable/A-2

### Business risk: Strong

- **Country risk:** Very low
- **Industry risk:** Very low
- **Competitive position:** Satisfactory

### Financial risk: Significant

- **Cash flow/leverage:** Significant

Anchor: bbb

### Modifiers

- **Diversification/portfolio effect:** Neutral (no impact)
- **Capital structure:** Neutral (no impact)
- **Financial policy:** Neutral (no impact)
- **Liquidity:** Adequate (no impact)
- **Management and governance:** Satisfactory (no impact)
- **Comparable rating analysis:** Neutral (no impact)

Stand-alone credit profile : bbb

## Related Criteria

- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings, April 7, 2017
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013
- Criteria | Corporates | Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- General Criteria: Group Rating Methodology, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013

- Criteria | Corporates | Utilities: Collateral Coverage And Issue Notching Rules For '1+' And '1' Recovery Ratings On Senior Bonds Secured By Utility Real Property, Feb. 14, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012
- General Criteria: Use Of CreditWatch And Outlooks, Sept. 14, 2009
- Criteria | Insurance | General: Hybrid Capital Handbook: September 2008 Edition, Sept. 15, 2008

### Business And Financial Risk Matrix

Business Risk Profile	Financial Risk Profile					
	Minimal	Modest	Intermediate	Significant	Aggressive	Highly leveraged
Excellent	aaa/aa+	aa	a+/a	a-	bbb	bbb-/bb+
<b>Strong</b>	aa/aa-	a+/a	a-/bbb+	<b>bbb</b>	bb+	bb
Satisfactory	a/a-	bbb+	bbb/bbb-	bbb-/bb+	bb	b+
Fair	bbb/bbb-	bbb-	bb+	bb	bb-	b
Weak	bb+	bb+	bb	bb-	b+	b/b-
Vulnerable	bb-	bb-	bb-/b+	b+	b	b-

### Ratings Detail (As Of May 29, 2020)\*

#### Avista Corp.

Issuer Credit Rating

BBB/Stable/A-2

Senior Secured

A-

#### Issuer Credit Ratings History

10-Dec-2018

BBB/Stable/A-2

15-Jun-2018

BBB/Watch Pos/A-2

19-Jul-2017

BBB/Positive/A-2

\*Unless otherwise noted, all ratings in this report are global scale ratings. S&P Global Ratings' credit ratings on the global scale are comparable across countries. S&P Global Ratings' credit ratings on a national scale are relative to obligors or obligations within that specific country. Issue and debt ratings could include debt guaranteed by another entity, and rated debt that an entity guarantees.

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Global Credit Research - 17 Mar 2011

Spokane, Washington, United States

### Ratings

Category	Moody's Rating
Outlook	Stable
Issuer Rating	Baa2
Sr Sec Bank Credit Facility	A3
First Mortgage Bonds	A3
Senior Secured	A3
Senior Unsecured	Baa2
Preferred Shelf	(P)Ba1
<b>Avista Corp. Capital II</b>	
Outlook	Stable
Bkd Preferred Stock	Baa3

### Contacts

Analyst	Phone
Kevin G. Rose/New York	212.553.0389
William L. Hess/New York	212.553.3837

### Key Indicators

#### [1]Avista Corp.

	2010	2009	2008	2007
(CFO Pre-W/C + Interest) / Interest Expense	4.1	4.4	3.7	2.9
(CFO Pre-W/C) / Debt	18%	20%	18%	14%
(CFO Pre-W/C - Dividends) / Debt	14%	17%	15%	12%
Debt / Book Capitalization	47%	46%	48%	48%

[1] All ratios calculated in accordance with the Regulated Electric and Gas Utilities Rating Methodology using Moody's standard adjustments

Note: For definitions of Moody's most common ratio terms please see the accompanying [User's Guide](#).

### Opinion

#### Rating Drivers

Stable and predictable cash flow from primarily rate regulated utility operations

Relatively supportive regulatory jurisdictions

Capital Expenditures expected to rise over intermediate-term

Supply portfolio is well positioned from emissions perspective

#### Corporate Profile

Avista Corp. is primarily a regulated electric and gas utility. The Avista Utilities division services more than 359,000 electric and 319,000 gas customers in Washington, Idaho and Oregon, and is regulated by the Washington Utilities and Transportation Commission (WUTC), Idaho Public Utilities Commission (IPUC) and the Oregon Public Utility Commission (OPUC). Avista's primary non-regulated subsidiary, Advantage IQ, provides sustainable utility expense management and energy management solutions to multi-state companies across North America.

#### SUMMARY RATING RATIONALE

Avista's Baa2 senior unsecured rating is principally based on the relatively supportive regulatory treatment that it receives in its three service area jurisdictions which has translated to improved credit metrics over the past five years. The ratings also considers Avista's improved liquidity profile, following the recent execution of a new \$400 million, four year revolving credit facility and its heavy reliance upon low cost hydro supply

resources.

## **DETAILED RATING CONSIDERATIONS**

### **REGULATED BUSINESS PROFILE UNDERPINS CREDIT QUALITY**

As a predominantly rate regulated electric and gas utility, the degree of regulatory support that Avista receives from its three state utility commissions (Washington, in particular) is a fundamental driver of the company's credit ratings. Over the past several years, the level of regulatory support, by way of rate increase approvals and timely cost recovery, has driven the improved financial profile of Avista.

Over the past several months, in particular, Avista has received significant rate increases in each jurisdiction, which should give a certain level of predictability to the company's financial performance over the near-term. For example, in November 2010 the WUTC, which regulates approximately 60% of Avista's utility operations, approved a rate settlement which increased customer rates by an average of 7.4%, which was designed to increase annual revenues by \$29.5 million. As part of the same approval, which made the new rates effective December 1, 2010, natural gas revenues are expected to increase by \$4.6 million and costs for the company's Lancaster tolling agreement will be recovered in rates going forward.

Similarly, in September 2010 the IPUC, which regulates around 30% of Avista's utility operations, approved a settlement agreement, putting new electric and gas rates into effect on October 1, 2010. The increase in Idaho is expected to increase annual revenues by \$21.2 million. Lastly, the OPUC, as recently as this month approved a phased-in \$2.97 million increase to natural gas revenues which will impact about 10% of Avista's utility earnings.

In addition to the rate approvals in Washington, Idaho and Oregon, each commission allows for cost recovery mechanisms that factor significantly into Moody's credit assessment. As the inherent volatility of commodity costs comprises one of the most significant risk factors to the industry, Moody's views the existence of commodity cost recovery mechanisms as a significant credit benefit. The WUTC provides for power supply costs to be included in base rates, while differences between authorized expenses and actual expenses are deferred and recovered annually through its Energy Recovery Mechanism (ERM). Idaho and Oregon provide similar mechanisms via the Power Cost Adjustment (PCA) and all three jurisdictions offer a Purchased Gas Adjustment (PGA) mechanism. Washington has also allowed the implementation of a pilot gas decoupling program, which is intended to de-link the revenue required for meeting the utility's fixed costs from the variability of gas customer usage.

The trend of settled rate case filings, as in the case of Washington and Idaho, and continual allowance of sufficient rate increases and annual cost recovery mechanisms by each utility commission, are significant factors in the recent upgrade of Avista's ratings. Moody's anticipates that the constructive relationships that Avista maintains with each jurisdiction's staff and commission will continue into the future and will provide continuing support for the increasing capital plans that the company has over the next several years.

### **PRIMARY CHALLENGE RELATED TO COST RECOVERY OF INCREASING CAPEX**

While Avista has received supportive regulatory treatment over the last several years, the company's service territory economies are still feeling the impacts of the recession, albeit showing some signs of slow growth. Avista's respective utility commissions will have to balance rate payers' economic situation against the service territory's need for a financially healthy utility; this balancing act gives rise to challenging issues that Avista, the WUTC, the IPUC and the OPUC will need to address as capital expenditures increase over the next couple years.

Avista's greatest capital requirements over the near-term are related to transmission and distribution assets, as well as upgrading its hydroelectric generation facilities. For 2011, the company expects to spend around \$250 million in total capex, up from about \$205 in 2010. The 2011 amount includes the development of the company's Smart Grid Demonstration Project in Pullman, Washington, which was selected to receive Department of Energy grants of approximately \$20 million; Avista plans to spend around \$19 million on Smart Grid investments this year.

This increased level of capex is expected to continue over the next few years (the company estimates between \$230 and \$240 million will be spent both 2012 and 2013), as Avista will be required to make investments in renewable resources to meet increasing Renewable Portfolio Standards (RPS) in Washington. In February 2011, Avista issued a request for proposals (RFP) seeking qualifying renewable electric resources to meet Washington's RPS standards. The company is seeking to acquire up to 35 MW of renewable energy or as much as 100 MW of wind capacity, deliverable in 2012. Though the company owns development rights for a wind generation site, there are no immediate plans advance this option, as Avista will look to meet RPS standards with a combination of qualified upgrades to existing hydro facilities and the purchase of renewable energy credits from 2012 through 2015.

Timely and adequate rate relief is a key ratings and outlook determinant for Avista going forward. Should the complications that face each of Avista's respective regulatory commissions persist to a level where Avista's recovery is compromised or should economic conditions create customer backlash over increasing utility prices (resulting in political unrest or possible intervention), there could be negative rating implications.

However, given each commission's level of supportiveness during the past few years, in what was an example of an economic downside case, Moody's expects that Avista will continue to recover prudently incurred costs in a timely manner and that ratings will not be pressured over the intermediate-term.

### **FINANCIAL METRICS MAY REDUCE SLIGHTLY, BUT REMAIN APPROPRIATE FOR Baa2 RATING**

Concurrent with the view that Avista will continue to receive supportive recovery in each of its regulatory jurisdictions, is Moody's anticipation that the company will continue to produce key credit metrics that are appropriate for a strong Baa rating. In 2010, the company produced CFO pre-WC to debt and CFO pre-WC to interest of 18% and 4.1x, respectively, which is right in-line with the Baa2 integrated utility peer group average of 17% and 4.0x, respectively.

Going forward, Moody's debt imputation related to the current underfunded pension liability and the expectation for larger amounts of capitalized interest (which increases adjusted interest expense) may cause a slight deterioration of Avista's financial performance, versus historical levels. That being the case, Moody's envisions Avista maintaining CFO before working capital changes (CFO pre-WC) to debt in the mid-to-high teens and CFO pre-WC interest coverage nearing 4.0x, both of which are toward the high end of the Baa rating category.

### **LONG SUPPLY POSITION LENDS STABILITY TO BUSINESS PLAN OVER INTERMEDIATE-TERM**

Although Avista's capex is increasing, the company is well positioned in regard to generation investments, when compared to many other integrated utilities across the nation. Regionally, Puget Sound Energy is anticipating spending close to \$2.5 billion over the next three years addressing its supply and delivery needs, Idaho Power is completing the construction of a 300 megawatt natural gas plant and Portland General Electric is in the midst of constructing wind and natural gas generating units. Avista's long power supply position is beneficial to its credit profile (despite the current depressed prices they receive for excess power sales), as the company is not currently required to make investments in higher-cost, higher-risk assets, like many of its peers.

Avista's high dependency on hydro resources (approximately 50% of its production comes from hydro fueled electric generation resources) is viewed as a supply concentration risk (which also lends to the potential for metric volatility, especially since hydro levels, due to weather, is a factor outside of management's control. However, hydro resources are a low-cost energy source and as the inertia for carbon legislation increases, Avista's credit profile will increasingly benefit from their relatively low dependency on carbon emitting resources.

Avista's primary exposure to environmental mandates comes from its 15% ownership in Colstrip Units 3 and 4, which provide for 1,500 MWs of coal-fired capacity in southeastern Montana. At this time, the company does not anticipate the need for additional environmental improvements related to sulfur-dioxide or mercury emissions. Though there are questions concerning how the Environmental Protection Agency might possibly regulate carbon emissions or how a possible federally legislated carbon tax might impact the industry, Moody's views Avista's supply position to be significantly better than the average utility from an environmental perspective, and does not ascribe as much downside risk to Avista for potential additional environmental mandates.

### Liquidity

Avista recently signed a new credit agreement for a \$400 million senior secured revolving credit facility. This replaced the \$320 million and \$75 million revolving credit facilities, both secured, that were set to expire in April 2011. The new \$400 million facility is secured by First Mortgage Bonds and is due to expire February 11, 2015. Since Avista currently has unsecured investment grade ratings from two nationally recognized rating agencies, the company has the option to request the banks to relinquish the First Mortgage Bond collateral position, but chooses not to do so for economic reasons. Despite the collateral being in place at Avista's discretion, the secured nature of the credit facilities somewhat constrains Avista's liquidity flexibility, in Moody's opinion, since the typical investment grade issuer (having an unsecured facility) can use collateral as an option to improve bank credit access during periods of unforeseen liquidity stress. If Avista were to exercise the option to remove the First Mortgage Bond collateral, Moody's would adjust the rating of the credit facility, accordingly, to a level commensurate with Avista's other unsecured obligations.

The new facility has a \$100 million accordion feature and is subject to grid pricing. The \$400 million facility does not contain any material adverse change language for borrowings but does so to access the \$100 million accordion feature and the option for a one or two year maturity extension. The facility also includes a debt to capitalization covenant (not to exceed 65%, down from the previous facilities' 70%) and has eliminated the EBIT to Interest coverage test, which existed in the previous facilities. As of December 2010, the company had sufficient headroom available under the debt to capitalization covenant.

Over the next four quarters, we expect Avista to produce CFO equivalent to the historical range of just over \$200 million with spending on capital expenditures at about \$250 million. Given Avista's plan to grow their dividend payout ratio to levels more in-line with the industry average of 60-70%, we expect the company to have negative free cash flow over the next four quarters of over \$100 million. The company has no material debt maturities to further pressure liquidity, until \$75 million comes due in 2013.

Advantage IQ also has a three year free-standing \$15 million facility due May 2011, secured by substantially all of Advantage IQ's assets, which has an option to be increased to \$25 million. As of December 31, 2010, the full amount was available under Advantage IQ's facility and the company had ample headroom under its applicable financial covenants. The company is currently in the process of renewing this credit facility.

### Rating Outlook

The stable outlook incorporates Moody's view that Avista will continue to receive timely and predictable cost recovery in each of its regulatory jurisdictions and that the company's credit metrics will approximate current levels, or decline modestly. It also assumes that Avista will finance an increasing capital expenditure budget with a balanced mix of debt and equity and will maintain sufficient liquidity levels throughout the construction period.

### What Could Change the Rating - Up

A rating upgrade would be considered if Avista were to produce metrics of CFO pre-WC to debt above 20% and CFO pre-WC interest coverage of at least 4.0x, on a sustainable basis and without the one-time effects of beneficial tax impacts such as those derived from bonus depreciation.

### What Could Change the Rating - Down

Avista's ratings could be negatively impacted if the level of regulatory support wanes, if the contribution of its unregulated business were to increase disproportionately to those of its regulated operations, or if CFO pre-WC to debt and CFO pre-WC interest coverage were to fall below 15% and 3.5x for a sustainable period.

### Rating Factors

#### Avista Corp.

<b>Regulated Electric and Gas Utilities Industry</b> [1][2]	<b>Current LTM 12/31//2010</b>	
<b>Factor 1: Regulatory Framework (25%)</b>	<b>Measure</b>	<b>Score</b>
a) Regulatory Framework		Baa

<b>Moody's 12-18 month Forward View* As of March 2, 2011</b>	
<b>Measure</b>	<b>Score</b>
	Baa

<b>Factor 2: Ability To Recover Costs And Earn Returns (25%)</b>		
a) Ability To Recover Costs And Earn Returns		Baa
<b>Factor 3: Diversification (10%)</b>		
a) Market Position (5%)		Baa
b) Generation and Fuel Diversity (5%)		A
<b>Factor 4: Financial Strength, Liquidity And Key Financial Metrics (40%)</b>		
a) Liquidity (10%)		Baa
b) CFO pre-WC + Interest/ Interest (3 Year Avg) (7.5%)	4.0x	Baa
c) CFO pre-WC / Debt (3 Year Avg) (7.5%)	18%	Baa
d) CFO pre-WC - Dividends / Debt (3 Year Avg) (7.5%)	15%	Baa
e) Debt/Capitalization (3 Year Avg) (7.5%)	47%	Baa
<b>Rating:</b>		
a) Indicated Rating from Grid		Baa2
b) Actual Rating Assigned		Baa2

		Baa
		Baa
		A
		Baa
	3.5 - 4.0x	Baa
	15 - 20%	Baa
	10 - 15%	Baa
	45 - 50%	Baa
		Baa2
		Baa2

\* THIS REPRESENTS MOODY'S FORWARD VIEW; NOT THE VIEW OF THE ISSUER; AND UNLESS NOTED IN THE TEXT DOES NOT INCORPORATE SIGNIFICANT ACQUISITIONS OR DIVESTITURES

[1] All ratios are calculated using Moody's Standard Adjustments. [2] As of 12/31/2010; Source: Moody's Financial Metrics



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## CREDIT OPINION

28 July 2020

Update

✓ Rate this Research

### RATINGS

#### Avista Corp.

Domicile	Spokane, Washington, United States
Long Term Rating	Baa2
Type	LT Issuer Rating
Outlook	Stable

Please see the [ratings section](#) at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

### Contacts

Edna R Marinelarena Analyst edna.marinelarena@moodys.com	+1.212.553.1383
Domenic Giovannone Associate Analyst domenic.giovannone@moodys.com	+1.212.553.1647
Ryan Wobbrock VP-Sr Credit Officer ryan.wobbrock@moodys.com	+1.212.553.7104
Michael G. Haggarty Associate Managing Director michael.haggarty@moodys.com	+1.212.553.7172
Jim Hempstead MD-Utilities james.hempstead@moodys.com	+1.212.553.4318

### CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
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## Avista Corp.

### Update to credit analysis

#### Summary

Avista Corporation's (Avista) credit profile reflects its primary business as a low-risk vertically integrated electric and gas utility with supportive cost recovery mechanisms, such as electric and gas decoupling. The credit further incorporates the company's adequate track record with its primary regulator, the Washington Utilities and Transportation Commission (WUTC). Although Avista has experienced some relatively contentious proceedings in the past, we expect regulatory outcomes to become more predictable over time because of the May 2019 passage of a new clean energy bill in Washington. The bill is credit positive for Avista because it clarifies the WUTC's authority to consider and implement various constructive regulatory mechanisms including multiyear rate plans and performance and incentive-based regulation.

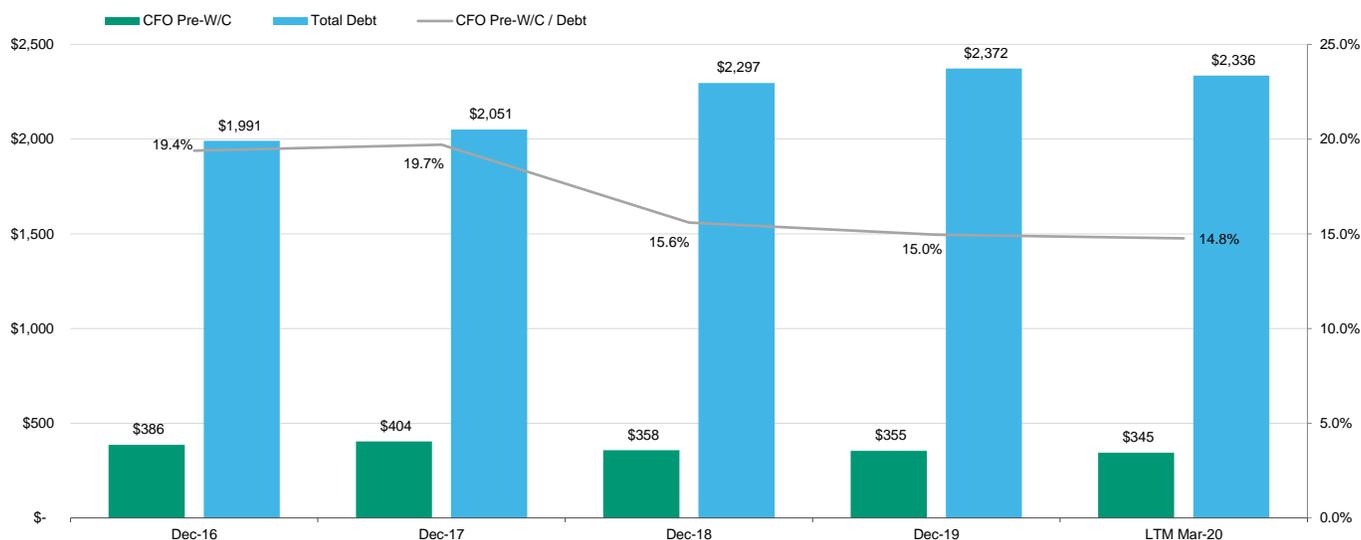
Avista's credit is constrained by lower key metrics driven by issuance of new debt to support liquidity and fund capex. We expect key metrics including CFO pre-WC to debt to be at about 14% over the next several years and should improve as the company files more frequent rate cases to recover costs. Avista has some unregulated exposure in addition to its ownership of regulated utility [Alaska Electric Light and Power](#) (AEL&P, Baa3 Stable) that provides marginal operational and cash flow diversity, but remain neutral in terms of our view of Avista's credit.

#### COVID-19 Developments

The rapid spread of the coronavirus outbreak, severe global economic shock, low oil prices and asset price volatility are creating a severe and extensive credit shock across many sectors, regions and markets. The combined credit effects of these developments are unprecedented. We regard the coronavirus outbreak as a social risk under our ESG framework, given the substantial implications for public health and safety.

We expect Avista and its subsidiaries to be resilient to recessionary pressures related to the coronavirus because of its primary rate regulated, essential service business model and cost recovery framework. Nevertheless, we are watching for electric usage declines, utility bill payment delinquency and the regulatory response to counter these effects on earnings and cash flow. As the events related to the coronavirus unfold, we are taking into consideration a wider range of potential outcomes, including more severe downside scenarios. The effects of the pandemic could result in financial metrics that are weaker than expected; however, we see these issues as temporary and not reflective of the core operations or long-term financial or credit profile of the company

Exhibit 1  
**Historical CFO pre-WC, Total Debt and CFO pre-WC to Debt**  
 \$ in millions



Source: Moody's Financial Metrics

## Credit Strengths

- » Low-risk, \$3.4 billion rate base utility with supportive cost recovery mechanisms
- » Track record of strong cash flow generation
- » 2019 clean energy bill provides for additional credit positive regulatory tools

## Credit Challenges

- » Limited financial buffer expected over next three years
- » Delayed cost recovery due to historic test year requirement
- » History of contentious regulatory proceedings

## Rating Outlook

The stable outlook incorporates our view that Avista's financial profile will remain adequate over the next several years with CFO pre-WC to debt at about 14%. In addition, the stable outlook assumes Avista will receive adequate cost recovery authorizations within its regulatory jurisdictions and that unregulated operations will remain below 15% of consolidated earnings and cash flow.

## Factors that Could Lead to an Upgrade

A rating upgrade is unlikely over the next 12 to 18 months given expectation of narrowed financial performance as a result of higher debt coupled with delayed plans to file rate cases as a result of economic impacts from the coronavirus. An upgrade could occur if financial metrics improve such that CFO pre-WC to debt was above 19% and CFO pre-WC less dividend was above 13% on a consistent basis. Additionally, a demonstrated improvement in regulatory environment and relationship will remain a key rating driver.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on [www.moody's.com](http://www.moody's.com) for the most updated credit rating action information and rating history.

## Factors that Could Lead to a Downgrade

A rating downgrade could result should there be a degradation of regulatory relationships resulting in inadequate cost recovery and CFO pre-WC to debt dropping below 14% on a sustained basis.

## Key Indicators

Exhibit 2

### Avista Corp. [1]

	Dec-16	Dec-17	Dec-18	Dec-19	LTM Mar-20
CFO Pre-W/C + Interest / Interest	5.4x	5.2x	4.5x	4.3x	4.2x
CFO Pre-W/C / Debt	19.4%	19.7%	15.6%	15.0%	14.8%
CFO Pre-W/C – Dividends / Debt	15.0%	15.2%	11.3%	10.6%	10.4%
Debt / Capitalization	44.5%	48.4%	50.5%	49.2%	49.4%

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Financial Metrics™

Source: Moody's Financial Metrics

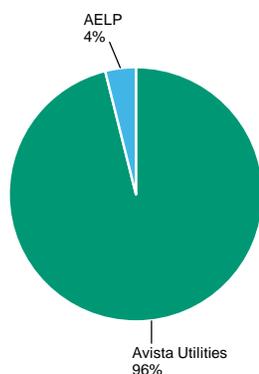
## Profile

Avista is primarily an electric and natural gas utility whose Avista Utilities operating division provides electric transmission and distribution, and natural gas distribution services in parts of eastern Washington and northern Idaho. Avista Utilities also provide natural gas distribution service in parts of northeastern and southwestern Oregon. The utility has electric generating facilities in Washington, Idaho, Oregon and Montana and also supplies electricity to a small number of customers in Montana. For the three months ended 31 March 2020, Avista Utilities averaged over 394,000 electric and over 362,000 gas customers.

Avista owns Alaska Energy and Resources Company (AERC; not rated), parent of Alaska Electric Light and Power Company (AEL&P; Baa3 Stable) which serves around 17,000 electric customers in Juneau, Alaska.

Avista's utility operations are regulated by the Washington Utilities and Transportation Commission (WUTC), the Idaho Public Utilities Commission (IPUC), the Oregon Public Utility Commission (OPUC) and the Montana Public Service Commission (MPSC). AEL&P is under the purview of the Regulatory Commission of Alaska (RCA).

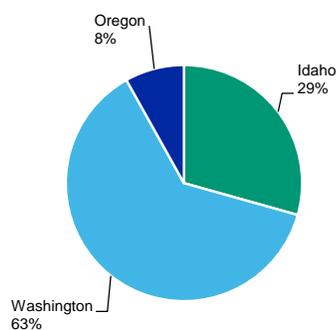
### 2019 earnings contribution breakdown



Excludes other segments  
Source: Avista Corp. Filings

Exhibit 4

### Rate base by jurisdiction



As of 31 March 2020, excludes AEL&P

Source: Company Documents & Moody's Investors Service

## Detailed Credit Considerations

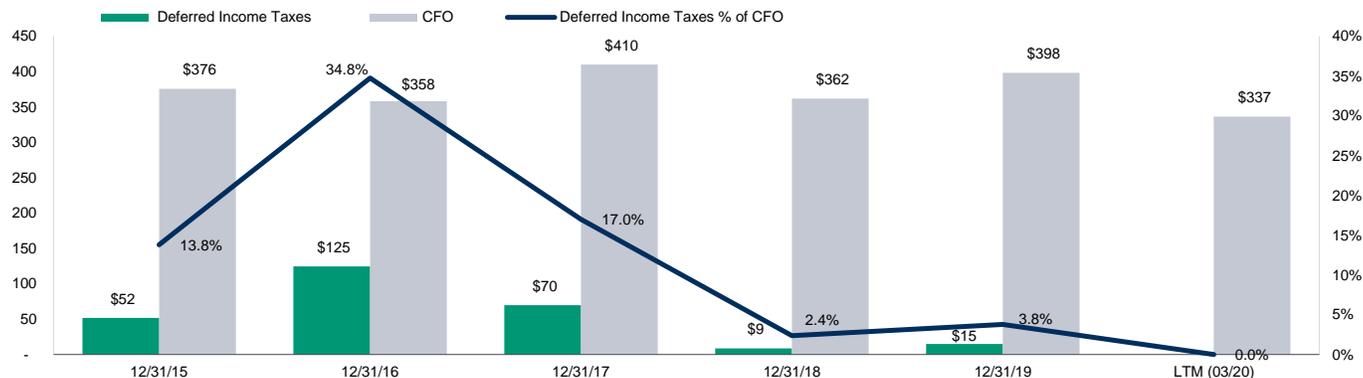
### Strong cash flow producer with narrow financial metrics expected over next three years

Avista has a history of strong cash flow production averaging about \$360 million from 2014 to 2019. Deferred income taxes historically constituted a significant portion of Avista's operating cash flow, which averaged 30% over the 2014 to 2017 period. Post tax reform, Avista's reliance on deferred income reduced annually reaching about zero as of LTM Q120 (see Exhibit 5). The loss of deferred tax resulted in lower financial metrics ranging in the midteens over the last two years.

Exhibit 5

#### Reduced reliance on deferred income taxes will continue

Historical CFO and deferred income taxes



Source: Moody's Investors Service

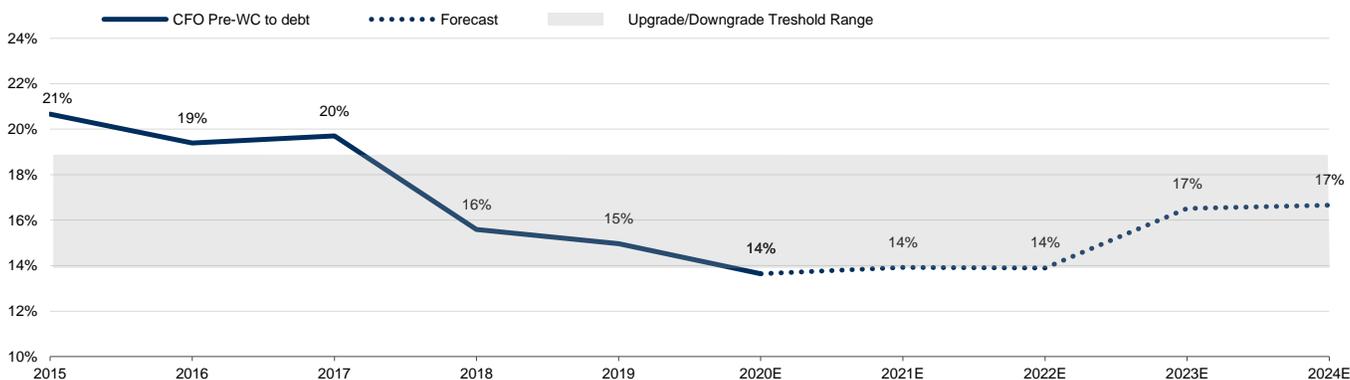
We expect cash flow generation will continue to be strong although financial metrics will be weakened over the medium-term as a result of additional debt to support liquidity and capital investment. As highlighted in Exhibit 6, CFO pre-WC to debt in 2020 is likely to be just under 14% and sustain at about 14% through 2022. Avista intends to file a general rate case in Washington and Idaho in late 2020, which is the driver behind the improved CFO in the later year of the forecast period.

Because of historic test year requirements, Avista has experienced cash flow lags over the past several years. Management intended to improve the lag by filing rate cases more frequently, but the coronavirus driven economic downturn delayed plans to file until late 2020. Any outcome thereafter will not be effective until late 2021. Although the company's financial buffer will be limited over the next several years, we expect performance will be close to forecast because the company has a strong track record of producing consistent financial results in line with expectations.

Exhibit 6

#### Stable financial metrics through 2022 with improved flexibility in 2023

Historical and forecast CFO pre-WC to debt



Source: Moody's Investors Service

We do not anticipate a material financial impact from the economic slowdown caused by COVID-19. Similar to other states, Washington, Idaho and Oregon shutdown economic activity affecting sales primarily in March and April. Management reports a modest overall decline in electric load driven by higher residential usage offsetting load loss in commercial and industrial customer class; natural gas demand was within normal bounds. Favorably, Avista benefits from decoupling and other cost recovery mechanisms, which mitigates effects from load loss within residential and commercial customers. The company instituted cost savings to offset any additional negative impacts from the coronavirus and filed requests to recover costs associated with COVID-19 with all regulatory jurisdictions.

### Credit supportive regulatory jurisdictions with adequate track record for cost recovery

#### Washington

We view Avista's regulatory jurisdictions to be generally credit supportive. The Washington Utilities and Transportation Commission (WUTC), which regulates roughly 60% of the company's rate base and revenue, has electric and gas decoupling mechanisms which allow for timely recovery of fixed costs for the utility and drive stable and predictable gross margin and cash flow in the face of declining use. Even so, the use of historic test years result in the need for Avista to file general rate cases frequently to recover and earn on investments.

Avista filed its most recent electric and natural gas general rate cases on 30 April 2019 with WUTC and reached a partial settlement in November 2019. The commission approved the settlement in March 2020. The partial settlement allows for a one year rate plan increasing electric revenue by \$28.5 million and natural gas revenue by \$8 million effective 1 April 2020. The agreement is based on an ROE of 9.4% and equity layer of 48.5%, which are slightly below industry averages. Additionally, the settlement includes provisions for cost recovery associated with Colstrip units 3 and 4 decommissioning and remediation (D&R) expenses estimated at about \$33 million as of 31 March 2020 and ability to accelerate depreciation to 2025 in recognition of the state's new energy bill requirements. The original filing was for a two-year rate plan that included a \$45.8 million increase in annual electric revenue and a \$12.9 million increase in annual natural gas revenue effective April 2020 and a \$18.9 million increase for annual electric revenue and a \$6.5 million increase for annual natural gas revenue effective April 2021. The request was based on a 9.9% ROE and 50% equity layer. Additionally, the order disallowed Avista recovery of costs associated with a 2018 Colstrip plant outage, ruling Avista failed to prove the costs were prudently incurred. Total costs were about \$3 million.

While we consider the last two Washington rate case outcomes as neutral from a credit perspective, the company has had a somewhat contentious regulatory relationship in recent years particularly related to credit supportive mechanisms that would allow for faster cost recovery. In an ongoing review of Avista's 2015 rate case, the rate base attrition adjustments, which we considered credit supportive, were ruled by the Washington Court of Appeals in August 2018 as against the state's used and useful law. Subsequently, both the Court of Appeals and Superior Court terminated and remanded the case back to the WUTC to recalculate Avista's rates without the attrition adjustment used in the final order. On 06 March 2020, the WUTC issued a final order which concluded the 2015 rate case review. The order required Avista reimburse customers a total of \$8.4 million or \$4.9 million to electric customers and \$3.5 million to natural gas customers.

#### Idaho

Avista reached an all parties settlement on 11 October 2019 for its electric general rate case filed 10 June 2019. The settlement, which was approved on 1 December 2019 by IPUC, included a revenue reduction of \$7.18 million effective 1 December 2019. The approved revenue decrease was based on a 9.5% ROE and a 50% equity ratio, which were in line with prior approved levels. Avista requested a revenue increase of about \$5.3 million that included costs associated with their wind generation PPAs in base rates instead of continuation of the Power Cost Adjustment (PCA) mechanism. The settlement approved continuation of the PCA instead of inclusion in base rates. Avista was authorized electric and gas decoupling mechanisms, known as Fix Cost Adjustment (FCA) in Idaho, in December 2015 for a three-year period beginning 1 January 2016. The company filed a request for continuation, and the IPUC approved the request on 17 December 2019.

#### Oregon

The company filed its latest natural gas rate case on 16 March 2020 seeking a \$6.8 million or 6.8% base rate increase. Management expects proceedings to move along and could reach an overall settlement with effective rates mid January 2021. On 9 October 2019, the OPUC approved an all-party natural gas rate settlement filed in August 2019 taking effect 15 January 2020. The approved

settlement increases natural gas revenue by \$3.6 million and maintains the 9.4% ROE and a 50% equity layer. As part of its March 2016 rate case order in Oregon, Avista is allowed to implement a revenue per customer decoupling mechanism.

### Alaska

AELP lowered customer rates by 6.7% or \$2.4 million annually effective 1 August 2018 to reflect the lower tax rate associated with tax reform. The RCA also approved AELP's proposal to refund to customers a one-time credit equal to the 6.7% rate reduction for 1 January through 31 July 2018. The utility completed the refund during the third quarter of 2018. The impact of the TCJA on AELP's deferred income taxes will be addressed in its next general rate case to be filed by August 30, 2021. AELP's allowed ROE of 11.95% and equity layer of 58.18% is above the average of authorized returns for the industry, a credit positive. However, we note that Alaska has a statutory period of 450 days or approximately 15 months to decide on rate cases, the longest in the nation and has not authorized cash flow stabilizing mechanisms such as revenue decoupling.

### Washington's clean energy bill enhances regulatory framework

In May 2019, Washington State Governor Jay Inslee signed a package of clean energy legislation including the 100% clean energy and regulatory reform bill (SB 5116). We expect Avista's regulatory environment to strengthen as a result of passage of this legislation. The bill requires electric utilities to eliminate coal-fired generation by 2025, transition the state's electricity supply to 80% renewables and 100% carbon neutral power by 2030 and be 100% carbon free by 2045. We view the law as credit positive because it includes the potential for enhanced cost recovery mechanisms that can improve utility financial performance and provides a legal and regulatory framework to reduce carbon exposure risks.

Compliance with the law will require significant investment and an overhaul of existing state electric infrastructure. However, the law acknowledges the WUTC's authority to implement performance and incentive based regulation, multiyear rate plans and other "flexible regulatory mechanisms" to achieve the state's public interest objectives. Importantly, the law also recognizes that the policy must include safeguards that do not impair the reliability of the electricity system nor impose unreasonable costs on utility customers.

Some of the key components of SB 5116 include: four year clean energy implementation plans to be filed and approved beginning in 2022; successive four year compliance periods to implement WUTC approved clean energy plans for interim goals beginning in 2022; penalty payments for failure to comply with emissions goals; alternative compliance options (including payments, use of renewable energy certificates, investment in "energy transformation projects"); and 2% revenue increase caps on compliance costs. It also promotes energy transformation projects, including support of the electrification of transportation, smart grid investments, distributed generation and grid resilience, among others. SB 5116 also requires the WUTC to accelerate depreciation schedules for coal generation resources, including transmission lines, to December 31, 2025, or to allow investor-owned utilities to recover costs in rates for earlier closure of those facilities.

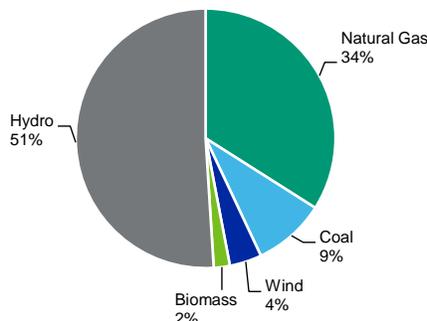
### ESG considerations

From an environmental perspective, Avista has moderate carbon transition risk within the regulated electric and gas utility sector. The company's electric generation resource mix consists of 34% fossil fuels and 9% coal. The Washington and Idaho commissions agreed to set aside \$11.7 million and \$6.4 million, respectively, of TCJA related electric tax benefits to offset costs associated with accelerating depreciation of Avista's only coal facilities, Colstrip Units 3 and 4. The remaining useful life under the WUTC agreement is 31 December 2025 while the IPUC authorized to 31 December 2027. Colstrip Units 3 & 4 will cease service to Washington customers in 2025 in line with state requirements. Moody's framework for assessing carbon transition risk in the utility industry is discussed in "[Prudent regulation key to mitigating risk, capturing opportunities of decarbonization](#)" (2 November 2017).

Exhibit 7

**Avista electric generation mix**

As of 31 March 2020



Based on maximum capacity, excludes AEL&P  
 Source: Avista Corp. Filings

Social considerations include risks associated with safety and reliability of company services and supply, business reputation or regulatory relations, an aging workforce and ability to hire and retain qualified personnel. With respects to regulatory relations, Avista has experienced a contentious relationship in the past, we anticipate a more predictable regulatory environment as a result of the 2019 legislative action. Regarding health and safety, we see a rise of social risks associated with the COVID-19 pandemic and its effect on the health and safety of plant operations. The safety and reliability of service are extremely important and are a key focus for Avista's utilities.

From a governance perspective, financial and risk management policies including a strong financial profile are important characteristics for managing environmental and social risks. We view the governance of Avista as strong based on our assessment criteria. Moody's framework for assessing corporate governance is discussed in "[Utilities and power companies – North America Corporate governance assessments show generally credit-friendly characteristics](#)" (September 19, 2019).

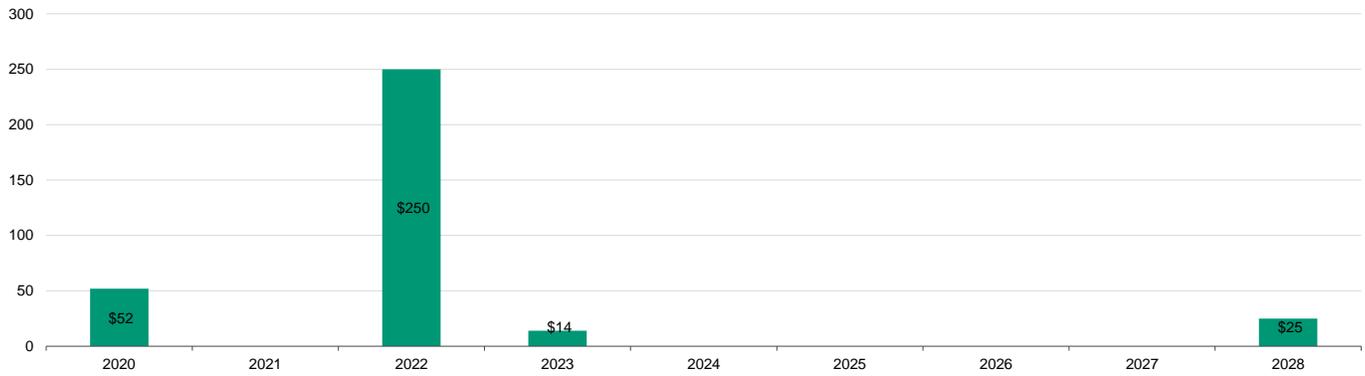
### Liquidity Analysis

We expect Avista to maintain adequate liquidity over the next 12-18 months. Avista's external liquidity sources consist of a \$400 million senior secured revolving credit facility, which expires in April 2022. At the end of Q120, there was about \$182 million available under the line of credit. Since Avista currently has unsecured investment-grade ratings from two nationally recognized rating agencies, the company has the option to request the banks to relinquish the existing First Mortgage Bond collateral position. Avista has not asked for the release, keeping the company as one of the few US regulated utilities to maintain a secured bank credit facility. The secured nature of the credit facilities constrains Avista's liquidity flexibility, in our opinion, since the typical investment grade issuer (having an unsecured facility) can use collateral as an option to improve bank credit access during periods of unforeseen liquidity stress. Avista was in compliance with the facility's sole covenant of less than 65% capitalization, with a ratio of 53.7% as of 31 March 2020. We note that the company has no material adverse change language beyond the close of the facility, a credit positive.

AEL&P has a \$25 million line of credit which expires in 2024 and requires a consolidated debt to capitalization covenant of 67.5%. As of 30 March 2020, there were no borrowings or letters of credit outstanding under the facility and AEL&P was in compliance with its covenant, with a ratio of 52.3%.

Avista entered into \$100 million 364-day term loan in April 2020 to support liquidity. Additionally, the company plans to issue \$165 million in long-term debt to refinance the \$52 million in senior debt maturing in December 2020 as well as fund capital spending estimated at \$405 million annually through 2024. This is consistent with prior years where the company funds capex with a combination of long-term debt and equity.

Exhibit 8  
**Avista Corp. Debt Maturities**  
(\$ in millions)



Excludes \$15 million term loan at Alaska Energy and Resources Company maturing in 2024  
Source: Avista Corporation

## Methodology and Scorecard

Exhibit 9

### Rating Factors

Avista Corporation

Regulated Electric and Gas Utilities Industry [1][2]	Current LTM 3/31/2020		Moody's 12-18 Month Forward View As of Date Published [3]	
	Measure	Score	Measure	Score
<b>Factor 1 : Regulatory Framework (25%)</b>				
a) Legislative and Judicial Underpinnings of the Regulatory Framework	A	A	A	A
b) Consistency and Predictability of Regulation	Baa	Baa	Baa	Baa
<b>Factor 2 : Ability to Recover Costs and Earn Returns (25%)</b>				
a) Timeliness of Recovery of Operating and Capital Costs	Baa	Baa	Baa	Baa
b) Sufficiency of Rates and Returns	Baa	Baa	Baa	Baa
<b>Factor 3 : Diversification (10%)</b>				
a) Market Position	A	A	A	A
b) Generation and Fuel Diversity	A	A	A	A
<b>Factor 4 : Financial Strength (40%)</b>				
a) CFO pre-WC + Interest / Interest (3 Year Avg)	4.6x	A	4x - 4.5x	Baa
b) CFO pre-WC / Debt (3 Year Avg)	16.7%	Baa	13.6%-14.0%	Baa
c) CFO pre-WC – Dividends / Debt (3 Year Avg)	12.2%	Baa	9%-10%	Baa
d) Debt / Capitalization (3 Year Avg)	48.4%	Baa	48%-51%	Baa
<b>Rating:</b>				
Scorecard-Indicated Outcome Before Notching Adjustment		Baa1		Baa1
HoldCo Structural Subordination Notching	0	0	0	0
a) Scorecard-Indicated Outcome		Baa1		Baa1
b) Actual Rating Assigned		Baa2		(P)Baa2

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.

[2] As of 3/31/2020 (LTM)

[3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.

Source: Moody's Financial Metrics™

## Appendix

Exhibit 10

## Peer Comparison Table [1]

(in US millions)	Avista Corp.			Puget Sound Energy, Inc.			Idaho Power Company			Portland General Electric Company		
	(P)Baa2 Stable			Baa1 Stable			A3 Stable			A3 Stable		
	FYE	FYE	LTM	FYE	FYE	LTM	FYE	FYE	LTM	FYE	FYE	LTM
	Dec-18	Dec-19	Mar-20	Dec-18	Dec-19	Mar-20	Dec-18	Dec-19	Mar-20	Dec-18	Dec-19	Mar-20
Revenue	1,397	1,346	1,353	3,346	3,401	3,422	1,367	1,343	1,384	1,991	2,123	2,082
EBITDA	452	463	458	1,393	1,329	1,331	503	527	507	749	787	754
CFO Pre-W/C / Debt	15.6%	15.0%	14.8%	20.3%	15.1%	18.5%	17.5%	15.3%	17.9%	22.2%	19.7%	21.4%
CFO Pre-W/C – Dividends / Debt	11.3%	10.6%	10.4%	16.5%	11.7%	15.2%	12.2%	9.8%	12.3%	17.8%	15.3%	16.9%
Debt / EBITDA	5.1x	5.1x	5.1x	3.3x	3.6x	3.6x	4.5x	4.5x	4.5x	3.8x	3.8x	3.8x
Debt / Capitalization	50.5%	49.2%	49.4%	49.9%	49.3%	50.3%	43.9%	43.6%	43.5%	49.6%	50.5%	49.6%
EBITDA / Interest Expense	4.4x	4.3x	4.3x	5.7x	5.2x	5.4x	4.5x	4.8x	4.5x	5.5x	5.7x	5.5x

[1] All figures &amp; ratios calculated using Moody's estimates &amp; standard adjustments. FYE=Financial Year=End. LTM=Last Twelve Months.

Source: Moody's Financial Metrics

Exhibit 11

## Cash Flow and Credit Metrics [1]

(\$ in millions)

CF Metrics	Dec-16	Dec-17	Dec-18	Dec-19	LTM Mar-20
As Adjusted					
<b>EBITDA</b>	<b>473</b>	<b>488</b>	<b>452</b>	<b>463</b>	<b>458</b>
<b>FFO</b>	<b>442</b>	<b>389</b>	<b>332</b>	<b>365</b>	<b>355</b>
- Div	87	92	98	103	101
<b>RCF</b>	<b>355</b>	<b>297</b>	<b>234</b>	<b>262</b>	<b>253</b>
FFO	442	389	332	365	355
+/- ΔWC	(28)	8	4	47	(7)
+/- Other	(56)	15	26	(10)	(10)
<b>CFO</b>	<b>358</b>	<b>412</b>	<b>362</b>	<b>402</b>	<b>338</b>
- Div	87	92	98	103	101
- Capex	407	412	424	447	452
<b>FCF</b>	<b>(136)</b>	<b>(93)</b>	<b>(160)</b>	<b>(147)</b>	<b>(215)</b>
Debt / EBITDA	4.2x	4.2x	5.1x	5.1x	5.1x
EBITDA / Interest	5.4x	5.0x	4.4x	4.3x	4.3x
FFO / Debt	22.2%	19.0%	14.5%	15.4%	15.2%
RCF / Debt	17.8%	14.5%	10.2%	11.1%	10.8%
Revenue	1,442	1,446	1,397	1,346	1,353
Cost of Good Sold	547	525	495	438	455
Interest Expense	88	97	102	107	107
Net Income	141	126	84	128	75
Total Assets	5,310	5,518	5,833	6,082	5,965
Total Liabilities	3,672	3,799	4,074	4,158	4,086
Total Equity	1,637	1,719	1,759	1,925	1,879

[1] All figures &amp; ratios calculated using Moody's estimates &amp; standard adjustments. Periods are Financial Year-End unless indicated. LTM = Last Twelve Months.

Source: Moody's Financial Metrics™

## Ratings

Exhibit 12

<b>Category</b>	<b>Moody's Rating</b>
<b>AVISTA CORP.</b>	
Outlook	Stable
Issuer Rating	Baa2
First Mortgage Bonds	A3
Senior Secured	A3
Senior Unsecured MTN	(P)Baa2
<b>ALASKA ELECTRIC LIGHT AND POWER COMPANY(AELP)</b>	
Outlook	Stable
Issuer Rating	Baa3
<b>AVISTA CORP. CAPITAL II</b>	
Outlook	Stable
BACKED Pref. Stock	Baa3

Source: Moody's Investors Service

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## Research Update:

# Avista Corp. Ratings Affirmed; Off Watch Positive; Outlook Stable

### Primary Credit Analyst:

Obioma Ugboaja, New York + 1 (212) 438 7406; obioma.ugboaja@spglobal.com

### Secondary Contacts:

Sloan Millman, New York + 1 (212) 438 2146; sloan.millman@spglobal.com

Kevin M Sheridan, New York + 1 (212) 438 3022; kevin.sheridan@spglobal.com

## Table Of Contents

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Rating Action Overview

Rating Action Rationale

Outlook

Company Description

Liquidity

Environmental, Social, And Governance(ESG)

Issue Ratings - Subordination Risk Analysis

Issue Ratings - Recovery Analysis

Ratings Score Snapshot

Related Criteria

Ratings List

## Research Update:

# Avista Corp. Ratings Affirmed; Off Watch Positive; Outlook Stable

## Rating Action Overview

- The Washington Utilities and Transportation Commission (WUTC) has denied the merger petition between Avista Corp. and Hydro One Limited (HOL).
- The WUTC's decision, in our view, significantly increases the likelihood that the transaction will not close, despite other regulatory approvals achieved from other states.
- We are affirming our ratings on Avista, and removing our CreditWatch Positive listing on the company.
- The stable outlook reflects our base-case expectation that Avista will most likely continue to operate as a stand-alone regulated utility, and that the company's funds from operations (FFO) to debt will stay at about 16% through 2020.

## Rating Action Rationale

On Dec. 10, 2018, S&P Global Ratings affirmed its 'BBB/A-2' long- and short-term issuer credit ratings on Avista Corp. and the 'A-' issue rating on its senior secured debt. At the same, we removed the ratings from CreditWatch with positive implications, where they were placed on June 15, 2018 (see "Hydro One Ltd. And Hydro One Inc. Placed On Watch Negative, Avista Corp. On Watch Positive Ahead Of Regulatory Approvals"). The outlook on Avista is stable.

The rating action follows the WUTC's rejection of the merger petition between Avista and HOL. Because Washington is Avista's largest jurisdiction, the WUTC's decision, in our view, significantly increases the likelihood that the transaction may not close as expected, despite other regulatory approvals achieved from other states. As such, we no longer incorporate in our base case the potential for ratings uplift on Avista as previously expected, given that Hydro One Limited is rated higher than Avista.

Our assessment of Avista's business risk profile primarily reflects its management of regulatory risk, since about 95% of the company's overall EBITDA is derived from low-risk regulated utility operations. The company is generally authorized to use various cost recovery mechanisms to help alleviate regulatory lag, but is somewhat exposed to potential excess power costs, typically tied to an earnings sharing mechanism in Washington. Our business risk assessment also incorporates our view of the company's regulatory diversity and generation mix. Avista primarily operates in Washington and Idaho; Oregon and Alaska jointly contribute less than 10% of its consolidated

revenues. Moreover, the company's dependence on hydro-electric generation introduces fuel replacement risk during periods of unfavorable hydro conditions.

We assess Avista's financial risk profile under our medial volatility financial benchmark table, reflecting the company's business risk derived from its low risk regulated utility operations and average management of regulatory risk. Under our base-case scenario--including capital spending averaging about \$430 million, dividends of about \$100 million, periodic rate cases, and the effects of U.S. tax reform--we expect FFO to debt to average about 16% through 2020. Our base case also assumes a merger termination fee payment to Avista from Hydro One, as per the merger agreement terms, reflecting the lack of regulatory approval in Washington.

## **Outlook**

The stable outlook reflects our base-case expectation that Avista will most likely continue to operate as a stand-alone regulated utility, and that the company's FFO to debt will stay at around 16% through 2020.

### **Downside scenario**

We could lower our ratings on Avista during the next two years if the company shifts its strategic focus to other business activities that weaken its credit quality, or if the company's management of regulatory risk weakens, relative to our expectations. We could also lower our ratings if adverse regulatory decisions weaken the company's FFO to debt consistently below 15%.

### **Upside scenario**

We could raise the rating on Avista if the company materially improves its financial measures, including FFO to debt that is consistently above 21%.

## **Company Description**

Avista is a vertically integrated regulated electric and natural gas utility company. It operates through two segments, Avista Utilities and AEL&P. Avista Utilities provides electric distribution and transmission, and natural gas distribution services in parts of eastern Washington and northern Idaho; and natural gas distribution services in parts of northeastern and southwestern Oregon. AEL&P offers electric services to approximately 17,000 customers in the city and borough of Juneau, Alaska. Overall, Avista has about 382,000 electric customers and approximately 347,000 natural gas customers.

## **Liquidity**

We assess Avista's liquidity as adequate. We expect the company's sources to cover uses by more than 1.1x over the next 12 months even in the event of a 10% decline in EBITDA. Our assessment also reflects the company's generally prudent risk management, sound relationships with banks, and generally

satisfactory standing in the credit markets.

#### Principal Liquidity Sources

- Revolving credit facility of \$400 million;
- Cash FFO of \$330 million; and
- Minimal cash assumed.

#### Principal Liquidity Uses

- Long-term debt maturities of about \$272 million in 2019;
- Assumed maintenance capital spending of \$245 million; and
- Dividends of approximately \$100 million.

## Environmental, Social, And Governance(ESG)

With a total generation fleet capacity of over 1,800 megawatts, close to 45% of which is based on fossil-fired generation, Avista's environmental footprint is a significant risk factor, including from natural gas (35%) and coal (around 10%). This reflects the potential for ongoing cost of operating fossil units in the face of disruptive technology advances and the potential for changing environmental regulations that may require significant capital investments. In addition, the company's dependence on hydro-electric generation introduces fuel replacement risk during periods of unfavorable hydro conditions. From a social perspective, Avista's safety and health management systems processes enable it to effectively serve electricity customers across four states. Governance factors are neutral to our ESG assessment. Avista has board of directors who, in our view, are capably engaged in risk oversight, including on matters that affect the company's financial performance, regulatory relations, and environmental mandates.

## Issue Ratings - Subordination Risk Analysis

### Capital structure

Avista's consolidated capital structure comprises about \$1.8 billion of long-term debt, most of which is secured, and about \$50 million of preferred stock, issued through Avista Capital II.

### Analytical conclusions

We rate the preferred stock issued by Avista Capital II two notches below the issuer credit rating to reflect the deferability of the dividends, and because it is deeply subordinated to other instruments in the company's capital structure, consistent with our criteria. The short-term rating on Avista is 'A-2', based on our long-term issuer credit rating on the company.

## Issue Ratings - Recovery Analysis

Avista's first-mortgage bonds benefit from a first-priority lien on substantially all of the utility's owned or subsequently acquired real

property. Collateral coverage of more than 1.5x supports a recovery rating of '1+' and an 'A-' issue rating, two notches above the issuer credit rating.

## Ratings Score Snapshot

Issuer Credit Rating: BBB/Stable/A-2

Business risk: Strong

- Country risk: Very low
- Industry risk: Very low
- Competitive position: Satisfactory

Financial risk: Significant

- Cash flow/Leverage: Significant

Anchor: bbb

Modifiers

- Diversification/Portfolio effect: Neutral (no impact)
- Capital structure: Neutral (no impact)
- Financial policy: Neutral (no impact)
- Liquidity: Adequate (no impact)
- Management and governance: Satisfactory (no impact)
- Comparable rating analysis: Neutral (no impact)

Stand-alone credit profile: bbb

## Related Criteria

- Criteria - Corporates - General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings , April 7, 2017
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- Criteria - Corporates - Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013

- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- Criteria - Corporates - General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Group Rating Methodology, Nov. 19, 2013
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, Nov. 19, 2013
- Criteria - Corporates - Utilities: Collateral Coverage And Issue Notching Rules For '1+' And '1' Recovery Ratings On Senior Bonds Secured By Utility Real Property, Feb. 14, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012
- General Criteria: Use Of CreditWatch And Outlooks, Sept. 14, 2009
- Criteria - Insurance - General: Hybrid Capital Handbook: September 2008 Edition, Sept. 15, 2008

## Ratings List

### Ratings Affirmed; CreditWatch/Outlook Action

	To	From
Avista Corp. Issuer Credit Rating	BBB/Stable/A-2	BBB/Watch Pos/A-2
Avista Corp. Senior Secured	A-	A-/Watch Pos
Avista Capital II Preferred Stock	BB+	BB+/Watch Pos

Certain terms used in this report, particularly certain adjectives used to express our view on rating relevant factors, have specific meanings ascribed to them in our criteria, and should therefore be read in conjunction with such criteria. Please see Ratings Criteria at [www.standardandpoors.com](http://www.standardandpoors.com) for further information. Complete ratings information is available to subscribers of RatingsDirect at [www.capitaliq.com](http://www.capitaliq.com). All ratings affected by this rating action can be found on S&P Global Ratings' public website at [www.standardandpoors.com](http://www.standardandpoors.com). Use the Ratings search box located in the left column.

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## The Cross-Section of Expected Stock Returns

EUGENE F. FAMA and KENNETH R. FRENCH\*

### ABSTRACT

Two easily measured variables, size and book-to-market equity, combine to capture the cross-sectional variation in average stock returns associated with market  $\beta$ , size, leverage, book-to-market equity, and earnings-price ratios. Moreover, when the tests allow for variation in  $\beta$  that is unrelated to size, the relation between market  $\beta$  and average return is flat, even when  $\beta$  is the only explanatory variable.

THE ASSET-PRICING MODEL OF Sharpe (1964), Lintner (1965), and Black (1972) has long shaped the way academics and practitioners think about average returns and risk. The central prediction of the model is that the market portfolio of invested wealth is mean-variance efficient in the sense of Markowitz (1959). The efficiency of the market portfolio implies that (a) expected returns on securities are a positive linear function of their market  $\beta$ s (the slope in the regression of a security's return on the market's return), and (b) market  $\beta$ s suffice to describe the cross-section of expected returns.

There are several empirical contradictions of the Sharpe-Lintner-Black (SLB) model. The most prominent is the size effect of Banz (1981). He finds that market equity, ME (a stock's price times shares outstanding), adds to the explanation of the cross-section of average returns provided by market  $\beta$ s. Average returns on small (low ME) stocks are too high given their  $\beta$  estimates, and average returns on large stocks are too low.

Another contradiction of the SLB model is the positive relation between leverage and average return documented by Bhandari (1988). It is plausible that leverage is associated with risk and expected return, but in the SLB model, leverage risk should be captured by market  $\beta$ . Bhandari finds, however, that leverage helps explain the cross-section of average stock returns in tests that include size (ME) as well as  $\beta$ .

Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) find that average returns on U.S. stocks are positively related to the ratio of a firm's book value of common equity, BE, to its market value, ME. Chan, Hamao, and Lakonishok (1991) find that book-to-market equity, BE/ME, also has a strong role in explaining the cross-section of average returns on Japanese stocks.

\* Graduate School of Business, University of Chicago, 1101 East 58th Street, Chicago, IL 60637. We acknowledge the helpful comments of David Booth, Nai-fu Chen, George Constantinides, Wayne Ferson, Edward George, Campbell Harvey, Josef Lakonishok, Rex Sinquefeld, René Stulz, Mark Zmijewski, and an anonymous referee. This research is supported by the National Science Foundation (Fama) and the Center for Research in Security Prices (French).

Finally, Basu (1983) shows that earnings-price ratios (E/P) help explain the cross-section of average returns on U.S. stocks in tests that also include size and market  $\beta$ . Ball (1978) argues that E/P is a catch-all proxy for unnamed factors in expected returns; E/P is likely to be higher (prices are lower relative to earnings) for stocks with higher risks and expected returns, whatever the unnamed sources of risk.

Ball's proxy argument for E/P might also apply to size (ME), leverage, and book-to-market equity. All these variables can be regarded as different ways to scale stock prices, to extract the information in prices about risk and expected returns (Keim (1988)). Moreover, since E/P, ME, leverage, and BE/ME are all scaled versions of price, it is reasonable to expect that some of them are redundant for describing average returns. Our goal is to evaluate the joint roles of market  $\beta$ , size, E/P, leverage, and book-to-market equity in the cross-section of average returns on NYSE, AMEX, and NASDAQ stocks.

Black, Jensen, and Scholes (1972) and Fama and MacBeth (1973) find that, as predicted by the SLB model, there is a positive simple relation between average stock returns and  $\beta$  during the pre-1969 period. Like Reinganum (1981) and Lakonishok and Shapiro (1986), we find that the relation between  $\beta$  and average return disappears during the more recent 1963-1990 period, even when  $\beta$  is used alone to explain average returns. The appendix shows that the simple relation between  $\beta$  and average return is also weak in the 50-year 1941-1990 period. In short, our tests do not support the most basic prediction of the SLB model, that average stock returns are positively related to market  $\beta$ s.

Unlike the simple relation between  $\beta$  and average return, the univariate relations between average return and size, leverage, E/P, and book-to-market equity are strong. In multivariate tests, the negative relation between size and average return is robust to the inclusion of other variables. The positive relation between book-to-market equity and average return also persists in competition with other variables. Moreover, although the size effect has attracted more attention, book-to-market equity has a consistently stronger role in average returns. Our bottom-line results are: (a)  $\beta$  does not seem to help explain the cross-section of average stock returns, and (b) the combination of size and book-to-market equity seems to absorb the roles of leverage and E/P in average stock returns, at least during our 1963-1990 sample period.

If assets are priced rationally, our results suggest that stock risks are multidimensional. One dimension of risk is proxied by size, ME. Another dimension of risk is proxied by BE/ME, the ratio of the book value of common equity to its market value.

It is possible that the risk captured by BE/ME is the relative distress factor of Chan and Chen (1991). They postulate that the earning prospects of firms are associated with a risk factor in returns. Firms that the market judges to have poor prospects, signaled here by low stock prices and high ratios of book-to-market equity, have higher expected stock returns (they are penalized with higher costs of capital) than firms with strong prospects. It is

also possible, however, that BE/ME just captures the unraveling (regression toward the mean) of irrational market whims about the prospects of firms.

Whatever the underlying economic causes, our main result is straightforward. Two easily measured variables, size (ME) and book-to-market equity (BE/ME), provide a simple and powerful characterization of the cross-section of average stock returns for the 1963-1990 period.

In the next section we discuss the data and our approach to estimating  $\beta$ . Section II examines the relations between average return and  $\beta$  and between average return and size. Section III examines the roles of E/P, leverage, and book-to-market equity in average returns. In sections IV and V, we summarize, interpret, and discuss applications of the results.

## I. Preliminaries

### A. Data

We use all nonfinancial firms in the intersection of (a) the NYSE, AMEX, and NASDAQ return files from the Center for Research in Security Prices (CRSP) and (b) the merged COMPUSTAT annual industrial files of income-statement and balance-sheet data, also maintained by CRSP. We exclude financial firms because the high leverage that is normal for these firms probably does not have the same meaning as for nonfinancial firms, where high leverage more likely indicates distress. The CRSP returns cover NYSE and AMEX stocks until 1973 when NASDAQ returns also come on line. The COMPUSTAT data are for 1962-1989. The 1962 start date reflects the fact that book value of common equity (COMPUSTAT item 60), is not generally available prior to 1962. More important, COMPUSTAT data for earlier years have a serious selection bias; the pre-1962 data are tilted toward big historically successful firms.

To ensure that the accounting variables are known before the returns they are used to explain, we match the accounting data for all fiscal yearends in calendar year  $t - 1$  (1962-1989) with the returns for July of year  $t$  to June of  $t + 1$ . The 6-month (minimum) gap between fiscal yearend and the return tests is conservative. Earlier work (e.g., Basu (1983)) often assumes that accounting data are available within three months of fiscal yearends. Firms are indeed required to file their 10-K reports with the SEC within 90 days of their fiscal yearends, but on average 19.8% do not comply. In addition, more than 40% of the December fiscal yearend firms that do comply with the 90-day rule file on March 31, and their reports are not made public until April. (See Alford, Jones, and Zmijewski (1992).)

We use a firm's market equity at the end of December of year  $t - 1$  to compute its book-to-market, leverage, and earnings-price ratios for  $t - 1$ , and we use its market equity for June of year  $t$  to measure its size. Thus, to be included in the return tests for July of year  $t$ , a firm must have a CRSP stock price for December of year  $t - 1$  and June of year  $t$ . It must also have monthly returns for at least 24 of the 60 months preceding July of year  $t$  (for

"pre-ranking"  $\beta$  estimates, discussed below). And the firm must have COMPUSTAT data on total book assets (A), book equity (BE), and earnings (E), for its fiscal year ending in (any month of) calendar year  $t - 1$ .

Our use of December market equity in the E/P, BE/ME, and leverage ratios is objectionable for firms that do not have December fiscal yearends because the accounting variable in the numerator of a ratio is not aligned with the market value in the denominator. Using ME at fiscal yearends is also problematic; then part of the cross-sectional variation of a ratio for a given year is due to market-wide variation in the ratio during the year. For example, if there is a general fall in stock prices during the year, ratios measured early in the year will tend to be lower than ratios measured later. We can report, however, that the use of fiscal-yearend MEs, rather than December MEs, in the accounting ratios has little impact on our return tests.

Finally, the tests mix firms with different fiscal yearends. Since we match accounting data for all fiscal yearends in calendar year  $t - 1$  with returns for July of  $t$  to June of  $t + 1$ , the gap between the accounting data and the matching returns varies across firms. We have done the tests using the smaller sample of firms with December fiscal yearends with similar results.

### *B. Estimating Market $\beta$ s*

Our asset-pricing tests use the cross-sectional regression approach of Fama and MacBeth (1973). Each month the cross-section of returns on stocks is regressed on variables hypothesized to explain expected returns. The time-series means of the monthly regression slopes then provide standard tests of whether different explanatory variables are on average priced.

Since size, E/P, leverage, and BE/ME are measured precisely for individual stocks, there is no reason to smear the information in these variables by using portfolios in the Fama-MacBeth (FM) regressions. Most previous tests use portfolios because estimates of market  $\beta$ s are more precise for portfolios. Our approach is to estimate  $\beta$ s for portfolios and then assign a portfolio's  $\beta$  to each stock in the portfolio. This allows us to use individual stocks in the FM asset-pricing tests.

#### *B.1. $\beta$ Estimation: Details*

In June of each year, all NYSE stocks on CRSP are sorted by size (ME) to determine the NYSE decile breakpoints for ME. NYSE, AMEX, and NASDAQ stocks that have the required CRSP-COMPUSTAT data are then allocated to 10 size portfolios based on the NYSE breakpoints. (If we used stocks from all three exchanges to determine the ME breakpoints, most portfolios would include only small stocks after 1973, when NASDAQ stocks are added to the sample.)

We form portfolios on size because of the evidence of Chan and Chen (1988) and others that size produces a wide spread of average returns and  $\beta$ s. Chan and Chen use only size portfolios. The problem this creates is that size and the  $\beta$ s of size portfolios are highly correlated ( $-0.988$  in their data), so

asset-pricing tests lack power to separate size from  $\beta$  effects in average returns.

To allow for variation in  $\beta$  that is unrelated to size, we subdivide each size decile into 10 portfolios on the basis of pre-ranking  $\beta$ s for individual stocks. The pre-ranking  $\beta$ s are estimated on 24 to 60 monthly returns (as available) in the 5 years before July of year  $t$ . We set the  $\beta$  breakpoints for each size decile using only NYSE stocks that satisfy our COMPUSTAT-CRSP data requirements for year  $t - 1$ . Using NYSE stocks ensures that the  $\beta$  breakpoints are not dominated after 1973 by the many small stocks on NASDAQ. Setting  $\beta$  breakpoints with stocks that satisfy our COMPUSTAT-CRSP data requirements guarantees that there are firms in each of the 100 size- $\beta$  portfolios.

After assigning firms to the size- $\beta$  portfolios in June, we calculate the equal-weighted monthly returns on the portfolios for the next 12 months, from July to June. In the end, we have post-ranking monthly returns for July 1963 to December 1990 on 100 portfolios formed on size and pre-ranking  $\beta$ s. We then estimate  $\beta$ s using the full sample (330 months) of post-ranking returns on each of the 100 portfolios, with the CRSP value-weighted portfolio of NYSE, AMEX, and (after 1972) NASDAQ stocks used as the proxy for the market. We have also estimated  $\beta$ s using the value-weighted or the equal-weighted portfolio of NYSE stocks as the proxy for the market. These  $\beta$ s produce inferences on the role of  $\beta$  in average returns like those reported below.

We estimate  $\beta$  as the sum of the slopes in the regression of the return on a portfolio on the current and prior month's market return. (An additional lead and lag of the market have little effect on these sum  $\beta$ s.) The sum  $\beta$ s are meant to adjust for nonsynchronous trading (Dimson (1979)). Fowler and Rorke (1983) show that sum  $\beta$ s are biased when the market return is autocorrelated. The 1st- and 2nd-order autocorrelations of the monthly market returns for July 1963 to December 1990 are 0.06 and  $-0.05$ , both about 1 standard error from 0. If the Fowler-Rorke corrections are used, they lead to trivial changes in the  $\beta$ s. We stick with the simpler sum  $\beta$ s. Appendix Table AI shows that using sum  $\beta$ s produces large increases in the  $\beta$ s of the smallest ME portfolios and small declines in the  $\beta$ s of the largest ME portfolios.

Chan and Chen (1988) show that full-period  $\beta$  estimates for portfolios can work well in tests of the SLB model, even if the true  $\beta$ s of the portfolios vary through time, if the variation in the  $\beta$ s is proportional,

$$\beta_{jt} - \beta_j = k_t(\beta_j - \beta), \quad (1)$$

where  $\beta_{jt}$  is the true  $\beta$  for portfolio  $j$  at time  $t$ ,  $\beta_j$  is the mean of  $\beta_{jt}$  across  $t$ , and  $\beta$  is the mean of the  $\beta_j$ . The Appendix argues that (1) is a good approximation for the variation through time in the true  $\beta$ s of portfolios ( $j$ ) formed on size and  $\beta$ . For diehard  $\beta$  fans, sure to be skeptical of our results on the weak role of  $\beta$  in average stock returns, we can also report that the results stand up to robustness checks that use 5-year pre-ranking  $\beta$ s, or 5-year post-ranking  $\beta$ s, instead of the full-period post-ranking  $\beta$ s.

We allocate the full-period post-ranking  $\beta$  of a size- $\beta$  portfolio to each stock in the portfolio. These are the  $\beta$ s that will be used in the Fama-MacBeth cross-sectional regressions for individual stocks. We judge that the precision of the full-period post-ranking portfolio  $\beta$ s, relative to the imprecise  $\beta$  estimates that would be obtained for individual stocks, more than makes up for the fact that true  $\beta$ s are not the same for all stocks in a portfolio. And note that assigning full-period portfolio  $\beta$ s to stocks does not mean that a stock's  $\beta$  is constant. A stock can move across portfolios with year-to-year changes in the stock's size (ME) and in the estimates of its  $\beta$  for the preceding 5 years.

### *B.2. $\beta$ Estimates*

Table I shows that forming portfolios on size and pre-ranking  $\beta$ s, rather than on size alone, magnifies the range of full-period post-ranking  $\beta$ s. Sorted on size alone, the post-ranking  $\beta$ s range from 1.44 for the smallest ME portfolio to 0.92 for the largest. This spread of  $\beta$ s across the 10 size deciles is smaller than the spread of post-ranking  $\beta$ s produced by the  $\beta$  sort of *any* size decile. For example, the post-ranking  $\beta$ s for the 10 portfolios in the smallest size decile range from 1.05 to 1.79. Across all 100 size- $\beta$  portfolios, the post-ranking  $\beta$ s range from 0.53 to 1.79, a spread 2.4 times the spread, 0.52, obtained with size portfolios alone.

Two other facts about the  $\beta$ s are important. First, in each size decile the post-ranking  $\beta$ s closely reproduce the ordering of the pre-ranking  $\beta$ s. We take this to be evidence that the pre-ranking  $\beta$  sort captures the ordering of true post-ranking  $\beta$ s. (The appendix gives more evidence on this important issue.) Second, the  $\beta$  sort is not a refined size sort. In any size decile, the average values of  $\ln(\text{ME})$  are similar across the  $\beta$ -sorted portfolios. Thus the pre-ranking  $\beta$  sort achieves its goal. It produces strong variation in post-ranking  $\beta$ s that is unrelated to size. This is important in allowing our tests to distinguish between  $\beta$  and size effects in average returns.

## **II. $\beta$ and Size**

The Sharpe-Lintner-Black (SLB) model plays an important role in the way academics and practitioners think about risk and the relation between risk and expected return. We show next that when common stock portfolios are formed on size alone, there seems to be evidence for the model's central prediction: average return is positively related to  $\beta$ . The  $\beta$ s of size portfolios are, however, almost perfectly correlated with size, so tests on size portfolios are unable to disentangle  $\beta$  and size effects in average returns. Allowing for variation in  $\beta$  that is unrelated to size breaks the logjam, but at the expense of  $\beta$ . Thus, when we subdivide size portfolios on the basis of pre-ranking  $\beta$ s, we find a strong relation between average return and size, but no relation between average return and  $\beta$ .

### A. Informal Tests

Table II shows post-ranking average returns for July 1963 to December 1990 for portfolios formed from one-dimensional sorts of stocks on size or  $\beta$ . The portfolios are formed at the end of June each year and their equal-weighted returns are calculated for the next 12 months. We use returns for July to June to match the returns in later tests that use the accounting data. When we sort on just size or 5-year pre-ranking  $\beta$ s, we form 12 portfolios. The middle 8 cover deciles of size or  $\beta$ . The 4 extreme portfolios (1A, 1B, 10A, and 10B) split the bottom and top deciles in half.

Table II shows that when portfolios are formed on size alone, we observe the familiar strong negative relation between size and average return (Banz (1981)), and a strong positive relation between average return and  $\beta$ . Average returns fall from 1.64% per month for the smallest ME portfolio to 0.90% for the largest. Post-ranking  $\beta$ s also decline across the 12 size portfolios, from 1.44 for portfolio 1A to 0.90 for portfolio 10B. Thus, a simple size sort seems to support the SLB prediction of a positive relation between  $\beta$  and average return. But the evidence is muddled by the tight relation between size and the  $\beta$ s of size portfolios.

The portfolios formed on the basis of the ranked market  $\beta$ s of stocks in Table II produce a wider range of  $\beta$ s (from 0.81 for portfolio 1A to 1.73 for 10B) than the portfolios formed on size. Unlike the size portfolios, the  $\beta$ -sorted portfolios do not support the SLB model. There is little spread in average returns across the  $\beta$  portfolios, and there is no obvious relation between  $\beta$  and average returns. For example, although the two extreme portfolios, 1A and 10B, have much different  $\beta$ s, they have nearly identical average returns (1.20% and 1.18% per month). These results for 1963-1990 confirm Reinganum's (1981) evidence that for  $\beta$ -sorted portfolios, there is no relation between average return and  $\beta$  during the 1964-1979 period.

The 100 portfolios formed on size and then pre-ranking  $\beta$  in Table I clarify the contradictory evidence on the relation between  $\beta$  and average return produced by portfolios formed on size or  $\beta$  alone. Specifically, the two-pass sort gives a clearer picture of the separate roles of size and  $\beta$  in average returns. Contrary to the central prediction of the SLB model, the second-pass  $\beta$  sort produces little variation in average returns. Although the post-ranking  $\beta$ s in Table I increase strongly in each size decile, average returns are flat or show a slight tendency to decline. In contrast, within the columns of the average return and  $\beta$  matrices of Table I, average returns and  $\beta$ s decrease with increasing size.

The two-pass sort on size and  $\beta$  in Table I says that variation in  $\beta$  that is tied to size is positively related to average return, but variation in  $\beta$  unrelated to size is not compensated in the average returns of 1963-1990. The proper inference seems to be that there is a relation between size and average return, but controlling for size, there is no relation between  $\beta$  and average return. The regressions that follow confirm this conclusion, and they produce another that is stronger. The regressions show that when one allows

Table I

**Average Returns, Post-Ranking  $\beta$ s and Average Size For Portfolios Formed on Size and then  $\beta$ : Stocks Sorted on ME (Down) then Pre-Ranking  $\beta$  (Across): July 1963 to December 1990**

Portfolios are formed yearly. The breakpoints for the size (ME, price times shares outstanding) deciles are determined in June of year  $t$  ( $t = 1963-1990$ ) using all NYSE stocks on CRSP. All NYSE, AMEX, and NASDAQ stocks that meet the CRSP-COMPUSTAT data requirements are allocated to the 10 size portfolios using the NYSE breakpoints. Each size decile is subdivided into 10  $\beta$  portfolios using pre-ranking  $\beta$ s of individual stocks, estimated with 2 to 5 years of monthly returns (as available) ending in June of year  $t$ . We use only NYSE stocks that meet the CRSP-COMPUSTAT data requirements to establish the  $\beta$  breakpoints. The equal-weighted monthly returns on the resulting 100 portfolios are then calculated for July of year  $t$  to June of year  $t + 1$ .

The post-ranking  $\beta$ s use the full (July 1963 to December 1990) sample of post-ranking returns for each portfolio. The pre- and post-ranking  $\beta$ s (here and in all other tables) are the sum of the slopes from a regression of monthly returns on the current and prior month's returns on the value-weighted portfolio of NYSE, AMEX, and (after 1972) NASDAQ stocks. The average return is the time-series average of the monthly equal-weighted portfolio returns, in percent. The average size of a portfolio is the time-series average of monthly averages of  $\ln(\text{ME})$  for stocks in the portfolio at the end of June of each year, with ME denominated in millions of dollars.

The average number of stocks per month for the size- $\beta$  portfolios in the smallest size decile varies from 70 to 177. The average number of stocks for the size- $\beta$  portfolios in size deciles 2 and 3 is between 15 and 41, and the average number for the largest 7 size deciles is between 11 and 22.

The All column shows statistics for equal-weighted size-decile (ME) portfolios. The All row shows statistics for equal-weighted portfolios of the stocks in each  $\beta$  group.

	All	Low- $\beta$	$\beta$ -2	$\beta$ -3	$\beta$ -4	$\beta$ -5	$\beta$ -6	$\beta$ -7	$\beta$ -8	$\beta$ -9	High- $\beta$
All	1.25	1.34	1.29	1.36	1.31	1.33	1.28	1.24	1.21	1.25	1.14
Small-ME	1.52	1.71	1.57	1.79	1.61	1.50	1.50	1.37	1.63	1.50	1.42
ME-2	1.29	1.25	1.42	1.36	1.39	1.65	1.61	1.37	1.31	1.34	1.11
ME-3	1.24	1.12	1.31	1.17	1.70	1.29	1.10	1.31	1.36	1.26	0.76
ME-4	1.25	1.27	1.13	1.54	1.06	1.34	1.06	1.41	1.17	1.35	0.98
ME-5	1.29	1.34	1.42	1.39	1.48	1.42	1.18	1.13	1.27	1.18	1.08
ME-6	1.17	1.08	1.53	1.27	1.15	1.20	1.21	1.18	1.04	1.07	1.02
ME-7	1.07	0.95	1.21	1.26	1.09	1.18	1.11	1.24	0.62	1.32	0.76
ME-8	1.10	1.09	1.05	1.37	1.20	1.27	0.98	1.18	1.02	1.01	0.94
ME-9	0.95	0.98	0.88	1.02	1.14	1.07	1.23	0.94	0.82	0.88	0.59
Large-ME	0.89	1.01	0.93	1.10	0.94	0.93	0.89	1.03	0.71	0.74	0.56

Panel A: Average Monthly Returns (in Percent)

Table I—Continued

	All	Low- $\beta$	$\beta$ -2	$\beta$ -3	$\beta$ -4	$\beta$ -5	$\beta$ -6	$\beta$ -7	$\beta$ -8	$\beta$ -9	High- $\beta$	
	Panel B: Post-Ranking $\beta$ s											
All	0.87	0.99	1.09	1.16	1.26	1.29	1.35	1.45	1.52	1.72		
Small-ME	1.44	1.18	1.28	1.32	1.40	1.40	1.49	1.61	1.64	1.79		
ME-2	1.39	0.91	1.17	1.24	1.36	1.41	1.43	1.50	1.66	1.76		
ME-3	1.35	0.97	1.13	1.21	1.26	1.28	1.39	1.50	1.51	1.75		
ME-4	1.34	0.78	1.03	1.17	1.29	1.37	1.46	1.51	1.64	1.71		
ME-5	1.25	0.66	0.85	1.12	1.15	1.26	1.30	1.43	1.59	1.68		
ME-6	1.23	0.61	0.78	1.05	1.16	1.22	1.36	1.46	1.49	1.70		
ME-7	1.17	0.57	0.92	1.01	1.11	1.14	1.24	1.39	1.34	1.60		
ME-8	1.09	0.53	0.74	0.94	1.02	1.13	1.18	1.26	1.35	1.52		
ME-9	1.03	0.58	0.74	0.80	0.95	1.06	1.14	1.21	1.22	1.42		
Large-ME	0.92	0.57	0.71	0.78	0.89	0.95	1.02	1.01	1.11	1.32		
	Panel C: Average Size (ln(ME))											
All	4.11	3.86	4.26	4.33	4.41	4.27	4.32	4.26	4.19	4.03	3.77	
Small-ME	2.24	2.12	2.27	2.30	2.30	2.28	2.29	2.30	2.32	2.25	2.15	
ME-2	3.63	3.65	3.68	3.70	3.72	3.69	3.70	3.69	3.69	3.70	3.68	
ME-3	4.10	4.14	4.18	4.12	4.15	4.16	4.16	4.18	4.14	4.15	4.15	
ME-4	4.50	4.53	4.53	4.57	4.54	4.56	4.55	4.52	4.58	4.52	4.56	
ME-5	4.89	4.91	4.91	4.93	4.95	4.93	4.92	4.93	4.92	4.92	4.95	
ME-6	5.30	5.30	5.33	5.34	5.34	5.33	5.33	5.33	5.33	5.34	5.36	
ME-7	5.73	5.73	5.75	5.77	5.76	5.73	5.77	5.77	5.76	5.72	5.76	
ME-8	6.24	6.26	6.27	6.26	6.24	6.24	6.27	6.24	6.24	6.24	6.26	
ME-9	6.82	6.82	6.84	6.82	6.82	6.81	6.81	6.81	6.81	6.80	6.83	
Large-ME	7.93	7.94	8.04	8.10	8.04	8.02	8.02	7.94	7.80	7.75	7.62	

Table II  
**Properties of Portfolios Formed on Size or Pre-Ranking  $\beta$ :  
 July 1963 to December 1990**

At the end of June of each year  $t$ , 12 portfolios are formed on the basis of ranked values of size (ME) or pre-ranking  $\beta$ . The pre-ranking  $\beta$ s use 2 to 5 years (as available) of monthly returns ending in June of  $t$ . Portfolios 2-9 cover deciles of the ranking variables. The bottom and top 2 portfolios (1A, 1B, 10A, and 10B) split the bottom and top deciles in half. The breakpoints for the ME portfolios are based on ranked values of ME for all NYSE stocks on CRSP. NYSE breakpoints for pre-ranking  $\beta$ s are also used to form the  $\beta$  portfolios. NYSE, AMEX, and NASDAQ stocks are then allocated to the size or  $\beta$  portfolios using the NYSE breakpoints. We calculate each portfolio's monthly equal-weighted return for July of year  $t$  to June of year  $t + 1$ , and then reform the portfolios in June of  $t + 1$ .

BE is the book value of common equity plus balance-sheet deferred taxes, A is total book assets, and E is earnings (income before extraordinary items, plus income-statement deferred taxes, minus preferred dividends). BE, A, and E are for each firm's latest fiscal year ending in calendar year  $t - 1$ . The accounting ratios are measured using market equity ME in December of year  $t - 1$ . Firm size  $\ln(\text{ME})$  is measured in June of year  $t$ , with ME denominated in millions of dollars.

The average return is the time-series average of the monthly equal-weighted portfolio returns, in percent.  $\ln(\text{ME})$ ,  $\ln(\text{BE}/\text{ME})$ ,  $\ln(\text{A}/\text{BE})$ , E/P, and E/P dummy are the time-series averages of the monthly average values of these variables in each portfolio. Since the E/P dummy is 0 when earnings are positive, and 1 when earnings are negative, E/P dummy gives the average proportion of stocks with negative earnings in each portfolio.

$\beta$  is the time-series average of the monthly portfolio  $\beta$ s. Stocks are assigned the post-ranking  $\beta$  of the size- $\beta$  portfolio they are in at the end of June of year  $t$  (Table I). These individual-firm  $\beta$ s are averaged to compute the monthly  $\beta$ s for each portfolio for July of year  $t$  to June of year  $t + 1$ .

Firms is the average number of stocks in the portfolio each month.

	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Return	1.64	1.16	1.29	1.24	1.25	1.29	1.17	1.07	1.10	0.95	0.88	0.90
$\beta$	1.44	1.44	1.39	1.34	1.33	1.24	1.22	1.16	1.08	1.02	0.95	0.90
$\ln(\text{ME})$	1.98	3.18	3.63	4.10	4.50	4.89	5.30	5.73	6.24	6.82	7.39	8.44
$\ln(\text{BE}/\text{ME})$	-0.01	-0.21	-0.23	-0.26	-0.32	-0.36	-0.36	-0.44	-0.40	-0.42	-0.51	-0.65
$\ln(\text{A}/\text{ME})$	0.73	0.50	0.46	0.43	0.37	0.32	0.32	0.24	0.29	0.27	0.17	-0.03
$\ln(\text{A}/\text{BE})$	0.75	0.71	0.69	0.69	0.68	0.67	0.68	0.67	0.69	0.70	0.68	0.62
E/P dummy	0.26	0.14	0.11	0.09	0.06	0.04	0.04	0.03	0.03	0.02	0.02	0.01
E(+)/P	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09
Firms	772	189	236	170	144	140	126	125	119	114	60	64

Panel A: Portfolios Formed on Size

Table II—Continued

	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Panel B: Portfolios Formed on Pre-Ranking $\beta$												
Return	1.20	1.20	1.32	1.26	1.31	1.30	1.30	1.23	1.23	1.33	1.34	1.18
$\beta$	0.81	0.79	0.92	1.04	1.13	1.19	1.26	1.32	1.41	1.52	1.63	1.73
ln(ME)	4.21	4.86	4.75	4.68	4.59	4.48	4.36	4.25	3.97	3.78	3.52	3.15
ln(BE/ME)	-0.18	-0.13	-0.22	-0.21	-0.23	-0.22	-0.22	-0.25	-0.23	-0.27	-0.31	-0.50
ln(A/ME)	0.60	0.66	0.49	0.45	0.42	0.42	0.45	0.42	0.47	0.46	0.46	0.31
ln(A/BE)	0.78	0.79	0.71	0.66	0.64	0.65	0.67	0.67	0.70	0.73	0.77	0.81
E/P dummy	0.12	0.06	0.09	0.09	0.08	0.09	0.10	0.12	0.12	0.14	0.17	0.23
E(+)/P	0.11	0.12	0.10	0.10	0.10	0.10	0.10	0.09	0.10	0.09	0.09	0.08
Firms	116	80	185	181	179	182	185	205	227	267	165	291

for variation in  $\beta$  that is unrelated to size, the relation between  $\beta$  and average return is flat, even when  $\beta$  is the only explanatory variable.

### *B. Fama-MacBeth Regressions*

Table III shows time-series averages of the slopes from the month-by-month Fama-MacBeth (FM) regressions of the cross-section of stock returns on size,  $\beta$ , and the other variables (leverage, E/P, and book-to-market equity) used to explain average returns. The average slopes provide standard FM tests for determining which explanatory variables on average have non-zero expected premiums during the July 1963 to December 1990 period.

Like the average returns in Tables I and II, the regressions in Table III say that size,  $\ln(\text{ME})$ , helps explain the cross-section of average stock returns. The average slope from the monthly regressions of returns on size alone is  $-0.15\%$ , with a  $t$ -statistic of  $-2.58$ . This reliable negative relation persists no matter which other explanatory variables are in the regressions; the average slopes on  $\ln(\text{ME})$  are always close to or more than 2 standard errors from 0. The size effect (smaller stocks have higher average returns) is thus robust in the 1963–1990 returns on NYSE, AMEX, and NASDAQ stocks.

In contrast to the consistent explanatory power of size, the FM regressions show that market  $\beta$  does not help explain average stock returns for 1963–1990. In a shot straight at the heart of the SLB model, the average slope from the regressions of returns on  $\beta$  alone in Table III is  $0.15\%$  per month and only 0.46 standard errors from 0. In the regressions of returns on size and  $\beta$ , size has explanatory power (an average slope  $-3.41$  standard errors from 0), but the average slope for  $\beta$  is negative and only 1.21 standard errors from 0. Lakonishok and Shapiro (1986) get similar results for NYSE stocks for 1962–1981. We can also report that  $\beta$  shows no power to explain average returns (the average slopes are typically less than 1 standard error from 0) in FM regressions that use various combinations of  $\beta$  with size, book-to-market equity, leverage, and E/P.

### *C. Can $\beta$ Be Saved?*

What explains the poor results for  $\beta$ ? One possibility is that other explanatory variables are correlated with true  $\beta$ s, and this obscures the relation between average returns and measured  $\beta$ s. But this line of attack cannot explain why  $\beta$  has no power when used alone to explain average returns. Moreover, leverage, book-to-market equity, and E/P do not seem to be good proxies for  $\beta$ . The averages of the monthly cross-sectional correlations between  $\beta$  and the values of these variables for individual stocks are all within 0.15 of 0.

Another hypothesis is that, as predicted by the SLB model, there is a positive relation between  $\beta$  and average return, but the relation is obscured by noise in the  $\beta$  estimates. However, our full-period post-ranking  $\beta$ s do not seem to be imprecise. Most of the standard errors of the  $\beta$ s (not shown) are

Table III

**Average Slopes (*t*-Statistics) from Month-by-Month Regressions of  
Stock Returns on  $\beta$ , Size, Book-to-Market Equity, Leverage, and E/P:  
July 1963 to December 1990**

Stocks are assigned the post-ranking  $\beta$  of the size- $\beta$  portfolio they are in at the end of June of year  $t$  (Table I). BE is the book value of common equity plus balance-sheet deferred taxes, A is total book assets, and E is earnings (income before extraordinary items, plus income-statement deferred taxes, minus preferred dividends). BE, A, and E are for each firm's latest fiscal year ending in calendar year  $t - 1$ . The accounting ratios are measured using market equity ME in December of year  $t - 1$ . Firm size  $\ln(\text{ME})$  is measured in June of year  $t$ . In the regressions, these values of the explanatory variables for individual stocks are matched with CRSP returns for the months from July of year  $t$  to June of year  $t + 1$ . The gap between the accounting data and the returns ensures that the accounting data are available prior to the returns. If earnings are positive,  $E(+)/P$  is the ratio of total earnings to market equity and E/P dummy is 0. If earnings are negative,  $E(+)/P$  is 0 and E/P dummy is 1.

The average slope is the time-series average of the monthly regression slopes for July 1963 to December 1990, and the  $t$ -statistic is the average slope divided by its time-series standard error.

On average, there are 2267 stocks in the monthly regressions. To avoid giving extreme observations heavy weight in the regressions, the smallest and largest 0.5% of the observations on  $E(+)/P$ , BE/ME, A/ME, and A/BE are set equal to the next largest or smallest values of the ratios (the 0.005 and 0.995 fractiles). This has no effect on inferences.

$\beta$	$\ln(\text{ME})$	$\ln(\text{BE}/\text{ME})$	$\ln(\text{A}/\text{ME})$	$\ln(\text{A}/\text{BE})$	E/P Dummy	$E(+)/P$
0.15 (0.46)	-0.15 (-2.58)					
-0.37 (-1.21)	-0.17 (-3.41)					
		0.50 (5.71)				
			0.50 (5.69)	-0.57 (-5.34)		
					0.57 (2.28)	4.72 (4.57)
	-0.11 (-1.99)	0.35 (4.44)				
	-0.11 (-2.06)		0.35 (4.32)	-0.50 (-4.56)		
	-0.16 (-3.06)				0.06 (0.38)	2.99 (3.04)
	-0.13 (-2.47)	0.33 (4.46)			-0.14 (-0.90)	0.87 (1.23)
	-0.13 (-2.47)		0.32 (4.28)	-0.46 (-4.45)	-0.08 (-0.56)	1.15 (1.57)

0.05 or less, only 1 is greater than 0.1, and the standard errors are small relative to the range of the  $\beta$ s (0.53 to 1.79).

The  $\beta$ -sorted portfolios in Tables I and II also provide strong evidence against the  $\beta$ -measurement-error story. When portfolios are formed on pre-ranking  $\beta$ s alone (Table II), the post-ranking  $\beta$ s for the portfolios almost perfectly reproduce the ordering of the pre-ranking  $\beta$ s. Only the  $\beta$  for portfolio 1B is out of line, and only by 0.02. Similarly, when portfolios are formed on size and then pre-ranking  $\beta$ s (Table I), the post-ranking  $\beta$ s in each size decile closely reproduce the ordering of the pre-ranking  $\beta$ s.

The correspondence between the ordering of the pre-ranking and post-ranking  $\beta$ s for the  $\beta$ -sorted portfolios in Tables I and II is evidence that the post-ranking  $\beta$ s are informative about the ordering of the true  $\beta$ s. The problem for the SLB model is that there is no similar ordering in the average returns on the  $\beta$ -sorted portfolios. Whether one looks at portfolios sorted on  $\beta$  alone (Table II) or on size and then  $\beta$  (Table I), average returns are flat (Table II) or decline slightly (Table I) as the post-ranking  $\beta$ s increase.

Our evidence on the robustness of the size effect and the absence of a relation between  $\beta$  and average return is so contrary to the SLB model that it behooves us to examine whether the results are special to 1963-1990. The appendix shows that NYSE returns for 1941-1990 behave like the NYSE, AMEX, and NASDAQ returns for 1963-1990; there is a reliable size effect over the full 50-year period, but little relation between  $\beta$  and average return. Interestingly, there is a reliable simple relation between  $\beta$  and average return during the 1941-1965 period. These 25 years are a major part of the samples in the early studies of the SLB model of Black, Jensen, and Scholes (1972) and Fama and MacBeth (1973). Even for the 1941-1965 period, however, the relation between  $\beta$  and average return disappears when we control for size.

### III. Book-to-Market Equity, E/P, and Leverage

Tables I to III say that there is a strong relation between the average returns on stocks and size, but there is no reliable relation between average returns and  $\beta$ . In this section we show that there is also a strong cross-sectional relation between average returns and book-to-market equity. If anything, this book-to-market effect is more powerful than the size effect. We also find that the combination of size and book-to-market equity absorbs the apparent roles of leverage and E/P in average stock returns.

#### A. Average Returns

Table IV shows average returns for July 1963 to December 1990 for portfolios formed on ranked values of book-to-market equity (BE/ME) or earnings-price ratio (E/P). The BE/ME and E/P portfolios in Table IV are formed in the same general way (one-dimensional yearly sorts) as the size and  $\beta$  portfolios in Table II. (See the tables for details.)

The relation between average return and E/P has a familiar U-shape (e.g., Jaffe, Keim, and Westerfield (1989) for U.S. data, and Chan, Hamao, and Lakonishok (1991) for Japan). Average returns decline from 1.46% per month for the negative E/P portfolio to 0.93% for the firms in portfolio 1B that have low but positive E/P. Average returns then increase monotonically, reaching 1.72% per month for the highest E/P portfolio.

The more striking evidence in Table IV is the strong positive relation between average return and book-to-market equity. Average returns rise from 0.30% for the lowest BE/ME portfolio to 1.83% for the highest, a difference of 1.53% per month. This spread is twice as large as the difference of 0.74% between the average monthly returns on the smallest and largest size portfolios in Table II. Note also that the strong relation between book-to-market equity and average return is unlikely to be a  $\beta$  effect in disguise; Table IV shows that post-ranking market  $\beta$ s vary little across portfolios formed on ranked values of BE/ME.

On average, only about 50 (out of 2317) firms per year have negative book equity, BE. The negative BE firms are mostly concentrated in the last 14 years of the sample, 1976-1989, and we do not include them in the tests. We can report, however, that average returns for negative BE firms are high, like the average returns of high BE/ME firms. Negative BE (which results from persistently negative earnings) and high BE/ME (which typically means that stock prices have fallen) are both signals of poor earning prospects. The similar average returns of negative and high BE/ME firms are thus consistent with the hypothesis that book-to-market equity captures cross-sectional variation in average returns that is related to relative distress.

## B. Fama-MacBeth Regressions

### B.1. BE/ME

The FM regressions in Table III confirm the importance of book-to-market equity in explaining the cross-section of average stock returns. The average slope from the monthly regressions of returns on  $\ln(\text{BE}/\text{ME})$  alone is 0.50%, with a  $t$ -statistic of 5.71. This book-to-market relation is stronger than the size effect, which produces a  $t$ -statistic of -2.58 in the regressions of returns on  $\ln(\text{ME})$  alone. But book-to-market equity does not replace size in explaining average returns. When both  $\ln(\text{ME})$  and  $\ln(\text{BE}/\text{ME})$  are included in the regressions, the average size slope is still -1.99 standard errors from 0; the book-to-market slope is an impressive 4.44 standard errors from 0.

### B.2. Leverage

The FM regressions that explain returns with leverage variables provide interesting insight into the relation between book-to-market equity and average return. We use two leverage variables, the ratio of book assets to market equity, A/ME, and the ratio of book assets to book equity, A/BE. We interpret A/ME as a measure of market leverage, while A/BE is a measure

Table IV  
**Properties of Portfolios Formed on Book-to-Market Equity (BE/ME) and Earnings-Price Ratio (E/P):  
 July 1963 to December 1990**

At the end of each year  $t - 1$ , 12 portfolios are formed on the basis of ranked values of BE/ME or E/P. Portfolios 2-9 cover deciles of the ranking variables. The bottom and top 2 portfolios (1A, 1B, 10A, and 10B) split the bottom and top deciles in half. For E/P, there are 13 portfolios; portfolio 0 is stocks with negative E/P. Since BE/ME and E/P are not strongly related to exchange listing, their portfolio breakpoints are determined on the basis of the ranked values of the variables for all stocks that satisfy the CRSP-COMPUSTAT data requirements. BE is the book value of common equity plus balance-sheet deferred taxes, A is total book assets, and E is earnings (income before extraordinary items, plus income-statement deferred taxes, minus preferred dividends). BE, A, and E are for each firm's latest fiscal year ending in calendar year  $t - 1$ . The accounting ratios are measured using market equity ME in December of year  $t - 1$ . Firm size  $\ln(\text{ME})$  is measured in June of year  $t$ , with ME denominated in millions of dollars. We calculate each portfolio's monthly equal-weighted return for July of year  $t + 1$ , and then reform the portfolios at the end of year  $t$ .

Return is the time-series average of the monthly equal-weighted portfolio returns (in percent).  $\ln(\text{ME})$ ,  $\ln(\text{BE}/\text{ME})$ ,  $\ln(\text{A}/\text{ME})$ ,  $\ln(\text{A}/\text{BE})$ ,  $\text{E}(+)/\text{P}$ , and E/P dummy are the time-series averages of the monthly average values of these variables in each portfolio. Since the E/P dummy is 0 when earnings are positive, and 1 when earnings are negative, E/P dummy gives the average proportion of stocks with negative earnings in each portfolio.

$\beta$  is the time-series average of the monthly portfolio  $\beta$ s. Stocks are assigned the post-ranking  $\beta$  of the size- $\beta$  portfolio they are in at the end of June of year  $t$  (Table I). These individual-firm  $\beta$ s are averaged to compute the monthly  $\beta$ s for each portfolio for July of year  $t$  to June of year  $t + 1$ . Firms is the average number of stocks in the portfolio each month.

Portfolio	Panel A: Stocks Sorted on Book-to-Market Equity (BE/ME)												
	0	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Return	0.30	0.67	0.87	0.97	1.04	1.17	1.30	1.44	1.50	1.59	1.92	1.83	
$\beta$	1.36	1.34	1.32	1.30	1.28	1.27	1.27	1.27	1.27	1.29	1.33	1.35	
$\ln(\text{ME})$	4.53	4.67	4.69	4.56	4.47	4.38	4.23	4.06	3.85	3.51	3.06	2.65	
$\ln(\text{BE}/\text{ME})$	-2.22	-1.51	-1.09	-0.75	-0.51	-0.32	-0.14	0.03	0.21	0.42	0.66	1.02	
$\ln(\text{A}/\text{ME})$	-1.24	-0.79	-0.40	-0.05	0.20	0.40	0.56	0.71	0.91	1.12	1.35	1.75	
$\ln(\text{A}/\text{BE})$	0.94	0.71	0.68	0.70	0.71	0.71	0.70	0.68	0.70	0.70	0.70	0.73	
E/P dummy	0.29	0.15	0.10	0.08	0.08	0.08	0.09	0.09	0.11	0.15	0.22	0.36	
$\text{E}(+)/\text{P}$	0.03	0.04	0.06	0.08	0.09	0.09	0.11	0.11	0.12	0.12	0.11	0.10	
Firms	89	98	209	222	236	230	235	237	239	239	120	117	

Table IV—Continued

Portfolio	0	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Return	1.46	1.04	0.93	0.94	1.03	1.18	1.22	1.33	1.42	1.46	1.57	1.74	1.72
$\beta$	1.47	1.40	1.35	1.31	1.28	1.26	1.25	1.26	1.24	1.23	1.24	1.28	1.31
$\ln(\text{ME})$	2.48	3.64	4.33	4.61	4.64	4.63	4.58	4.49	4.37	4.28	4.07	3.82	3.52
$\ln(\text{BE}/\text{ME})$	-0.10	-0.76	-0.91	-0.79	-0.61	-0.47	-0.33	-0.21	-0.08	0.02	0.15	0.26	0.40
$\ln(\text{A}/\text{ME})$	0.90	-0.05	-0.27	-0.16	0.03	0.18	0.31	0.44	0.58	0.70	0.85	1.01	1.25
$\ln(\text{A}/\text{BE})$	0.99	0.70	0.63	0.63	0.64	0.65	0.64	0.65	0.66	0.68	0.71	0.75	0.86
E/P dummy	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E(+)/P	0.00	0.01	0.03	0.05	0.06	0.08	0.09	0.11	0.12	0.14	0.16	0.20	0.28
Firms	355	88	90	182	190	193	196	194	197	195	195	95	91

Panel B: Stocks Sorted on Earnings-Price Ratio (E/P)

of book leverage. The regressions use the natural logs of the leverage ratios,  $\ln(A/ME)$  and  $\ln(A/BE)$ , because preliminary tests indicated that logs are a good functional form for capturing leverage effects in average returns. Using logs also leads to a simple interpretation of the relation between the roles of leverage and book-to-market equity in average returns.

The FM regressions of returns on the leverage variables (Table III) pose a bit of a puzzle. The two leverage variables are related to average returns, but with opposite signs. As in Bhandari (1988), higher market leverage is associated with higher average returns; the average slopes for  $\ln(A/ME)$  are always positive and more than 4 standard errors from 0. But higher book leverage is associated with lower average returns; the average slopes for  $\ln(A/BE)$  are always negative and more than 4 standard errors from 0.

The puzzle of the opposite slopes on  $\ln(A/ME)$  and  $\ln(A/BE)$  has a simple solution. The average slopes for the two leverage variables are opposite in sign but close in absolute value, e.g., 0.50 and  $-0.57$ . Thus it is the difference between market and book leverage that helps explain average returns. But the difference between market and book leverage is book-to-market equity,  $\ln(BE/ME) = \ln(A/ME) - \ln(A/BE)$ . Table III shows that the average book-to-market slopes in the FM regressions are indeed close in absolute value to the slopes for the two leverage variables.

The close links between the leverage and book-to-market results suggest that there are two equivalent ways to interpret the book-to-market effect in average returns. A high ratio of book equity to market equity (a low stock price relative to book value) says that the market judges the prospects of a firm to be poor relative to firms with low  $BE/ME$ . Thus  $BE/ME$  may capture the relative-distress effect postulated by Chan and Chen (1991). A high book-to-market ratio also says that a firm's market leverage is high relative to its book leverage; the firm has a large amount of market-imposed leverage because the market judges that its prospects are poor and discounts its stock price relative to book value. In short, our tests suggest that the relative-distress effect, captured by  $BE/ME$ , can also be interpreted as an involuntary leverage effect, which is captured by the difference between  $A/ME$  and  $A/BE$ .

### B.3. *E/P*

Ball (1978) posits that the earnings-price ratio is a catch-all for omitted risk factors in expected returns. If current earnings proxy for expected future earnings, high-risk stocks with high expected returns will have low prices relative to their earnings. Thus,  $E/P$  should be related to expected returns, whatever the omitted sources of risk. This argument only makes sense, however, for firms with positive earnings. When current earnings are negative, they are not a proxy for the earnings forecasts embedded in the stock price, and  $E/P$  is not a proxy for expected returns. Thus, the slope for  $E/P$  in the FM regressions is based on positive values; we use a dummy variable for  $E/P$  when earnings are negative.

The U-shaped relation between average return and E/P observed in Table IV is also apparent when the E/P variables are used alone in the FM regressions in Table III. The average slope on the E/P dummy variable (0.57% per month, 2.28 standard errors from 0) confirms that firms with negative earnings have higher average returns. The average slope for stocks with positive E/P (4.72% per month, 4.57 standard errors from 0) shows that average returns increase with E/P when it is positive.

Adding size to the regressions kills the explanatory power of the E/P dummy. Thus the high average returns of negative E/P stocks are better captured by their size, which Table IV says is on average small. Adding both size and book-to-market equity to the E/P regressions kills the E/P dummy and lowers the average slope on E/P from 4.72 to 0.87 ( $t = 1.23$ ). In contrast, the average slopes for  $\ln(\text{ME})$  and  $\ln(\text{BE}/\text{ME})$  in the regressions that include E/P are similar to those in the regressions that explain average returns with only size and book-to-market equity. The results suggest that most of the relation between (positive) E/P and average return is due to the positive correlation between E/P and  $\ln(\text{BE}/\text{ME})$ , illustrated in Table IV; firms with high E/P tend to have high book-to-market equity ratios.

#### IV. A Parsimonious Model for Average Returns

The results to here are easily summarized:

- (1) When we allow for variation in  $\beta$  that is unrelated to size, there is no reliable relation between  $\beta$  and average return.
- (2) The opposite roles of market leverage and book leverage in average returns are captured well by book-to-market equity.
- (3) The relation between E/P and average return seems to be absorbed by the combination of size and book-to-market equity.

In a nutshell, market  $\beta$  seems to have no role in explaining the average returns on NYSE, AMEX, and NASDAQ stocks for 1963-1990, while size and book-to-market equity capture the cross-sectional variation in average stock returns that is related to leverage and E/P.

##### A. Average Returns, Size and Book-to-Market Equity

The average return matrix in Table V gives a simple picture of the two-dimensional variation in average returns that results when the 10 size deciles are each subdivided into 10 portfolios based on ranked values of BE/ME for individual stocks. Within a size decile (across a row of the average return matrix), returns typically increase strongly with BE/ME: on average, the returns on the lowest and highest BE/ME portfolios in a size decile differ by 0.99% (1.63% - 0.64%) per month. Similarly, looking down the columns of the average return matrix shows that there is a negative relation between average return and size: on average, the spread of returns across the size portfolios in a BE/ME group is 0.58% per month. The average return matrix gives life to the conclusion from the regressions that,

Table V  
**Average Monthly Returns on Portfolios Formed on Size and  
 Book-to-Market Equity; Stocks Sorted by ME (Down) and then  
 BE/ME (Across): July 1963 to December 1990**

In June of each year  $t$ , the NYSE, AMEX, and NASDAQ stocks that meet the CRSP-COMPUSTAT data requirements are allocated to 10 size portfolios using the NYSE size (ME) breakpoints. The NYSE, AMEX, and NASDAQ stocks in each size decile are then sorted into 10 BE/ME portfolios using the book-to-market ratios for year  $t - 1$ . BE/ME is the book value of common equity plus balance-sheet deferred taxes for fiscal year  $t - 1$ , over market equity for December of year  $t - 1$ . The equal-weighted monthly portfolio returns are then calculated for July of year  $t$  to June of year  $t + 1$ .

Average monthly return is the time-series average of the monthly equal-weighted portfolio returns (in percent).

The All column shows average returns for equal-weighted size decile portfolios. The All row shows average returns for equal-weighted portfolios of the stocks in each BE/ME group.

	Book-to-Market Portfolios										
	All	Low	2	3	4	5	6	7	8	9	High
All	1.23	0.64	0.98	1.06	1.17	1.24	1.26	1.39	1.40	1.50	1.63
Small-ME	1.47	0.70	1.14	1.20	1.43	1.56	1.51	1.70	1.71	1.82	1.92
ME-2	1.22	0.43	1.05	0.96	1.19	1.33	1.19	1.58	1.28	1.43	1.79
ME-3	1.22	0.56	0.88	1.23	0.95	1.36	1.30	1.30	1.40	1.54	1.60
ME-4	1.19	0.39	0.72	1.06	1.36	1.13	1.21	1.34	1.59	1.51	1.47
ME-5	1.24	0.88	0.65	1.08	1.47	1.13	1.43	1.44	1.26	1.52	1.49
ME-6	1.15	0.70	0.98	1.14	1.23	0.94	1.27	1.19	1.19	1.24	1.50
ME-7	1.07	0.95	1.00	0.99	0.83	0.99	1.13	0.99	1.16	1.10	1.47
ME-8	1.08	0.66	1.13	0.91	0.95	0.99	1.01	1.15	1.05	1.29	1.55
ME-9	0.95	0.44	0.89	0.92	1.00	1.05	0.93	0.82	1.11	1.04	1.22
Large-ME	0.89	0.93	0.88	0.84	0.71	0.79	0.83	0.81	0.96	0.97	1.18

controlling for size, book-to-market equity captures strong variation in average returns, and controlling for book-to-market equity leaves a size effect in average returns.

### *B. The Interaction between Size and Book-to-Market Equity*

The average of the monthly correlations between the cross-sections of  $\ln(\text{ME})$  and  $\ln(\text{BE}/\text{ME})$  for individual stocks is  $-0.26$ . The negative correlation is also apparent in the average values of  $\ln(\text{ME})$  and  $\ln(\text{BE}/\text{ME})$  for the portfolios sorted on ME or BE/ME in Tables II and IV. Thus, firms with low market equity are more likely to have poor prospects, resulting in low stock prices and high book-to-market equity. Conversely, large stocks are more likely to be firms with stronger prospects, higher stock prices, lower book-to-market equity, and lower average stock returns.

The correlation between size and book-to-market equity affects the regressions in Table III. Including  $\ln(\text{BE}/\text{ME})$  moves the average slope on  $\ln(\text{ME})$  from  $-0.15$  ( $t = -2.58$ ) in the univariate regressions to  $-0.11$  ( $t = -1.99$ ) in the bivariate regressions. Similarly, including  $\ln(\text{ME})$  in the regressions

lowers the average slope on  $\ln(\text{BE}/\text{ME})$  from 0.50 to 0.35 (still a healthy 4.44 standard errors from 0). Thus, part of the size effect in the simple regressions is due to the fact that small ME stocks are more likely to have high book-to-market ratios, and part of the simple book-to-market effect is due to the fact that high BE/ME stocks tend to be small (they have low ME).

We should not, however, exaggerate the links between size and book-to-market equity. The correlation ( $-0.26$ ) between  $\ln(\text{ME})$  and  $\ln(\text{BE}/\text{ME})$  is not extreme, and the average slopes in the bivariate regressions in Table III show that  $\ln(\text{ME})$  and  $\ln(\text{BE}/\text{ME})$  are both needed to explain the cross-section of average returns. Finally, the  $10 \times 10$  average return matrix in Table V provides concrete evidence that, (a) controlling for size, book-to-market equity captures substantial variation in the cross-section of average returns, and (b) within BE/ME groups average returns are related to size.

### *C. Subperiod Averages of the FM Slopes*

The message from the average FM slopes for 1963–1990 (Table III) is that size on average has a negative premium in the cross-section of stock returns, book-to-market equity has a positive premium, and the average premium for market  $\beta$  is essentially 0. Table VI shows the average FM slopes for two roughly equal subperiods (July 1963–December 1976 and January 1977–December 1990) from two regressions: (a) the cross-section of stock returns on size,  $\ln(\text{ME})$ , and book-to-market equity,  $\ln(\text{BE}/\text{ME})$ , and (b) returns on  $\beta$ ,  $\ln(\text{ME})$ , and  $\ln(\text{BE}/\text{ME})$ . For perspective, average returns on the value-weighted and equal-weighted (VW and EW) portfolios of NYSE stocks are also shown.

In FM regressions, the intercept is the return on a standard portfolio (the weights on stocks sum to 1) in which the weighted averages of the explanatory variables are 0 (Fama (1976), chapter 9). In our tests, the intercept is weighted toward small stocks (ME is in millions of dollars so  $\ln(\text{ME}) = 0$  implies  $\text{ME} = \$1$  million) and toward stocks with relatively high book-to-market ratios (Table IV says that  $\ln(\text{BE}/\text{ME})$  is negative for the typical firm, so  $\ln(\text{BE}/\text{ME}) = 0$  is toward the high end of the sample ratios). Thus it is not surprising that the average intercepts are always large relative to their standard errors and relative to the returns on the NYSE VW and EW portfolios.

Like the overall period, the subperiods do not offer much hope that the average premium for  $\beta$  is economically important. The average FM slope for  $\beta$  is only slightly positive for 1963–1976 (0.10% per month,  $t = 0.25$ ), and it is negative for 1977–1990 ( $-0.44\%$  per month,  $t = -1.17$ ). There is a hint that the size effect is weaker in the 1977–1990 period, but inferences about the average size slopes for the subperiods lack power.

Unlike the size effect, the relation between book-to-market equity and average return is so strong that it shows up reliably in both the 1963–1976 and the 1977–1990 subperiods. The average slopes for  $\ln(\text{BE}/\text{ME})$  are all more than 2.95 standard errors from 0, and the average slopes for the

Table VI  
**Subperiod Average Monthly Returns on the NYSE  
 Equal-Weighted and Value-Weighted Portfolios and Subperiod  
 Means of the Intercepts and Slopes from the Monthly FM  
 Cross-Sectional Regressions of Returns on (a) Size ( $\ln(\text{ME})$ ) and  
 Book-to-Market Equity ( $\ln(\text{BE}/\text{ME})$ ), and (b)  $\beta$ ,  $\ln(\text{ME})$ , and  
 $\ln(\text{BE}/\text{ME})$**

Mean is the time-series mean of a monthly return, Std is its time-series standard deviation, and  $t(\text{Mn})$  is Mean divided by its time-series standard error.

Variable	7/63-12/90 (330 Mos.)			7/63-12/76 (162 Mos.)			1/77-12/90 (168 Mos.)		
	Mean	Std	$t(\text{Mn})$	Mean	Std	$t(\text{Mn})$	Mean	Std	$t(\text{Mn})$
NYSE Value-Weighted (VW) and Equal-Weighted (EW) Portfolio Returns									
VW	0.81	4.47	3.27	0.56	4.26	1.67	1.04	4.66	2.89
EW	0.97	5.49	3.19	0.77	5.70	1.72	1.15	5.28	2.82
$R_{it} = a + b_{2t}\ln(\text{ME}_{it}) + b_{3t}\ln(\text{BE}/\text{ME}_{it}) + e_{it}$									
a	1.77	8.51	3.77	1.86	10.10	2.33	1.69	6.67	3.27
$b_2$	-0.11	1.02	-1.99	-0.16	1.25	-1.62	-0.07	0.73	-1.16
$b_3$	0.35	1.45	4.43	0.36	1.53	2.96	0.35	1.37	3.30
$R_{it} = a + b_{1t}\beta_{it} + b_{2t}\ln(\text{ME}_{it}) + b_{3t}\ln(\text{BE}/\text{ME}_{it}) + e_{it}$									
a	2.07	5.75	6.55	1.73	6.22	3.54	2.40	5.25	5.92
$b_1$	-0.17	5.12	-0.62	0.10	5.33	0.25	-0.44	4.91	-1.17
$b_2$	-0.12	0.89	-2.52	-0.15	1.03	-1.91	-0.09	0.74	-1.64
$b_3$	0.33	1.24	4.80	0.34	1.36	3.17	0.31	1.10	3.67

subperiods (0.36 and 0.35) are close to the average slope (0.35) for the overall period. The subperiod results thus support the conclusion that, among the variables considered here, book-to-market equity is consistently the most powerful for explaining the cross-section of average stock returns.

Finally, Roll (1983) and Keim (1983) show that the size effect is stronger in January. We have examined the monthly slopes from the FM regressions in Table VI for evidence of a January seasonal in the relation between book-to-market equity and average return. The average January slopes for  $\ln(\text{BE}/\text{ME})$  are about twice those for February to December. Unlike the size effect, however, the strong relation between book-to-market equity and average return is not special to January. The average monthly February-to-December slopes for  $\ln(\text{BE}/\text{ME})$  are about 4 standard errors from 0, and they are close to (within 0.05 of) the average slopes for the whole year. Thus, there is a January seasonal in the book-to-market equity effect, but the positive relation between  $\text{BE}/\text{ME}$  and average return is strong throughout the year.

#### D. $\beta$ and the Market Factor: Caveats

Some caveats about the negative evidence on the role of  $\beta$  in average returns are in order. The average premiums for  $\beta$ , size, and book-to-market

equity depend on the definitions of the variables used in the regressions. For example, suppose we replace book-to-market equity ( $\ln(\text{BE}/\text{ME})$ ) with book equity ( $\ln(\text{BE})$ ). As long as size ( $\ln(\text{ME})$ ) is also in the regression, this change will not affect the intercept, the fitted values or the  $R^2$ . But the change, in variables increases the average slope (and the  $t$ -statistic) on  $\ln(\text{ME})$ . In other words, it increases the risk premium associated with size. Other redefinitions of the  $\beta$ , size, and book-to-market variables will produce different regression slopes and perhaps different inferences about average premiums, including possible resuscitation of a role for  $\beta$ . And, of course, at the moment, we have no theoretical basis for choosing among different versions of the variables.

Moreover, the tests here are restricted to stocks. It is possible that including other assets will change the inferences about the average premiums for  $\beta$ , size, and book-to-market equity. For example, the large average intercepts for the FM regressions in Table VI suggest that the regressions will not do a good job on Treasury bills, which have low average returns and are likely to have small loadings on the underlying market, size, and book-to-market factors in returns. Extending the tests to bills and other bonds may well change our inferences about average risk premiums, including the revival of a role for market  $\beta$ .

We emphasize, however, that different approaches to the tests are not likely to revive the Sharpe-Lintner-Black model. Resuscitation of the SLB model requires that a better proxy for the market portfolio (a) overturns our evidence that the simple relation between  $\beta$  and average stock returns is flat and (b) leaves  $\beta$  as the only variable relevant for explaining average returns. Such results seem unlikely, given Stambaugh's (1982) evidence that tests of the SLB model do not seem to be sensitive to the choice of a market proxy. Thus, if there is a role for  $\beta$  in average returns, it is likely to be found in a multi-factor model that transforms the flat simple relation between average return and  $\beta$  into a positively sloped conditional relation.

## V. Conclusions and Implications

The Sharpe-Lintner-Black model has long shaped the way academics and practitioners think about average return and risk. Black, Jensen, and Scholes (1972) and Fama and MacBeth (1973) find that, as predicted by the model, there is a positive simple relation between average return and market  $\beta$  during the early years (1926-1968) of the CRSP NYSE returns file. Like Reinganum (1981) and Lakonishok and Shapiro (1986), we find that this simple relation between  $\beta$  and average return disappears during the more recent 1963-1990 period. The appendix that follows shows that the relation between  $\beta$  and average return is also weak in the last half century (1941-1990) of returns on NYSE stocks. In short, our tests do not support the central prediction of the SLB model, that average stock returns are positively related to market  $\beta$ .

Banz (1981) documents a strong negative relation between average return and firm size. Bhandari (1988) finds that average return is positively related to leverage, and Basu (1983) finds a positive relation between average return

and E/P. Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) document a positive relation between average return and book-to-market equity for U.S. stocks, and Chan, Hamao, and Lakonishok (1992) find that BE/ME is also a powerful variable for explaining average returns on Japanese stocks.

Variables like size, E/P, leverage, and book-to-market equity are all scaled versions of a firm's stock price. They can be regarded as different ways of extracting information from stock prices about the cross-section of expected stock returns (Ball (1978), Keim (1988)). Since all these variables are scaled versions of price, it is reasonable to expect that some of them are redundant for explaining average returns. Our main result is that for the 1963-1990 period, size and book-to-market equity capture the cross-sectional variation in average stock returns associated with size, E/P, book-to-market equity, and leverage.

#### *A. Rational Asset-Pricing Stories*

Are our results consistent with asset-pricing theory? Since the FM intercept is constrained to be the same for all stocks, FM regressions always impose a linear factor structure on returns and expected returns that is consistent with the multifactor asset-pricing models of Merton (1973) and Ross (1976). Thus our tests impose a rational asset-pricing framework on the relation between average return and size and book-to-market equity.

Even if our results are consistent with asset-pricing theory, they are not economically satisfying. What is the economic explanation for the roles of size and book-to-market equity in average returns? We suggest several paths of inquiry.

- (a) The intercepts and slopes in the monthly FM regressions of returns on  $\ln(\text{ME})$  and  $\ln(\text{BE}/\text{ME})$  are returns on portfolios that mimic the underlying common risk factors in returns proxied by size and book-to-market equity (Fama (1976), chapter 9). Examining the relations between the returns on these portfolios and economic variables that measure variation in business conditions might help expose the nature of the economic risks captured by size and book-to-market equity.
- (b) Chan, Chen, and Hsieh (1985) argue that the relation between size and average return proxies for a more fundamental relation between expected returns and economic risk factors. Their most powerful factor in explaining the size effect is the difference between the monthly returns on low- and high-grade corporate bonds, which in principle captures a kind of default risk in returns that is priced. It would be interesting to test whether loadings on this or other economic factors, such as those of Chen, Roll, and Ross (1986), can explain the roles of size and book-to-market equity in our tests.
- (c) In a similar vein, Chan and Chen (1991) argue that the relation between size and average return is a relative-prospects effect. The earning prospects of distressed firms are more sensitive to economic

conditions. This results in a distress factor in returns that is priced in expected returns. Chan and Chen construct two mimicking portfolios for the distress factor, based on dividend changes and leverage. It would be interesting to check whether loadings on their distress factors absorb the size and book-to-market equity effects in average returns that are documented here.

- (d) In fact, if stock prices are rational, BE/ME, the ratio of the book value of a stock to the market's assessment of its value, should be a direct indicator of the relative prospects of firms. For example, we expect that high BE/ME firms have low earnings on assets relative to low BE/ME firms. Our work (in progress) suggests that there is indeed a clean separation between high and low BE/ME firms on various measures of economic fundamentals. Low BE/ME firms are persistently strong performers, while the economic performance of high BE/ME firms is persistently weak.

### *B. Irrational Asset-Pricing Stories*

The discussion above assumes that the asset-pricing effects captured by size and book-to-market equity are rational. For BE/ME, our most powerful expected-return variable, there is an obvious alternative. The cross-section of book-to-market ratios might result from market overreaction to the relative prospects of firms. If overreaction tends to be corrected, BE/ME will predict the cross-section of stock returns.

Simple tests do not confirm that the size and book-to-market effects in average returns are due to market overreaction, at least of the type posited by DeBondt and Thaler (1985). One overreaction measure used by DeBondt and Thaler is a stock's most recent 3-year return. Their overreaction story predicts that 3-year losers have strong post-ranking returns relative to 3-year winners. In FM regressions (not shown) for individual stocks, the 3-year lagged return shows no power even when used alone to explain average returns. The univariate average slope for the lagged return is negative, -6 basis points per month, but less than 0.5 standard errors from 0.

### *C. Applications*

Our main result is that two easily measured variables, size and book-to-market equity, seem to describe the cross-section of average stock returns. Prescriptions for using this evidence depend on (a) whether it will persist, and (b) whether it results from rational or irrational asset-pricing.

It is possible that, by chance, size and book-to-market equity happen to describe the cross-section of average returns in our sample, but they were and are unrelated to expected returns. We put little weight on this possibility, especially for book-to-market equity. First, although BE/ME has long been touted as a measure of the return prospects of stocks, there is no evidence that its explanatory power deteriorates through time. The 1963-1990 relation between BE/ME and average return is strong, and remarkably similar

for the 1963–1976 and 1977–1990 subperiods. Second, our preliminary work on economic fundamentals suggests that high-BE/ME firms tend to be persistently poor earners relative to low-BE/ME firms. Similarly, small firms have a long period of poor earnings during the 1980s not shared with big firms. The systematic patterns in fundamentals give us some hope that size and book-to-market equity proxy for risk factors in returns, related to relative earning prospects, that are rationally priced in expected returns.

If our results are more than chance, they have practical implications for portfolio formation and performance evaluation by investors whose primary concern is long-term average returns. If asset-pricing is rational, size and BE/ME must proxy for risk. Our results then imply that the performance of managed portfolios (e.g., pension funds and mutual funds) can be evaluated by comparing their average returns with the average returns of benchmark portfolios with similar size and BE/ME characteristics. Likewise, the expected returns for different portfolio strategies can be estimated from the historical average returns of portfolios with matching size and BE/ME properties.

If asset-pricing is irrational and size and BE/ME do not proxy for risk, our results might still be used to evaluate portfolio performance and measure the expected returns from alternative investment strategies. If stock prices are irrational, however, the likely persistence of the results is more suspect.

#### **Appendix** **Size Versus $\beta$ : 1941–1990**

Our results on the absence of a relation between  $\beta$  and average stock returns for 1963–1990 are so contrary to the tests of the Sharpe-Lintner-Black model by Black, Jensen, and Scholes (1972), Fama and MacBeth (1973), and (more recently) Chan and Chen (1988), that further tests are appropriate. We examine the roles of size and  $\beta$  in the average returns on NYSE stocks for the half-century 1941–1990, the longest available period that avoids the high volatility of returns in the Great Depression. We do not include the accounting variables in the tests because of the strong selection bias (toward successful firms) in the COMPUSTAT data prior to 1962.

We first replicate the results of Chan and Chen (1988). Like them, we find that when portfolios are formed on size alone, there are strong relations between average return and either size or  $\beta$ ; average return increases with  $\beta$  and decreases with size. For size portfolios, however, size ( $\ln(\text{ME})$ ) and  $\beta$  are almost perfectly correlated ( $-0.98$ ), so it is difficult to distinguish between the roles of size and  $\beta$  in average returns.

One way to generate strong variation in  $\beta$  that is unrelated to size is to form portfolios on size and then on  $\beta$ . As in Tables I to III, we find that the resulting independent variation in  $\beta$  just about washes out the positive simple relation between average return and  $\beta$  observed when portfolios are formed on size alone. The results for NYSE stocks for 1941–1990 are thus much like those for NYSE, AMEX, and NASDAQ stocks for 1963–1990.

This appendix also has methodological goals. For example, the FM regressions in Table III use returns on individual stocks as the dependent variable. Since we allocate portfolio  $\beta$ s to individual stocks but use firm-specific values of other variables like size,  $\beta$  may be at a disadvantage in the regressions for individual stocks. This appendix shows, however, that regressions for portfolios, which put  $\beta$  and size on equal footing, produce results comparable to those for individual stocks.

### A. Size Portfolios

Table AI shows average monthly returns and market  $\beta$ s for 12 portfolios of NYSE stocks formed on the basis of size (ME) at the end of each year from 1940 to 1989. For these size portfolios, there is a strong positive relation between average return and  $\beta$ . Average returns fall from 1.96% per month for the smallest ME portfolio (1A) to 0.93% for the largest (10B) and  $\beta$  falls from 1.60 to 0.95. (Note also that, as claimed earlier, estimating  $\beta$  as the sum of the slopes in the regression of a portfolio's return on the current and prior month's NYSE value-weighted return produces much larger  $\beta$ s for the smallest ME portfolios and slightly smaller  $\beta$ s for the largest ME portfolios.)

The FM regressions in Table AI confirm the positive simple relation between average return and  $\beta$  for size portfolios. In the regressions of the size-portfolio returns on  $\beta$  alone, the average premium for a unit of  $\beta$  is 1.45% per month. In the regressions of individual stock returns on  $\beta$  (where stocks are assigned the  $\beta$  of their size portfolio), the premium for a unit of  $\beta$  is 1.39%. Both estimates are about 3 standard errors from 0. Moreover, the  $\beta$ s of size portfolios do not leave a residual size effect; the average residuals from the simple regressions of returns on  $\beta$  in Table AI show no relation to size. These positive SLB results for 1941-1990 are like those obtained by Chan and Chen (1988) in tests on size portfolios for 1954-1983.

There is, however, evidence in Table AI that all is not well with the  $\beta$ s of the size portfolios. They do a fine job on the relation between size and average return, but they do a lousy job on their main task, the relation between  $\beta$  and average return. When the residuals from the regressions of returns on  $\beta$  are grouped using the pre-ranking  $\beta$ s of individual stocks, the average residuals are strongly positive for low- $\beta$  stocks (0.51% per month for group 1A) and negative for high- $\beta$  stocks (-1.05% for 10B). Thus the market lines estimated with size-portfolio  $\beta$ s exaggerate the tradeoff of average return for  $\beta$ ; they underestimate average returns on low- $\beta$  stocks and overestimate average returns on high- $\beta$  stocks. This pattern in the  $\beta$ -sorted average residuals for individual stocks suggests that (a) there is variation in  $\beta$  across stocks that is lost in the size portfolios, and (b) this variation in  $\beta$  is not rewarded as well as the variation in  $\beta$  that is related to size.

### B. Two-Pass Size- $\beta$ Portfolios

Like Table I, Table AII shows that subdividing size deciles using the (pre-ranking)  $\beta$ s of individual stocks results in strong variation in  $\beta$  that is

Table A1  
**Average Returns, Post-Ranking  $\beta$ s and Fama-MacBeth Regression Slopes for  
 Size Portfolios of NYSE Stocks: 1941-1990**

At the end of each year  $t-1$ , stocks are assigned to 12 portfolios using ranked values of ME. Included are all NYSE stocks that have a CRSP price and shares for December of year  $t-1$  and returns for at least 24 of the 60 months ending in December of year  $t-1$  (for pre-ranking  $\beta$  estimates). The middle 8 portfolios cover size deciles 2 to 9. The 4 extreme portfolios (1A, 1B, 10A, and 10B) split the smallest and largest deciles in half. We compute equal-weighted returns on the portfolios for the 12 months of year  $t$  using all surviving stocks. Average Return is the time-series average of the monthly portfolio returns for 1941-1990, in percent. Average firms is the average number of stocks in the portfolios each month. The simple  $\beta$ s are estimated by regressing the 1941-1990 sample of post-ranking monthly returns for a size portfolio on the current month's value-weighted NYSE portfolio return. The sum  $\beta$ s are the sum of the slopes from a regression of the post-ranking monthly returns on the current and prior month's VW NYSE returns.

The independent variables in the Fama-MacBeth regressions are defined for each firm at the end of December of each year  $t-1$ . Stocks are assigned the post-ranking (sum)  $\beta$  of the size portfolio they are in at the end of year  $t-1$ . ME is price times shares outstanding at the end of year  $t-1$ . In the individual-stock regressions, these values of the explanatory variables are matched with CRSP returns for each of the 12 months of year  $t$ . The portfolio regressions match the equal-weighted portfolio returns with the equal-weighted averages of  $\beta$  and  $\ln(\text{ME})$  for the surviving stocks in each month of year  $t$ . Slope is the average of the (600) monthly FM regression slopes and SE is the standard error of the average slope. The residuals from the monthly regressions for year  $t$  are grouped into 12 portfolios on the basis of size (ME) or pre-ranking  $\beta$  (estimated with 24 to 60 months of data, as available) at the end of year  $t-1$ . The average residuals are the time-series averages of the monthly equal-weighted portfolio residuals, in percent. The average residuals for regressions (1) and (2) (not shown) are quite similar to those for regressions (4) and (5) (shown).

	Portfolios Formed on Size											
	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Ave. return	1.96	1.59	1.44	1.36	1.28	1.24	1.23	1.17	1.15	1.13	0.97	0.93
Ave. firms	57	56	110	107	107	108	111	113	115	118	59	59
Simple $\beta$	1.29	1.24	1.21	1.19	1.16	1.13	1.13	1.12	1.09	1.05	1.00	0.98
Standard error	0.07	0.05	0.04	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
Sum $\beta$	1.60	1.44	1.37	1.32	1.26	1.23	1.19	1.17	1.12	1.06	0.99	0.95
Standard error	0.10	0.06	0.05	0.04	0.03	0.03	0.03	0.02	0.02	0.01	0.01	0.01

Table AI—Continued

	Portfolio Regressions			Individual Stock Regressions								
	(1) $\beta$	(2) $\ln(\text{ME})$	(3) $\beta$ and $\ln(\text{ME})$	(4) $\beta$	(5) $\ln(\text{ME})$	(6) $\beta$ and $\ln(\text{ME})$						
Slope	1.45	-0.137	3.05	0.149	1.39	-0.133	0.71	-0.133	-0.060			
SE	0.47	0.044	1.51	0.115	0.46	0.043	0.81	0.043	0.062			
Average Residuals for Stocks Grouped on Size												
	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Regression (4)	0.17	0.00	-0.04	-0.06	-0.05	-0.04	0.00	-0.03	0.03	0.08	0.01	0.04
Standard error	0.11	0.06	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.05	0.06
Regression (5)	0.30	0.02	-0.05	-0.06	-0.08	-0.07	-0.03	-0.04	0.02	0.08	0.01	0.13
Standard error	0.14	0.07	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.07
Regression (6)	0.20	0.02	-0.05	-0.07	-0.08	-0.06	-0.01	-0.02	0.04	0.09	0.00	0.06
Standard error	0.10	0.06	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.05	0.05
Average Residuals for Stocks Grouped on Pre-Ranking $\beta$												
	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Regression (4)	0.51	0.61	0.38	0.32	0.16	0.12	0.03	-0.10	-0.27	-0.31	-0.66	-1.05
Standard error	0.21	0.19	0.13	0.08	0.04	0.03	0.04	0.05	0.09	0.11	0.18	0.23
Regression (5)	-0.10	0.00	0.02	0.09	0.05	0.07	0.05	0.00	-0.03	-0.01	-0.11	-0.33
Standard error	0.11	0.10	0.07	0.05	0.04	0.03	0.03	0.04	0.05	0.07	0.10	0.13
Regression (6)	0.09	0.25	0.13	0.19	0.11	0.14	0.09	0.01	-0.11	-0.12	-0.38	-0.70
Standard error	0.41	0.37	0.24	0.14	0.07	0.04	0.04	0.09	0.16	0.21	0.34	0.43

Table AII  
**Properties of Portfolios Formed on Size and Pre-Ranking  $\beta$ : NYSE Stocks Sorted by ME (Down) then Pre-Ranking  $\beta$  (Across): 1941-1990**

At the end of year  $t-1$ , the NYSE stocks on CRSP are assigned to 10 size (ME) portfolios. Each size decile is subdivided into 10  $\beta$  portfolios using pre-ranking  $\beta$ s of individual stocks, estimated with 24 to 60 monthly returns (as available) ending in December of year  $t-1$ . The equal-weighted monthly returns on the resulting 100 portfolios are then calculated for year  $t$ . The average returns are the time-series averages of the monthly returns, in percent. The post-ranking  $\beta$ s use the full 1941-1990 sample of post-ranking returns for each portfolio. The pre- and post-ranking  $\beta$ s are the sum of the slopes from a regression of monthly returns on the current and prior month's NYSE value-weighted market return. The average size for a portfolio is the time-series average of each month's average value of  $\ln(\text{ME})$  for stocks in the portfolio. ME is denominated in millions of dollars. There are, on average, about 10 stocks in each size- $\beta$  portfolio each month. The All column shows parameter values for equal-weighted size-decile (ME) portfolios. The All rows show parameter values for equal-weighted portfolios of the stocks in each  $\beta$  group.

	All	Low- $\beta$	$\beta$ -2	$\beta$ -3	$\beta$ -4	$\beta$ -5	$\beta$ -6	$\beta$ -7	$\beta$ -8	$\beta$ -9	High- $\beta$
Panel A: Average Monthly Return (in Percent)											
All	1.22	1.30	1.32	1.32	1.35	1.36	1.34	1.29	1.34	1.14	1.10
Small-ME	1.78	1.74	1.76	2.08	1.91	1.92	1.72	1.77	1.91	1.56	1.46
ME-2	1.44	1.41	1.35	1.33	1.61	1.72	1.59	1.40	1.62	1.24	1.11
ME-3	1.36	1.21	1.40	1.22	1.47	1.34	1.51	1.33	1.57	1.33	1.21
ME-4	1.28	1.26	1.29	1.19	1.27	1.51	1.30	1.19	1.56	1.18	1.00
ME-5	1.24	1.22	1.30	1.28	1.33	1.21	1.37	1.41	1.31	0.92	1.06
ME-6	1.23	1.21	1.32	1.37	1.09	1.34	1.10	1.40	1.21	1.22	1.08
ME-7	1.17	1.08	1.23	1.37	1.27	1.19	1.34	1.10	1.11	0.87	1.17
ME-8	1.15	1.06	1.18	1.26	1.25	1.26	1.17	1.16	1.05	1.08	1.04
ME-9	1.13	0.99	1.13	1.00	1.24	1.28	1.31	1.15	1.11	1.09	1.05
Large-ME	0.95	0.99	1.01	1.12	1.01	0.89	0.95	0.95	1.00	0.90	0.68

Table AII—Continued

	All	Low- $\beta$	$\beta$ -2	$\beta$ -3	$\beta$ -4	$\beta$ -5	$\beta$ -6	$\beta$ -7	$\beta$ -8	$\beta$ -9	High- $\beta$
Panel B: Post-Ranking $\beta$											
All		0.76	0.95	1.05	1.14	1.22	1.26	1.34	1.38	1.49	1.69
Small-ME	1.52	1.17	1.40	1.31	1.50	1.46	1.50	1.69	1.60	1.75	1.92
ME-2	1.37	0.86	1.09	1.12	1.24	1.39	1.42	1.48	1.60	1.69	1.91
ME-3	1.32	0.88	0.96	1.18	1.19	1.33	1.40	1.43	1.56	1.64	1.74
ME-4	1.26	0.69	0.95	1.06	1.15	1.24	1.29	1.46	1.43	1.64	1.83
ME-5	1.23	0.70	0.95	1.04	1.10	1.22	1.32	1.34	1.41	1.56	1.72
ME-6	1.19	0.68	0.86	1.04	1.13	1.20	1.20	1.35	1.36	1.48	1.70
ME-7	1.17	0.67	0.88	0.95	1.14	1.18	1.26	1.27	1.32	1.44	1.68
ME-8	1.12	0.64	0.83	0.99	1.06	1.14	1.14	1.21	1.26	1.39	1.58
ME-9	1.06	0.68	0.81	0.94	0.96	1.06	1.11	1.18	1.22	1.25	1.46
Large-ME	0.97	0.65	0.73	0.90	0.91	0.97	1.01	1.01	1.07	1.12	1.38
Panel C: Average Size (ln(ME))											
All		4.39	4.39	4.40	4.40	4.39	4.40	4.38	4.37	4.37	4.34
Small-ME	1.93	2.04	1.99	2.00	1.96	1.92	1.92	1.91	1.90	1.87	1.80
ME-2	2.80	2.81	2.79	2.81	2.83	2.80	2.79	2.80	2.80	2.79	2.79
ME-3	3.27	3.28	3.27	3.28	3.27	3.27	3.28	3.29	3.27	3.27	3.26
ME-4	3.67	3.67	3.67	3.67	3.68	3.68	3.67	3.68	3.66	3.67	3.67
ME-5	4.06	4.07	4.06	4.05	4.06	4.07	4.06	4.05	4.05	4.06	4.06
ME-6	4.45	4.45	4.44	4.46	4.45	4.45	4.45	4.45	4.44	4.45	4.45
ME-7	4.87	4.86	4.87	4.87	4.87	4.87	4.88	4.87	4.87	4.85	4.87
ME-8	5.36	5.38	5.38	5.38	5.35	5.36	5.37	5.37	5.36	5.35	5.34
ME-9	5.98	5.96	5.98	5.99	6.00	5.98	5.98	5.97	5.95	5.96	5.96
Large-ME	7.12	7.10	7.12	7.16	7.17	7.20	7.29	7.14	7.09	7.04	6.83

independent of size. The  $\beta$  sort of a size decile always produces portfolios with similar average  $\ln(\text{ME})$  but much different (post-ranking)  $\beta$ s. Table AII also shows, however, that investors are not compensated for the variation in  $\beta$  that is independent of size. Despite the wide range of  $\beta$ s in each size decile, average returns show no tendency to increase with  $\beta$ . AII

The FM regressions in Table AIII formalize the roles of size and  $\beta$  in NYSE average returns for 1941-1990. The regressions of returns on  $\beta$  alone show that using the  $\beta$ s of the portfolios formed on size and  $\beta$ , rather than size alone, causes the average slope on  $\beta$  to fall from about 1.4% per month (Table AI) to about 0.23% (about 1 standard error from 0). Thus, allowing for variation in  $\beta$  that is unrelated to size flattens the relation between average return and  $\beta$ , to the point where it is indistinguishable from no relation at all.

The flatter market lines in Table AIII succeed, however, in erasing the negative relation between  $\beta$  and average residuals observed in the regressions of returns on  $\beta$  alone in Table AI. Thus, forming portfolios on size and  $\beta$  (Table AIII) produces a better description of the simple relation between average return and  $\beta$  than forming portfolios on size alone (Table AI). This improved description of the relation between average return and  $\beta$  is evidence that the  $\beta$  estimates for the two-pass size- $\beta$  portfolios capture variation in true  $\beta$ s that is missed when portfolios are formed on size alone.

Unfortunately, the flatter market lines in Table AIII have a cost, the emergence of a residual size effect. Grouped on the basis of ME for individual stocks, the average residuals from the univariate regressions of returns on the  $\beta$ s of the 100 size- $\beta$  portfolios are strongly positive for small stocks and negative for large stocks (0.60% per month for the smallest ME group, 1A, and -0.27% for the largest, 10B). Thus, when we allow for variation in  $\beta$  that is independent of size, the resulting  $\beta$ s leave a large size effect in average returns. This residual size effect is much like that observed by Banz (1981) with the  $\beta$ s of portfolios formed on size and  $\beta$ .

The correlation between size and  $\beta$  is -0.98 for portfolios formed on size alone. The independent variation in  $\beta$  obtained with the second-pass sort on  $\beta$  lowers the correlation to -0.50. The lower correlation means that bivariate regressions of returns on  $\beta$  and  $\ln(\text{ME})$  are more likely to distinguish true size effects from true  $\beta$  effects in average returns.

The bivariate regressions (Table AIII) that use the  $\beta$ s of the size- $\beta$  portfolios are more bad news for  $\beta$ . The average slopes for  $\ln(\text{ME})$  are close to the values in the univariate size regressions, and almost 4 standard errors from 0, but the average slopes for  $\beta$  are negative and less than 1 standard error from 0. The message from the bivariate regressions is that there is a strong relation between size and average return. But like the regressions in Table AIII that explain average returns with  $\beta$  alone, the bivariate regressions say that there is no reliable relation between  $\beta$  and average returns when the tests use  $\beta$ s that are not close substitutes for size. These uncomfortable SLB results for NYSE stocks for 1941-1990 are much like those for NYSE, AMEX, and NASDAQ stocks for 1963-1990 in Table III.

### C. Subperiod Diagnostics

Our results for 1941-1990 seem to contradict the evidence in Black, Jensen, and Scholes (BJS) (1972) and Fama and MacBeth (FM) (1973) that there is a reliable positive relation between average return and  $\beta$ . The  $\beta$ s in BJS and FM are from portfolios formed on  $\beta$  alone, and the market proxy is the NYSE equal-weighted portfolio. We use the  $\beta$ s of portfolios formed on size and  $\beta$ , and our market is the value-weighted NYSE portfolio. We can report, however, that our inference that there isn't much relation between  $\beta$  and average return is unchanged when (a) the market proxy is the NYSE EW portfolio, (b) portfolios are formed on just (pre-ranking)  $\beta$ s, or (c) the order of forming the size- $\beta$  portfolios is changed from size then  $\beta$  to  $\beta$  then size.

A more important difference between our results and the earlier studies is the sample periods. The tests in BJS and FM end in the 1960s. Table AIV shows that when we split the 50-year 1941-1990 period in half, the univariate FM regressions of returns on  $\beta$  produce an average slope for 1941-1965 (0.50% per month,  $t = 1.82$ ) more like that of the earlier studies. In contrast, the average slope on  $\beta$  for 1966-1990 is close to 0 ( $-0.02$ ,  $t = 0.06$ ).

But Table AIV also shows that drawing a distinction between the results for 1941-1965 and 1966-1990 is misleading. The stronger tradeoff of average return for  $\beta$  in the simple regressions for 1941-1965 is due to the first 10 years, 1941-1950. This is the only period in Table AIV that produces an average premium for  $\beta$  (1.26% per month) that is both positive and more than 2 standard errors from 0. Conversely, the weak relation between  $\beta$  and average return for 1966-1990 is largely due to 1981-1990. The strong negative average slope in the univariate regressions of returns on  $\beta$  for 1981-1990 ( $-1.01$ ,  $t = -2.10$ ) offsets a positive slope for 1971-1980 (0.82,  $t = 1.27$ ).

The subperiod variation in the average slopes from the FM regressions of returns on  $\beta$  alone seems moot, however, given the evidence in Table AIV that adding size always kills any positive tradeoff of average return for  $\beta$  in the subperiods. Adding size to the regressions for 1941-1965 causes the average slope for  $\beta$  to drop from 0.50 ( $t = 1.82$ ) to 0.07 ( $t = 0.28$ ). In contrast, the average slope on size in the bivariate regressions ( $-0.16$ ,  $t = -2.97$ ) is close to its value ( $-0.17$ ,  $t = -2.88$ ) in the regressions of returns on  $\ln(\text{ME})$  alone. Similar comments hold for 1941-1950. In short, any evidence of a positive average premium for  $\beta$  in the subperiods seems to be a size effect in disguise.

### D. Can the SLB Model Be Saved?

Before concluding that  $\beta$  has no explanatory power, it is appropriate to consider other explanations for our results. One possibility is that the variation in  $\beta$  produced by the  $\beta$  sorts of size deciles is just sampling error. If so, it is not surprising that the variation in  $\beta$  within a size decile is unrelated to average return, or that size dominates  $\beta$  in bivariate tests. The standard errors of the  $\beta$ s suggest, however, that this explanation cannot save the SLB

Table AIII

**Average Slopes, Their Standard Errors (SE), and Average Residuals from  
Monthly FM Regressions for Individual NYSE Stocks and for Portfolios Formed  
on Size and Pre-Ranking  $\beta$ : 1941-1990**

Stocks are assigned the post-ranking  $\beta$  of the size- $\beta$  portfolio they are in at the end of year  $t-1$  (Table AII).  $\ln(\text{ME})$  is the natural log of price times shares outstanding at the end of year  $t-1$ . In the individual-stock regressions, these values of the explanatory variables are matched with CRSP returns for each of the 12 months in year  $t$ . The portfolio regressions match the equal-weighted portfolio returns for the size- $\beta$  portfolios (Table AII) with the equal-weighted averages of  $\beta$  and  $\ln(\text{ME})$  for the surviving stocks in each month of year  $t$ . Slope is the time-series average of the monthly regression slopes from 1941-1990 (600 months); SE is the time-series standard error of the average slope.

The residuals from the monthly regressions in year  $t$  are grouped into 12 portfolios on the basis of size or pre-ranking  $\beta$  (estimated with 24 to 60 months of returns, as available) as of the end of year  $t-1$ . The average residuals are the time-series averages of the monthly equal-weighted averages of the residuals in percent. The average residuals (not shown) from the FM regressions (1) to (3) that use the returns on the 100 size- $\beta$  portfolios as the dependent variable are always within 0.01 of those from the regressions for individual stock returns. This is not surprising given that the correlation between the time-series of 1941-1990 monthly FM slopes on  $\beta$  or  $\ln(\text{ME})$  for the comparable portfolio and individual stock regressions is always greater than 0.99.

	Portfolio Regressions						Individual Stock Regressions					
	(1) $\beta$	(2) $\ln(\text{ME})$	(3) $\beta$ and $\ln(\text{ME})$	(4) $\beta$	(5) $\ln(\text{ME})$	(6) $\beta$ and $\ln(\text{ME})$	(7) $\beta$	(8) $\ln(\text{ME})$	(9) $\beta$ and $\ln(\text{ME})$	(10) $\beta$	(11) $\ln(\text{ME})$	(12) $\beta$ and $\ln(\text{ME})$
Slope	0.22	-0.128	-0.13	-0.143	0.24	-0.133	0.24	-0.133	0.24	-0.133	0.24	-0.147
SE	0.24	0.043	0.21	0.039	0.23	0.043	0.23	0.043	0.21	0.21	0.039	0.039
Average Residuals for Stocks Grouped on Size												
	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Regression (4)	0.60	0.26	0.13	0.06	-0.01	-0.03	-0.03	-0.09	-0.10	-0.11	-0.25	-0.27
Standard error	0.21	0.10	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.06	0.08
Regression (5)	0.30	0.02	-0.05	-0.06	-0.08	-0.07	-0.03	-0.04	0.02	0.08	0.01	0.13
Standard error	0.14	0.07	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.07
Regression (6)	0.31	0.02	-0.05	-0.06	-0.09	-0.07	-0.03	-0.04	0.02	0.08	0.01	0.13
Standard error	0.14	0.07	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.07

Table AIII—Continued

	Portfolio Regressions			Individual Stock Regressions								
	(1) $\beta$	(2) $\ln(\text{ME})$	(3) $\beta$ and $\ln(\text{ME})$	(4) $\beta$	(5) $\ln(\text{ME})$	(6) $\beta$ and $\ln(\text{ME})$						
	1A	1B	2	3	4	5	6	7	8	9	10A	10B
Regression (4)	-0.08	0.03	-0.01	0.08	0.04	0.08	0.04	0.02	-0.03	0.02	-0.11	-0.32
Standard error	0.07	0.05	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.06	0.07
Regression (5)	-0.10	0.00	0.02	0.09	0.05	0.07	0.05	0.00	-0.03	-0.01	-0.11	-0.33
Standard error	0.11	0.10	0.07	0.05	0.04	0.03	0.03	0.04	0.05	0.07	0.10	0.13
Regression (6)	-0.17	-0.07	-0.02	0.07	0.04	0.06	0.05	0.03	0.00	0.04	-0.04	-0.23
Standard error	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.06	0.07

Average Residuals for Stocks Grouped on Pre-Ranking  $\beta$

Table AIV  
**Subperiod Average Returns on the NYSE Value-Weighted and Equal-Weighted Portfolios and Average Values of the Intercepts and Slopes for the FM Cross-Sectional Regressions of Individual Stock Returns on  $\beta$  and Size ( $\ln(\text{ME})$ )**

Mean is the average VW or EW return or an average slope from the monthly cross-sectional regressions of individual stock returns on  $\beta$  and/or  $\ln(\text{ME})$ . Std is the standard deviation of the time-series of returns or slopes, and  $t(\text{Mn})$  is Mean over its time-series standard error. The average slopes (not shown) from the FM regressions that use the returns on the 100 size- $\beta$  portfolios of Table AII as the dependent variable are quite close to those for individual stock returns. (The correlation between the 1941-1990 month-by-month slopes on  $\beta$  or  $\ln(\text{ME})$  for the comparable portfolio and individual stock regressions is always greater than 0.99.)

Variable	1941-1990 (600 Mos.)			1941-1965 (300 Mos.)			1966-1990 (300 Mos.)		
	Mean	Std	$t(\text{Mn})$	Mean	Std	$t(\text{Mn})$	Mean	Std	$t(\text{Mn})$
VW	0.93	4.15	5.49	1.10	3.58	5.30	0.76	4.64	2.85
EW	1.12	5.10	5.37	1.33	4.42	5.18	0.91	5.70	2.77
$a$	0.98	3.93	6.11	0.84	3.18	4.56	1.13	4.57	4.26
$b_1$	0.24	5.52	1.07	0.50	4.75	1.82	-0.02	6.19	-0.06
$a$	1.70	8.24	5.04	1.88	6.43	5.06	1.51	9.72	2.69
$b_2$	-0.13	1.06	-3.07	-0.17	1.01	-2.88	-0.10	1.11	-1.54
$a$	1.97	6.16	7.84	1.80	4.77	6.52	2.14	7.29	5.09
$b_1$	-0.14	5.05	-0.66	0.07	4.15	0.28	-0.34	5.80	-1.01
$b_2$	-0.15	0.96	-3.75	-0.16	0.94	-2.97	-0.13	0.99	-2.34

Panel A

NYSE Value-Weighted (VW) and Equal-Weighted (EW) Portfolio Returns

$$R_{it} = a + b_1\beta_{it} + e_{it}$$

$$R_{it} = a + b_2\ln(\text{ME}_{it}) + e_{it}$$

$$R_{it} = a + b_1\beta_{it} + b_2\ln(\text{ME}_{it}) + e_{it}$$



model. The standard errors for portfolios formed on size and  $\beta$  are only slightly larger (0.02 to 0.11) than those for portfolios formed on size alone (0.01 to 0.10, Table AI). And the range of the post-ranking  $\beta$ s within a size decile is always large relative to the standard errors of the  $\beta$ s.

Another possibility is that the proportionality condition (1) for the variation through time in true  $\beta$ s, that justifies the use of full-period post-ranking  $\beta$ s in the FM tests, does not work well for portfolios formed on size and  $\beta$ . If this is a problem, post-ranking  $\beta$ s for the size- $\beta$  portfolios should not be highly correlated across subperiods. The correlation between the half-period (1941-1965 and 1966-1990)  $\beta$ s of the size- $\beta$  portfolios is 0.91, which we take to be good evidence that the full-period  $\beta$  estimates for these portfolios are informative about true  $\beta$ s. We can also report that using 5-year  $\beta$ s (pre- or post-ranking) in the FM regressions does not change our negative conclusions about the role of  $\beta$  in average returns, as long as portfolios are formed on  $\beta$  as well as size, or on  $\beta$  alone.

Any attempt to salvage the simple positive relation between  $\beta$  and average return predicted by the SLB model runs into three damaging facts, clear in Table AII. (a) Forming portfolios on size and pre-ranking  $\beta$ s produces a wide range of post-ranking  $\beta$ s in every size decile. (b) The post-ranking  $\beta$ s closely reproduce (in deciles 2 to 10 they exactly reproduce) the ordering of the pre-ranking  $\beta$ s used to form the  $\beta$ -sorted portfolios. It seems safe to conclude that the increasing pattern of the post-ranking  $\beta$ s in every size decile captures the ordering of the true  $\beta$ s. (c) Contrary to the SLB model, the  $\beta$  sorts do not produce a similar ordering of average returns. Within the rows (size deciles) of the average return matrix in Table AII, the high- $\beta$  portfolios have average returns that are close to or less than the low- $\beta$  portfolios.

But the most damaging evidence against the SLB model comes from the univariate regressions of returns on  $\beta$  in Table AIII. They say that when the tests allow for variation in  $\beta$  that is unrelated to size, the relation between  $\beta$  and average return for 1941-1990 is weak, perhaps nonexistent, even when  $\beta$  is the only explanatory variable. We are forced to conclude that the SLB model does not describe the last 50 years of average stock returns.

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Author(s): George E. Pinches, J. Clay Singleton, Ali Jahankhani

Source: *Financial Management*, Vol. 7, No. 2, (Summer, 1978), pp. 45-55

Published by: Blackwell Publishing on behalf of the Financial Management Association International

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# Fixed Coverage as a Determinant of Electric Utility Bond Ratings

**George E. Pinches, J. Clay Singleton, and Ali Jahankhani**

*George E. Pinches is Professor of Business Administration at the University of Kansas. J. Clay Singleton is a doctoral candidate in finance at the University of Missouri-Columbia. Ali Jahankhani is Assistant Professor of Finance at the University of Illinois, Urbana-Champaign.*

## Introduction

Bond ratings, which represent the judgment of informed and sophisticated financial analysts concerning the credit risk of firms, have been the subject of numerous studies in recent years [11, 12, 19, 20, 22, 25]. Statistical models of the bond rating process afford insight into information that analysts employ in making their judgments about a firm's creditworthiness. In addition, the information content of bond rating changes has also been examined [9, 10, 21].

The creditworthiness of electric utility firms is of concern to regulatory commissions, utility executives, and customers. The importance of maintaining adequate bond ratings, though, has taken on added significance in recent years, in part because of the continuing need to raise additional capital, the increased costs of fuel, and the inability (in some cases) to obtain adequate rate relief. Recently the importance of maintaining or achieving specific bond ratings has been

reemphasized in some public utility regulatory hearings. Testimony in at least two electric utility rate cases (Public Utilities Control Authority of Connecticut, Docket Nos. 760604 and 760605, and Public Utility Commission of Texas, Docket No. 178) has stressed the need for substantial revenue increases in order to preserve or increase a firm's bond rating. Specifically, it was suggested that if sufficient rate increases were not granted, the firm's fixed coverage ratio would decrease, and the firm's bonds would therefore be downgraded, causing an increase in the effective interest rate; consequently, the company and its consumers would have to pay the increased interest costs. In essence, the argument presented to the regulatory commissions was that: 1) while many factors may influence ratings, fixed coverage is the dominant financial variable taken into consideration by the rating agency financial analysts; and 2) higher coverage ratios, *ceteris paribus*, would lead to lower

costs of debt (and presumably lower overall capital costs) and therefore would be in the best interests of consumers. (The effect of considering coverage as a factor in determining the rate of return on equity is outside the scope of this study; see Ewert [8].)

The purpose of this study is to examine the importance of fixed coverage as a determinant of electric utility bond ratings. While fixed coverage is undoubtedly one of the important variables, apparently previous research neither indicates that a single variable captures all of the information that financial analysts employ when rating bonds, nor does it address fully the question of how important any specific financial factors are in determining bond ratings.<sup>1</sup>

This study consists of three parts: a multiple discriminant model to predict (or discriminate among) electric utility bonds as rated by financial analysts for both Moody's and Standard & Poor's; examination of the relative importance of the financial variables; and a comparison of the predictive ability of the multiple discriminant model with that of a univariate model employing the fixed coverage ratio. In addition, the predictive ability of all other variables on a univariate basis is also evaluated. The results indicate that fixed coverage is only one of a number of financial factors that financial analysts take into consideration in determining electric utility bond ratings.

### Financial Variables and Bond Ratings

Electric utility firms listed on the COMPUSTAT data tapes with first mortgage bonds outstanding as of December 31, 1975, were examined. (See Appendix A for a description of the variable selection procedures and multiple discriminant analysis methodology employed.) For Moody's 92 firms were examined — 41 Aa, 32 A, and 19 Baa. For Standard & Poor's there were 94 firms — 32 AA, 45 A, and 17 BBB. (The top category in each group had to be omitted because of the small sample size for that group. See Appendix B for a model that incorporates Moody's Aaa and Stan-

dard & Poor's AAA bonds.) In addition, 69 firms were rated the same by both of the major rating agencies. For this group, there were 28 Aa(AA) firms, 27 A(A), and 14 Baa(BBB).

### Variables in the Multiple Discriminant Model

Complete stepwise procedures were employed to select a six-variable discriminant model. These variables were:  $X_1$  (regulatory climate),  $X_2$  (total assets),  $X_6$  (net income/total assets),  $X_9$  (earnings before interest & taxes/fixed charges),  $X_{13}$  (construction expenses/total assets) and  $X_{17}$  (1970–1975 growth rate in net earnings). Variable  $X_1$  is a measure of the "regulatory climate" in the state where the electric utilities earned the majority of their revenue (as perceived by a major brokerage firm [7]). Given the nature of the electric utility industry, consideration of the predisposition of regulatory commissions toward a firm's request for an "adequate rate of return" has important financial implications. We are unaware of any previous empirical work that has attempted to incorporate a variable related to regulatory climate. As Exhibit A2 (in Appendix A) indicates, the more favorable the regulatory climate ( $X_1$ ), the higher the bond rating. Further examination of Exhibit A2 indicates that, except for the Baa(BBB) group, the larger firms (in terms of  $X_2$ , total assets) tend to have higher bond ratings. The large average size for the Baa(BBB) group is caused by the presence of several large firms (including Consolidated Edison Company of New York and Detroit Edison Company). The higher-rated firms tend to be more profitable as seen by  $X_6$  (net income/total assets) and have higher fixed coverage levels,  $X_9$  (earnings before interest & taxes/fixed charges), than lower-rated firms. In addition, the higher-rated firms tend to have a higher ratio of construction expenses to total assets ( $X_{13}$ ), while they have lower growth rates in net earnings ( $X_{17}$ ) than lower-rated firms during 1970–1975.

The higher construction expenses for higher-rated firms may be due to the fact that firms in the Aa(AA) group tend to cluster in the Midwest and Southern regions of the country — areas where the demand for electrical energy is growing faster than the national average. The seeming inconsistency in the lower growth rates in net earnings ( $X_{17}$ ) for higher-rated firms may be due, in part, to the accounting treatment for two separate items. First, the heavier capital expenditures (as evidenced by variable  $X_{13}$ ) experienced by higher-rated firms indicate that relatively more

<sup>1</sup>In addition, the previous study of electric utility bond ratings [2] has two major methodological problems. First, the authors pooled companies from each of three years. Not only does this procedure suffer from potential time-series instability, but it also violates the critical assumption of independence since the same firms are often used more than once. Second, the authors employed 14 independent (or predictor) variables. While the question of the impact on the results of the number of variables employed and the correlation between the variables is an unsolved problem in multiple discriminant analysis, the use of 14 variables would appear to violate the concept of parsimony. See, for example, [4, 6, 15, 16, 24].

generating capacity was being placed into service by these firms. This would cause depreciation expenses to be greater for higher-rated firms, resulting in lower reported earnings and lower growth rates. Second, an examination of variable  $X_{12}$  indicates that the allowance for funds used during construction (AFUDC) represents a larger percentage of net earnings for lower-rated firms. Therefore, a second reason for the higher growth rates in net income for lower-rated firms may be due to the relatively large amounts of AFUDC (as a percent of net income) for lower-rated firms during this period. In such situations, while total reported earnings may be growing faster for lower-rated firms, financial analysts rating electric utility bonds recognized that the "quality" of earnings growth was poorer since it was due to the inclusion of large amounts of AFUDC.

### Discriminant Analysis Classification Results

After testing for differences in the group centroids (means),<sup>2</sup> we examined the ability of the six-variable model to predict which bonds (based on financial variables) should be assigned to specific bond rating categories. Every sample firm is classified into one of the three bond rating groups on the basis of the closeness of the firms' observation values to the respective group centroids. The classification matrix (Exhibit 1) shows that 70.65% (65/92) of the firms are classified correctly in their Moody's bond rating category, 76.60% (72/94) are classified according to their Standard & Poor's classification, and 81.16% (56/69) are correctly classified when both agencies rate the bonds the same. (The total number correctly classified is determined by summing the main upper left-lower right diagonal element of the classification table.) The six-variable model does slightly better, in total, for Standard & Poor's than for Moody's, suggesting that Standard & Poor's bond ratings more closely follow these six variables than do Moody's bond ratings. For both Moody's and Standard & Poor's, the model does very well for Baa(BBB)-rated firms, but does the poorest for the A-rated firms. In addition, the model performs slightly better for Standard & Poor's top two categories examined, AA and A, than for Moody's (Aa and A). Where both agencies rate the firms the same, the model does exceedingly

well; however, it still performs poorly for the A-rated firms.

While these results are impressive, they suffer an upward bias since the same firms being reclassified were employed to develop the model. In order to validate the model, the Lachenbruch jackknife procedure [13] was employed. The essence of this procedure is estimation of the model on all but one of the observations (firms), followed by classification of the omitted observation. This is repeated sequentially until all observations are classified on the basis of a model determined by the rest of the observations. The results of this validation procedure (Exhibit 2) indicate that 54.35% (50/92) are correctly classified for Moody's, 64.89% (61/94) for Standard & Poor's, and 65.22% (45/69) when both agencies rated the utility firms the same. These overall classification results fall approximately 15 percentage points as compared to those reported in Exhibit 1. In general, the largest drop in correct classifications occurs in the A and Baa(BBB) categories, suggesting that the results were more sample-sensitive for these categories than for the Aa(AA) category. Based on these results, we conclude that the model is reasonably effective in discriminating among the three bond rating groups, but that it possesses some sample-specific characteristics.

### Relative Importance of the Variables

When multiple discriminant analysis is employed, there is no single criterion for assessing the relative importance of variables in the model. The rank ordering of the six variables according to five different criteria [6] is reported in Exhibit 3, in an attempt to obtain some insight into the relative importance of the six variables. These five criteria are the univariate F ratio, the scaled weighted method, the forward stepwise and backward stepwise methods, and the conditional deletion method. The univariate F and stepwise forward results (Exhibit 3) seem to show that variable  $X_9$  (earnings before interest & taxes/fixed charges) is the most important variable, by itself, for both Moody's and Standard & Poor's bond ratings, while variable  $X_2$  (total assets) tends to be the least important. (Hereafter, for the sake of simplicity, we refer to variable  $X_9$  as fixed coverage.) However, in a multivariate framework when all variables in the model are considered simultaneously (as seen by the scaled weighted, conditional deletion, and stepwise backward criteria), fixed coverage becomes one of the least important variables, and variable  $X_{17}$  (1970-1975 growth in net earnings) one of the most important variables.

<sup>2</sup>The F test based on Wilk's Lambda was employed to test the null hypothesis that the difference in the group centroids of the three bond rating groups was zero. The null hypothesis was rejected at the .001 level for Moody's, Standard & Poor's, and where both sets of ratings were the same.

The reason fixed coverage is less important in a multivariate context is because of the intercorrelation (see Exhibit A2) between it and the other five variables in the multiple discriminant model. It is also interesting to note that variable  $X_1$  (regulatory climate) is the

most important variable according to the conditional deletion criterion.

In attempting to decide which variable is most important, we must, of necessity, specify whether we are interested in a univariate (single variable) or a mul-

### Exhibit 1. Classification Results

Actual Bond Rating	Moody's Predicted Bond Rating			Percent Correct
	Aa	A	Baa	
Aa	30	10	1	73.17
A	7	18	7	56.25
Baa	0	2	17	89.47

Actual Bond Rating	Standard & Poor's Predicted Bond Rating			Percent Correct
	AA	A	BBB	
AA	27	5	0	84.38
A	8	30	7	66.67
BBB	0	2	15	88.24

Actual Bond Rating	Both the same Predicted Bond Rating			Percent Correct
	Aa(AA)	A(A)	Baa(BBB)	
Aa(AA)	23	5	0	82.14
A(A)	3	19	5	70.37
Baa(BBB)	0	0	14	100.00

### Exhibit 2. Classification Results: Lachenbruch Jackknife Procedure

Actual Bond Rating	Moody's Predicted Bond Rating			Percent Correct
	Aa	A	Baa	
Aa	26	13	2	63.41
A	10	12	10	37.50
Baa	1	6	12	63.16

Actual Bond Rating	Standard & Poor's Predicted Bond Rating			Percent Correct
	AA	A	BBB	
AA	24	7	1	75.00
A	11	26	8	57.78
BBB	1	5	11	64.71

Actual Bond Rating	Both the same Predicted Bond Rating			Percent Correct
	Aa(AA)	A(A)	Baa(BBB)	
Aa(AA)	21	5	2	75.00
A(A)	5	17	5	62.96
Baa(BBB)	1	6	7	50.00

tivariate (six-variable) approach. Based on a univariate approach, fixed coverage appears to be one of the most important variables, since it has the highest univariate F ratio (as reported in Exhibit 3). This find-

ing is in line with recent testimony in regulatory proceedings indicating that the fixed coverage ratio is an important variable that financial analysts look at when assigning electric utility bond ratings.

**Exhibit 3.** Variable Importance Ranked According to Different Criteria

Variable	Moody's				
	Univariate F Ratio	Scaled Weighted	Conditional Deletion	Stepwise Forward	Stepwise Backward
X <sub>1</sub>	2	6	1	6	6
X <sub>2</sub>	6	5	5	5	5
X <sub>6</sub>	3	3	4	4	1
X <sub>9</sub>	1	4	6	1	4
X <sub>13</sub>	5	2	3	2	3
X <sub>17</sub>	4	1	2	3	2

Variable	Standard & Poor's				
	Univariate F Ratio	Scaled Weighted	Conditional Deletion	Stepwise Forward	Stepwise Backward
X <sub>1</sub>	2	6	1	6	3
X <sub>2</sub>	6	2	5	4	5
X <sub>6</sub>	4	4	4	5	2
X <sub>9</sub>	1	5	6	1	6
X <sub>13</sub>	5	3	3	3	4
X <sub>17</sub>	3	1	2	2	1

### Classification — Discriminant Analysis Versus Fixed Coverage

Recent testimony in public utility rate cases has also suggested that unless a specific minimum value for the fixed coverage ratio is maintained, the utilities' bond rating would be downgraded. From a classification standpoint, the importance of the fixed coverage ratio could be examined by using it, by itself, to classify bonds into the bond rating groups (on the basis of the closeness of the individual firm's value for fixed coverage to the group means of fixed coverage for the respective groups). In Exhibit 4, the classification results are reported for the six-variable multiple discriminant analysis model and for fixed coverage when employed alone. Fixed coverage (earnings before interest & taxes/fixed charges) correctly predicts 50.00% of the Moody's ratings, 41.19% of Standard & Poor's, and 50.72% when both agencies rate the firms the same. While the classification results from employing fixed coverage by itself are greater than would have been expected by chance,<sup>3</sup> they are sub-

stantially worse than those achieved by the multiple discriminant model. In all the models examined in Exhibit 4, the multiple discriminant model predicted 20 to 35% more of the actual bond ratings than did fixed coverage by itself. These results provide a clear indication that the information employed by financial analysts in rating electric utility bonds is better approximated by the six-variable multiple discriminant model than by the fixed coverage ratio.

Examination of Moody's versus Standard & Poor's results (Exhibit 4) indicates that fixed coverage correctly classifies 50% for Moody's and 41.59% for Standard & Poor's. This suggests that Moody's bond ratings tend to more closely follow one variable (*i.e.*, fixed charge coverage) than do Standard & Poor's bond ratings.

<sup>3</sup>The Z test for difference in proportions was employed to test the null hypothesis that the classification results from using the fixed coverage variable were the same as would be expected by chance. The null hypothesis was rejected at the .003 level for Moody's and where both agencies rated the bonds the same, and at the .095 level for Standard & Poor's.

**Exhibit 4.** Correct Classifications: Multiple Discriminant Model Versus Fixed Charge Coverage ( $X_9$ ) Model

Rating	Correct					
	Moody's		Standard & Poor's		Both	
	MDA	$X_9$	MDA	$X_9$	MDA	$X_9$
Aa(AA)	30	15	27	14	23	11
A(A)	18	16	30	12	19	14
Baa(BBB)	17	15	15	13	14	10
Bonds Correct	65	46	72	39	56	35
Total Bonds	92	92	94	94	69	69
% Correct	70.65	50.00	76.60	41.49	81.16	50.72

### Classification — Fixed Coverage Versus other Variables on a Univariate Basis

In the final part of our analysis we examine the predictive ability of the other five variables, when employed on a univariate basis, to predict the actual bond ratings assigned by Moody's and Standard & Poor's. These results (Exhibit 5) indicate that any of the five variables, excluding fixed coverage, predicts between 36.23% and 52.13% of the bonds correctly. When these results are compared to those for fixed coverage (Exhibit 4), there is no significant difference<sup>4</sup> in predictive ability between the fixed coverage variable and the average of these five variables. For Moody's, the fixed coverage ratio does better than all but one of the other financial variables in predicting the actual bond ratings; however, for Standard & Poor's, fixed coverage performs more poorly than any of the other five financial variables. These results provide some additional support for the observation made earlier that Moody's ratings tend to more closely follow fixed coverage ratios than do Standard & Poor's ratings.

Based on the results presented in Exhibit 5, it appears that (for Moody's and Standard & Poor's combined) the bond ratings more closely follow variable  $X_{17}$  (1970–1975 growth rate in net earnings) than any other single variable. Likewise, variable  $X_2$  (total assets) appears to bear the least relationship to the ratings assigned to electric utility bonds. By comparing the results of Exhibits 4 and 5, additional evidence is provided that fixed coverage is not the dominant financial variable employed by financial analysts when assigning bond ratings.

<sup>4</sup>The null hypothesis of no difference in classification results between fixed coverage and the average of the other five variables could not be rejected at the .25 level.

### Summary and Conclusions

The purpose of this study has been to examine the importance of fixed coverage as a determinant of electric utility bond ratings. It was prompted by recent testimony presented to regulatory commissions suggesting that: 1) fixed coverage ratios were the primary determinant of bond ratings; and 2) higher coverage ratios, *ceteris paribus*, lead to lower costs of debt (and presumably to lower overall capital costs). Since bond rating agencies are reluctant to specify which variables they find important, a six-variable multiple discriminant model was employed. One new variable,  $X_1$  (regulatory climate), was employed to capture some of the unique aspects of the regulatory environment as it interrelates with the financial integrity of electric utility firms. This discriminant model correctly predicts 70% of Moody's ratings, 76% of Standard & Poor's, and 81% of the ratings for those firms where both agencies assigned the same rating.

An examination of the relative importance of the six variables indicates that, on a univariate basis, fixed coverage is one of the most important variables. However, on a multivariate basis, fixed coverage becomes substantially less important, while variable  $X_{17}$  (1970–1975 growth rate in net earnings) becomes the most important variable. The six-variable discriminant model substantially outperforms a univariate model based on fixed coverage in terms of correctly predicting the bond ratings assigned by Moody's and Standard & Poor's. Further analysis of the predictive ability of the other five variables indicates that the bond ratings most closely follow those predicted by variable  $X_{17}$  (1970–1975 growth rate in net income) and least follow those predicted by variable  $X_6$  (total assets).

The results of this study are not consistent with the

**Exhibit 5.** Correct Classifications: Five Variables on a Univariate Basis

Bond Rating	X <sub>1</sub> Regulatory Climate	X <sub>2</sub> Total Assets	X <sub>4</sub> Net Income/ Total Assets	X <sub>13</sub> Construction Expenses/ Total Assets	X <sub>17</sub> 1970-1975 Growth Rate in Net Earnings
<b>Moody's</b>					
Aa	24	6	29	24	32
A	0	25	7	7	8
Baa	<u>13</u>	<u>3</u>	<u>9</u>	<u>10</u>	<u>4</u>
Bonds Correct	37	34	45	41	44
% Correct	40.22	39.96	48.91	44.57	47.83
<b>Standard &amp; Poor's</b>					
AA	11	4	24	14	27
A	17	38	8	11	19
BBB	<u>12</u>	<u>0</u>	<u>8</u>	<u>9</u>	<u>3</u>
Bonds Correct	40	42	40	34	49
% Correct	42.55	44.68	42.55	36.17	52.13
<b>Both the Same</b>					
Aa(AA)	10	2	20	15	23
A(A)	8	22	5	8	6
Baa(BBB)	<u>10</u>	<u>1</u>	<u>7</u>	<u>9</u>	<u>6</u>
Bonds Correct	28	25	32	32	35
% Correct	40.58	36.23	46.38	46.38	50.72

assertion that fixed coverage, by itself, is the primary determinant of electric utility bond ratings. In addition, the findings indicate that in the electric utility industry (as has previously been demonstrated for industrial firms) appropriately specified multivariate models with relatively few financial variables can capture a significant portion of the rating process. The findings also indicate that attempts in electric utility regulatory proceedings to specify exact fixed coverage ratios that must be achieved in order to maintain (or secure) a given bond rating are both short-sighted and incomplete. Even if regulatory commissions grant rate increases that have the effect of maintaining (or increasing) fixed coverage ratios, there is no guarantee that such action will lead to maintaining (or increasing) specific bond ratings. As all financial experts and regulatory commissions should be aware by now, bond ratings are the result of a complex decision making process in which financial analysts employ both financial data and "rater judgment" to arrive at an estimate of the creditworthiness of firms. Regulatory commissions should realize that fixed coverage is only one (and not the dominant) financial variable that apparently influences the bond ratings assigned to electric utility firms.

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## Appendix A. Methodology

### Variables

A thorough review of previous bond rating studies and related work on the predictive ability and interrelationships between financial variables [1, 2, 3, 18, 23] resulted in consideration of 19 variables (see Exhibit A1) for inclusion in the multiple discriminant model. Seventeen are financial variables, while two,  $X_1$  (regulatory climate) and  $X_{14}$  (geographical area), are attempts to measure certain factors that might influence the bond rating process, and consequently bond ratings.  $X_1$  is based on a major brokerage firm's assessment [7] of the regulatory climate in the state where the majority of the firm's revenue originates, while  $X_{14}$  indicates the general geographic region in which the firm derives the majority of its sales. (While both of these variables are classificatory variables, available evidence [14] suggests discriminant analysis is reasonably robust in such situations.)

Variables  $X_2$  (total assets) and  $X_3$  (total operating revenue) measure size; variables related to size have been found to be important in previous bond rating studies.  $X_4$  (long-term debt/invested capital) and  $X_5$  (debt & preferred stock/total assets) measure financial leverage which has also been found to have been important in previous work. Variables  $X_6$  (net income/total assets),  $X_7$  (earnings before taxes/total operating revenue), and  $X_{10}$  (cash flow/total assets) measure various aspects of profitability, while  $X_8$  (cash flow/fixed charges) and  $X_9$  (earnings before interest & taxes/fixed charges) measure fixed charge coverage; similar variables have also been important in earlier studies. Variables  $X_{11}$  (residential electric sales/total electric sales),  $X_{12}$  (allowance for funds used during construction/net income),  $X_{13}$  (construction expenses/total assets), and  $X_{19}$  (fuel expenses/total electric sales) are all unique to the electric utility industry.  $X_{15}$  (dividend payout) is included to reflect relative differences in dividend policy, while variables  $X_{16}$  (1970-1975 growth rate in cash flow),  $X_{17}$  (1970-1975 growth rate in net earnings), and  $X_{18}$  (standard deviation of 1970-1975 cash flows) measure various aspects of growth and stability for electric

**Exhibit A1.** Variable Number and Description

Variable	
Number	Name
X <sub>1</sub>	Regulatory Climate*
X <sub>2</sub>	Total Assets
X <sub>3</sub>	Total Operating Revenue
X <sub>4</sub>	Long-Term Debt/Invested Capital
X <sub>5</sub>	Debt & Preferred Stock/Total Assets
X <sub>6</sub>	Net Income/Total Assets
X <sub>7</sub>	Earnings Before Taxes/Total Operating Revenue
X <sub>8</sub>	Cash Flow**/Fixed Charges
X <sub>9</sub>	Earnings Before Interest & Taxes/Fixed Charges
X <sub>10</sub>	Cash Flow**/Total Assets
X <sub>11</sub>	Residential Electric Sales/Total Electric Sales
X <sub>12</sub>	AFUDC***/Net Income
X <sub>13</sub>	Construction Expenses/Total Assets
X <sub>14</sub>	Geographical Area****
X <sub>15</sub>	Dividend Payout Ratio
X <sub>16</sub>	1970-1975 Growth Rate in Cash Flow**
X <sub>17</sub>	1970-1975 Growth Rate in New Earnings
X <sub>18</sub>	Standard Deviation of 1970-1975 Cash Flows**
X <sub>19</sub>	Fuel Expenses/Total Electric Sales

\*As determined by White, Weld & Co. (1 = most favorable, 4 = least favorable)

\*\*Cash flow = operating income after taxes + income taxes + depreciation + interest charges - AFUDC

\*\*\*AFUDC = Allowance for Funds Used During Construction

\*\*\*\*Federal Power Commission regional breakdown where company supplies a major portion of its electricity.

utility firms. Exhibit A2 presents the means, standard deviations, and univariate F ratios (testing for differences among the means) for all 19 variables by bond rating group, for both Moody's and Standard & Poor's. Exhibit A3 shows the correlation matrix for all of the variables.

**Discriminant Analysis**

Multiple discriminant analysis is a multivariate statistical technique that allows observations (firms, in this study) to be classified into appropriate *a priori* groups (bond ratings) on the basis of a set of independent or predictor variables. While it is possible to use all 19 variables, this would result in a great deal of "noise" in the discriminant model. (See [4, 6, 14, 15, 16, 17, 24], for information on the selection of variables and the importance of correlation among variables in discriminant analysis.) Complete stepwise procedures were employed to reduce the original 19 variables to a six-variable model employing the same variables for both Moody's and Standard & Poor's. (The six-variable model was selected after examining a number of models for both Moody's and Standard & Poor's that include from four to ten variables. Six

variables appeared reasonable based on the relative independence of the variables and the very small incremental increases in discriminatory ability when using more than six variables. Slightly better models could be obtained separately using either Moody's or Standard & Poor's, but the six-variable model here was the best for both groups simultaneously.)

Ninety-seven firms were originally selected for examination. The small number of Moody's Aaa bonds (5) and Standard & Poor's AAA bonds (3) made it impossible (employing normal discriminant analysis techniques) to develop a four-group model. Since the number of variables exceeded the number of cases, the dispersion (variance-covariance) matrices for the Aaa and AAA groups were singular. Hence, we excluded the five Aaa-rated firms for Moody's, leaving 92 bonds for analysis. For Standard & Poor's, we excluded the three AAA-rated firms, leaving 94 bonds rated AA, A, or BBB for analysis. Appendix B shows an alternative approach (based on the assumption that the dispersion matrix for the Aaa(AAA) group was equal to the dispersion matrix for the Aa(AA) group) that allowed the four-group model to be estimated.

Tests for the equality of the dispersion matrices among the three bond rating groups resulted in the rejection of the null hypothesis of equal dispersion matrices for both Moody's (.045 significance level) and Standard & Poor's (.005 significance level); hence, quadratic as opposed to linear classification rules were employed. Because of the use of quadratic classification procedures, the typical discriminant functions (two in this case) and their coefficients were not reported. Finally, we employed equal prior probabilities for classification purposes. Ideally, the prior probabilities should reflect the distribution of bonds in the population; in recent years, however, the number of bonds in different rating categories has undergone considerable change. Given this instability in the population prior probabilities, we believe it is better to use equal prior probabilities and that way provide more consistent and generalizable results. In addition, we examined above the discriminatory power of each variable on a univariate basis. Since our specific objective was to ascertain how well individual variables could predict bond ratings without any consideration of prior probabilities, this led to a second reason for employing equal prior probabilities. The specific computer program employed for this analysis comes from Eisenbeis and Avery [5]. (For further elaboration of the mathematical assumptions and difficulties encountered in employing multiple discriminant analysis, see [5, 14, 17].)

**Exhibit A2. Means, Standard Deviations,<sup>a</sup> and F Ratios for 97 Electric Utility Firms, 1975**

Variable	Moody's				F Ratio	Standard & Poor's				F Ratio	Total
	Aaa (5)	Aa (41)	A (32)	Baa (19)		AAA (3)	AA (32)	A (45)	BBB (17)		
X <sub>1</sub>	1.40 (.55)	2.22 (.94)	2.50 (.88)	3.00 (.82)	5.77**	1.00 (.00)	2.16 (1.02)	2.47 (.79)	3.05 (.83)	6.75***	2.42 (.94)
X <sub>2</sub> <sup>b</sup>	1900.51 (2143.15)	1304.33 (1305.87)	1082.10 (1187.62)	1418.43 (1579.87)	.63	1073.27 (365.91)	1469.76 (1630.84)	1169.02 (1095.65)	1276.42 (1609.17)	.32	1284.10 (1364.74)
X <sub>3</sub> <sup>b</sup>	562.82 (652.60)	420.35 (453.33)	333.01 (345.41)	478.23 (637.69)	.59	297.65 (88.49)	479.09 (551.81)	352.70 (327.33)	452.70 (652.06)	.55	410.22 (471.50)
X <sub>4</sub>	.49 (.02)	.52 (.03)	.53 (.03)	.54 (.03)	4.11**	.48 (.01)	.52 (.03)	.53 (.03)	.54 (.03)	3.38*	.53 (.03)
X <sub>5</sub>	.53 (.04)	.54 (.05)	.56 (.05)	.57 (.04)	2.06	.55 (.03)	.52 (.05)	.56 (.05)	.56 (.04)	5.64**	.55 (.05)
X <sub>6</sub>	.04 (.01)	.04 (.01)	.04 (.01)	.03 (.01)	4.65**	.04 (.01)	.04 (.01)	.04 (.01)	.04 (.01)	3.69*	.04 (.01)
X <sub>7</sub>	.29 (.05)	.26 (.06)	.24 (.04)	.22 (.06)	3.89*	.31 (.06)	.26 (.05)	.25 (.06)	.22 (.06)	3.27*	.25 (.06)
X <sub>8</sub>	5.01 (.69)	4.42 (1.05)	3.97 (.69)	3.31 (.62)	9.59****	4.70 (.33)	4.56 (1.01)	3.97 (.88)	3.38 (.62)	7.42***	4.09 (.96)
X <sub>9</sub>	4.18 (.47)	3.76 (.71)	3.40 (.44)	2.89 (.40)	12.62****	4.01 (.31)	3.86 (.69)	3.40 (.57)	2.95 (.43)	9.99****	3.49 (.67)
X <sub>10</sub>	.14 (.01)	.13 (.02)	.13 (.02)	.12 (.02)	1.47	.13 (.01)	.13 (.02)	.13 (.02)	.12 (.02)	.61	.13 (.02)
X <sub>11</sub>	.44 (.31)	.29 (.07)	.30 (.09)	.35 (.07)	4.48**	.55 (.39)	.28 (.06)	.31 (.08)	.36 (.08)	9.02****	.31 (.10)
X <sub>12</sub>	.16 (.09)	.22 (.13)	.21 (.15)	.29 (.18)	1.74	.20 (.02)	.21 (.10)	.22 (.17)	.28 (.17)	.92	.23 (.15)
X <sub>13</sub>	.15 (.03)	.12 (.04)	.11 (.04)	.10 (.04)	2.63	.16 (.03)	.12 (.04)	.11 (.04)	.10 (.04)	2.14	.11 (.04)
X <sub>14</sub>	4.20 (1.30)	3.71 (1.91)	3.66 (2.22)	4.05 (3.05)	.20	5.00 (.00)	3.84 (1.80)	3.82 (2.22)	3.35 (3.08)	.51	3.78 (2.23)
X <sub>15</sub>	.71 (.09)	.68 (.11)	.67 (.13)	.74 (.24)	1.00	.70 (.10)	.66 (.10)	.69 (.13)	.73 (.25)	.75	.69 (.15)
X <sub>16</sub>	-.04 (.03)	-.03 (.04)	-.02 (.03)	-.02 (.03)	.56	-.06 (.01)	-.03 (.04)	-.03 (.03)	-.02 (.04)	1.24	-.03 (.03)
X <sub>17</sub>	.05 (.01)	.06 (.03)	.08 (.04)	.09 (.05)	3.12*	.05 (.01)	.05 (.02)	.08 (.04)	.08 (.04)	4.76**	.07 (.04)
X <sub>18</sub>	35.79 (43.26)	22.31 (20.27)	23.42 (29.52)	29.37 (35.24)	.56	19.03 (9.55)	25.41 (27.25)	23.65 (25.78)	27.46 (36.98)	.12	24.75 (27.88)
X <sub>19</sub>	.00 (.01)	.01 (.01)	.01 (.01)	.01 (.01)	1.43	.00 (.01)	.01 (.01)	.01 (.01)	.01 (.01)	1.63	.01 (.01)

<sup>a</sup>In parentheses. <sup>b</sup>Millions of dollars. \*Significant at .05 level. \*\*Significant at .01 level. \*\*\*Significant at .001 level. \*\*\*\*Significant at .0001 level.

**Exhibit A3. Correlation Coefficients over 19 Variables, Electric Utility Firms, 1975**

	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	X <sub>7</sub>	X <sub>8</sub>	X <sub>9</sub>	X <sub>10</sub>	X <sub>11</sub>	X <sub>12</sub>	X <sub>13</sub>	X <sub>14</sub>	X <sub>15</sub>	X <sub>16</sub>	X <sub>17</sub>	X <sub>18</sub>	X <sub>19</sub>
X <sub>1</sub>	1.00																		
X <sub>2</sub>	.10	1.00																	
X <sub>3</sub>	.09	.98	1.00																
X <sub>4</sub>	.06	-.06	-.08	1.00															
X <sub>5</sub>	-.04	.27	.24	.36	1.00														
X <sub>6</sub>	-.34	-.03	-.02	-.43	.03	1.00													
X <sub>7</sub>	-.30	-.13	-.24	.01	-.11	.23	1.00												
X <sub>8</sub>	-.35	-.25	-.18	-.38	-.47	.29	.21	1.00											
X <sub>9</sub>	-.40	-.24	-.18	-.40	-.47	.44	.31	.97	1.00										
X <sub>10</sub>	-.35	-.34	-.26	-.09	-.30	.06	.18	.80	.73	1.00									
X <sub>11</sub>	.01	-.08	-.07	-.01	.13	-.07	-.15	-.10	-.11	-.06	1.00								
X <sub>12</sub>	.23	.30	.20	.15	.24	-.05	-.08	-.72	-.61	-.77	.12	1.00							
X <sub>13</sub>	-.09	-.15	-.21	.00	.06	.15	.30	-.13	-.03	-.30	.15	.36	1.00						
X <sub>14</sub>	.12	-.13	-.16	.11	-.15	-.09	.26	.03	.01	-.04	-.01	-.08	.21	1.00					
X <sub>15</sub>	.32	-.02	-.06	.11	-.01	-.58	-.15	-.15	-.25	-.06	-.01	.07	-.05	-.08	1.00				
X <sub>16</sub>	-.10	.04	.08	-.14	.00	.07	-.01	.43	.38	.52	.00	-.49	-.32	-.18	-.14	1.00			
X <sub>17</sub>	-.07	.16	.10	.00	.48	.38	.15	-.36	-.26	-.29	.08	.38	.20	-.06	-.37	.13	1.00		
X <sub>18</sub>	.00	.92	.90	.00	.27	-.04	-.04	-.17	-.15	-.17	-.09	.22	-.19	-.20	-.07	.19	.23	1.00	
X <sub>19</sub>	.09	.29	.35	-.04	.24	-.02	-.39	-.20	-.21	-.11	.00	.17	-.18	-.42	.11	.02	.18	.34	1.00

### Appendix B. A Four-Group Multiple Discriminant Model

Because of the small sample size of the Moody's Aaa group (5) and the Standard & Poor's AAA group (3), and the necessity of calculating separate dispersion matrices (because of the inequality of the dispersion matrices), a four-group multiple discriminant model could not be estimated by the normal procedure. Two alternative approaches might be employed in attempting to develop a four-group model. First, we could assume that the dispersion matrices for all four groups were equal so that a pooled dispersion matrix could be estimated over the 97 bonds. This approach would allow a linear four-group model to be estimated in the usual manner but would not take account of the inequality in the dispersion matrices for the Aa(AA), A, and Baa(BBB) groups. The inequality in the group dispersion matrices indicates that an assumption of equal dispersion matrices is not valid; hence, quadratic as opposed to linear classification procedures should be employed.

A second approach to the problem involves the estimation of the Aaa(AAA) group dispersion matrix so that quadratic classification procedures could still be employed. This subject has not been examined widely, and we believe it requires some elaboration. The crux of the problem is how to obtain a "reasonable" estimate of the dispersion matrix for the Aaa(AAA) group that could not be estimated because of the small sample size. One possible approach is to examine an earlier time period providing sufficient observations in order to estimate the Aaa(AAA) dispersion matrix.

This approach raises certain time series problems, however, and might result in a lack of independence. A second approach is to estimate this unobservable dispersion matrix as being the same (or equal to) the dispersion matrix for the next closest observable group. Following this procedure, we would estimate therefore the Aaa(AAA) dispersion matrix to be equal to the dispersion matrix for the Aa(AA) group. Once this assumption is made, we could obtain separate estimates of all four dispersion matrices (even though two of them are equal) — hence quadratic classification procedures could be employed.

Four-group classification results employing this latter procedure are reported in Exhibit B for the 97 cases for Moody's and Standard & Poor's and the 72 cases where both agencies rated the bonds the same. For all three models, the classification results do not change for the A and Baa(BBB) groups. However, the number of Aa(AA)-rated bonds classified correctly decreases for all of the models, because some of the bonds formally estimated as Aa(AA) were now placed in the Aaa(AAA) group. The overall (percentage) classificatory ability of the multiple discriminant models decreases in all three cases from the three group results; in addition, the Moody's four-group model also suffers an absolute decrease of one fewer bond being correctly classified than for the three-group model.

While this procedure allows estimation of a four-group quadratic discriminant model, it suffers one major drawback — the reasonableness of the assumption that the unobservable Aaa(AAA) group dispersion matrix was equal to that of the Aa(AA) group could not be ascertained.

### Exhibit B. Classification Results for the Four-Group Model

Rating	Moody's			Rating	Standard & Poor's			Rating	Both the Same		
	Actual	Predicted	Percent Correct		Actual	Predicted	Percent Correct		Actual	Predicted	Percent Correct
Aaa	5	4	80.00	AAA	3	2	66.67	Aaa(AAA)	3	2	66.67
Aa	41	25	60.98	AA	32	25	78.12	Aa(AA)	28	21	75.00
A	32	18	56.25	A	45	30	66.67	A(A)	27	19	70.37
Baa	19	17	89.47	BBB	17	15	88.24	Baa(BBB)	14	14	100.00
TOTAL	97	64	65.98	TOTAL	97	72	74.23	TOTAL	72	56	77.78

# THE RELATIONSHIP BETWEEN RETURN AND MARKET VALUE OF COMMON STOCKS\*

ROLF W. BANZ

Northwestern University, Evanston, IL 60201, USA

Received June 1979, final version received September 1980

This study examines the empirical relationship between the return and the total market value of NYSE common stocks. It is found that smaller firms have had higher risk adjusted returns, on average, than larger firms. This 'size effect' has been in existence for at least forty years and is evidence that the capital asset pricing model is misspecified. The size effect is not linear in the market value; the main effect occurs for very small firms while there is little difference in return between average sized and large firms. It is not known whether size *per se* is responsible for the effect or whether size is just a proxy for one or more true unknown factors correlated with size.

## 1. Introduction

The single-period capital asset pricing model (henceforth CAPM) postulates a simple linear relationship between the expected return and the market risk of a security. While the results of direct tests have been inconclusive, recent evidence suggests the existence of additional factors which are relevant for asset pricing. Litzenberger and Ramaswamy (1979) show a significant positive relationship between dividend yield and return of common stocks for the 1936-1977 period. Basu (1977) finds that price-earnings ratios and risk adjusted returns are related. He chooses to interpret his findings as evidence of market inefficiency but as Ball (1978) points out, market efficiency tests are often joint tests of the efficient market hypothesis and a particular equilibrium relationship. Thus, some of the anomalies that have been attributed to a lack of market efficiency might well be the result of a misspecification of the pricing model.

This study contributes another piece to the emerging puzzle. It examines the relationship between the total market value of the common stock of a firm and its return. The results show that, in the 1936-1975 period, the common stock of small firms had, on average, higher risk-adjusted returns

\*This study is based on part of my dissertation and was completed while I was at the University of Chicago. I am grateful to my committee, Myron Scholes (chairman), John Gould, Roger Ibbotson, Jonathan Ingersoll, and especially Eugene Fama and Merton Miller, for their advice and comments. I wish to acknowledge the valuable comments of Bill Schwert on earlier drafts of this paper.

than a common stock of large firms. This result will henceforth be referred to as the 'size effect'. Since the results of the study are not based on a particular theoretical equilibrium model, it is not possible to determine conclusively whether market value *per se* matters or whether it is only a proxy for unknown true additional factors correlated with market value. The last section of this paper will address this question in greater detail.

The various methods currently available for the type of empirical research presented in this study are discussed in section 2. Since there is a considerable amount of confusion about their relative merit, more than one technique is used. Section 3 discusses the data. The empirical results are presented in section 4. A discussion of the relationship between the size effect and other factors, as well as some speculative comments on possible explanations of the results, constitute section 5.

## 2. Methodologies

The empirical tests are based on a generalized asset pricing model which allows the expected return of a common stock to be a function of risk  $\beta$  and an additional factor  $\phi$ , the market value of the equity.<sup>1</sup> A simple linear relationship of the form

$$E(R_i) = \gamma_0 + \gamma_1 \beta_i + \gamma_2 [(\phi_i - \phi_m) / \phi_m], \quad (1)$$

is assumed, where

- $E(R_i)$  = expected return on security  $i$ ,  
 $\gamma_0$  = expected return on a zero-beta portfolio,  
 $\gamma_1$  = expected market risk premium,  
 $\phi_i$  = market value of security  $i$ ,  
 $\phi_m$  = average market value, and  
 $\gamma_2$  = constant measuring the contribution of  $\phi_i$  to the expected return of a security.

If there is no relationship between  $\phi_i$  and the expected return, i.e.,  $\gamma_2 = 0$ , (1) reduces to the Black (1972) version of the CAPM.

Since expectations are not observable, the parameters in (1) must be estimated from historical data. Several methods are available for this purpose. They all involve the use of pooled cross-sectional and time series regressions to estimate  $\gamma_0$ ,  $\gamma_1$ , and  $\gamma_2$ . They differ primarily in (a) the assumption concerning the residual variance of the stock returns (homoscedastic or heteroscedastic in the cross-sectional), and (b) the treatment of the

errors-in-variables problem introduced by the use of estimates in (1). All methods use a constrained optimization procedure, described in Fama (1976, ch. 9), to generate minimum variance (m.v.) portfolios with mean returns  $\gamma_i$ ,  $i = 0, \dots, 2$ . This imposes certain constraints on the portfolio weights, since from (1)

$$E(R_p) \equiv \gamma_0 \sum_j w_j + \gamma_1 \sum_j w_j \beta_j + \gamma_2 \left[ \left( \sum_j w_j \phi_j - \phi_m \sum_j w_j \right) / \phi_m \right], \quad i = 0, \dots, 2, \quad (2)$$

where the  $w_j$  are the portfolio proportions of each asset  $j$ ,  $j = 1, \dots, N$ . An examination of (2) shows that  $\hat{\gamma}_0$  is the mean return of a standard m.v. portfolio ( $\sum_j w_j = 1$ ) with zero beta and  $\phi_p \equiv \sum_j w_j \phi_j = \phi_m$  [to make the second and third terms of the right-hand side of (2) vanish]. Similarly,  $\hat{\gamma}_1$  is the mean return on a zero-investment m.v. portfolio with beta of one and  $\phi_p = 0$ , and  $\hat{\gamma}_2$  is the mean return on a m.v. zero-investment, zero-beta portfolio with  $\phi_p = \phi_m$ . As shown by Fama (1976, ch. 9), this constrained optimization can be performed by running a cross-sectional regression of the form

$$R_{it} = \gamma_0 + \gamma_1 \beta_{it} + \gamma_2 [(\phi_{it} - \phi_{mt}) / \phi_{mt}] + \epsilon_{it}, \quad i = 1, \dots, N, \quad (3)$$

on a period-by-period basis, using estimated betas  $\beta_{it}$  and allowing for either homoscedastic or heteroscedastic error terms. Invoking the usual stationarity arguments the final estimates of the gammas are calculated as the averages of the  $T$  estimates.

One basic approach involves grouping individual securities into portfolios on the basis of market value and security beta, reestimating the relevant parameters (beta, residual variance) of the portfolios in a subsequent period, and finally performing either an ordinary least squares (OLS) regression [Fama and MacBeth (1973)] which assumes homoscedastic errors, or a generalized least squares (GLS) regression [Black and Scholes (1974)] which allows for heteroscedastic errors, on the portfolios in each time period.<sup>2</sup> Grouping reduces the errors-in-variables problem, but is not very efficient because it does not make use of all information. The errors-in-variables problem should not be a factor as long as the portfolios contain a reasonable number of securities.<sup>3</sup>

Litzenberger and Ramaswamy (1979) have suggested an alternative method which avoids grouping. They allow for heteroscedastic errors in the cross-section and use the estimates of the standard errors of the security

<sup>2</sup>Black and Scholes (1974) do not take account of heteroscedasticity, even though their method was designed to do so.

<sup>3</sup>Black, Jensen and Scholes (1972, p. 116).

betas  $\gamma$  makes of the measurement errors. As Theil (1971, p. 610) has pointed out, this method leads to unbiased maximum likelihood estimators for the gammas as long as the error in the standard error of beta is small and the standard assumptions of the simple errors-in-variables model are met. Thus, it is very important that the diagonal model is the correct specification of the return-generating process, since the residual variance assumes a critical position in this procedure. The Litzenberger-Ramaswamy method is superior from a theoretical viewpoint; however, preliminary work has shown that it leads to serious problems when applied to the model of this study and is not pursued any further.<sup>4</sup>

Instead of estimating equation (3) with data for all securities, it is also possible to construct arbitrage portfolios containing stocks of very large and very small firms, by combining long positions in small firms with short positions in large firms. A simple time series regression is run to determine the difference in risk-adjusted returns between small and large firms. This approach, long familiar in the efficient markets and option pricing literature, has the advantage that no assumptions about the exact functional relationships between market value and expected return need to be made, and it will therefore be used in this study.

### 3. Data

The sample includes all common stocks quoted on the NYSE for at least five years between 1926 and 1975. Monthly price and return data and the number of shares outstanding at the end of each month are available in the monthly returns file of the Center for Research in Security Prices (CRSP) of the University of Chicago. Three different market indices are used; this is in response to Roll's (1977) critique of empirical tests of the CAPM. Two of the three are pure common stock indices — the CRSP equally- and value-weighted indices. The third is more comprehensive: a value-weighted combination of the CRSP value-weighted index and return data on corporate and government bonds from Ibbotson and Sinquefeld (1977) (henceforth 'market index').<sup>5</sup> The weights of the components of this index are derived from information on the total market value of corporate and government bonds in various issues of the *Survey of Current Business* (updated annually) and from the market value of common stocks in the CRSP monthly index file. The stock indices, made up of riskier assets, have both higher returns

and higher risk than the bond indices and the 'market index'. Time series of commercial paper returns is used as the risk-free rate.<sup>7</sup> While not actually constant through time, its variation is very small when compared to that of the other series, and it is not significantly correlated with any of the three indices used as market proxies.

### 4. Empirical results

#### 4.1. Results for methods based on grouped data

The portfolio selection procedure used in this study is identical to the one described at length in Black and Scholes (1974). The securities are assigned to one of twenty-five portfolios containing similar numbers of securities, first to one of five on the basis of the market value of the stock, then the securities in each of those five are in turn assigned to one of five portfolios on the basis of their beta. Five years of data are used for the estimation of the security beta; the next five years' data are used for the reestimation of the portfolio betas. Stock price and number of shares outstanding at the end of the five year periods are used for the calculation of the market proportions. The portfolios are updated every year. The cross-sectional regression (3) is then performed in each month and the means of the resulting time series of the gammas could be (and have been in the past) interpreted as the final estimators. However, having used estimated parameters, it is not certain that the series have the theoretical properties, in particular, the hypothesized beta. Black and Scholes (1974, p. 17) suggest that the time series of the gammas be regressed once more on the excess return of the market index. This correction involves running the time series regression (for  $\hat{\gamma}_2$ )

$$\hat{\gamma}_{2t} - R_{Ft} = \hat{\alpha}_2 + \hat{\beta}_2(R_{mt} - R_{Ft}) + \hat{\epsilon}_{2t} \quad (4)$$

It has been shown earlier that the theoretical  $\beta_2$  is zero. (4) removes the effects of a non-zero  $\hat{\beta}_2$  on the return estimate  $\hat{\gamma}_2$  and  $\hat{\alpha}_2$  is used as the final estimator for  $\hat{\gamma}_2 - R_{Ft}$ . Similar corrections are performed for  $\hat{\gamma}_0$  and  $\hat{\gamma}_1$ . The

<sup>4</sup>Mean monthly returns and standard deviations for the 1926-1975 period are:

	Mean return	Standard deviation
Market index <sup>1</sup>	0.0046	0.0178
CRSP value-weighted index	0.0085	0.0588
CRSP equally-weighted index	0.0120	0.0830
Government bond index	0.0027	0.0157
Corporate bond index	0.0032	0.0142

<sup>7</sup>I am grateful to Myron Scholes for making this series available. The mean monthly return for the 1926-1975 period is 0.0026 and the standard deviation is 0.0021.

<sup>4</sup>If the diagonal model (or market model) is an incomplete specification of the return generating process, the estimate of the standard error of beta is likely to have an upward bias, since the residual variance estimate is too large. The error in the residual variance estimate appears to be related to the second factor. Therefore, the resulting gamma estimates are biased.  
<sup>5</sup>No pretense is made that this index is complete; thus, the use of quotation marks. It ignores real estate, foreign assets, etc.; it should be considered a first step toward a comprehensive index. See Ibbotson and Fall (1979).

de.  $\beta_i$  of the  $\beta_i, i=0, \dots, 2$ , in (4) from their theoretical values also allows us to check whether the grouping procedure is an effective means to eliminate the errors-in-beta problem.

The results are essentially identical for both OLS and GLS and for all three indices. Thus, only one set of results, those for the 'market index' with GLS, is presented in table 1. For each of the gammas, three numbers are reported: the mean of that time series of returns which is relevant for the test of the hypothesis of interest (i.e., whether or not  $\hat{\gamma}_0$  and  $\hat{\gamma}_1$  are different from the risk-free rate and the risk premium, respectively), the associated *t*-statistic, and finally, the estimated beta of the time series of the gamma from (4). Note that the means are corrected for the deviation from the theoretical beta as discussed above.

The table shows a significantly negative estimate for  $\gamma_2$  for the overall time period. Thus, shares of firms with large market values have had smaller returns, on average, than similar small firms. The CAPM appears to be misspecified. The table also shows that  $\gamma_0$  is different from the risk-free rate. As both Fama (1976, ch. 9) and Roll (1977) have pointed out, if a test does not use the true market portfolio, the Sharpe-Lintner model might be wrongly rejected. The estimates for  $\gamma_0$  are of the same magnitude as those reported by Fama and MacBeth (1973) and others. The choice of a market index and the econometric method does not affect the results. Thus, at least within the context of this study, the choice of a proxy for the market portfolio does not seem to affect the results and allowing for heteroscedastic disturbances does not lead to significantly more efficient estimators.

Before looking at the results in more detail, some comments on econometric problems are in order. The results in table 1 are based on the 'market index' which is likely to be superior to pure stock indices from a theoretical viewpoint since it includes more assets [Roll (1977)]. This superiority has its price. The actual betas of the time series of the gammas are reported in table 1 in the columns labeled  $\beta_i$ . Recall that the theoretical values of  $\beta_0$  and  $\beta_1$  are zero and one, respectively. The standard zero-beta portfolio with return  $\hat{\gamma}_0$  contains high beta stocks in short positions and low beta stocks in long positions, while the opposite is the case for the zero-investment portfolio with return  $\hat{\gamma}_1$ . The actual betas are all significantly different from the theoretical values. This suggests a regression effect, i.e., the past betas of high beta securities are overestimated and the betas of low beta securities are underestimated.<sup>8</sup> Past beta is not completely uncorrelated with the error of the current beta and the instrumental variable approach to the error-in-variables problem is not entirely successful.<sup>9</sup>

<sup>8</sup>There is no such effect for  $\beta_2$  because that portfolio has both zero beta and zero investment; i.e., net holdings of both high and low beta securities are, on average, zero.

<sup>9</sup>This result is first documented in Brenner (1976) who examines the original Fama-MacBeth (1973) time series of  $\hat{\gamma}_0$ .

Table 1  
Portfolio estimators for  $\gamma_0, \gamma_1$  and  $\gamma_2$  based on the 'market index' with generalized least squares estimation.<sup>a</sup>

$$R_{it} = \hat{\gamma}_0 + \hat{\gamma}_1 \beta_{it} + \hat{\gamma}_2 [(\phi_{it} - \phi_{mt}) / \phi_{mt}]$$

Period	$\hat{\gamma}_0 - R_F$	$t(\hat{\gamma}_0 - R_F)$	$\beta_0$	$\hat{\gamma}_1 - (R_M - R_F)$	$t(\hat{\gamma}_1 - (R_M - R_F))$	$\beta_1$	$\hat{\gamma}_2$	$t(\hat{\gamma}_2)$	$\beta_2$
1936-1975	0.00450	2.76	0.45	-0.00092	-1.00	0.75	-0.00052	-2.92	0.01
1936-1955	0.00377	1.66	0.43	-0.00060	-0.80	0.80	-0.00043	-2.12	0.01
1956-1975	0.00531	2.22	0.46	-0.00138	-0.82	0.73	-0.00062	-2.09	0.01
1936-1945	0.00121	0.30	0.63	-0.00098	-0.77	0.82	-0.00075	-2.32	-0.01
1946-1955	0.00650	2.89	0.03	-0.00021	-0.26	0.75	-0.00015	-0.65	0.06
1956-1965	0.00494	2.02	0.34	-0.00098	-0.56	0.96	-0.00039	-1.27	-0.01
1966-1975	0.00596	1.43	0.49	-0.00232	-0.80	0.69	-0.00080	-1.55	0.01

<sup>a</sup> $\hat{\gamma}_0 - R_F$  = mean difference between return on zero beta portfolio and risk-free rate,  $\hat{\gamma}_1 - (R_M - R_F)$  = mean difference between actual risk premium ( $\hat{\gamma}_1$ ) and risk premium stipulated by Sharpe-Lintner model ( $R_M - R_F$ ),  $\hat{\gamma}_2$  = size premium,  $\beta_i$  = actual estimated market risk of  $\hat{\gamma}_i$  (theoretical values:  $\beta_0 = 0, \beta_1 = 1, \beta_2 = 0$ ); all  $\beta_0, \beta_1$  are significantly different from the theoretical values.  $t(\cdot)$  = *t*-statistic.

1. Deviations from the theoretical betas are largest for the 'market index' and smallest for the CRSP value-weighted index, and smallest for the CRSP equally-weighted index. This is due to two factors: first, even if the true covariance structure is stationary, betas with respect to a value-weighted index change whenever the weights change, since the weighted average of the betas is constrained to be equal to one. Second, the betas and their standard errors with respect to the 'market index' are much larger than for the stock indices (a typical stock beta is between two and three), which leads to larger deviations — a kind of 'leverage' effect. Thus, the results in table 1 show that the final correction for the deviation of  $\hat{\beta}_0$  and  $\hat{\beta}_1$  from their theoretical values is of crucial importance for market proxies with changing weights.

Estimated portfolio betas and portfolio market proportions are (negatively) correlated. It is therefore possible that the errors in beta induce an error in the coefficient of the market proportion. According to Levi (1973), the probability limit of  $\hat{\gamma}_1$  in the standard errors-in-the-variables model is

$$\text{plim } \hat{\gamma}_1 = \gamma_1 / (1 + (\sigma_u^2 \cdot \sigma_{12}^2) / D) < \gamma_1,$$

with

$$D = (\sigma_1^2 + \sigma_u^2) \cdot \sigma_2^2 - \sigma_{12}^2 > 0,$$

where  $\sigma_1^2$ ,  $\sigma_2^2$  are the variances of the true factors  $\beta$  and  $\phi$ , respectively,  $\sigma_u^2$  is the variance of the error in beta and  $\sigma_{12}$  is the covariance of  $\beta$  and  $\phi$ . Thus, the bias in  $\hat{\gamma}_1$  is unambiguously towards zero for positive  $\gamma_1$ . The probability limit of  $\hat{\gamma}_2 - \gamma_2$  is [Levi (1973)]

$$\text{plim } (\hat{\gamma}_2 - \gamma_2) = (\sigma_u^2 \cdot \sigma_{12} \cdot \gamma_1) / D.$$

We find that the bias in  $\hat{\gamma}_2$  depends on the covariance between  $\beta$  and  $\phi$  and the sign of  $\gamma_1$ . If  $\sigma_{12}$  has the same sign as the covariance between  $\beta$  and  $\phi$ , i.e.,  $\sigma_{12} < 0$ , and if  $\gamma_1 > 0$ , then  $\text{plim } (\hat{\gamma}_2 - \gamma_2) < 0$ , i.e.,  $\text{plim } \hat{\gamma}_2 < \gamma_2$ . If the grouping procedure is not successful in removing the error in beta, then it is likely that the reported  $\hat{\gamma}_2$  overstates the true magnitude of the size effect. If this was a serious problem in this study, the results for the different market indices should reflect the problem. In particular, using the equally-weighted stock index should then lead to the smallest size effect since, as was pointed out earlier, the error in beta problem is apparently less serious for that kind of index. In fact, we find that there is little difference between the estimates.<sup>10</sup>

<sup>10</sup>For the overall time period,  $\hat{\gamma}_2$  with the equally-weighted CRSP index is  $-0.00044$ , with the value weighted CRSP index  $-0.00044$  as well as opposed to the  $-0.00052$  for the 'market index' reported in table 1. The estimated betas of  $\hat{\beta}_0$  and  $\hat{\beta}_1$  which reflect the degree of the error in beta problems are 0.07 and 0.91, respectively, for the equally-weighted CRSP index and 0.13 and 0.87 for the value-weighted CRSP index.

Thus, it does not appear that the size effect is just a proxy for the unobservable true beta even though the market proportion, and the beta of securities are negatively correlated.

The correlation coefficient between the mean market values of the twenty-five portfolios and their betas is significantly negative, which might have introduced a multicollinearity problem. One of its possible consequences is coefficients that are very sensitive to addition or deletion of data. This effect does not appear to occur in this case: the results do not change significantly when five portfolios are dropped from the sample. Revising the grouping procedure — ranking on the basis of beta first, then ranking on the basis of market proportion — also does not lead to substantially different results.

#### 4.2. A closer look at the results

An additional factor relevant for asset pricing — the market value of the equity of a firm — has been found. The results are based on a linear model. Linearity was assumed only for convenience and there is no theoretical reason (since there is no model) why the relationship should be linear. If it is nonlinear, the particular form of the relationship might give us a starting point for the discussion of possible causes of the size effect in the next section. An analysis of the residuals of the twenty-five portfolios is the easiest way to look at the linearity question. For each month  $t$ , the estimated residual return

$$\hat{\epsilon}_{it} = R_{it} - \hat{\gamma}_0 - \hat{\gamma}_1 \beta_{it} - \hat{\gamma}_2 L[(\phi_{it} - \phi_{mt}) / \phi_{mt}], \quad i = 1, \dots, 25, \quad (5)$$

is calculated for all portfolios. The mean residuals over the forty-five year sample period are plotted as a function of the mean market proportion in fig. 1. Since the distribution of the market proportions is very skewed, a logarithmic scale is used. The solid line connects the mean residual returns of each size group. The numbers identify the individual portfolios within each group according to beta, '1' being the one with the largest beta, '5' being the one with the smallest beta.

The figure shows clearly that the linear model is misspecified.<sup>11</sup> The residuals are not randomly distributed around zero. The residuals of the portfolios containing the smallest firms are all positive; the remaining ones are close to zero. As a consequence, it is impossible to use  $\hat{\gamma}_2$  as a simple size premium in the cross-section. The plot also shows, however, that the misspecification is not responsible for the significance of  $\hat{\gamma}_2$  since the linear model underestimates the true size effect present for very small firms. To illustrate this point, the five portfolios containing the smaller firms are

<sup>11</sup>The nonlinearity cannot be eliminated by defining  $\phi$  as the log of the market proportion.

delete  $\hat{\gamma}_2$  in the sample and the parameters reestimated. The results summarized in table 2, show that the  $\hat{\gamma}_2$  remain essentially the same. The relationship is still not linear; the new  $\hat{\gamma}_2$  still cannot be used as a size premium.

Fig. 1 suggests that the main effect occurs for very small firms. Further support for this conclusion can be obtained from a simple test. We can regress the returns of the twenty-five portfolios in each result on beta alone and examine the residuals. The regression is misspecified and the residuals contain information about the size effect. Fig. 2 shows the plot of those residuals in the same format as fig. 1. The smallest firms have, on average, very large unexplained mean returns. There is no significant difference between the residuals of the remaining portfolios.

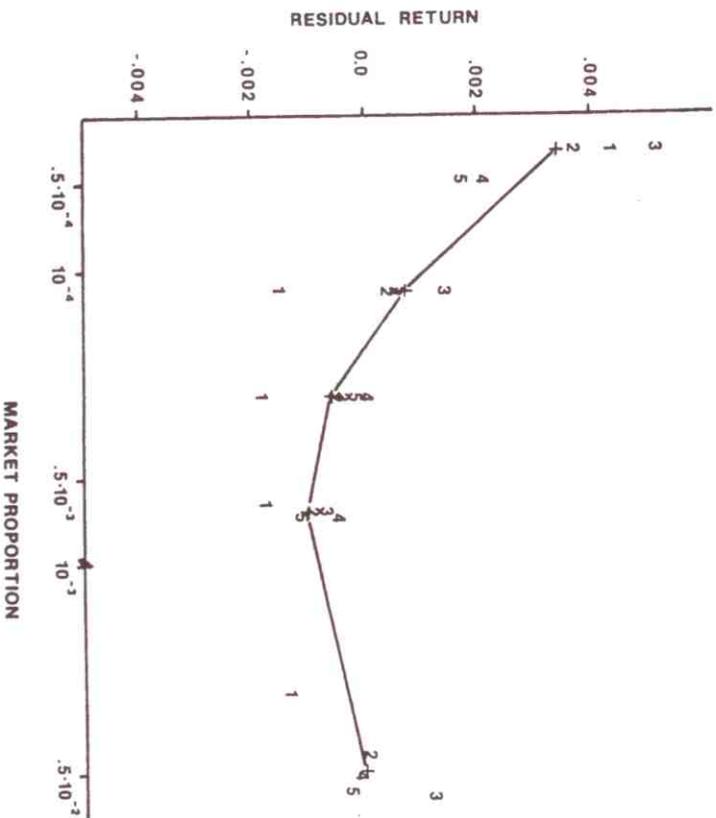


Fig. 1. Mean residual returns of portfolios (1936-1975) with equally-weighted CRSP index as market proxy. The residual is calculated with the three-factor model [eq. (3)]. The numbers 1, ..., 5 represent the mean residual return for the five portfolios within each size group (1: portfolio with largest beta, ..., 5: portfolio with smallest beta). + represents the mean of the mean residuals of the five portfolios with similar market values.

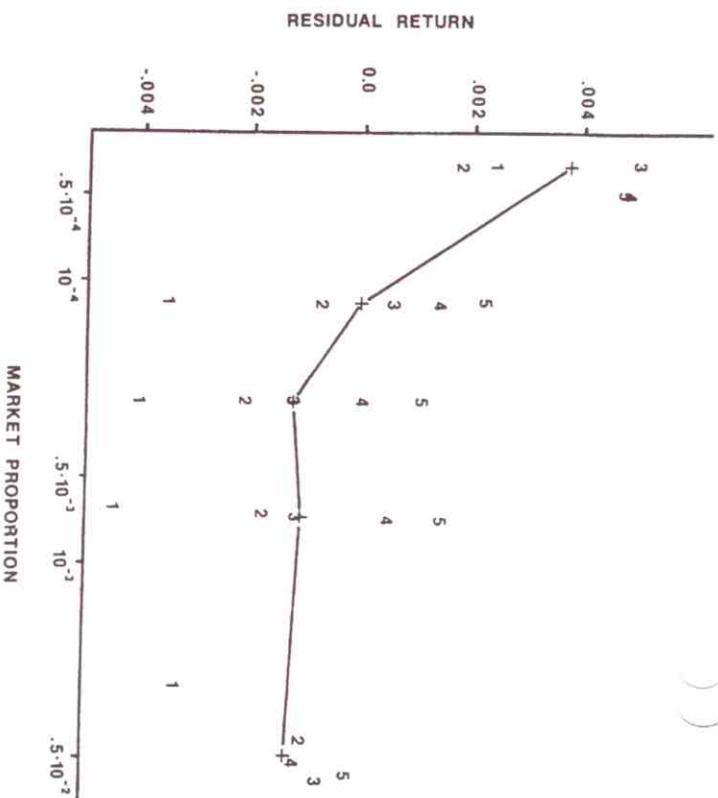


Fig. 2. Mean residual returns of portfolios (1936-1975) with equally-weighted CRSP index as market proxy. The residual is calculated with the two-factor model ( $\hat{r}_{it} = R_{it} - \hat{\gamma}_0 - \hat{\gamma}_1 \beta_{it}$ ). The symbols are as defined for fig. 1.

#### 4.3. 'Arbitrage' portfolio returns

One important empirical question still remains: How important is the size effect from a practical point of view? Fig. 2 suggests that the difference in returns between the smallest firms and the remaining ones is, on average, about 0.4 percent per month. A more dramatic result can be obtained when the securities are chosen solely on the basis of their market value.

As an illustration, consider putting equal dollar amounts into portfolios containing the smallest, largest and median-sized firms at the beginning of a year. These portfolios are to be equally weighted and contain, say, ten, twenty or fifty securities. They are to be held for five years and are rebalanced every month. They are levered or unlevered to have the same beta. We are then interested in the differences in their returns.

$$R_{1t} = R_{st} - R_{lt}, \quad R_{2t} = R_{st} - R_{mt}, \quad R_{3t} = R_{at} - R_{lt}, \quad (6)$$

Table 2  
Portfolio estimators for  $\hat{\gamma}_2$  for all 25 portfolios and for 20 portfolios (portfolios containing smallest firms deleted) based on CRSP equally weighted index with generalized least-squares estimation.<sup>a</sup>

Period	Size premium $\hat{\gamma}_2$ with	
	25 portfolios	20 portfolios
1936-1975	-0.00044 (-2.42)	-0.00043 (-2.54)
1936-1955	-0.00037 (-1.72)	-0.00041 (-1.88)
1956-1975	-0.00056 (-1.91)	-0.00050 (-1.91)
1936-1945	-0.00085 (-2.81)	-0.00083 (-2.48)
1946-1955	0.00003 (0.12)	-0.00003 (-0.13)
1956-1965	-0.00023 (-0.81)	-0.00017 (-0.65)
1966-1975	-0.00091 (-1.78)	-0.00085 (-1.84)

<sup>a</sup>t-statistic in parentheses.

where  $R_{it}$ ,  $R_{at}$  and  $R_{it}$  are the returns on the portfolios containing the smallest, median-sized and largest firms at portfolio formation time (and  $R_{it} = R_{2t} + R_{3t}$ ). The procedure involves (a) the calculation of the three differences in raw returns in each month and (b) running time series regressions of the differences on the excess returns of the market proxy. The intercept terms of these regressions are then interpreted as the  $\bar{R}_i$ ,  $i=1, \dots, 3$ . Thus, the differences can be interpreted as 'arbitrage' returns, since, e.g.,  $R_{1t}$  is the return obtained from holding the smallest firms long and the largest firms short, representing zero net investment in a zero-beta portfolio.<sup>12</sup> Simple equally weighted portfolios are used rather than more sophisticated minimum variance portfolios to demonstrate that the size effect is not due to some quirk in the covariance matrix.

Table 3 shows that the results of the earlier tests are fully confirmed.  $\bar{R}_2$ , the difference in returns between very small firms and median-size firms, is typically considerably larger than  $\bar{R}_3$ , the difference in returns between median-sized and very large firms. The average excess return from holding very small firms long and very large firms short is, on average, 1.52 percent

<sup>12</sup>No *ex post* sample bias is introduced, since monthly rebalancing includes stocks delisted during the five years. Thus, the portfolio size is generally accurate only for the first month of each period.

Table 3  
Mean monthly returns on 'arbitrage' portfolios.<sup>a</sup>  
 $R_j - R_k = \bar{\alpha}_i + \beta_i(R_m - R_F)$

	$\bar{\alpha}_1^b$			$\bar{\alpha}_2^c$			$\bar{\alpha}_3^d$		
	n=10	n=20	n=50	n=10	n=20	n=50	n=10	n=20	n=50
Overall period									
1931-1975	0.0152 (2.99)	0.0148 (3.53)	0.0101 (3.07)	0.0130 (2.90)	0.0124 (3.56)	0.0089 (3.64)	0.0021 (1.06)	0.0024 (1.41)	0.0012 (0.85)
Five-year subperiods									
1931-1935	0.0589 (2.25)	0.0597 (2.81)	0.0427 (2.35)	0.0462 (1.92)	0.0462 (2.55)	0.0326 (2.46)	0.0127 (1.09)	0.0134 (1.49)	0.0101 (1.42)
1936-1940	0.0201 (0.82)	0.0182 (0.97)	0.0089 (0.67)	0.0118 (0.55)	0.0145 (0.90)	0.0064 (0.65)	0.0084 (1.20)	0.0037 (0.62)	0.0025 (0.49)
1941-1945	0.0430 (2.29)	0.0408 (2.46)	0.0269 (2.17)	0.0381 (2.29)	0.0367 (2.54)	0.0228 (2.02)	0.0049 (1.25)	0.0038 (1.09)	0.0041 (1.68)
1946-1950	-0.0060 (-1.17)	-0.0046 (-0.97)	-0.0036 (-0.97)	-0.0058 (-1.03)	-0.0059 (-1.29)	-0.0029 (-0.83)	-0.0002 (-0.07)	-0.0104 (-0.50)	-0.0007 (-0.38)
1951-1955	-0.0067 (-0.89)	-0.0011 (-0.21)	0.0013 (0.32)	-0.0004 (-0.07)	0.0026 (0.72)	0.0010 (0.39)	-0.0062 (-1.29)	-0.0037 (-0.99)	0.0003 (0.11)
1956-1960	0.0039 (0.67)	0.0008 (0.15)	0.0037 (0.89)	0.0007 (0.14)	-0.0027 (-0.64)	0.0011 (0.45)	0.0031 (0.88)	0.0035 (1.16)	0.0026 (0.97)
1961-1965	0.0131 (1.38)	0.0060 (0.67)	0.0024 (0.31)	0.0096 (1.11)	0.0046 (0.72)	0.0036 (0.77)	0.0035 (0.59)	0.0014 (0.24)	-0.0012 (-0.24)
1966-1970	0.0121 (1.64)	0.0117 (2.26)	0.0077 (1.91)	0.0129 (1.93)	0.0110 (2.71)	0.0071 (2.43)	0.0008 (0.23)	0.0007 (0.22)	0.0006 (0.27)
1971-1975	0.0063 (0.60)	0.0108 (1.23)	0.0098 (1.45)	0.0033 (0.39)	0.0077 (1.18)	0.0083 (1.79)	0.0030 (0.64)	0.0031 (0.72)	0.0015 (0.43)

<sup>a</sup>Equally-weighted portfolios with  $n$  securities, adjusted for differences in market risk with respect to CRSP value-weighted index.  $t$ -statistics in parentheses.

<sup>b</sup>Small firms held long, large firms held short.

<sup>c</sup>Small firms held long, median-size firms held short.

per 19.8 percent on an annualized basis. This strategy, which suggests very large 'profit opportunities', leaves the investor with a poorly diversified portfolio. A portfolio of small firms has typically much larger residual risk with respect to a value-weighted index than a portfolio of very large firms with the same number of securities [Banz (1978, ch. 3)]. Since the fifty largest firms make up more than 25 percent of the total market value of NYSE stocks, it is not surprising that a larger part of the variation of the return of a portfolio of those large firms can be explained by its relation with the value-weighted market index. Table 3 also shows that the strategy would not have been successful in every five year subperiod. Nevertheless, the magnitude of the size effect during the past forty-five years is such that it is of more than just academic interest.

## 5. Conclusions

The evidence presented in this study suggests that the CAPM is misspecified. On average, small NYSE firms have had significantly larger risk adjusted returns than large NYSE firms over a forty year period. This size effect is not linear in the market proportion (or the log of the market proportion) but is most pronounced for the smallest firms in the sample. The effect is also not very stable through time. An analysis of the ten year subperiods show substantial differences in the magnitude of the coefficient of the size factor (table 1).

There is no theoretical foundation for such an effect. We do not even know whether the factor is size itself or whether size is just a proxy for one or more true but unknown factors correlated with size. It is possible, however, to offer some conjectures and even discuss some factors for which size is suspected to proxy. Recent work by Reinganum (1980) has eliminated one obvious candidate: the price-earnings ( $P/E$ ) ratio.<sup>13</sup> He finds that the  $P/E$ -effect, as reported by Basu (1977), disappears for both NYSE and AMEX stocks when he controls for size but that there is a significant size effect even when he controls for the  $P/E$ -ratio, i.e., the  $P/E$ -ratio effect is a proxy for the size effect and not vice versa. Statman (1980), who found a significant negative relationship between the ratio of book value and market value of equity and its return, also reports that this relationship is just a proxy for the size effect. Naturally, a large number of possible factors remain to be tested.<sup>14</sup> But the Reinganum results point out a potential problem with some of the existing negative evidence of the efficient market hypothesis. Basu believed to have identified a market inefficiency but his  $P/E$ -effect is

<sup>13</sup>The average correlation coefficient between  $P/E$ -ratio and market value is only 0.16 for individual stocks for thirty-eight quarters ending in 1978. But for the portfolios formed on the basis of  $P/E$ -ratio, it rises to 0.82. Recall that Basu (1977) used ten portfolios in his study.

<sup>14</sup>E.g., debt-equity ratios, skewness of the return distribution [Kraus and Litzenberger (1976)].

just a proxy for the size effect. Given its longevity, it is likely that it is due to a market inefficiency but it is rather evidence of a pricing model misspecification. To the extent that tests of market efficiency use data of firms of different sizes and are based on the CAPM, their results might be at least contaminated by the size effect.

One possible explanation involving the size of the firm directly is based on a model by Klein and Bawa (1977). They find that if insufficient information is available about a subset of securities, investors will not hold these securities because of estimation risk, i.e., uncertainty about the true parameters of the return distribution. If investors differ in the amount of information available, they will limit their diversification to different subsets of all securities in the market.<sup>15</sup> It is likely that the amount of information generated is related to the size of the firm. Therefore, many investors would not desire to hold the common stock of very small firms. I have shown elsewhere [Banz (1978, ch. 2)] that securities sought by only a subset of the investors have higher risk-adjusted returns than those considered by all investors. Thus, lack of information about small firms leads to limited diversification and therefore to higher returns for the 'undesirable' stocks of small firms.<sup>16</sup> While this informal model is consistent with the empirical results, it is, nevertheless, just conjecture.

To summarize, the size effect exists but it is not at all clear why it exists. Until we find an answer, it should be interpreted with caution. It might be tempting to use the size effect, e.g., as the basis for a theory of mergers — large firms are able to pay a premium for the stock of small firms since they will be able to discount the same cash flows at a smaller discount rate. Naturally, this might turn out to be complete nonsense if size were to be shown to be just a proxy.

The preceding discussion suggests that the results of this study leave many questions unanswered. Further research should consider the relationship between size and other factors such as the dividend yield effect, and the tests should be expanded to include OTC stocks as well.

<sup>15</sup>Klein and Bawa (1977, p. 102).

<sup>16</sup>A similar result can be obtained with the introduction of fixed holding costs which lead to limited diversification as well. See Brennan (1975), Banz (1978, ch. 2) and Maysar (1979).

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**Rating Action: Moody's downgrades Avista Corp. to Baa2, outlook stable**

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20 Dec 2018

**Approximately \$1.1 billion of securities affected**

New York, December 20, 2018 -- Moody's Investors Service ("Moody's") today downgraded Avista Corp.'s (Avista) issuer rating to Baa2 from Baa1, its senior secured and first mortgage bond ratings to A3 from A2 and the trust preferred securities rating at Avista Corp. Capital II to Baa3 from Baa2. The outlook for Avista is stable.

"Avista's cash flow is lower primarily due to tax reform, resulting in financial metrics in the mid-teens range" stated Nana Hamilton, Analyst. "In addition, Moody's sees less predictability with the regulatory outcomes in Washington and room for the company to better manage its relationship with the commission."

Downgrades:

..Issuer: Avista Corp.

... Issuer Rating, Downgraded to Baa2 from Baa1

...Senior Secured First Mortgage Bonds, Downgraded to A3 from A2

...Underlying Senior Secured First Mortgage Bonds, Downgraded to A3 from A2

...Senior Secured Medium-Term Note Program, Downgraded to (P)A3 from (P)A2

...Senior Secured Regular Bond/Debenture, Downgraded to A3 from A2

...Senior Unsecured Medium-Term Note Program, Downgraded to (P)Baa2 from (P)Baa1

..Issuer: Avista Corp. Capital II

...Pref. Stock, Downgraded to Baa3 from Baa2

Outlook Actions:

..Issuer: Avista Corp.

...Outlook, Changed To Stable From Negative

..Issuer: Avista Corp. Capital II

...Outlook, Changed To Stable From Negative

RATINGS RATIONALE

Pre-tax reform, deferred income taxes constituted a significant portion of Avista's operating cash flow. For example, in 2016, over a third of operating cash flow was associated with deferred taxes. Between 2013 to 2017, deferred taxes averaged about 26% of cash flow. With the lower tax rate and loss of bonus depreciation from tax reform, Avista's ratio of cash flow to debt over the next two years should be around 16%.

The Baa2 rating also looks at Avista's less predictable regulatory outcomes in Washington, where the company generates about 60% of its revenue. Although the state has some credit supportive mechanisms, such as revenue decoupling, the use of historic test years results in the need file general rate cases more frequently. In August 2018, rate base attrition adjustments, which are considered to be credit supportive, were ruled by the Washington Court of Appeals as against the state's used and useful law. This legal decision was part of an ongoing review of Avista's 2015 Washington rate case.

Separately, in April 26, 2018, the Washington Utilities and Transportation Commission (WUTC) issued a final

order in Avista's most recent electric and natural gas general rate cases filed on May 26, 2017. Although Avista had requested three-year electric and gas rate plans in its original filing, the WUTC's order provided for new rates effective May 1, 2018 for one year. In its order, the WUTC approved a net electric revenue increase of \$10.8 million and a net natural gas revenue decrease of \$2.1 million, both including the impacts from the tax cuts and jobs act (TCJA). Both electric and natural gas rate orders were based on a slightly below industry average ROEs of 9.5% and equity layers of 48.5%. In addition, the WUTC agreed to withhold \$10.4 million of the electric excess deferred federal income taxes that resulted from TCJA for the purpose of accelerating the depreciation schedule for Colstrip Units 3 and 4 to reflect a remaining useful life of those units through December 31, 2027.

Although Moody's considers the outcome of the rate case as neutral from a credit perspective, the company's relationship with the Washington commission has been more contentious than other peers'. For example, Avista's February 2016 rate filing was rejected by the WUTC in December 2016, and the company's request for reconsideration of the decision was rejected by the commission in February 2017.

On 5 December 2018, the WUTC rejected Hydro One Limited's (HOL) proposed acquisition of Avista, concluding that the proposed merger agreement is not in the best interest of Avista or its customers from a political and financial risk perspective. Avista and HOL have filed a petition for reconsideration of Washington's decision and decisions from Idaho and Oregon on the acquisition are still pending.

#### Outlook

The stable outlook incorporates a view that Avista's financial profile will maintain a ratio of cash flow from operations pre-working capital (CFO pre-WC) to debt in the mid-teens range and assumes that the utility will receive adequate cost recovery within its regulatory jurisdictions. The stable outlook also incorporates a view that the proposed acquisition by HOL is unlikely to be completed and that unregulated operations will remain below 15% of consolidated earnings and cash flow.

#### What could change the rating -- Up

A rating upgrade could be considered with a demonstrated improvement in regulatory relationships or with CFO pre-WC to debt above 19% on a sustainable basis and CFO pre-WC less dividends to debt above 13% on a sustained basis.

#### What could change the rating -- Down

A downgrade could be considered if there was a sustained depredation of regulatory relationships or if CFO pre-WC to debt deteriorated to below 14% on a consistent basis. A rating downgrade could also be considered if, in the event of a successful completion of the HOL acquisition, Avista is required to provide direct financial support of HOL's acquisition debt.

The principal methodology used in these ratings was Regulated Electric and Gas Utilities published in June 2017. Please see the Rating Methodologies page on [www.moodys.com](http://www.moodys.com) for a copy of this methodology.

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Nana Hamilton  
Asst Vice President - Analyst  
Infrastructure Finance Group  
Moody's Investors Service, Inc.  
250 Greenwich Street  
New York, NY 10007  
U.S.A.

JOURNALISTS: 1 212 553 0376  
Client Service: 1 212 553 1653

Michael G. Haggarty  
Associate Managing Director  
Infrastructure Finance Group  
JOURNALISTS: 1 212 553 0376  
Client Service: 1 212 553 1653

Releasing Office:  
Moody's Investors Service, Inc.  
250 Greenwich Street  
New York, NY 10007  
U.S.A.  
JOURNALISTS: 1 212 553 0376  
Client Service: 1 212 553 1653

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## INDUSTRY OUTLOOK

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### Table of Contents:

SUPPORTIVE REGULATORY RELATIONSHIPS DRIVE OUR STABLE OUTLOOK	2
IMPROVED REGULATORY ENVIRONMENT MEANS STABLE, MORE PREDICTABLE COST-RECOVERY	3
COST-RECOVERY IMPROVES, BUT NOT WITHOUT EXCEPTIONS	5
MORE UTILITIES ARE TURNING TO FINANCIAL ENGINEERING	6
APPENDIX: PEER GROUP	7
MOODY'S RELATED RESEARCH	11

### Analyst Contacts:

NEW YORK	+1.212.553.1653
Ryan Wobbrock	+1.212.553.7104
Assistant Vice President - Analyst	ryan.wobbrock@moodys.com
James Hempstead	+1.212.553.4318
Associate Managing Director	james.hempstead@moodys.com
Mike Haggarty	+1.212.553.7172
Senior Vice President	mike.haggarty@moodys.com
Mihoko Manabe	+1.212.553.1942
Senior Vice President	mihoko.manabe@moodys.com
Natividad Martel	+1.212.553.4561
Vice President - Senior Analyst	natividad.martel@moodys.com
Sid Menon	+1.212.553.0165
Associate Analyst	sid.menon@moodys.com

contacts continue on page 12»

## US Regulated Utilities

# Regulation Will Keep Cash Flow Stable As Major Tax Break Ends

Our outlook for the US regulated utility industry is stable. This outlook reflects our expectations for the fundamental business conditions in the industry.

- » **Cost-recovery mechanisms, coupled with annual base-rate increases, will keep the ratio of industry-wide cash flow to debt at about 18%, within our range for a stable outlook.** Favorable rate orders are part of what we view as a broader shift toward stronger regulatory support for the industry, all the more important this year given the end of bonus depreciation. Industry regulation is the most important driver of our outlook.
- » **Ratemaking mechanisms, such as revenue decoupling and riders, allow utilities to recover costs faster and improve the quality, predictability and stability of cash flow.** The ratio of cash flow to gross profit for a peer group of 122 US operating companies has been more stable on a year-over-year basis since 2009, as the use of riders in regulatory agreements has become more commonplace.
- » **We are also seeing signs of improved regulatory support in historically contentious states, such as Connecticut and Illinois.** Stronger recovery mechanisms put in place last year for [Connecticut Natural Gas Corp.](#) (A3 stable) and [Commonwealth Edison Co.](#) (Baa1 stable) in Illinois will likely make cash flow more predictable for utilities in each state. This marks a turnaround in both states, where regulatory support was lacking for certain cost-recovery provisions in the past.
- » **Stagnant customer demand is leading some utilities to pursue shareholder growth through financial engineering.** Some companies are restructuring their businesses by creating master limited partnerships and “yieldcos” to defend their historically high equity multiples. For now, credit risks are limited but so are any benefits for bondholders, and these structures may weaken sponsor credit quality over time.
- » **What could change our outlook.** We could shift our outlook to positive if the ratio of cash flow to debt rose toward 25% on a sustainable basis, which could happen if return on equity rises or utilities deleverage significantly. A more contentious regulatory environment that resulted in a material deterioration in cash flow, such that the ratio fell to 13%, could cause us to have a negative outlook.

## Supportive regulatory relationships drive our stable outlook

Regulatory support will help US electric and gas utilities maintain stable credit profiles in 2014, even with stagnant customer demand and without the cash-flow boost from bonus depreciation.

Fundamentally, the regulatory environment is the most important driver of our outlook because it sets the pace for cost-recovery. Favorable rate orders, even in states where utilities have had contentious regulatory relationships in the past, are part of what we view as a broader shift toward stronger regulatory support for the industry.

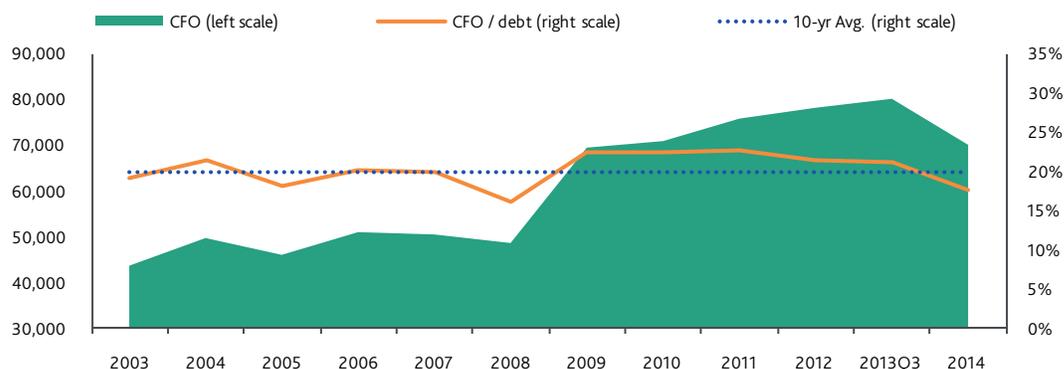
The improved regulatory framework, led by special cost-recovery mechanisms and annual base-rate increases, is all the more important this year for two reasons. First is the end of bonus depreciation, a temporary tax break that expired on December 31. We incorporate a view that bonus depreciation will not be extended; however, various corporate sectors are currently lobbying for the extension in 2014. Second is stagnant customer demand, which is also leading some utilities to pursue shareholder growth through financial engineering (please see page 6).

As Exhibit 1 shows, the ratio of cash flow to debt will decline this year to 18%, just below the 10-year trend line but within our range for a stable outlook. The decline is largely because of higher cash taxes, but utilities can still get some tax relief in 2014 by applying net operating loss carry-forwards (from factors unrelated to bonus depreciation) from past years to this year's tax payments—an option they didn't use when bonus depreciation was in effect.

We would likely shift our outlook to positive if the ratio of cash flow to debt rose to 25%, although that would take a marked increase in regulatory-allowed ROE levels or steps by utilities to scale back their dividend and stock-repurchase plans. A more contentious regulatory environment or a widespread adoption of more-aggressive financial strategies resulting in a material deterioration in cash flow, such that the ratio fell to 13%, would likely lead to a negative outlook.

EXHIBIT 1

### Cash Flow to Debt Will Hover Below the 10-Year Average



Notes: Figures are in thousands of US dollars. A list of the 122 utilities included in our analysis starts on page 7. Data for the third quarter of 2013 are the latest available. Data for 2014 are our estimates.

Source: Moody's Investors Service

## Improved regulatory environment means stable, more predictable cost-recovery

The US regulatory environment has improved significantly in the past year, providing for faster and more-certain cost-recovery in 2014.

[Puget Sound Energy Inc.](#)'s (PSE; Baa1 stable) June 2013 rate order is a good example. Its regulator, the Washington Utilities and Transportation Commission, approved the decoupling of electric and gas revenue from sales volume, and a property-tax tracker that provides more-efficient recovery of property-tax expense. The commission acknowledged a need to reduce regulatory lag times by expediting the utility's rate filings and offering more real-time true-up of costs during rate filings. The regulator also provided the company with forward-looking annual revenue adjustments (about 3% for electric and 2% for gas) over the next three years. As a result of these changes, we expect that Puget Sound's cash-flow-to-debt ratio will continue to surpass 20%, exceeding the industry average, even without the cash-flow benefit of bonus depreciation.

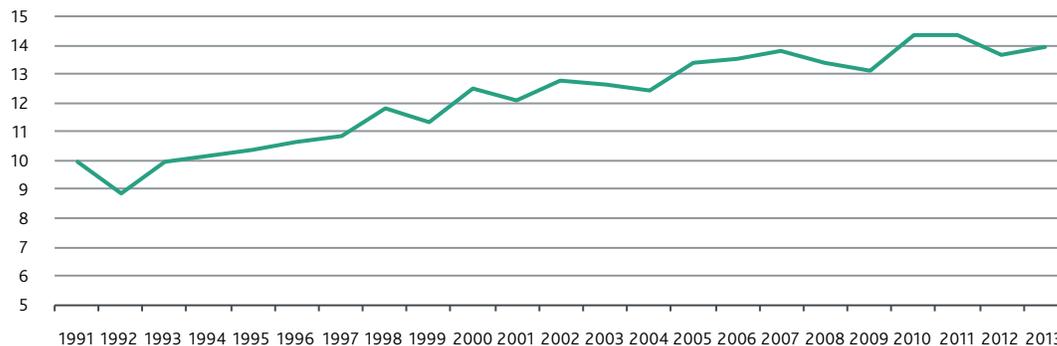
Another example is [Westar Energy Inc.](#)'s (Baa1 stable) 2013 abbreviated rate case with the Kansas Corporation Commission. In addition to providing incremental cost-recovery for environmental upgrades, the regulator allowed Westar to increase its monthly fixed charge on customer bills. This movement in rate design will allow Westar to recover a greater portion of its fixed costs through fixed rates, rather than volumetric rates, thereby reducing Westar's dependency on selling higher volumes to recover fixed costs. The shift to a \$12 residential monthly fixed charge from \$9 will be a benefit amid flat customer demand in Kansas over the past three years (see Exhibit 2).

### EXHIBIT 2

#### Demand for Electricity Has Been Stagnant in Kansas

Actual Consumption

Kansas Residential Electricity  
Consumption, TWh



Notes: TWh stands for terawatt hour. 2013 US Energy Information Administration (EIA) data are through October 2013. Our estimates for November and December 2013 are based on historical trends.

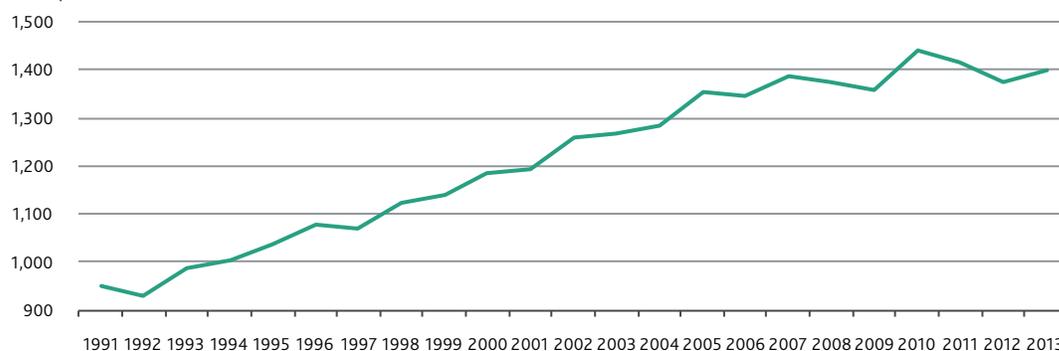
Source: US Energy Information Administration

As demand for electricity wanes, rate structures that are tied more closely to volumetric charges than to fixed charges will threaten the gross profits of most electric and gas utilities. Exhibit 3 below shows the drop-off in US electricity demand since 2010, largely attributable to weather and slow economic growth as well as conservation and efficiency measures.

EXHIBIT 3

**Demand for Electricity Is Slow to Rebound**

Actual Consumption

US Residential Electricity  
Consumption, TWh

Note: 2013 EIA data is through October 2013. Our estimates for November and December 2013 are based on historical trends.

Source: US Energy Information Administration

The industry's financial profile is becoming more predictable and steady because of these special recovery mechanisms that supplement cash recovery between general rate cases. As Exhibit 4 shows, the average ratio of cash flow from operations to gross profit had a standard deviation of 2.4% on a year-over-year basis between 2003 and 2008. This compares with a 1.1% standard deviation on average between 2009 and the third quarter of 2013, the latest data available, a period marked by a more pervasive use of cost-recovery mechanisms throughout the US.

EXHIBIT 4

**Cost-Recovery Mechanisms Make Cash Flow More Predictable**

Year	CFO / Gross Profit	Standard Deviation Rolling Two-Year Average	Average Standard Deviation
2003	30.9%		
2004	37.0%	4.3%	
2005	34.0%	2.1%	
2006	37.3%	2.4%	
2007	34.9%	1.7%	
2008	32.9%	1.4%	2.4%
2009	44.9%		
2010	42.5%	1.7%	
2011	44.8%	1.6%	
2012	44.3%	0.3%	
3Q13	43.0%	0.9%	1.1%

Note: The latest data available are for the third quarter of 2013.

Source: Moody's Investors Service

## Cost-recovery improves, but not without exceptions

Most regulated electric and gas utilities in the US have shown evidence of improved regulatory relationships. Apart from Puget Sound's and Westar's cost-recovery improvements, we have seen regulatory improvement in Illinois and Connecticut, states in which the relationships between regulators and utilities have been somewhat contentious.

Stronger recovery mechanisms put in place late last year in both Illinois and Connecticut will make utility cash flow more predictable. For example, in Illinois, **Commonwealth Edison's** (ComEd) cash flow to debt coverage will start improving in 2014, supported by the adoption of a version of formula ratemaking (i.e., the Energy Infrastructure Modernization Act, or "EIMA," which helps define various aspects of rate structure and cost-recovery in Illinois). The implementation of EIMA will make cost-recovery more tied to factors determined by a formula and less tied to rate-case negotiations (the results of which are less predictable).

Similarly, the Connecticut legislature in 2013 passed the Comprehensive Energy Strategy, which encourages the use of decoupling mechanisms and infrastructure replacement riders (i.e., the Distribution Integrity Management Program, or DIMP), while promoting growth of local distribution companies (LDCs) through customer conversions. These measures are subject to approval by the Public Utilities Regulatory Authority in rate-case proceedings, but were approved in **Connecticut Natural Gas's** (CNG; A3 stable) December 2013 rate case. We expect decoupling, DIMP and conversion incentives to be applied to all LDCs in the state going forward.

These moves mark a turnaround in both states from past years, when regulatory support was lacking for certain cost-recovery provisions and when general rate case outcomes were deemed less than favorable from an investor perspective. For example, the Illinois legislature passed the EIMA in 2011, but the Illinois Commerce Commission did not fully implement it, initially, which made future cost-recovery for ComEd uncertain. Likewise, Connecticut LDCs had few tracking mechanisms and were exposed to declining customer usage in rate design. Now, through the adoption of EIMA in ComEd's rate structure (clarified by Senate Bill 9 in 2013) and CNG's implementation of decoupling and the DIMP, the financial profiles of both companies will likely improve.

These cost-recovery improvements are part of the broader trend we are seeing in the industry, but there are a few high-profile exceptions. [Entergy Corp.](#) (Baa3 stable), which has a history of contentious regulatory relationships in Arkansas and Texas, is one example.

Last year, [Entergy Arkansas Inc.](#) (Baa2 stable) put forth a nearly \$145 million rate request but received about \$81 million (the Arkansas Public Service Commission did allow a new cost-recovery rider for certain regional transmission expenses, however). [Entergy Texas Inc.](#) (Baa3 stable) requested about \$53 million in rate increases for 2014, but the Texas Public Utilities Commission's (PUC) staff recommended a rate increase of a little more than \$3 million. The PUC has not issued a final decision.

Another high-profile exception is [Consolidated Edison of New York's](#) (A2 stable) pending rate settlement, which calls for a two-year freeze on electric rates and a three-year rate freeze on gas and steam rates. Although the rate freeze would curb Consolidated Edison of New York's earnings, the settlement is credit neutral because of the provision for reasonable recovery of deferred storm costs related to Hurricane Sandy and other investments.

This year, one utility that might also buck the positive trend is [Jersey Central Power & Light Co.](#) (JCP&L; Baa2 negative). JCP&L has been the target of public criticism over its handling of outages related to Hurricane Sandy, besides allegations of over-earning. The staff of the New Jersey Board of Public Utilities has proposed that base rates be cut by \$207 million (not considering recovery of storm costs, which will be addressed in a separate rate proceeding). This compares with the company's request for an increase of \$11 million (again, not considering storm costs).

JCP&L's financial flexibility and financial metrics have already been weakened by costs associated with Hurricane Sandy, so a material rate reduction could hurt JCP&L's rating. If JCP&L can bring its ratio of cash flow to debt to at least 14% despite a rate decrease, then our rating outlook could stabilize. JCP&L had 12% cash flow to debt through the 12 months ended the third quarter of 2013.

### More utilities are turning to financial engineering

Against a backdrop of stagnant demand, some utility holding companies are turning to forms of financial engineering, such as creating master limited partnerships (MLPs) and so-called yieldcos, to defend their historically high equity multiples. For the few companies that have proceeded with these strategies so far, the credit impact is neutral because the vehicles are small relative to the corporate sponsor's consolidated credit profile. But longer term, credit risks could increase if these companies eventually lose too much cash flow from their most stable assets and don't reduce debt enough to rebalance their capital structures.

We expect some more companies to go public with these financial-engineering vehicles this year. The joint venture among OGE, CenterPoint and ArcLight—the Enable Midstream Partners MLP—plans to complete an initial public offering in the first quarter. [Dominion Resources Inc.](#) (Baa2 stable) expects to publicly offer its MLP by mid-year. In addition, [NextEra Energy Inc.](#) (Baa1 stable) expects to make a decision whether to form a yieldco by then.

Meantime, several companies have pursued acquisitions outside of their core utility holdings and service territories, like [MidAmerican Energy Holdings Co.](#) (A3 stable), [TECO Energy Inc.](#) (Baa1 stable), and [Avista Corp.](#) (Baa1 stable). This trend is bound to continue as companies try to expand their regulated footprint and achieve regulatory diversity. We expect that most M&A activity in 2014 will be conservatively financed much like these transactions, which included equity financings.

#### EXHIBIT 5

#### Regulated Utilities: M&A Activity

Acquirer / Acquiree	Acquirer			Acquiree			Financing	Credit Implication
	Revenue	CFO	Debt	Revenue	CFO	Debt		
MidAmerican Energy Holdings Co. / NV Energy, Inc.	\$12,373	\$505	\$4,255	\$2,930	\$794	\$5,125	\$5.6 billion in debt & equity	Positive; no ratings actions
TECO Energy, Inc. / New Mexico Gas Company	\$2,851	\$680	\$3,156	\$332	\$65	\$250	\$950 million in debt, equity, & cash	Affirmed TECO Energy ratings
Avista Corp / Alaska Energy and Resources Company (AERC)	\$1,581	\$295	\$1,739	\$42	\$20	\$115	\$170 million in equity	Neutral for Avista
Fortis, Inc. / UNS Energy Corporation	\$3,654	\$976	\$5,783	\$1,483	\$400	\$1,937	\$4.3 billion in debt & equity	Slightly positive for UNS Energy Corporation; no ratings action

Notes: Financials are in millions, as of the 12 months ended September 30, 2013. AERC financials are based on Alaska Electric Light and Power Co. (AELP) 2012 FERC Form 1 data. Fortis and New Mexico Gas financials are as reported as of fiscal 2012. We expect TECO Energy will assume \$200 million of debt already existing at New Mexico Gas Company. We expect Fortis to assume approximately \$1.8 billion of debt already existing at UNS Energy Corporation. In addition, we expect Fortis to finance the UNS acquisition in a manner similar to historical precedent, with a balanced mix of debt and equity issued upstream from the utility (we expect Fortis to keep UNS's current capital structure in place).

Sources: Fortis Inc. Annual Report, AELP 2012 FERC Form 1, SNL, Moody's Financial Metrics

## Appendix: Peer Group

### Moody's Financial Metrics

	Entity Name	LT Rating	Outlook	CFO/Debt (3-Yr Avg) LTM 3Q11- LTM3Q13
Integrated	Alabama Power Company	A1	Stable	26%
	ALLETE, Inc.	A3	Stable	22%
	Appalachian Power Company	Baa1	Stable	17%
	Arizona Public Service Company	A3	Stable	28%
	Avista Corp.	Baa1	Stable	18%
	Black Hills Power, Inc.	A3	Stable	22%
	Cleco Power LLC	Baa1	Positive	19%
	Consumers Energy Company	(P)A3	Stable	27%
	Dayton Power & Light Company	Baa3	Stable	34%
	DTE Electric Company	A2	Stable	24%
	Duke Energy Carolinas, LLC	A1	Stable	23%
	Duke Energy Corporation	A3	Stable	15%
	Duke Energy Florida, Inc.	A3	Stable	21%
	Duke Energy Indiana, Inc.	A2	Stable	16%
	Duke Energy Kentucky, Inc.	Baa1	Stable	23%
	Duke Energy Ohio, Inc.	Baa1	Stable	25%
	Duke Energy Progress, Inc.	A1	Stable	23%
	El Paso Electric Company	Baa1	Stable	25%
	Empire District Electric Company (The)	Baa1	Stable	20%
	Entergy Arkansas, Inc.	Baa2	Stable	19%
	Entergy Louisiana, LLC	Baa1	Stable	17%
	Entergy Mississippi, Inc.	Baa2	Stable	16%
	Entergy New Orleans, Inc.	Ba2	Stable	20%
	Entergy Texas, Inc.	Baa3	Stable	14%
	Florida Power & Light Company	A1	Stable	32%
	Georgia Power Company	A3	Stable	25%
	Gulf Power Company	A2	Stable	26%
	Hawaiian Electric Company, Inc.	Baa1	Stable	17%
	Idaho Power Company	A3	Stable	16%
	Indiana Michigan Power Company	Baa1	Stable	21%
	Interstate Power and Light Company	A3	Stable	18%
	Kansas City Power & Light Company	Baa1	Stable	18%
	Kansas City Power & Light Company - Greater MO	Baa2	Stable	22%
	Madison Gas and Electric Company	A1	Stable	30%
MidAmerican Energy Company	A1	Stable	24%	
Mississippi Power Company	Baa1	Stable	14%	
Nevada Power Company	Baa1	Stable	18%	

	Entity Name	LT Rating	Outlook	CFO/Debt (3-Yr Avg) LTM 3Q11- LTM3Q13
	Northern States Power Company (Minnesota)	A2	Stable	25%
	Northern States Power Company (Wisconsin)	(P)A2	Stable	30%
	NorthWestern Corporation	A3	Stable	19%
	Ohio Power Company	Baa1	Stable	32%
	Oklahoma Gas & Electric Company	A1	Stable	27%
	Otter Tail Power Company	A3	Stable	24%
	Pacific Gas & Electric Company	A3	Stable	25%
	PacifiCorp	A3	Stable	23%
	Portland General Electric Company	A3	Stable	25%
	Public Service Co. of North Carolina, Inc.	A3	Stable	25%
	Public Service Company of Colorado	A3	Stable	23%
	Public Service Company of New Hampshire	Baa1	Stable	20%
	Public Service Company of New Mexico	Baa2	Positive	21%
	Public Service Company of Oklahoma	A3	Stable	27%
	Puget Sound Energy, Inc.	Baa1	Stable	21%
	San Diego Gas & Electric Company	A1	Stable	21%
	Sierra Pacific Power Company	Baa1	Stable	16%
	South Carolina Electric & Gas Company	Baa2	Stable	17%
	Southern California Edison Company	A2	Stable	30%
	Southern Indiana Gas & Electric Company	A2	Stable	28%
	Southwestern Electric Power Company	Baa2	Stable	18%
	Southwestern Public Service Company	Baa1	Stable	21%
	Tampa Electric Company	A2	Stable	32%
	Tucson Electric Power Company	Baa1	Stable	19%
	Union Electric Company	(P)Baa1	Stable	22%
	UNS Energy Corporation	Baa2	Stable	19%
	Virginia Electric and Power Company	A2	Stable	27%
	Westar Energy, Inc.	Baa1	Stable	16%
	Wisconsin Electric Power Company	A1	Stable	17%
	Wisconsin Power and Light Company	A1	Stable	31%
	Wisconsin Public Service Corporation	A1	Stable	26%
T&Ds	AEP Texas North Company	Baa1	Stable	22%
	Ameren Illinois Company	(P)Baa1	Stable	26%
	Atlantic City Electric Company	Baa2	Stable	15%
	Baltimore Gas and Electric Company	A3	Stable	19%
	CenterPoint Energy Houston Electric, LLC	A3	Stable	16%
	Central Hudson Gas & Electric Corporation	A2	Stable	29%
	Central Maine Power Company	A3	Stable	27%
	Cleveland Electric Illuminating Company (The)	Baa3	Stable	15%
	Commonwealth Edison Company	Baa1	Stable	21%

Entity Name	LT Rating	Outlook	CFO/Debt (3-Yr Avg) LTM 3Q11- LTM3Q13
Connecticut Light and Power Company	Baa1	Stable	13%
Consolidated Edison Company of New York, Inc.	A2	Stable	23%
Delmarva Power & Light Company	Baa1	Stable	17%
Duquesne Light Company	A3	Stable	26%
Jersey Central Power & Light Company	Baa2	Negative	18%
New York State Electric and Gas Corporation	A3	Stable	26%
Niagara Mohawk Power Corporation	A3	Stable	23%
NSTAR Electric Company	A2	Stable	29%
Ohio Edison Company	Baa2	Stable	25%
Oncor Electric Delivery Company LLC	Baa3	Stable	20%
Orange and Rockland Utilities, Inc.	A3	Stable	21%
PECO Energy Company	A2	Stable	30%
Pennsylvania Electric Company	Baa2	Stable	18%
Pennsylvania Power Company	Baa2	Stable	37%
Potomac Edison Company (The)	Baa3	Stable	19%
Potomac Electric Power Company	Baa1	Stable	16%
Public Service Electric and Gas Company	A2	Stable	25%
Rochester Gas & Electric Corporation	Baa1	Stable	26%
Texas-New Mexico Power Company	Baa1	Positive	26%
Toledo Edison Company	Baa3	Stable	8%
United Illuminating Company	Baa1	Stable	20%
West Penn Power Company	Baa2	Stable	25%
Western Massachusetts Electric Company	A3	Stable	23%
LDCs			
Atlanta Gas Light Company	A2	Stable	30%
Atmos Energy Corporation	A2	Stable	23%
Berkshire Gas Company	Baa1	Stable	29%
Connecticut Natural Gas Corporation	A3	Stable	26%
DTE Gas Company	Aa3	Stable	24%
Indiana Gas Company, Inc.	A2	Stable	27%
Laclede Gas Company	(P)A3	Stable	26%
New Jersey Natural Gas Company	(P)Aa2	Stable	19%
Northern Illinois Gas Company	A2	Stable	49%
Northwest Natural Gas Company	(P)A3	Stable	20%
Piedmont Natural Gas Company, Inc.	A2	Stable	23%
Questar Gas Company	A2	Stable	25%
SEMCO Energy, Inc.	Baa1	Stable	15%
SourceGas LLC	Baa2	Stable	14%
South Jersey Gas Company	A2	Stable	21%
Southern California Gas Company	A1	Stable	32%
Southern Connecticut Gas Company	Baa1	Stable	22%

Entity Name	LT Rating	Outlook	CFO/Debt (3-Yr Avg) LTM 3Q11- LTM3Q13
UGI Utilities, Inc.	A2	Stable	27%
UNS Gas, Inc.	Baa1	Stable	27%
Washington Gas Light Company	A1	Stable	35%
Wisconsin Gas LLC	A1	Stable	28%
Yankee Gas Services Company	Baa1	Stable	18%

Source: Moody's Investors Service

## Moody's Related Research

### Industry Outlooks:

- » [US Regulated Utilities: Regulation Provides Stability as Business Model Faces Challenges, July 2013 \(156754\)](#)
- » [US Regulated Utilities: Regulatory Support, Low Natural Gas Prices Maintains Stability, February 2013 \(149379\)](#)
- » [US Unregulated Power: Headwinds continue for the merchant power players, July 2013 \(156302\)](#)
- » [US Coal Industry Outlook Stabilizes as Business Conditions Hit Bottom, August 2013 \(157309\)](#)
- » [Global Oil & Gas: Persistent High Oil Prices Keep Industry Robust, but Global Supply Increasing \(Summary\), December 2013 \(160980\)](#)

### Special Comment:

- » [US utility sector upgrades driven by stable and transparent regulatory frameworks, January 2014 \(163726\)](#)
- » [YieldCos: Fantastic for Shareholders; Less So for Bondholders, November 2013 \(160121\)](#)
- » [Planned Capital Expenditures Set to Fall in 2015, And Modestly Decline Thereafter, October 2013 \(158945\)](#)
- » [US Telecommunications and Regulated Utilities: End of Bonus Depreciation Could Prompt Cuts in Capital Spending, Dividends, September 2013 \(157572\)](#)
- » [US Local Gas Distribution Companies: Lower risks and unique growth opportunities versus electric utility peers, May 2013 \(153018\)](#)
- » [The Prospect of US LNG Exports Influences Pricing and Gas Markets Worldwide, May 2013 \(151819\)](#)
- » [US Extends Tax Credit for Wind Power, a Credit Positive for Developers and Utilities, January 2013 \(148915\)](#)

### Rating Methodology:

- » [Regulated Electric and Gas Utilities, December 2013 \(157160\)](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

Rate this Research



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» contacts continued from page 1

**Analyst Contacts:**

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**NEW YORK** +1.212.553.1653

Jeffrey F. Cassella +1.212.553.1665  
*Analyst*  
jeffrey.cassella@moodys.com

Lesley Ritter +1.212.553.1607  
*Analyst*  
lesley.ritter@moodys.com

Toby Shea +1.212.553.1779  
*Vice President - Senior Analyst*  
toby.shea@moodys.com

Swami Venkataraman +1.212.553.7950  
*Vice President - Senior Credit Officer*  
swami.venkataraman@moodys.com

Susana Vivares +1.212.553.4694  
*Vice President - Senior Analyst*  
susana.vivares@moodys.com

Larry Hess +1.212.553.3837  
*Managing Director - Utilities*  
larry.hess@moodys.com

---

**TORONTO** +1.416.214.1635

Gavin MacFarlane +1.416.214.3864  
*Vice President - Senior Analyst*  
gavin.macfarlane@moodys.com

Report Number: 164268

**Author**  
Ryan Wobbrock

**Production Specialist**  
Cassina Brooks

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## **Standard & Poor's Credit Research**

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# Assessing U.S. Investor-Owned Utility Regulatory Environments

**Primary Credit Analyst:**

Todd A Shipman, CFA, Boston (1) 617-530-8241; [todd.shipman@spglobal.com](mailto:todd.shipman@spglobal.com)

### **Table Of Contents**

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Regulatory Stability

Tariff-Setting Procedures

Financial Stability

Regulatory Independence And Insulation

Related Criteria And Research

# Assessing U.S. Investor-Owned Utility Regulatory Environments

Regulatory advantage is the most heavily weighted factor when S&P Global Ratings analyzes a regulated utility's business risk profile. One significant aspect of regulatory risk that influences credit quality is the regulatory environment in the jurisdictions where a utility operates. A utility management team's skill in dealing with regulatory risk can sometimes overcome a difficult regulatory environment. Conversely, companies' regulatory risk can increase even with supportive regulatory regimes if management fails to devote the necessary time and resources to the important task of managing regulatory risk. We modify our assessment of regulatory advantage to account for this dynamic in our ratings methodology (for the criteria we use to rate utilities, see "Corporate Methodology," and "Key Credit Factors For The Regulated Utilities Industry," published Nov. 19, 2013, on RatingsDirect.)

There are specific factors we use in the U.S. to assess the credit implications of the numerous regulatory jurisdictions here that help us determine the "preliminary regulatory advantage" in our credit analysis of each investor-owned regulated utility. We organize the subfactors of regulatory advantage into four categories:

- Regulatory stability,
- Tariff-setting procedures and design,
- Financial stability, and
- Regulatory independence and insulation.

## Regulatory Stability

The foundation of our opinion of a jurisdiction is the stability of its approach to regulating utilities, encompassing transparency, predictability, and consistency. Given the maturity of the U.S. investor-owned utility industry, the long history of utility regulation (going back to the early 20th century) and the well-established constitutional protections accorded to utility investments, we emphasize the principle of consistency when weighing regulatory stability. We also incorporate the degree to which the regulatory framework either explicitly or implicitly considers credit quality in its design.

## Regulatory Change Can Bring Stability, Or Take It Away

While stability is one of the four pillars of our approach to evaluating regulatory risk, experience shows us that it's not an absolute positive or negative for creditors. Change can boost or lessen risk, and any improvement in a regulatory regime will overcome any negative connotations of instability. A good example is Michigan, which in about 2008 revamped its whole approach to utility regulation. As implemented in subsequent years by the Michigan Public Service Commission, the reforms have almost completely transformed the regulatory environment in that state.

However, during any period of change, we see the uncertainties surrounding the process and the outcome as possible major causes of risk. A more recent and still ongoing example is New York, where the Public Service Commission's (NYPSC) Reforming the Energy Vision (REV) proceeding is possibly revving up risk for utilities. While the NYPSC seemed at first to be focusing more on high-minded policy questions than on making a lot of changes to day-to-day operations, the current phase could eventually disrupt the way utilities make money and affect their ability to earn the authorized return. If the end result is greater operating risk with no opportunity to earn greater returns, our assessment of the regulatory environment could change.

### Durability of regulatory system

An established, dependable approach to regulating utilities is a hallmark of a credit-supportive jurisdiction. Creditors lend capital to utilities over long periods to fund the development of long-lived assets. A firm understanding of the basic "rules" that will govern how the utility will recover its costs, including servicing its debt and the return on its capital over an extended period, is essential to accurately assess credit risk. Major or frequent changes to the regulatory model invariably raise risk due to the possibility of future changes. Steady application of transparent, comprehensible policies and practices lowers risk.

How long a regulatory framework has been in place is the most important factor in this area. We view jurisdictions as most supportive when there have been no major changes or where the approach has been consistent for a long time and is not prone to further changes. Jurisdictions that have undergone a major, fundamental change in the regulatory paradigm that seems to be working well are a little less supportive, and less so a jurisdiction that is transitioning to a new regulatory approach. Credit risk rises if the transition attracts political attention. The less-supportive jurisdictions are those that frequently alter the basic regulatory approach. We also view the framework's development less favorably if policy disputes or legal actions cause contention, indicating that the political consensus regarding utility regulation is fragile.

Some jurisdictions permit competitive markets to prevail for some important functions of the delivery of utility services, notably wholesale markets for electricity and retail markets for electric or gas service. In others, vertical integration is the norm. A jurisdiction's credit-supportiveness is more prone to suffer if market forces directly influence major cost items that utilities could otherwise control through cost-based regulation because of the potential volatility it creates. The risk inherent in a market-based model is straightforward: utility rates are more volatile when markets influence them rather than fully embedded costs, and regulators are apt to resist full and timely recovery when market price changes are abrupt and substantial (and perhaps misunderstood). We observe less support for credit quality in jurisdictions that are in the midst of deregulating important parts of the utility framework. The uncertainty of the timing

of reaching the outcome--and what the result will be--is a negative factor from a credit perspective. Utilities are also prone to financial stress when the transition to competition causes potential "rate shock" for customers that regulators could resist.

### **Transparency of regulatory framework and attitude toward credit quality**

We believe regulation works best when it is rule-based. Creditor interests are better protected by the presence of and adherence to a pre-set code of rules and procedures that we can look to when assessing risk. Risk is lower when the rules are more transparent and when they take into account a utility's financial integrity. We regard jurisdictions that require regulators to protect utilities' financial soundness and have transparent policies and procedures as the most credit-supportive. We ascribe higher risk in jurisdictions where policies and procedures support financial integrity, but where inconsistency can selectively arise. We believe a jurisdiction provides even less support when transparency merely exists. We see less support when any of these credit factors are absent, or if the regulator's record on following precedent is poor.

## **Tariff-Setting Procedures**

We review rate decisions as part of our surveillance on each U.S. utility. We focus on the jurisdiction's overall approach to setting rates and the process it uses to establish base rates (practices pertaining to separate tariff provisions for large expenses are in the "Financial Stability" part of our analysis). We focus on whether base rates, over time, fairly reflect a utility's cost structure and allow a fair opportunity to earn a compensatory return that provides creditors with a financial cushion that supports credit quality. If the process is geared toward an incentive-based system, our analysis centers on the risks related to the incentive mechanisms. If the jurisdiction has vertically integrated utilities, we review the resource procurement process and assess how it affects regulatory risk.

### **Rate Cases Can Affect Creditworthiness**

Although not common, rate case outcomes can sometimes lead directly to a change in our opinion of creditworthiness. Often it's a case that takes on greater importance because of the issues being litigated. For example, in 2010, we downgraded Florida Power & Light and its affiliates following a Florida Public Service Commission rate ruling that attracted attention due to drastic changes to settled practices on rate case particulars like depreciation rates. More recently, in June 2016, we downgraded Central Hudson Electric & Gas due to our revised opinion of regulatory risk. While that reflected the company's own management of regulatory risk, it was prompted in part by other rate case decisions in New York that highlighted the overall risk in the state.

Sometimes change comes from outside the usual rate case process. The aforementioned improvement in Michigan (see the previous sidebar) came from legislative changes that reformed rate case procedures such as interim rate increases and time limits on rate decisions. In March 2016, we affirmed our ratings on Entergy Corp. and kept the outlook positive based on the prospect of lower regulatory risk as the company pursues strategic changes in its various jurisdictions. For instance, legislation in Arkansas allowing for formula rates could better enable Entergy to manage regulatory lag and earn its authorized return.

### **Ability to timely recover costs**

We review authorized returns and capital structures in our analysis, but we focus mainly on actual earned returns. Examples abound of utilities with healthy authorized returns that have no meaningful expectation of earning those returns due to, for example, rate case lag (i.e., the relationship between approved rates and the age of the costs used to set those rates) or expense disallowances. Also, the stability of the returns is as important as the absolute level of financial returns, and we note the equity component in the capital structure used to generate the revenue requirement in rate proceedings. Higher authorized and earned returns and thicker equity ratios translate into better credit measures and a more comfortable equity cushion for creditors. We consider a regulatory approach that allows utilities the opportunity to consistently earn a reasonable return as a positive credit factor.

A very credit-supportive jurisdiction is one in which all of the utilities it regulates consistently earn above-average returns. We assess jurisdictions lower if only some of them do, and lower still if the earnings records are below average or highly variable from year to year. We deem jurisdictions as weaker when all utilities earn well-below-average returns, and we consider jurisdictions where all utilities consistently earn exceedingly poor returns, including years with negative returns, as weakest.

We consider "regulatory lag" along with the record of earned returns to assess timeliness. Credit-supportive jurisdiction typically have a track record of little regulatory lag, indicating that responsibility for a poor or uneven earnings history lies more with management than its regulators. In addition to the regulator's efficiency in completing rate cases, we consider the obsolescence of the costs on which the rates are based, the timing of interim rates, and other practices (such as allowing rates to automatically change in a future period based on inflation) that affect a utility's ability to earn its authorized return.

If a jurisdiction uses incentives as the primary ratemaking tool and institutes a comprehensive incentive program that allows revenues and costs to diverge, we evaluate the incentive mechanisms' effect on a utility's earnings capability and stability. A common approach features an extended period between base rate reviews, during which rates change according to a formula based on inflation, a predetermined productivity factor, and capital spending. An incentive-based program can be close to credit-neutral compared with systems that permit more frequent and dynamic rate changes if the risk is symmetrical (i.e., an equal opportunity to earn over or under the authorized return and equivalent reward or penalty for doing so) and limited (a maximum or minimum earnings band). The effect on regulatory risk depends on whether we believe the efficiency targets are realistic and achievable, the regulator's treatment of disparities in actual versus authorized spending, and the framework's flexibility to adjust returns for capital market conditions. If there are operating standards, we determine whether they fairly reward or punish utilities if performance deviates from expectations.

There is a muted effect on regulatory risk in jurisdictions where incentives are not central, but are instead used only to augment cost-of-service regulation. A moderate amount of incentives that carry symmetrical risks can even modestly support better credit quality. For example, a fuel-adjustment and purchased-power clause with a sharing mechanism that affects less than 10% of the total fuel costs and cuts both ways when commodity markets change can modestly reduce risk by offering the utility a mild incentive for effective procurement and efficient operations, without unduly exposing it to commodity price risk.

We typically view jurisdictions as credit-supportive if regulators use symmetrical incentive mechanisms sparingly in the rate-setting process. When incentives play a larger role in the rate-setting approach, but are well-designed to evenly allocate risk, we see less support for credit quality. We regard still lower jurisdictions where incentives dominate and are poorly designed. Jurisdictions where incentives significantly degrade risk and are part of a comprehensive incentive regime harbor the most risk for creditors.

## Financial Stability

When we evaluate U.S. utility regulatory environments, we consider financial stability to be of substantial importance. Cash takes precedence in credit analysis. A regulatory jurisdiction that recognizes the significance of cash flow in its decision-making is one that will appeal to creditors.

### Creative Ratemaking Can Help...If Used Correctly

The ability of financial stability factors to help a utility maintain and smooth its cash flow gives prominence to this area of our analysis. In addition to the near-ubiquitous fuel clauses, we see utilities give more attention to obtaining so-called "disc" mechanisms (DSIC, for distribution system investment charge, is a common acronym for this kind of rate adjustment) that accelerate and stabilize cash flow realization when a utility pursues a strategy of boosting rate base to fuel earnings growth.

For instance, Duquesne Light recently filed for a DSIC mechanism in Pennsylvania in conjunction with a long-term plan to improve its distribution system. Approval, requested for October, would enhance our view of Duquesne's ability to manage regulatory risk, because it would consequently be joining the other Pennsylvania utilities that already benefit from this mechanism. On the other end of the spectrum, Mississippi Power's ongoing travails in obtaining rate relief for its Kemper coal-fired plant, which has experienced significant cost and schedule problems, points to how regulatory risk can deteriorate under stress when well-established procedures for handling large and risky capital projects are absent or not followed.

### Treatment of significant expenses

When utilities have major expenses such as fuel and purchased power/gas/water, the presence of separate tariff provisions to facilitate full and contemporaneous recovery is the most prominent factor in this part of our analysis. The timely adjustment of rates in response to changing commodity prices and other expenses that are largely out of management's control is a key feature of a credit-supportive regulatory jurisdiction. The analysis centers on the special tariff mechanisms to determine their effectiveness in producing the cash flow stability they are designed to achieve. The frequency of rate adjustments, the ability to quickly react to unusual market volatility, and the control of opportunities to engage in hindsight disallowances of costs could affect our analysis almost as much as whether the tariff provisions exist at all. The record of disallowances plays a part when we assess regulatory advantage.

We consider jurisdictions to be very credit-supportive if utilities can recover all high-expense items through an automatic tariff clause that is based on projected costs, adjusts frequently, and has no record of any significant disallowances. We see more risk if separate mechanisms exist, but lack some of the above features. We view jurisdictions that lack independent rate mechanisms for large expenses and have a record of significant disallowances

as weakest.

### **Treatment of capital spending**

When applicable, a jurisdiction's willingness to support large capital projects with cash during construction is an important aspect of our analysis. This is especially true when the project represents a major addition to rate base and entails long lead times and technological risks that make it susceptible to construction delays. Broad support for all capital spending is the most credit-sustaining. Support for only specific types of capital spending, such as specific environmental projects or system integrity plans, is less so, but still favorable for creditors. Allowance of a cash return on construction work-in-progress or similar ratemaking methods historically were extraordinary measures for use in unusual circumstances, but when construction costs are rising, cash flow support could be crucial to maintain credit quality through the spending program. Even more favorable are those jurisdictions that present an opportunity for a higher return on capital projects as an incentive to investors.

Very supportive jurisdictions offer a separate recovery mechanism for all capital spending, a mandated current cash return during construction, and a bonus return for some or all capital projects. We deem a jurisdiction weaker if there is a separate mechanism for only certain kinds of spending and the cash return and higher return are subject to the regulator's discretion. We view jurisdictions that don't allow separate recovery or a current return as being lower on the scale. We assess a jurisdiction as weaker still when it doesn't have independent rate mechanisms for capital projects, and we view it as most risky when full recovery occurs only after a utility's assets become operational.

### **Cash-smoothing mechanisms**

We have a more positive view of jurisdictions that use innovative regulatory provisions that help to smooth cash flow from period to period. For a jurisdiction that focuses on incentives in its basic approach to ratemaking, through multiyear rate plans or a formula rate plan, we view the availability of "reopeners" (to adjust rates for unexpected events out of the utility's control) as key to this part of our analysis. The utility's ability to petition for a rate increase when unexpected or uncontrollable costs arise in the midst of a long-term rate plan is a critical risk mitigant.

Other examples of risk-dampening regulatory policies include hedging program approvals, and decoupling (the separation of a utility's profits from sales) or weather-related mechanisms. If a utility seeks approval of a hedging program to manage exposure to commodity prices, it can reduce risk if there's a clearly stated hedging policy that its regulator has endorsed, and a track record of activity that conforms to the policy that has not been subject to regulatory second-guessing. A well-designed decoupling or weather-normalization mechanism that efficiently adjusts rates to offset the sales effect of economic conditions, customer usage trends, or weather will soften earnings and cash flow volatility to the benefit of creditors. If applicable, we view a record of regulatory responsiveness to extreme events for utilities that are prone to violent or disruptive weather (like hurricanes) as favorable for credit quality.

A jurisdiction is more credit-supportive if it makes extensive use of extraordinary and credit-supportive rate mechanisms. Also favorable are jurisdictions that use innovative mechanisms selectively, or have regulators that are receptive to reopeners where incentives are the main ratemaking method.

## Regulatory Independence And Insulation

The role of politics in U.S. utility regulation is often misunderstood. In most jurisdictions, the regulator's function is to set and regulate rates and service standards with due regard not only for the interests of those who advance the capital needed to provide safe and reliable utility service, but for other constituents as well. Creditors should recognize that utility regulation harbors political as well as economic risks. Therefore, how politics could influence regulation helps us evaluate a regulatory environment.

### Political Influence On Utility Regulation Can Yield Unexpected Results

This is often the most variable area of our analysis and the most difficult to assess. The most dramatic, fairly recent reminder of how political forces can influence regulatory risk was last year's unexpected reversal by the popularly elected Mississippi Supreme Court of a significant rate increase granted for Mississippi Power to help pay for a major power plant under construction. Regulators, who were ordered to roll back rates and issue refunds, struggled to make decisions amid the strained political atmosphere and extra scrutiny that the Court's action had created. The episode also highlighted the greater regulatory risk that attends jurisdictions that expose regulators (and in this case the appellate court) to direct political accountability.

Another more recent example of political influence on regulation underscores the complexity of this area of analysis, because it featured many participants at both the federal and state level. Electric utilities in Ohio had a credible strategy for dealing with rising competitive risks in their merchant generation portfolios by offering the output to retail customers at pre-set prices on a long-term basis, which the state regulator approved. The federal regulator (Federal Energy Regulatory Commission, or FERC), responding to complaints by other generators that the plan would inhibit the operation of the competitive electricity market, essentially overruled the Ohio regulators and blocked the utilities from pursuing the strategy that would have reduced its risk profile. It essentially decided that its political interest in and ideological commitment to efficient electricity markets overrode the state's political interest in stable electric rates. The saga is still continuing with attempts to bypass the FERC's ruling through other means, but no matter what the ultimate result, we see how political considerations can increase risk.

### Political independence of regulator

The primary factor in this part of our analysis is the regulators' (and, when relevant, the judicial body that reviews the regulators' decisions) political independence. We think it's more credit-supportive when the regulator is substantially independent of the political process. Jurisdictions are somewhat less favorable when insulation is strong, such as when the executive branch of government appoints regulators subject to legislative approval. We consider jurisdictions to be further down the scale when the same voters who pay utility bills directly elect the regulators, but institutional efforts have been made to erect some shield for regulators from transient political concerns. We view jurisdictions that arrange for direct political accountability of regulators that persistently influences regulatory decisions as less supportive.

### Record of direct political intervention

The overall atmosphere that a regulator operates in can affect its ability to deliver sound, fair, and timely rate decisions and set prudent regulatory policies that assist utilities in managing business and financial risk. In this part of our

evaluation, we may consider the tone that politicians set, the history of political insulation given to the regulatory body and the courts that review its actions, and the behavior of important constituencies that intervene in utility proceedings. We also track the public visibility of utility issues, because we believe that the likelihood of constructive regulatory behavior increases with the comparative obscurity of utility issues.

We view a jurisdiction as having a lower risk if the regulatory environment is marked by cooperative attitudes and constructive interventions in important matters before the regulator. We assess a jurisdiction lower when the atmosphere is more combative and restricts the regulator's ability to act in the long-term best interests of all parties. We consider jurisdictions as weaker if the regulatory environment is so infused with short-term political influence over regulatory decisions that the regulator can't effectively consider investor interests in its decisions.

## **Related Criteria And Research**

### **Related Criteria**

- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013
- Criteria | Corporates | Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013

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INDUSTRY TIMELINESS: 89 (of 97)

Stocks in the Water Utility Industry have traditionally been purchased by income-oriented investors for their yield and dividend growth prospects. Accounts interested in these equities typically are willing to sacrifice capital appreciation in return for a well-defined income stream and a reduced amount of risk. This may be changing, however, as the yields of many water utility stocks are now lower than the *Value Line* median.

Five of the eight regulated utility stocks we follow outperformed the market averages since we last reviewed the group three months ago. Of these, the best performers were the small capitalization equities.

From an operational standpoint, the group continued to post decent earnings. Much of this is the result of positive regulatory climates in many states around the country.

Capital spending in the industry is significant as the water infrastructure in the United States had long been neglected. Utilities are now investing heavily to replace aging pipelines and valves, and to modernize wastewater facilities.

Consolidation remains an ongoing trend in the industry. Smaller municipally run water districts do not have sufficient funds to bring their plant and equipment up to EPA-mandated standards. As a result, they are being merged with larger utilities that have better access to capital. In addition, because this industry is plagued with redundancies, mergers are leading to economies of scale.

Are Water Utility Stocks Still Yield Plays?

The average dividend yield on the eight regulated water utilities we follow is currently 2.1%, or exactly the same as the median for all stocks in the *Value Line* universe. Historically, the yield on these stocks has been much higher. As an example, the typical yield on an electric utility equity is about 3.6%, or 150 basis points higher than the water utility industry. Why is this? One reason is that when taken as a whole, the market capitalization of the group is very modest. Thus, it doesn't take a large shift into the sector by institutional investors to drive the price of these stocks higher and their yields lower. Indeed, the three stocks with the best returns over the past three months were all small cap stocks. *York Water* and *SJW* each surged 30% while *Middlesex Water* rose about 25%. Before these moves, the market capitalization of each individual stock was \$375 million, \$850 million, and \$550 million, respectively. The spike in prices has also left the equities with respective yields of 1.7%, 1.5%, and 2.1%. Taking a look at the three biggest members of the group, only *American Water Works* performed well, while *Aqua America* and *American States Water* both only rose a meager 1%.

Operations And Earnings Are Solid

For the most part, water companies have been experiencing reasonable earnings growth. This comes despite a nationwide trend aimed at getting households to reduce their consumption of water. How can the bottom line do well when state authorities and the utilities themselves are discouraging water usage? The answer is that many states have implemented strategies that not only don't penalize utilities for selling less water, but provides incentives for households to conserve more.

State regulatory authorities are actively working with the industry in a way that is benefited both parties. In drought-stricken California, regulators have changed the compensation methodology for water utilities. Now they earn income on a fee basis, regardless of the amount of water sold. This has proven to be successful in cutting consumption without hurting the utilities bottom line.

As we often point out, the most important factor in a any utility's success, whether it provides electricity, gas, or water, is the regulatory climate in which it operates. Harsh regulatory conditions can make it nearly impossible for the best run utilities to earn a reasonable return on their investment.

Looking forward, the outlook for continued successful cooperation between states and utilities seems likely. Both parties realize that for decades much-needed capital improvements were deferred. Industry experts are now in agreement that large sums have to be made to bring the nation's water infrastructure up to par. Because water bills have been less than homeowners have been paying for other utility services, there appears to be less resistant in increasing them.

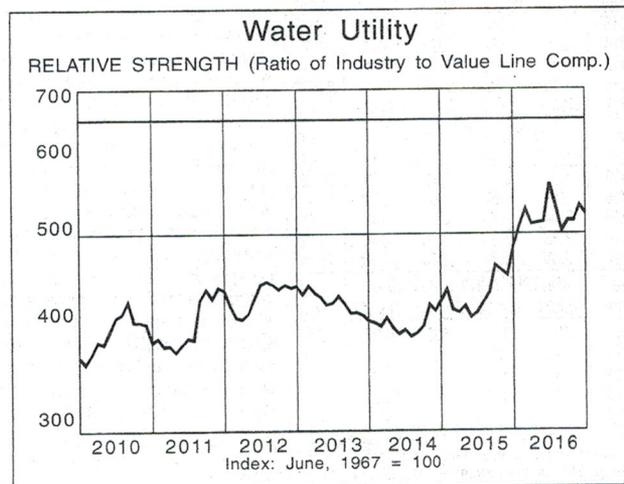
Consolidation

There are over 50,000 mostly small water authorities in the U. S. Many of these districts find themselves without the sums needed to modernize their facilities. As a result, many are merging with larger entities that have the financial wherewithal to make the required investment. *American Water Works*, *American States Water*, and *Aqua America* are three of the most active acquirers. Another benefit from these mergers is that there are a large amounts of redundancies in the industry and substantial cost savings can be achieved.

Conclusion

Our ranking system suggests that stock prices in this group are fully valued. None of the eight stocks are timely with *American Water Works*, *Connecticut Water Service*, *Middlesex Water*, *SJW Corp*, and *York Water* all ranked to underperform the market averages in the year ahead.

James A. Flood



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# Puget Energy Inc. And Subsidiary Ratings Placed On CreditWatch Negative Over Regulatory Concerns

23-Jul-2020 16:46 EDT

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[Table of Contents](#)

[Related Criteria](#)

Bellevue, Wash.-based Puget Sound Energy Inc.'s (PSE's) recent rate order from the Washington Utilities and Transportation Commission (WUTC) was less than credit supportive, effectively negating a rate increase over the next two years. The order substantially reduced a requested rate increase to mitigate the economic effects of the COVID-19 pandemic on customers. S&P Global Ratings expects this development to significantly affect parent Puget Energy Inc.'s (PE's) consolidated financial measures, with funds from operations to debt declining below our downgrade threshold of 13%; however, we expect the company could take steps to offset this weakness.

In addition, we view the WUTC's decision as a potential shift in the company's regulatory construct that increases business risk for both PSE and PE.

As a result, we are placing the ratings on PE and PSE on CreditWatch with negative implications.

The CreditWatch placement reflects the increased probability we could lower the ratings in the next three months.

NEW YORK (S&P Global Ratings) July 23, 2020—S&P Global Ratings today took the rating actions above. The CreditWatch placement reflects the increased possibility of a downgrade over the next three months. The order was significantly weaker than expected in that the company requested a nearly \$200 million rate increase and only received \$2 million. The commission also denied the company's request for an attrition adjustment of roughly \$39 million, which increases the company's regulatory lag. The WUTC's decision raises concerns regarding the company's regulatory construct and increases the business risk for PSE and PE. We will be focusing on future rate cases in the state, particularly, PacifiCorp, whose rate order is expected by November 2020, to give us additional information on whether the regulatory environment for the utilities to operate has materially weakened. This could result in a downward revision of PE and PSE's business risk profile.

We also expect the company to take steps to protect financial measures and will reevaluate the ratings impact of any potential improvement as we get that information. If the company is unable to offset the weakness in its financial metrics or if business risk further deteriorates further, we would lower the ratings.

Our ratings on PE are lower by one notch to reflect our negative comparative ratings analysis modifier. This is in line with our view of both the company's financial and business risk profiles that we view as consistently reflecting the lower end of the range for their categories. Looking forward, PSE may be more susceptible to regulatory lag and unfavorable regulatory decisions, which dims our view of the company's overall management of regulatory risk in the state.

We expect to resolve the CreditWatch in the coming months when we receive additional information regarding any actions the company takes to mitigate the weakness in financial measures along with additional information around regulatory actions in the state. Additional information around the company's action plan or the regulatory construct in the state could prompt rating actions, including a rating affirmation. We would also expect to lower the ratings if in our view the regulatory construct in the state materially weakens.

## Related Criteria

General Criteria: Group Rating Methodology (/en\_US/web/guest/article/-/view/sourceid/10999747), July 1, 2019

Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments (/en\_US/web/guest/article/-/view/sourceid/10906146), April 1, 2019

Criteria | Corporates | General: Reflecting Subordination Risk In Corporate Issue Ratings (/en\_US/web/guest/article/-/view/sourceid/10486915), March 28, 2018

General Criteria: Methodology For Linking Long-Term And Short-Term Ratings (/en\_US/web/guest/article/-/view/sourceld/10011703), April 7, 2017

Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers (/en\_US/web/guest/article/-/view/sourceld/8956570), Dec. 16, 2014

Criteria | Corporates | General: The Treatment Of Non-Common Equity Financing In Nonfinancial Corporate Entities (/en\_US/web/guest/article/-/view/sourceld/8569927), April 29, 2014

General Criteria: Country Risk Assessment Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/8313032), Nov. 19, 2013

Criteria | Corporates | General: Corporate Methodology (/en\_US/web/guest/article/-/view/sourceld/8314109), Nov. 19, 2013

Criteria | Corporates | Utilities: Key Credit Factors For The Regulated Utilities Industry (/en\_US/web/guest/article/-/view/sourceld/8339577), Nov. 19, 2013

General Criteria: Methodology: Industry Risk (/en\_US/web/guest/article/-/view/sourceld/8304862), Nov. 19, 2013

Criteria | Corporates | Utilities: Collateral Coverage And Issue Notching Rules For '1+' And '1' Recovery Ratings On Senior Bonds Secured By Utility Real Property (/en\_US/web/guest/article/-/view/sourceld/7785024), Feb. 14, 2013

General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities (/en\_US/web/guest/article/-/view/sourceld/7629699), Nov. 13, 2012

General Criteria: Use Of CreditWatch And Outlooks (/en\_US/web/guest/article/-/view/sourceld/5612636), Sept. 14, 2009

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Primary Credit Analyst: Matthew L O'Neill, New York (1) 212-438-4295;  
[matthew.oneill@spglobal.com](mailto:matthew.oneill@spglobal.com) (mailto:matthew.oneill@spglobal.com)

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17 July 2020

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Long Term Rating	Baa3
Type	LT Issuer Rating - Dom Curr
Outlook	Stable

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**Contacts**

**Nana Hamilton** +1.212.553.9440  
 AVP-Analyst  
 nana.hamilton@moodys.com

**Michael G. Haggarty** +1.212.553.7172  
 Associate Managing Director  
 michael.haggarty@moodys.com

**CLIENT SERVICES**

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## Puget Sound Energy, Inc.

### Puget Sound Energy's rate case outcome is credit negative

On 8 July 2020, Puget Sound Energy, Inc. (PSE) received a final order from the Washington Utilities and Transportation Commission (WUTC) on electric and gas general rate cases initially filed by the utility in June 2019. The WUTC authorized an electric revenue increase of \$29.5 million or 1.6% but extended the amortization of certain regulatory assets, effectively reducing the revenue increase to \$857,000 or 0.05%. With respect to gas operations, the commission also extended regulatory asset amortization, lowering its authorized revenue increase of \$36.5 million or 4% to \$1.3 million or 0.15%. PSE had requested rate increases of \$139.9 million or 6.9% and \$65.5 million or 7.9% for electric and gas operations respectively. The commission also authorized a below industry average return on equity of 9.4%, slightly lower than the utility's requested and previously allowed ROE of 9.5%, and an equity capitalization of 48.5%, equal to the utility's request and previously authorized equity capitalization.

The desire to limit customer rate increases in light of the uncertain economic environment caused by the coronavirus pandemic was an important driver of the WUTC's decisions. Nevertheless, the rate case outcome is credit negative for PSE and parent Puget Energy, Inc. (Puget) because it will constrain cash flow growth which, together with higher debt to help fund about \$2 billion of capital investments over the last two years, will pressure credit metrics.

Without any management actions to mitigate the negative cash flow impact of the rate case outcome, we estimate that PSE and Puget's credit metrics will remain on the weak end of our expected range for the credit, with operating cash flow before working capital changes (CFO pre-WC) to debt ratios in the high teens at PSE and around 11-12% at Puget over the next two years.

Both PSE and Puget have seen their debt coverage metrics deteriorate steadily since a favorable multi-year rate plan ended in 2017. The companies' credit metrics were particularly low in 2019 because of the adverse effects of an Enbridge Inc. (Baa2 positive) pipeline rupture and a colder than normal winter on purchased gas costs. These costs are being recovered over a three year period instead of the usual one year time frame to reduce the impact on customers. Still, even after adjusting for the purchased gas receivable, PSE's and Puget's 2019 credit metrics were lower than historical levels, with estimated CFO pre-WC to debt ratios of approximately 18% and 11%, respectively, compared with 20.3% and 12.9% in 2018 and 24% and 14.6% in 2017.

Although PSE's regulatory proceedings since 2017 have been characterized by some contention, we had expected Washington's Clean Energy Bill, passed in May 2019, to result in more credit supportive outcomes for the utility. The clean energy legislation includes

the potential for enhanced cost recovery mechanisms that can improve utility financial performance and provides a legal and regulatory framework to reduce carbon exposure. The law acknowledges the WUTC's authority to implement performance and incentive based regulation, multiyear rate plans and other "flexible regulatory mechanisms" to achieve the state's public interest objectives. The bill's application by the WUTC will ultimately determine its benefits to utilities. However, given current economic conditions, the WUTC's focus was on mitigating the economic impact of the coronavirus pandemic on PSE's customers.

Other notable provisions of the rate case order include:

- » Rejection of PSE's attrition adjustment proposal as not in the public interest at this time.
- » To help mitigate regulatory lag, approval of an end of period rate base valuation and approval of certain pro-forma capital additions such as Get to Zero investments to improve customer experience and advanced metering infrastructure (AMI) through the end of 2019.
- » A requirement that PSE continue deferring the recovery of a return on AMI investments, though deemed prudent, until the completion of the project when the benefits to all customers would be evaluated.
- » A requirement that PSE return unprotected excess deferred income taxes (EDIT) associated with tax reform over a three year amortization period and return 2019 and 2020 protected EDIT over a 12 month period.
- » Disallowance of recovery of \$7.2 million of costs to install SmartBurn controls at Colstrip units 3 and 4, citing a failure on PSE's part to maintain contemporaneous documentation of decision making.

The rate case order is still within the adjudicative process where PSE can file for reconsideration by the WUTC and petition a Washington Superior Court to review the order.

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REPORT NUMBER 1237958

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# COVID-19: The Outlook For North American Regulated Utilities Turns Negative

April 2, 2020

## Key Takeaways

- We are revising our assessment of the North America regulated utility industry to negative from stable.
- We expect that the utility industry will remain a high-credit-quality investment-grade industry.
- We expect that the industry's median rating, which is 'A-', could weaken to the 'BBB+' level.
- Prior to the coronavirus outbreak in North America about 25% of the utilities had a negative outlook or ratings that were on CreditWatch with negative implications.
- Additionally, many utilities with a stable outlook have minimal financial cushion at the current rating level.
- We expect COVID-19 will weaken the industry's 2020 funds from operations (FFO) to debt by about 100 basis points.

## PRIMARY CREDIT ANALYST

**Gabe Grosberg**  
New York  
(1) 212-438-6043  
gabe.grosberg  
@spglobal.com

## SECONDARY CONTACT

**Kevin M Sheridan**  
New York  
+ 1 (212) 438 3022  
kevin.sheridan  
@spglobal.com

S&P Global Ratings acknowledges a high degree of uncertainty about the rate of spread and peak of the coronavirus outbreak. Some government authorities estimate the pandemic will peak about midyear, and we are using this assumption in assessing the economic and credit implications. We believe the measures adopted to contain COVID-19 have pushed the global economy into recession (see our macroeconomic and credit updates here: [www.spglobal.com/ratings](http://www.spglobal.com/ratings)). As the situation evolves, we will update our assumptions and estimates accordingly.

S&P Global Ratings is revising downward its assessment of the North America utility industry to negative from stable. The North America utility industry consists of about 250 water, gas, and electric utilities. While we expect the sector to remain an investment-grade industry, we nevertheless project a modest weakening of credit quality within the industry. Credit quality had been gradually weakening prior to the COVID-19 outbreak with about 25% of companies on negative outlook or with ratings on CreditWatch with negative implications. We view COVID-19 as a source of incremental pressure and expect that the recession will lead to an increasing number of downgrades and negative outlooks. Currently, the median rating within the industry is 'A-' and over the next 12 months, we expect that the industry median could move to 'BBB+'.

## Credit Quality Was Weakening Even Before COVID-19

The North America regulated utility industry's credit quality was already weakening prior to COVID-19. This reflected companies' more consistent ability to manage credit measures closer to the downgrade threshold, leaving very minimal financial cushion at the current rating level. We generally view the industry's cash flows as more predictable and steady than most other corporate industries. Even so, unless a management team can proactively implement corrective actions, a utility with minimal financial cushion at the current rating coupled with an unexpected material event, typically results in a negative outlook or a downgrade.

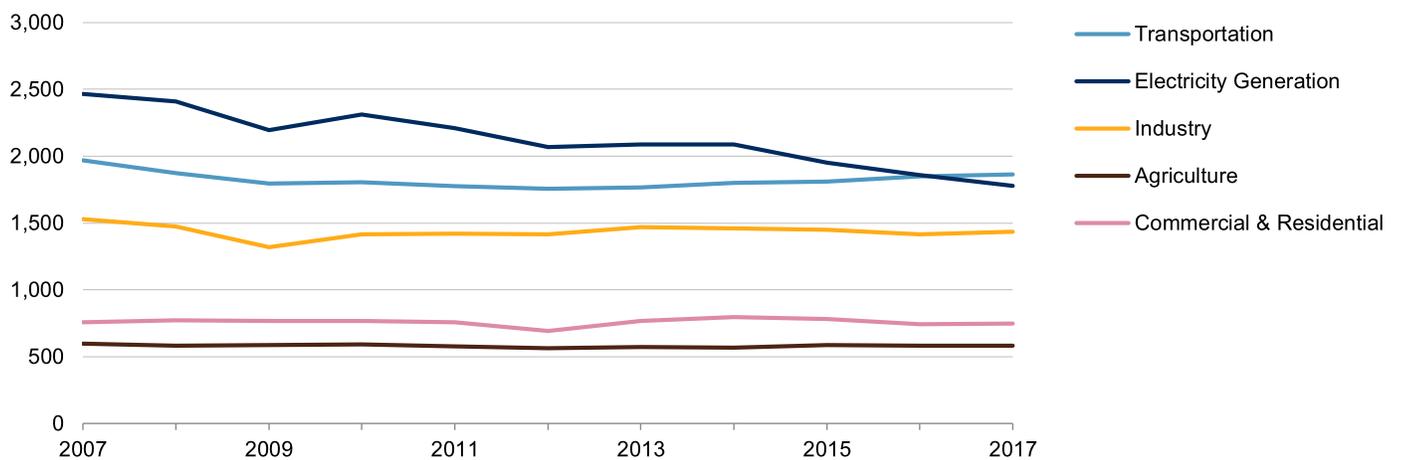
The industry has faced many unexpected events and credit obstacles over the past two years. Some of these include safety (NiSource Inc.), wildfires (PG&E Corp., Edison International, and Sempra Energy), large capital projects (Southern Co., SCANA Corp., Eversource Energy, Duke Energy Corp., and Dominion Energy Inc.), utility acquisition (Fortis Inc., Emera Inc., ENMAX Corp., and NextEra Energy Inc.), and nonutility acquisitions (DTE Energy Co.). Each of these instances have either significantly reduced the prior cushion at the current rating level, triggered negative outlooks, or downgrades.

Also pressuring the industry's credit quality is the critical focus on environmental, social, and governance (ESG) factors. Over the past decade, the industry has done an outstanding job to significantly reduce its greenhouse gas emissions and reduce its reliance on coal-fired generation.

Chart 1

### Total U.S. Greenhouse Gas Emissions By Economic Sector From 2007 -2017

Million metric tons of CO2 equivalents

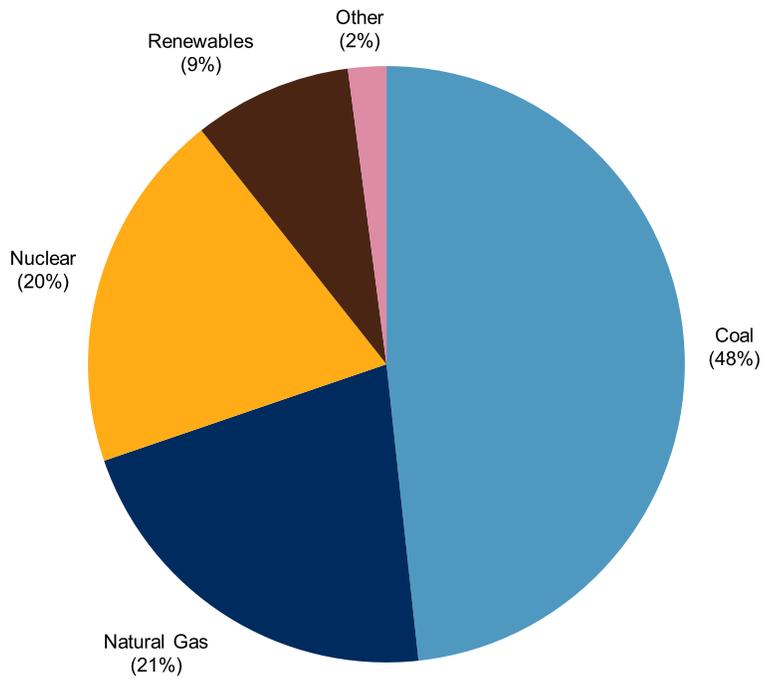


Source: U.S. Energy Information Administration.

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Chart 2

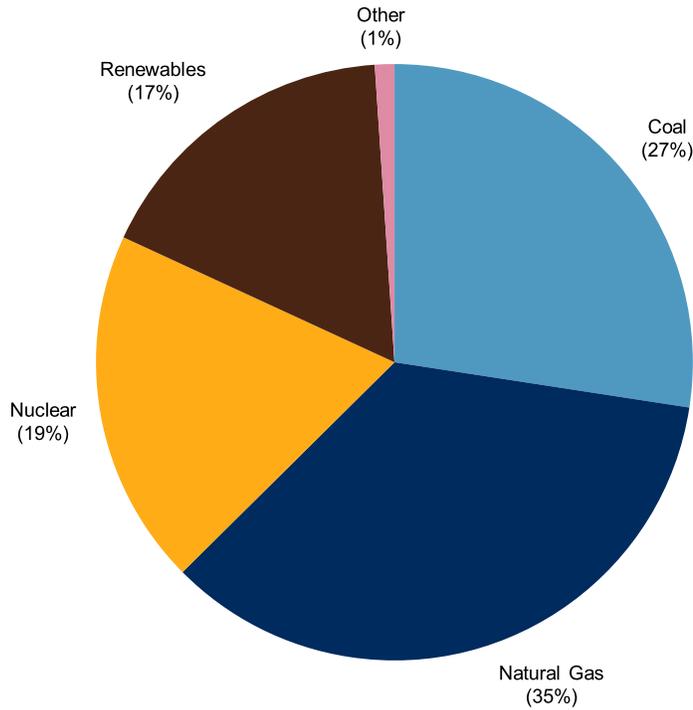
**U.S. 2008 Generation Mix**



Source: U.S. Energy Information Administration.  
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Chart 3

**U.S. 2018 Generation Mix**



Source: U.S. Energy Information Administration.  
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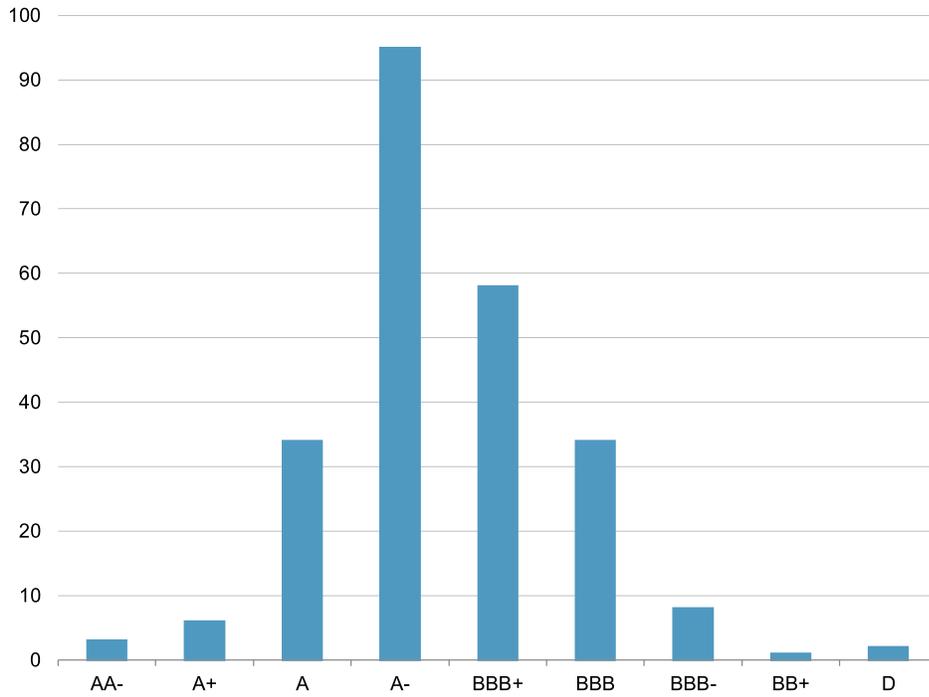
However, there are individual companies such as American Electric Power Co. Inc., Ameren Corp., and Evergy Inc. that despite having long-term plans to reduce their reliance on coal-fired generation, will continue to rely heavily on that fuel source for the next decade, possibly pressuring credit quality.

**Rating Upgrades And Downgrades**

Over the past decade, there have been generally more upgrades than downgrades in the sector. This has strengthened the utilities' credit quality since the financial recession and currently, the median rating within the industry is 'A-'.

Chart 4

North American Regulated Utilities Ratings Distribution 2019

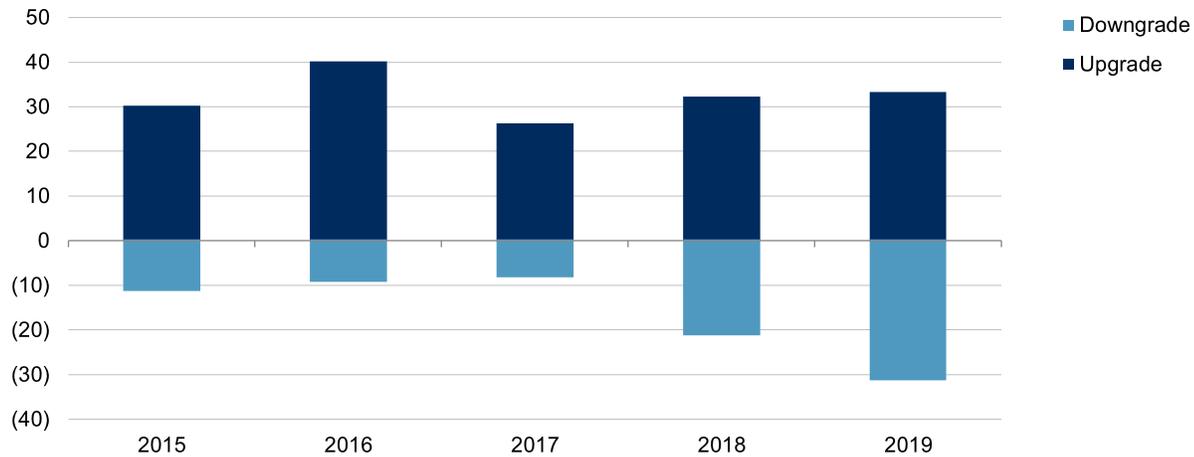


Source: S&P Global Ratings.  
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When analyzing our rating upgrades and downgrades in the sector for 2019, even prior to COVID-19, we note a weakening of credit quality.

Chart 5

### North American Regulated Utilities Upgrades And Downgrades



Source: S&P Global Ratings.

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While 2019 may initially appear to be similar to prior years with upgrades outpacing downgrades at 33 to 31, the underlying analysis tells a different story. In 2019, about 60% of the upgrades were attributed to S&P Global Ratings' revised group rating methodology criteria. Under the revised criteria, we placed more emphasis on the regulation of a utility allowing for a subsidiary with effective regulation and with a stand-alone credit profile that is higher than its group to potentially be rated higher. Absent the revised criteria, downgrades would have outpaced upgrades by 30 to 13 in 2019. This is a clear indication that even before COVID-19, the credit quality of the North America regulated utility sector had weakened.

### Operating With Minimal Financial Cushion

While many companies with a negative outlook such as Puget Energy Inc. have minimal financial cushion at their current rating level, many others with a stable outlook also have minimal financial cushion at their current rating level. Companies with a stable outlook and minimal financial cushion include Exelon Corp., ALLETE Inc., American Water Works Co. Inc., Edison International, AVANGRID Inc., DPL Inc., CenterPoint Energy Inc., and Madison Gas & Electric Co. As the financial effects of COVID-19 continue to take hold, we expect that even companies with stable outlooks may experience ratings downward pressure. This is another reason that underscores our assessment that the industry outlook has turned negative.

### How COVID-19 May Affect The Sector

In general, we assume that the U.S. will experience more than a 12% contraction in GDP during the second quarter and estimate the pandemic will peak between June and August (Global Macroeconomic Update, March 24: A Massive Hit To World Economic Growth, March 24, 2020).

For the North America utility industry, we expect that COVID-19 will reduce the commercial and

## COVID-19: The Outlook For North American Regulated Utilities Turns Negative

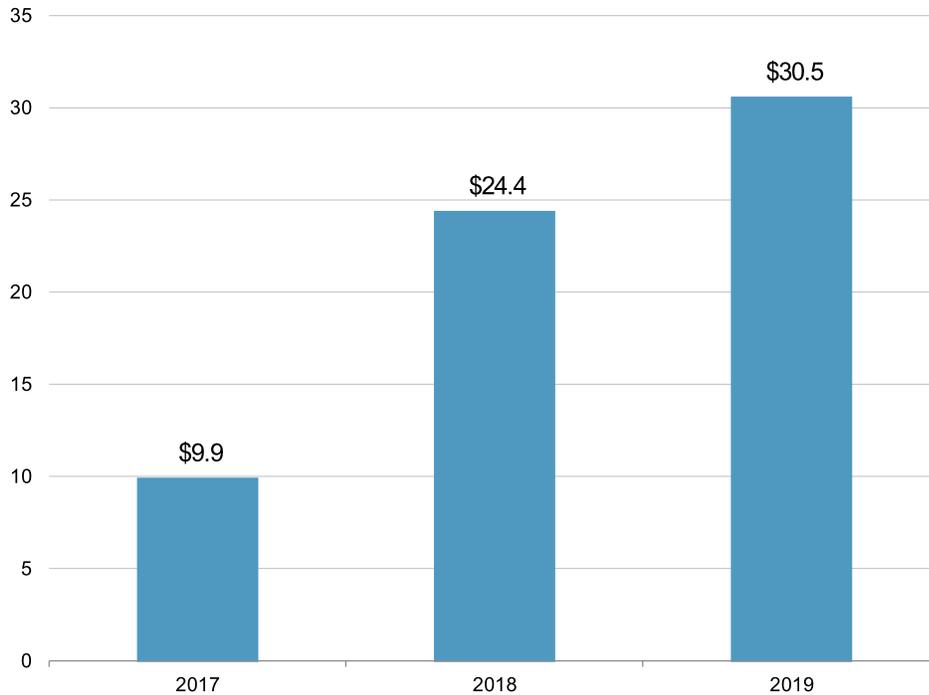
industrial (C&I) usage (North American Regulated Utilities Face Additional Risks Amid Coronavirus Outbreak, March 19, 2020). While some utilities will be able to offset some of the lower C&I usage through various regulatory mechanisms that include decoupling of revenues mechanisms and formula rates, many others will see a weakening of sales. Furthermore, as the recession continues to take hold, we expect bad debt expense will increase as it becomes increasingly more difficult for customers to pay their bills. While many utilities can defer these costs for future recovery, as these balances grow, historically we have seen incidents where utilities negotiate with their commission's to write off some of these costs as part of a larger agreement. Overall, we expect that these effects will result in a weakening of credit measures.

On a positive note, the industry continues to exhibit adequate liquidity and access to the debt markets, despite uneven performance of the commercial paper market for tier 2 issuers. The industry is benefiting from proactive risk management of establishing large credit facilities, having good access to additional liquidity through new term loans from banks, and public issuance of utility debt. These positive developments contrast to the last financial recession, when many utilities fully drew on their available credit lines and access to the banks or to the public debt market was effectively shut for many weeks.

Yet **availability to the equity markets remains extraordinarily challenging**. In 2019, the industry issued more than \$30 billion in equity to preserve credit quality and heading into 2020 many companies within the industry assumed equity issuances as part of their financing plans. Given the industry's negative discretionary cash flow because of its high capital spending **and lack of access to the equity markets**, we expect that this will also lead to a weakening of credit measures.

Chart 6

### North American Regulated Utilities Equity Issuance In Billions



Source: S&P Global Ratings.

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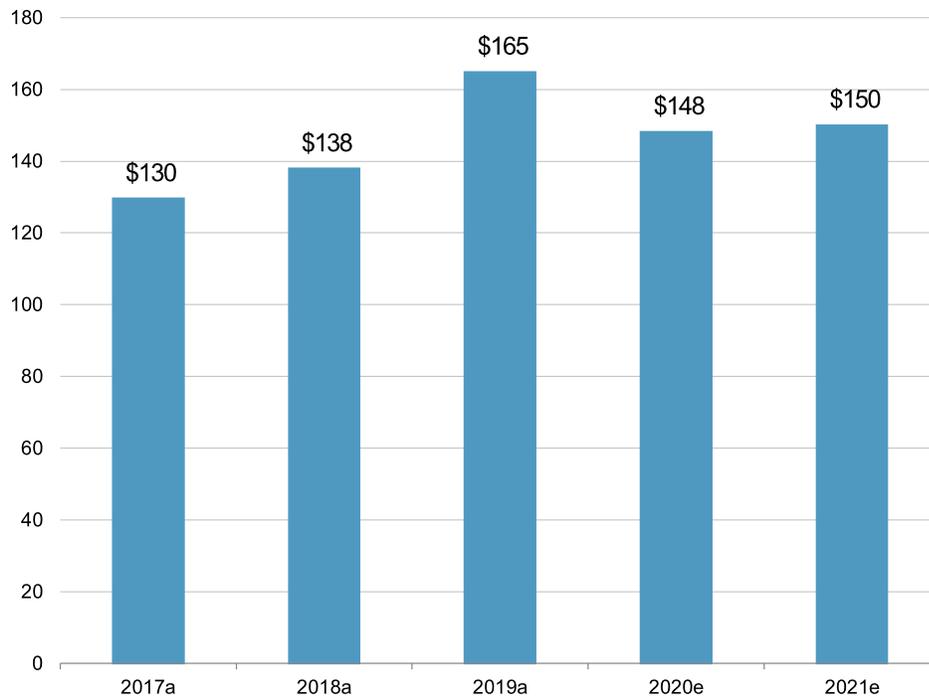
Another area of concern are utilities that rely to various degrees on nonutility businesses that have commodity exposure (S&P Global Ratings Cuts WTI And Brent Crude Oil Price Assumptions Amid Continued Near-Term Pressure, March 19, 2020). These include OGE Energy Corp., CenterPoint Energy Inc., DTE Energy Co., Dominion Energy Inc., Public Service Enterprise Group Inc., NextEra Energy Inc., and Exelon Corp. While many of them are well hedged in the near term, volumetric risk and a longer-term weakening of commodity prices could have a material effect on their credit measures. Overall, assuming that the effects of COVID-19 is only temporary, we would expect that the industry's 2020 FFO to debt will weaken by about 100 basis points, consistent with our revised negative outlook for the industry.

### The Industry Has Levers

Depending on the severity of the recession, the industry has important levers that could mitigate some of the risks. This includes reducing capital spending and dividends. Currently, we estimate that 2020 capital spending will approximate \$150 billion.

Chart 7

**North American Regulated Utilities Capital Expenditures In Billions**



a--actual. e--estimate. Source: S&P Global Ratings.

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Based on our conversations with the companies within the industry there is a wide range as to how deeply a utility can reduce its capital spending and still maintain safe and reliable services. Some utilities can only reduce capital spending by as little as 15%, others by as much as 60%. Our analysis indicates that the majority of utilities could reduce their capital spending on a temporary basis by about 40% and maintain safe operations. Should the recession prolong, we would expect that the industry would generally first reduce capital spending and only afterward cut dividends. There is precedent that during times of high financial stress, utilities have reduced their dividends and we would expect that the industry, if necessary, would use this lever, acting prudently to preserve credit quality.

Credit quality of the North America regulated utility industry was already weakening prior to COVID-19. We believe that incremental challenges that the industry will face from this recession exacerbates financial pressure and underpins our revised negative outlook for the industry. However, we also expect that this industry's credit quality will continue to outperform most other corporate industries despite these challenges. Furthermore, we expect that the utilities will use the levers available to them to reduce credit risks and limit the financial impact from COVID-19. Overall, while we expect a weakening to the industry's credit quality, we continue to firmly believe that this industry will remain a high-quality, investment-grade industry.

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# North American Regulated Utilities Face Tough Financial Policy Tradeoffs To Avoid Ratings Pressure Amid The COVID-19 Pandemic

May 11, 2020

## Key Takeaways

- Some North American regulated utilities are negatively affected by weaker economic conditions related to COVID-19 and are facing unexpected incremental pressure on ratings.
- Even before the current downturn and COVID-19, a confluence of factors, including the adverse impacts of tax reform, historically high capital spending, and associated increased debt, resulted in little cushion in ratings for unexpected operating challenges.
- We expect most utilities will be allowed to account for and defer the costs associated with COVID-19 through existing regulatory mechanisms or future rate cases, although the timing and extent of these protections adds uncertainty to already stretched financial profiles.
- With this as a backdrop, individual companies' financial policies may be tested, as some risk jeopardizing ratings that provide efficient access to capital that feeds this sector.
- We believe that most management teams remain mindful of the benefits of maintaining credit quality and limiting risk, and that they will take countermeasures to offset financial profile weakness.
- Tough tradeoffs may have to be considered to forestall potential downgrades and we think most companies will have some ability to influence better outcomes, even in a pandemic.

## PRIMARY CREDIT ANALYST

**Kyle M Loughlin**  
New York  
(1) 212-438-7804  
kyle.loughlin  
@spglobal.com

## RESEARCH CONTRIBUTOR

**Debadrita Mukherjee**  
CRISIL Global Analytical Center, an  
S&P affiliate, Mumbai

As many sectors face unprecedented disruption related to demand contraction and turbulent credit markets, our utility analysts are actively engaging with the companies we rate to discuss potential challenges utility management teams face. While utilities are not immune from the effects of the sudden deterioration of economic activity, they generally are well-positioned to ride out short-term demand shocks, including those associated with COVID-19. Utility companies operating in the U.S. and Canada benefit from some of the most credit-supportive business models of any issuers rated by S&P Global Ratings. A well-run utility will typically earn a fair return

on invested capital, and recover all of its costs, including debt service, thanks to the prevalence of cost-of-service rate-making and durable regulatory frameworks. These companies benefit from strong barriers to entry in the form of regulation over a service territory that effectively grants the utility monopoly status. Threats from competitors and substitute products are limited and utilities have demonstrated an ability to manage recent hurdles such as distributed generation and climate change. Still, weaker economic conditions related to COVID-19 have affected some utilities and as the realities of lost revenue comes into focus, we find they are facing unexpected incremental pressure on ratings.

S&P Global Ratings acknowledges a high degree of uncertainty about the rate of spread and peak of the coronavirus outbreak. Some government authorities estimate the pandemic will peak about midyear, and we are using this assumption in assessing the economic and credit implications. We believe the measures adopted to contain COVID-19 have pushed the global economy into recession (see our macroeconomic and credit updates here: [www.spglobal.com/ratings](http://www.spglobal.com/ratings)). As the situation evolves, we will update our assumptions and estimates accordingly.

## **Despite Favorable Regulation, Management's Aggressiveness Leaves Little Room For Unexpected Setbacks**

Most utility companies will be able to manage the impacts of COVID-19, as existing recovery mechanisms and rate proceedings will allow management teams to recapture lost cash flow with little disruption to financial risk profiles. Bad debts from mandated and voluntary policies not to cut power to vulnerable ratepayers will add to utility pressures, but we expect that utilities will collect most of this through rate cases and the creation of deferred regulatory assets. Given this type of stability in the face of economic downturns, our ratings on regulated utility companies are among the highest in our Corporate and Infrastructure Ratings practices, and we take fewer adverse rating actions in the sector in times of economic turmoil. Of course, utility companies face credit risks, but they are usually not in the form of demand shocks that so often plague typical industrial companies. More often, downgrades result from poorly executed strategic plans, stretched financial profiles from expansion, adverse regulatory rulings, or pressure from operational stumbles.

We certainly do not contend that demand does not matter to utility credit risk: it can at the margin. However, we do not see the pronounced swings in demand typical of more cyclical companies. The extent to which reduced demand prompts ratings actions, which does not occur often, depends on the individual utility and its management of regulatory risk. The relative stability of demand during a recession reflects the essential nature of the commodities provided and the fact that residential customers typically account for the majority of sales. Industrial and commercial demand can vary more, but the picture remains relatively predictable overall. What really differentiates utilities during severe downturns is the consistency and transparency of regulation, which can protect utility top lines. Regulation around the U.S. and Canada varies widely but many regulators have provided support to utilities from demand shortfalls related to conservation or weather, in the form of mechanisms that decouple revenue from sales, formula rate-making, or through other regulatory processes that enable utilities to defer costs for future recovery. In fact, it is because of conservation and the need to manage their businesses without volumetric growth for the last decade that the industry benefits from many favorable regulatory mechanisms. With respect to the current situation, we expect most utilities will be allowed to defer and collect the costs associated with COVID-19 through existing regulatory protections or future rate cases, although the timing and extent of these protections adds uncertainty to already stretched financial profiles.

Table 1

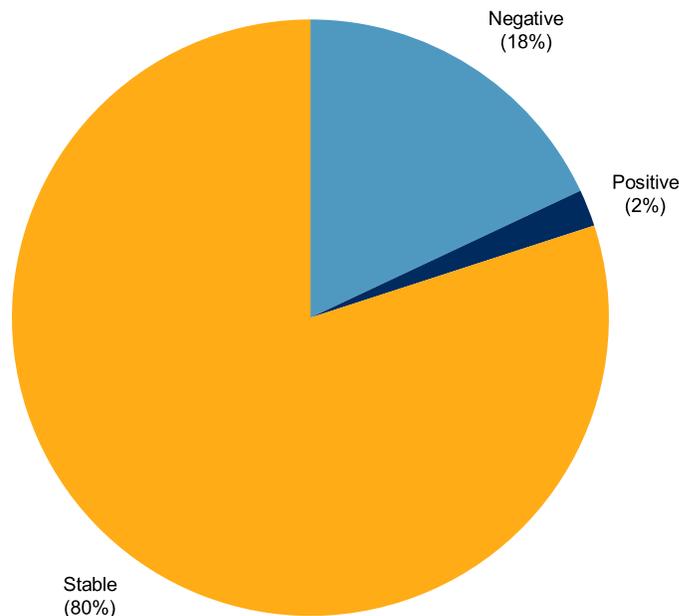
**COVID-19 Cost Recovery Provisions**

<b>Deferral</b>	<b>Customer payment plan</b>	<b>Pending</b>	<b>Other</b>
Alaska	Colorado	Arizona	Georgia
Arkansas	New Hampshire	Illinois	Texas-PUC
California	North Carolina	Kentucky	
Connecticut	Ohio	Pennsylvania	
Dist. Of Columbia	Rhode Island	Virginia	
Georgia		Wisconsin	
Idaho			
Maryland			
Texas-PUC			
Wyoming			

As of April 20, 2020. Deferral = Costs and/or lost revenues may be deferred for future recovery. Customer payment plan = Lost revenue associated with suspension moratorium to be recovered from individual customer over time. Pending = Proceeding underway/legislation pending to determine cost recovery. Georgia--Lost revenue associated with suspension moratorium proposed to be recovered through existing rate plan for one utility. Texas--PUC-costs or lost revenues may be deferred for future recovery for utilities; interim funding mechanism in place for retail electric providers. Source: Regulatory Research Associates, a group within S&P Global Market Intelligence.

This added uncertainty is really the focal point for our analyses as we update our models for 2020-2022 to reflect the severe U.S. recession in the second quarter of 2020 and a recovery in the second half of the year. As we've noted, many utilities already face rating pressure due to a confluence of factors, including the adverse impacts of tax reform of 2019, historically high capital spending of about \$150 billion per year, and associated increased debt levels. These factors have resulted in an unusually high percentage of negative outlooks for the sector. As of March 31, 2020, the percentage of issuers with negative outlooks was near 20% (reduced from 25% in late 2019).

## North American Regulated Utilities--Outlook Distribution



As of March 31, 2020. Source: S&P Global Ratings.  
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Complicating matters is that capital markets will likely remain choppy. The sector's heightened reliance on high equity offerings last year could be constrained due to COVID-19 and new debt issuance has surged in recent weeks as utilities placed historically high levels of additional debt for refinancing and liquidity purposes. The good news is that the debt markets have absorbed new investment-grade issuances, which alleviates immediate concerns about liquidity. The not-so-good news is that this may weigh on some balance sheets and stretched financial profiles. In the end, these issues may test individual companies' financial policies and reveal the amount of risk they are willing to carry without compromising the sector's efficient access to capital.

## Stability May Have Set A Financial Policy Trap For Some Companies

The essential nature of utility services, including electric, natural gas, and water, and the strength of the regulatory frameworks across North America breeds a level of confidence that enables utility management teams to dial-in risk management in most business environments. They are accustomed to running with negative free cash, and many have adopted policies that target a level of financial leverage that is just above the downgrade thresholds we communicate in our research reports. Under normal conditions, this is manageable, and the stability of these businesses enables companies to do that with a high degree of success. However, the incremental challenges brought to bear during this pandemic have already tested the prudence of stretching the financial profile as a consistent business policy. Leverage enables companies to grow and realize attractive

returns as long as it is managed to optimal levels. The uncertainties related to COVID-19 have come on quickly, primarily from the commercial and industrial customers facing unprecedented business shocks, high unemployment, and from the downturn in nonregulated activities such as midstream energy and other services. Other pressure in the form of regulatory risk on the timing and extent of recovery related to COVID-19 costs such as bad debts, and swelling pension exposures add to the mix. For a few stretched issuers, the incremental challenges have already resulted in rating actions. For others, financial policy priorities may need reevaluation to solidify financial profiles and avoid credit deterioration, while many others will ride out the current downturn.

## Some Utilities Have Limited Financial Cushion To Downside Triggers

Given the above, we believe that ratings pressure will remain to the downside through the 2020-2021 timeframe. The current high proportion of negative outlooks highlights that downside risks outweigh upside potential and a review of our existing projections for these companies only heightens concerns. A review of our projections for rated utility holding companies across the sector reflects the reality that tight cushions to downside triggers will likely persist. This sets the stage for downgrades to outpace upgrades for the near future, possibly lowering the median rating into the 'BBB' category for the first time in years. For many companies we rate, the forecast funds from operations (FFO) to debt ratio for the 2020-21 period is expected to reflect limited cushion above the downside trigger set in our published research. While that certainly does not mean that all of these companies will face downgrades, because some will begin to recover post-recession and others will take steps to address temporary weakness, it does highlight a tightening level of financial performance in an uncertain economic environment. With that said, we believe that management teams generally remain mindful of the benefits of maintaining stable credit quality and managing risk, and will take countermeasures to offset financial profile weakness.

## Options Abound For Utilities, But Many Involve Unattractive Tradeoffs

Fortunately, most utility management teams have the ability to pull levers to target financial outcomes. While this is true in any sector, utilities' operating stability supports a greater degree of precision when managing financial risk against other stakeholder objectives. The capacity and willingness to take actions to offset the negative impacts of the current business environment will vary from company to company. So what options are available and at what costs? They include a range of choices including debt issuance (which may pressure credit measures) to reducing dividends and share repurchases (which may hurt share prices). We've highlighted some of the actions available to utility management teams and the costs associated with each (see table 2).

Table 2

### Select Actions Regulated Utilities Could Take To Mitigate Operating Challenges

Action	Credit impact	Tradeoff/Costs
Proactive debt issuance	Alleviates immediate liquidity and refinancing concerns, no impact to FFO.	May pressure financial metrics.
Reduce operating and maintenance costs	Can help maintain financial performance including FFO/debt, offsetting lost revenue and bad debt.	If prolonged, may erode operational capabilities.
Reduce capital spending	Reduces free cash flow deficit and preserves cash but no impact on FFO/debt.	May delay key projects or growth plans.
Equity or hybrid capital issuance	Can immediately improve credit metrics to offset FFO shortfall.	Capital markets may limit access, dilution risk.

Table 2

**Select Actions Regulated Utilities Could Take To Mitigate Operating Challenges (cont.)**

Action	Credit impact	Tradeoff/Costs
Effective regulatory management	Can result in recovery of lost revenue and higher bad debt expense related to COVID-19.	Deferred recovery takes time to mitigate impact to metrics.
Reduce dividends and share repurchases	Reduced discretionary cash flow deficit, preserves cash, no impact to FFO.	Negatively affects share price.

FFO--Funds from operations. Source: S&P Global Ratings.

These steps are part of any utility's toolkit in seeking to secure an optimal capital structure for its business, but the COVID-19 recession is likely to add some urgency to reconsider alternatives. Others may even learn from the crisis, reassess their financial policy targets, and decide to sacrifice some growth or profit potential for the long-range benefit of preserving financial cushions necessary to support credit quality.

**Utilities Seek Best Outcomes In A Down Economy--And Look Forward To Better Times**

As COVID-19 sets the stage for a challenging year for utility sector credit quality, we remain reasonably optimistic that management teams will commit to credit quality to limit negative rating actions. Fortunately, for utilities, options remain available and most regulators are likely to support recovery of bad debts and lost revenues in one form or another. The painful reality is that COVID-19 came at a bad time for everyone, including utilities that already faced more potential ratings actions than is typical. For the most strained issuers, or those that may not fare as well in front of regulators vis-à-vis COVID-19 costs, this is where the rubber will hit the road in terms of evaluating financial policy priorities. Companies will have to consider tough tradeoffs, and some may even need to take proactive steps to forestall rating downgrades. The good news is that most utilities have some ability to influence that outcome because the demand for utility services is relatively stable, even in a pandemic.

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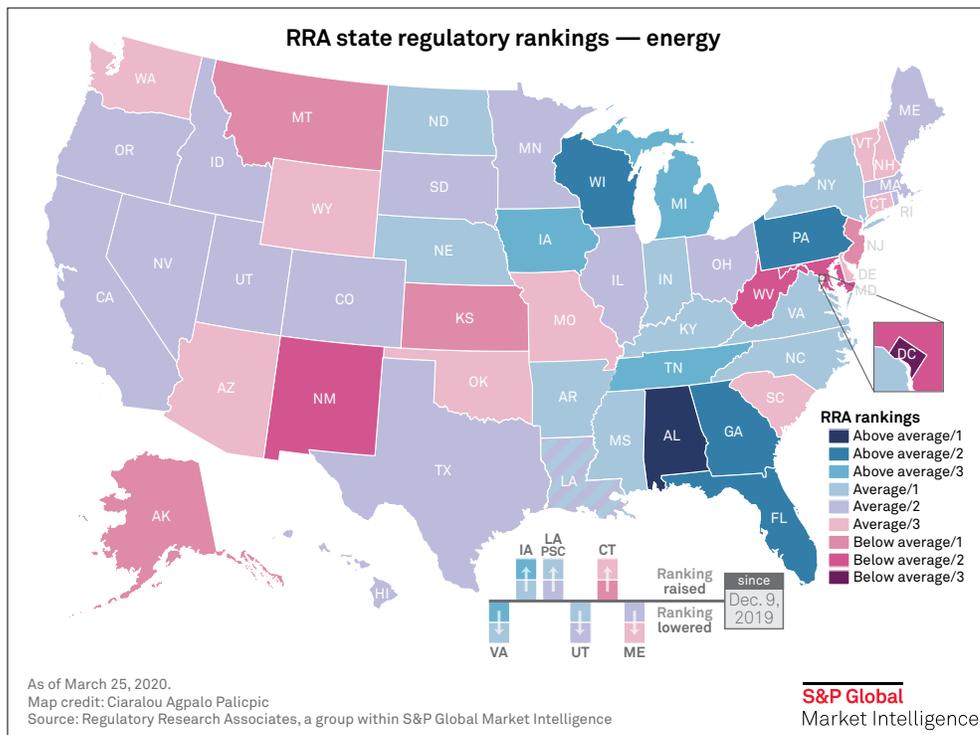
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# RRA Regulatory Focus

## State Regulatory Evaluations

### Assessments of regulatory climates for energy utilities

Regulatory Research Associates, a group within S&P Global Market Intelligence, evaluates the regulatory climate for energy utilities in each of the jurisdictions within the 50 states and the District of Columbia, a total of 53 jurisdictions, on an ongoing basis. The evaluations are assigned from an investor perspective and indicate the relative regulatory risk associated with the ownership of securities issued by each jurisdiction's energy utilities.



Each evaluation is based upon consideration of the numerous factors affecting the regulatory process in the state and may be adjusted as events occur that cause RRA to modify its view of the regulatory risk accruing to the ownership of utility securities in that individual jurisdiction.

**Lillian Federico**  
Research Director

**Sales & subscriptions**  
Sales\_NorthAm@spglobal.com

**Enquiries**  
support.mi@spglobal.com

### RRA State Regulatory Evaluations \* Energy

Above Average 1	Average 1	Below Average 1
Alabama	Arkansas	Alaska
	Indiana	Kansas
	Kentucky	Montana
	Louisiana — PSC	New Jersey
	Mississippi	
	Nebraska	
	New York	
	North Carolina	
	North Dakota	
	Virginia	
Above Average 2	Average 2	Below Average 2
Georgia	California	Maryland
Florida	Colorado	New Mexico
Pennsylvania	Hawaii	West Virginia
Wisconsin	Idaho	
	Illinois	
	Louisiana—NOCC	
	Massachusetts	
	Minnesota	
	Nevada	
	Ohio	
	Oregon	
	Rhode Island	
	South Dakota	
	Texas—PUC	
	Texas—RRC	
	Utah	
Above Average 3	Average 3	Below Average 3
Iowa	Arizona	Dist. of Columbia
Michigan	Connecticut	
Tennessee	Delaware	
	Maine	
	Missouri	
	New Hampshire	
	Oklahoma	
	South Carolina	
	Vermont	
	Washington	
	Wyoming	

As of March 25, 2020.  
NOCC = New Orleans City Council; PSC = Public Service Commission; PUC = Public Utility Commission; RRC = Railroad Commission  
\*Within a given subcategory, states are listed in alphabetical order, not by relative ranking.  
Source: Regulatory Research Associates, a group within S&P Global Market Intelligence.

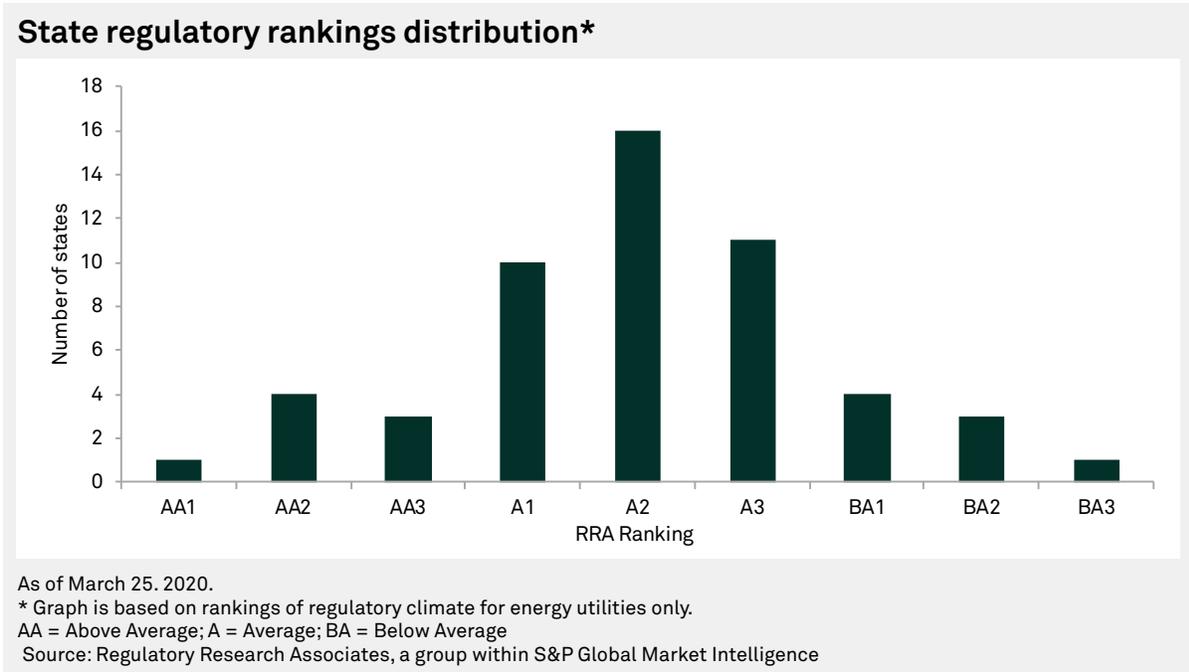
RRA also reviews evaluations when updating [Commission Profiles](#) and when publishing this quarterly comparative report. The issues considered are discussed in RRA Research Notes, Commission Profiles, Rate Case Final Reports and Topical Special Reports. RRA also considers information obtained from contacts with commission, company and government personnel in the course of its research. The final evaluation is an assessment of the probable level and quality of the earnings to be realized by the state’s utilities as a result of regulatory, legislative and court actions.

An Above Average designation indicates that, in RRA’s view, the regulatory climate in the jurisdiction is relatively more constructive than average, representing lower risk for investors that hold or are considering acquiring the securities issued by the utilities operating in that jurisdiction.

At the opposite end of the spectrum, a Below Average ranking would indicate a less constructive, higher-risk regulatory climate from an investor viewpoint.

A rating in the Average category would imply a relatively balanced approach on the part of the governor, the legislature, the courts and the commission when it comes to adopting policies that impact investor and consumer interests.

Within the three principal rating categories, the designations 1, 2 and 3 indicate relative position, with a 1 implying a more constructive relative ranking within the category, a 2 indicating a midrange ranking within the category and a 3 indicating a less constructive ranking within the category.



RRA attempts to maintain a “normal distribution” of the rankings, with the majority of the states classified in one of the three Average categories. The remaining states are then split relatively evenly between the Above Average and Below Average classifications, as seen in the accompanying chart that depicts the current ranking distribution. **For a more in-depth discussion of the factors RRA reviews as part of its ratings process, see the Overview of RRA rankings process section that begins on page 8.**

## Rankings changes

Since the publication of the previous “State Regulatory Evaluations” [report](#), which was published on Dec.9, 2019, RRA has made no rankings changes.

However, in conjunction with this quarterly review RRA is making six rankings changes. RRA is raising the rankings of **Connecticut, Iowa and Louisiana** and is lowering the rankings of **Maine, Utah and Virginia**.

At this time, RRA is raising the ranking of [Connecticut](#) regulation to Average/3 from Below Average/1. The ranking shift accounts for modestly constructive ratemaking actions the Connecticut Public Utilities Regulatory Authority, or PURA, has taken in recent years, including a focus on grid modernization. Although the [authorized](#) ROEs in recent years for both the electric and gas utilities have been considerably below national averages, the PURA has adopted these returns as part of multi-year rate plans that streamline the regulatory process and provide an enhanced degree of certainty with respect to the rate recognition of planned investments.

RRA is also raising the ranking of [Iowa](#) regulation to Above Average/3 from Average/1 as constructive measures stemming from the state’s omnibus energy legislation enacted in 2018 materialized in 2019. Key to moving the needle in the ranking was the use of forward-looking test years in [rate cases](#), as allowed by that 2018 legislation, in two separate 2019 rate case proceedings.

In addition, RRA is raising the ranking of [Louisiana](#) regulation to Average/1 from Average/2, recognizing the impact of the state’s use of alternative regulation plans. For many years Louisiana’s utilities have operated under these mechanisms that provide for periodic rate adjustments outside of base rate cases. Many of the plans contain earnings-sharing provisions, and include other constructive provisions that address various utility costs and investments in a timely manner, including new generation capacity additions. The plans also have generally incorporated benchmark equity returns that were in line with or above prevailing industry averages at the time they were established.

At this time, RRA is lowering the ranking of [Maine](#) regulation to Average/3 from Average/2 due to recent restrictive developments related to mergers and rate case activity. Legislation was enacted in 2019 that amends the Maine Public Utilities Commission’s standard of approval for public utility corporate reorganizations to a “net benefits” standard from a “no net harm” standard. While the PUC ultimately [approved](#) the proposed sale of Emera Inc. subsidiary Emera Maine to ENMAX Corp. under the new stricter test, it did so only after a revised settlement was reached outlining more stringent conditions, including extending a rate freeze for Emera Maine by an additional six months and restricting the level of dividend payments.

In a recent rate [case](#) for Central Maine Power, or CMP, the PUC imposed a penalty to reflect “imprudent” management decisions with respect to a new billing system. The penalty reduced the utility’s authorized ROE by 100 basis points to 8.25%. This ROE is significantly below the average of ROEs authorized by state commission in cases decided in 2019, and is the lowest equity return authorization for an electric utility nationwide since RRA began tracking equity returns in the 1980s. CMP is a subsidiary of Avangrid Inc., which is owned by Iberdrola SA.

RRA is reducing the rating of [Utah](#) regulation to Average/2 from Average/1. This is driven primarily by a recent restrictive Public Service Commission of Utah decision for Questar Gas, in which the commission adopted a below industry average equity return and directed the company to phase-in a relatively modest rate increase. This in conjunction with constructive developments in certain other jurisdictions caused a shift in Utah’s relative position within the RRA rankings framework. Questar is a subsidiary of Dominion Energy Inc.

RRA is lowering the ranking of [Virginia](#) regulation to Average/1 from Above Average/3. This is the second ranking reduction RRA has made for Virginia in the last 12 months — the ranking was [lowered](#) to Above Average/3 from Above Average/2 in August 2019. These rankings actions indicate that while RRA perceives an increase in the level of regulatory risk for the utilities operating in the state, the Virginia regulatory climate remains somewhat more constructive than average from an investor viewpoint.

These changes were precipitated by several factors including a declining trend in [authorized](#) ROEs, backlash concerning the use of rider mechanisms for new investment, as evidenced by commercial customer initiatives to aggregate load to qualify to procure power from a source other than the utility, legislative initiatives to implement broad-based [retail competition](#) for electric generation and the failure of the General Assembly to either re-elect a sitting commissioner or elect a replacement in a timely manner.

**RRA state regulatory evaluations**  
State-by-state listing — energy

State	Ranking	State	Ranking	State	Ranking
Alabama	Above Average/1	Louisiana—NOCC	Average/2	Ohio	Average/2
Alaska	Below Average/1	Louisiana—PSC*	Average/1	Oklahoma	Average/3
Arizona	Average/3	Maine**	Average/3	Oregon	Average/2
Arkansas	Average/1	Maryland	Below Average/2	Pennsylvania	Above Average/2
California	Average/2	Massachusetts	Average/2	Rhode Island	Average/2
Colorado	Average/2	Michigan	Above Average/3	South Carolina	Average/3
Connecticut*	Average/3	Minnesota	Average/2	South Dakota	Average/2
Delaware	Average/3	Mississippi	Average/1	Tennessee	Above Average/3
District of Columbia	Below Average/2	Missouri	Average/3	Texas—PUC	Average/2
Florida	Above Average/2	Montana	Below Average/1	Texas—RRC	Average/2
Georgia	Above Average/2	Nebraska	Average/1	Utah**	Average/2
Hawaii	Average/2	Nevada	Average/2	Vermont	Average/3
Idaho	Average/2	New Hampshire	Average/3	Virginia**	Average/1
Illinois	Average/2	New Jersey	Below Average/1	Washington	Average/3
Indiana	Average/1	New Mexico	Below Average/2	West Virginia	Below Average/2
Iowa*	Above Average/3	New York	Average/1	Wisconsin	Above Average/2
Kansas	Below Average/1	North Carolina	Average/1	Wyoming	Average/3
Kentucky	Average/1	North Dakota	Average/1		

As of March 25, 2020.  
NOCC = New Orleans City Council; PSC = Public Service Commission; PUC = Public Utility Commission; RRC = Railroad Commission  
\* Ranking raised since Dec. 9, 2019.  
\*\*Ranking lowered since Dec. 9, 2019.  
Source: Regulatory Research Associates, a group within S&P Global Market Intelligence

## Issues to watch

### Coronavirus/COVID 19

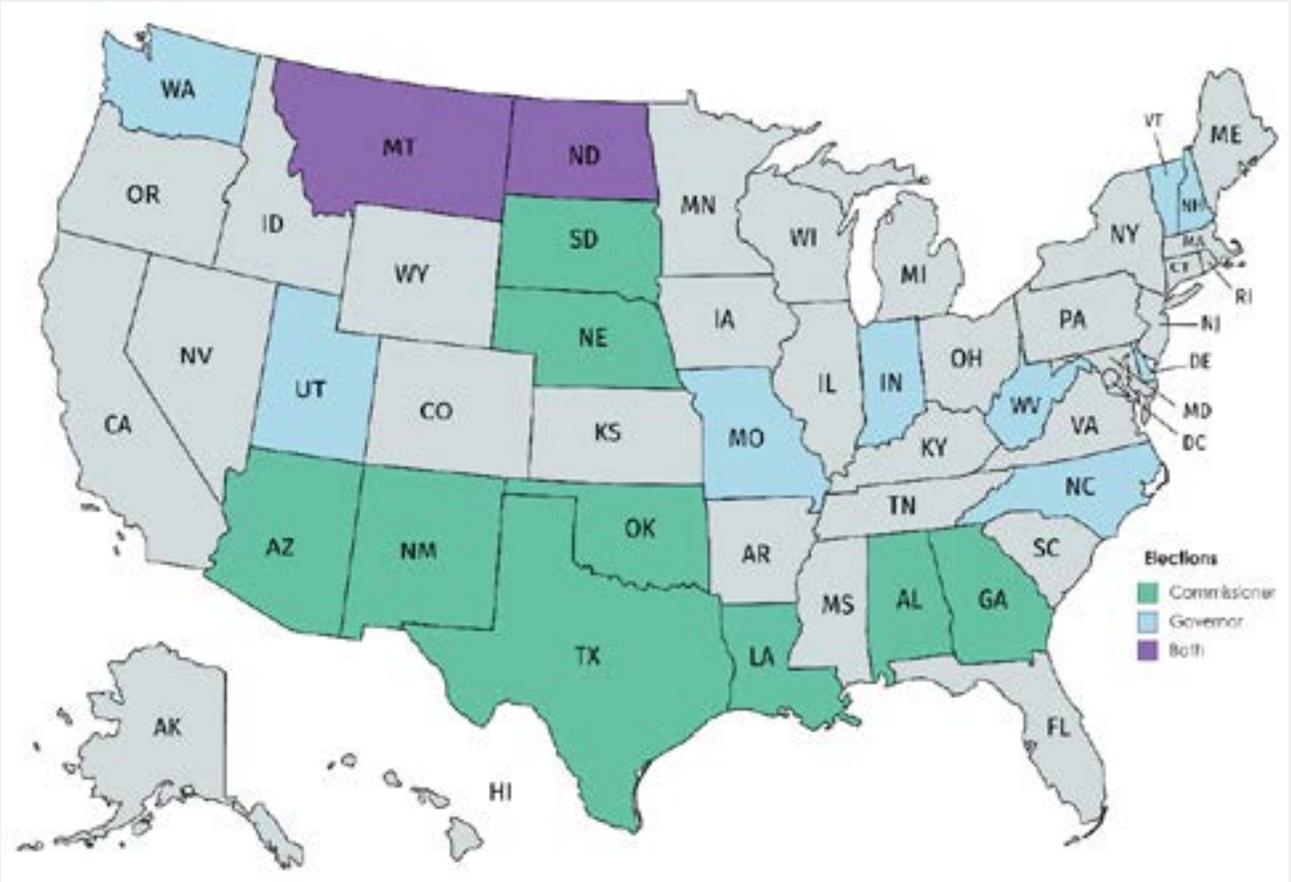
The coronavirus outbreak presents challenges for U.S. utilities on several fronts, including but not limited to, expected reductions in usage as businesses, schools and government buildings remain shuttered, lower revenues due to a higher anticipated occurrence of bad-debt/uncollectibles and increased operating costs associated with enhanced biohazard safety measures and maintaining sufficient staffing to ensure safety and reliability of utility service.

These challenges have the potential to significantly impact the financial performance of the investor-owned utilities, increasing the overall level of investor risk, and will have to be addressed by state regulators. [Mechanisms](#) are in place in several states that, all else being equal, could blunt the impact or allow the impacts to be addressed on a more expedited basis, and these mechanisms are already baked into RRA's rankings of those states.

However, RRA will be on the lookout for instances where the operation of these mechanisms is interrupted because of the unique circumstances surrounding the public health crisis and/or where the state adopts a new or unique approach to addressing the impacts that recognizes the interests of the companies and their investors, as well as customers.

It may be some time before it is apparent how these issues are addressed, as the public health crisis has already begun to [bog down](#) an already busy regulatory agenda. Similarly, concerns regarding the spread of the virus and the need to

**2020 general election snapshot**



Commissioner elections			Gubernatorial election		
State	Commissioner	Running?	State	Commissioner	Running?
Alabama	● Twinkle Andress Cavanaugh*	Yes	Delaware	● John Carney, Jr.	NA
Arizona	● Robert Burns*	No <sup>1</sup>	Indiana	● Eric Holcomb	Yes
	● Boyd Dunn	Yes	Missouri	● Mike Parson	Yes
	● Lea Maquez Peterson	Yes	Montana	● Steve Bullock	No <sup>1</sup>
Georgia	● Lauren "Bubba" McDonald, Jr.*	NA	New Hampshire	● Chris Sununu	Yes
	● James Shaw, Jr.	NA	North Carolina	● Roy Cooper	Yes
Louisiana	● Foster L. Campbell, Jr.**	NA	North Dakota	● Doug Burgum	Yes
	● Eric Skrmetta	NA	Utah	● Gary Herbert	No
Montana	● Bob Lake**	No <sup>1</sup>	Vermont	● Phil Scott	NA
	● Roger Koopman	No <sup>1</sup>	Washington	● Jay Inslee	Yes
	● Tony O'Donnell	Yes	West Virginia	● Jim Justice	Yes
Nebraska	● Crystal Rhoades	Yes		● Democrat ● Republican	
New Mexico	● Valerie Espinoza**	No <sup>1</sup>			
	● Cynthia Hall	Yes			
North Dakota	● Brian Kroshus*	Yes			
Oklahoma	● Todd Hiett*	NA			
South Dakota	● Gary Hanson*	NA			
Texas	● Ryan Sitton	Yes			

Data as of Jan. 10, 2020.  
 \* Chairman/President, \*\* Vice Chairman  
 NA = not available  
<sup>1</sup> The incumbent is ineligible for re-election due to term limits.  
 Source: Regulatory Research Associates, a group within S&P Global Market Intelligence

address the broader economic impacts are disrupting [legislative](#) sessions that are underway across the U.S., slowing the process and creating additional uncertainty for the sector as a whole.

## Elections

In addition to the U.S. Presidential election, the 2020 general [elections](#) will feature 19 utility commissioner and 11 gubernatorial elections. Changes in regulatory personnel that result from these elections could lead to policy shifts in the affected jurisdictions.

A total of four [commissioners](#) in three states where regulators are elected, are ineligible to run for reelection in November due to term limits — Arizona, Montana, where there are two, and New Mexico.

The chief executive of the jurisdiction appoints the utility commission members in nine of the 11 states where gubernatorial elections will be held. Nineteen commissioner terms in eight of those states will expire during the governor-elects' new terms and eight terms will expire within the first 12 months following the election.

## States to watch

In addition to the changes discussed above, there are several states where ongoing issues bear close scrutiny.

In [Arizona](#), a proceeding is ongoing in which the commission is considering an overhaul of the regulatory framework including the implementation of [retail competition](#) for generation and adoption of a 100% renewable portfolio standard, or RPS. While RRA does not take a view on whether the introduction of retail competition or the RPS is in and of itself positive or negative, experience shows that the transition process can be fraught with risk, and so developments in this proceeding bear watching.

In addition, a commission-mandated [rate case](#) is underway for Pinnacle West Capital Corp. subsidiary Arizona Public Service Co., while proceedings are also pending for [Southwest Gas Corp.](#) and Fortis Inc. subsidiary [Tucson Electric Power Co.](#)

In [California](#), the team is continuing to monitor developments with respect to the [bankruptcy](#) proceedings involving Pacific Gas & Electric and its parent PG&E Corp., including the prospects for a state takeover or [break up](#) of the company. Meanwhile, issues with respect to the treatment of wildfire costs continue to await a final resolution.

Other jurisdictions that bear watching include the [District of Columbia](#), where Exelon Corp. subsidiary Potomac Electric Power, or Pepco, filed its first ever multiyear rate [plan](#). In a prior case, the commission had stated that it is “not averse” to certain alternative forms of regulation. The commission later issued a policy order on alternative forms of regulation, setting guidelines for future alternative regulation filings as well as for Pepco’s current proposal. Recently, intervenors participating in Pepco’s rate case [called](#) for the commission to reject the utility’s multiyear rate proposal and instead recommended that District of Columbia Public Service Commission issue a decision based on a traditional test year filing. A final order is expected in late-2020.

Similarly, RRA continues to monitor [Maryland](#), as the commission implements its new policy allowing the use of multiyear rate plans to mitigate regulatory lag. The Maryland Public Service Commission has adopted rules for such proceedings and Exelon subsidiary Baltimore Gas & Electric has expressed a desire to be the test or “[pilot](#)” case.

[Montana](#) also bears watching, as recent rate case decisions have produced [authorized](#) returns on equity that have trended toward nationwide averages; however, it is too soon to say whether this heralds the beginning of a sustained improvement in the regulatory climate. It is also noteworthy that three of the five commissioner seats will be up for election during the 2020 general election.

RRA continues to closely follow a proceeding in [New Mexico](#) where the New Mexico Public Regulation Commission, or PRC, is reviewing a [proposal](#) by PNM Resources Inc. subsidiary Public Service Company of New Mexico to “abandon” its investment in the San Juan Generating Station and securitize the as-yet-unrecovered investment associated with the plant and abandonment-related costs. In addition, a measure is expected to be included on the 2020 [ballot](#) in the form of a proposed constitutional amendment to change the PRC from a five-person elected body to a three-person agency, with members chosen by the governor from a list of candidates compiled by a nominating committee, beginning in 2023. If successful, the implications of this change for utilities and investors will depend on the degree of influence the governor chooses to exert on the regulatory process.

Two recently [completed](#) rates cases before the [Public Utility Commission of Texas](#) were particularly contentious due to the commission’s request for testimony on enhanced ring-fencing requirements. While settlements were ultimately [reached](#), the facts remain that 1) the companies in question already had some form of ring-fencing in place, 2) there were no allegations of improper behavior that would warrant such an examination and 3) these type of issues are generally the purview of merger proceedings rather than rate cases.

RRA continues to monitor the situation in [New York](#) with respect to the heightened politicization of certain energy regulatory matters in the state. During the summer of 2019, a political backlash ensued surrounding power outages in Consolidated Edison Inc. subsidiary Consolidated Edison Co. of New York’s, or CECONY’s, service area. Both Gov. Andrew Cuomo, a Democrat, and local politicians ratcheted up the criticism of CECONY’s reliability. The utility reached a deal, which New York Public Service Commission adopted in January 2020, specifying a well-below-industry-average ROE as part of a three-year [electric](#) and [gas](#) rate plan.

Similarly, while settlement discussions have been held in pending rate cases for National Grid USA subsidiaries [Brooklyn Union Gas Co.](#) and [KeySpan Gas East Corp.](#), reaching a favorable agreement in these proceedings may be challenging in light of the political fallout surrounding the utilities’ self-imposed moratorium on new natural gas service. Amid pressure from Cuomo, a PSC investigation into the moratorium was initiated in October 2019. A settlement was quickly reached and adopted by the PSC in November 2019, which, among other things, lifted the moratorium and called for the National Grid utilities to pay \$36 million to compensate customers hurt by the moratorium and to support new energy conservation measures and projects. Rate cases are also [pending](#) for Iberdrola’s four New York utility operating companies. A joint proposal in those cases are expected to be filed in the near future.

**RRA state regulatory evaluations — energy**

Above average/1	Above average/2	Above average/3	Average/1	Average/2	Average/3	Below average/1	Below average/2	Below average/3
Alabama	Florida	Iowa	Arkansas	California	Arizona	Alaska	Maryland	Dist. of Columbia
	Georgia	Michigan	Indiana	Colorado	Connecticut	Kansas	New Mexico	
	Pennsylvania	Tennessee	Kentucky	Hawaii	Delaware	Montana	West Virginia	
	Wisconsin		Louisiana — PSC	Idaho	Maine	New Jersey		
			Mississippi	Illinois	Missouri			
			Nebraska	Louisiana — NOCC	New Hampshire			
			New York	Massachusetts	Oklahoma			
			North Carolina	Minnesota	South Carolina			
			North Dakota	Nevada	Vermont			
			Virginia	Ohio	Washington			
				Oregon	Wyoming			
				Rhode Island				
				South Dakota				
				Texas—PUC				
				Texas—RRC				
				Utah				

As of March 25, 2020.

NOCC = New Orleans City Council; PUC = Public Utility Commission; RRC = Railroad Commission

\*Within a given subcategory, states are listed in alphabetical order, not by relative ranking.

Source: Regulatory Research Associates, a group within S&P Global Market Intelligence

## State Regulatory Reviews issued since prior report

Since the prior quarterly evaluations report was published on Dec. 9, 2019, RRA has issued State Regulatory Reviews affirming the rankings of the North Carolina and South Carolina jurisdictions.

In a [review](#) published on Jan. 6, 2020, RRA affirmed its Average/3 ranking of [South Carolina](#) regulation indicating that while generally balanced, the environment in the state is somewhat more restrictive than average from an investor viewpoint.

In a [review](#) published on March 10, 2020, RRA affirmed the Average/1 ranking of the [North Carolina](#) regulatory climate. In RRA's view, North Carolina is also generally balanced from an investor viewpoint, but is a bit more constructive than average.

For a complete listing of RRA's in-depth reports, see the [Energy Research Library](#).

## Overview of RRA rankings process

RRA maintains three principal rating categories, Above Average, Average and Below Average, with Above Average indicating a relatively more constructive, lower-risk regulatory environment from an investor viewpoint and Below Average indicating a less constructive, higher-risk regulatory climate. Within the three principal rating categories, the numbers 1, 2 and 3 indicate relative position. The designation 1 indicates a stronger or more constructive rating from an investor viewpoint; 2, a midrange rating; and 3, a less constructive rating within each higher-level category. Hence, if you were to assign numeric values to each of the nine resulting categories, with a "1" being the most constructive from an investor viewpoint and a "9" being the least constructive from an investor viewpoint, then Above Average/1 would be a "1" and Below Average/3 would be a "9."

The rankings are subjective and are intended to be comparative in nature. RRA endeavors to maintain an approximate normal distribution with an approximately equal number of rankings above and below the average. The variables that RRA considers in determining each state's ranking are largely the broad issues addressed in our State Regulatory Reviews/Commission Profiles and those that arise in the context of rate cases and are discussed in RRA Rate Case Final Reports.

The rankings not only reflect the decisions rendered by the state regulatory commission, but also take into account the impact of the actions taken by the governor, the legislature, the courts and the consumer advocacy groups. The policies examined pertain largely to rate cases and the ratemaking process, but issues such as industry restructuring, corporate governance and approach to proposed mergers are also considered.

The rankings are designed to reflect the interest of both equity and fixed-income investors across more than 30 individual metrics. The individual scores are assigned based on the covering analysts' subjective judgement. The scores are then aggregated to create a single score for each state, with certain categories weighted more heavily than others.

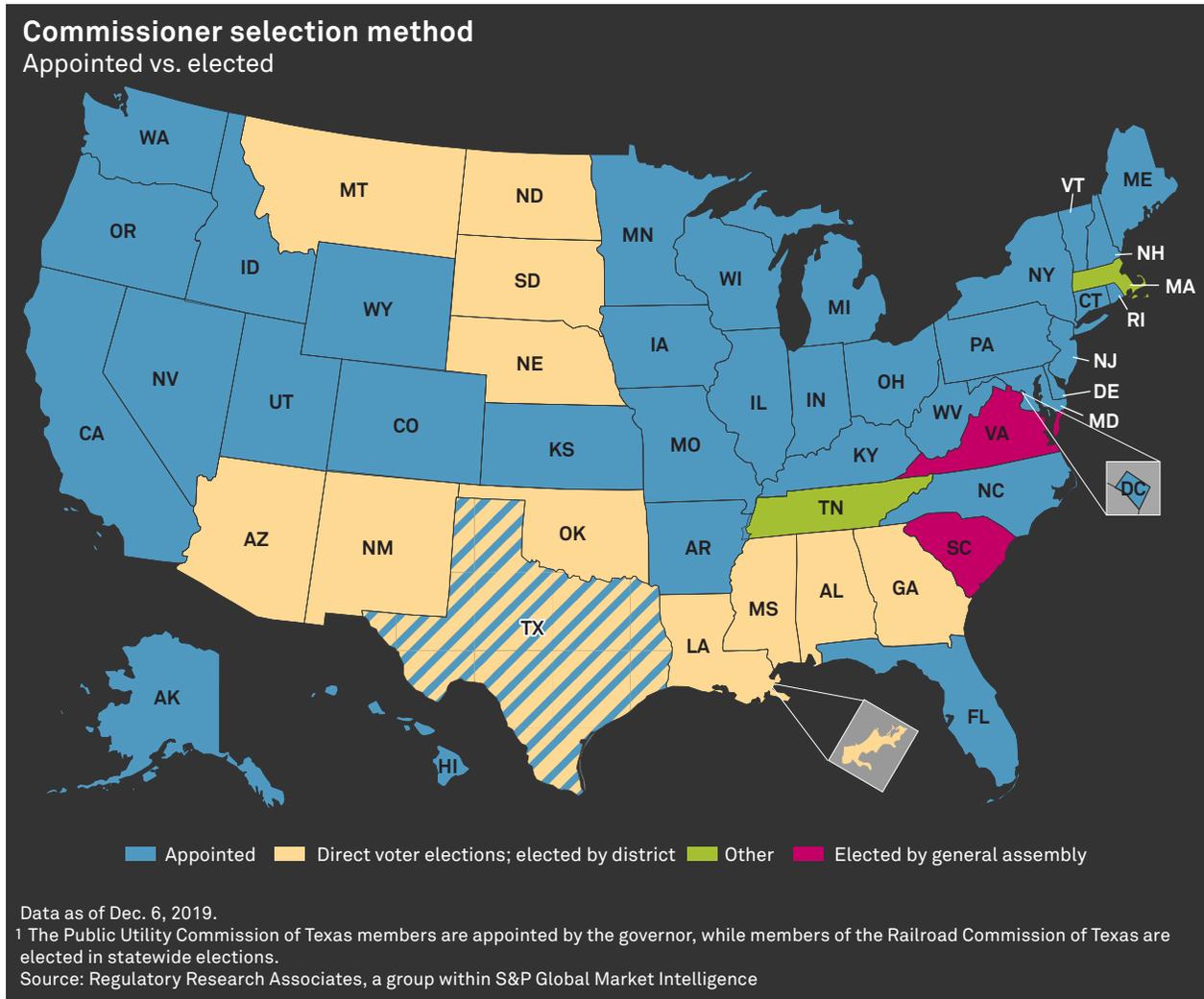
The states are then ranked from lowest to highest and distributed among the nine categories to create an approximate normal distribution. This distribution is then reviewed by the team as a whole, and individual state rankings may be adjusted based on the covering analysts' recommendations, subject to review by a designated panel of senior analysts.

**Please note: In the charts within this report that show the rankings by category, the jurisdictions in each category are listed in alphabetical order rather than by relative position within the category.**

The summaries below provide an overview of the variables RRA looks at, including a brief discussion of how each can impact the ranking of a given regulatory environment.

### Governor/Mayor

The impact the governor, or in the District of Columbia the mayor, may have depends largely on the individual; the issue of elected versus appointed commissioners is evaluated separately.



RRA takes no view on whether Republican governors or Democratic governors are more or less constructive. However, attributes of the governor or the gubernatorial election process that can move the needle here are: whether energy issues were a topic of debate in recent elections and what the tone/topic of the debate was, whether the governor seeks to involve himself or herself in the regulatory process, and what type of influence the governor is seeking to exert.

**Commissioner selection process/membership**

RRA looks at how commissioners are selected in each state. All else being equal, RRA attributes a greater level of investor risk to states in which commissioners are elected rather than appointed. Generally, energy regulatory issues are less politicized when they are not subject to debate in the context of an election.

Realistically, a commissioner candidate who indicates support for the utilities and their shareholders, or appears to be amenable to rate increases is not likely to be popular with the voting public. In addition, there might not be specific experience requirements to run for commissioner; so, a newly elected candidate may have a steeper learning curve with respect to utility regulatory and financial issues, which could make discerning what decisions that individual might make more difficult and could increase uncertainty.

However, there have been some notable instances in which energy issues played a key role in gubernatorial/senatorial elections in states where commissioners are appointed, with detrimental consequences for the utilities, e.g., Illinois,

Florida and Maryland, all of which were downgraded by RRA at the time in order to reflect the increase risk associated with increased political scrutiny of the regulatory process and policies within the jurisdiction.

In addition, RRA looks at the commissioners themselves and their backgrounds. Experience in economics and finance and/or energy issues is generally seen as a positive sign. Previous employment by the commission or a consumer advocacy group is sometimes viewed as a negative indicator. In some instances, new commissioners have very little experience or exposure to utility issues, and in some respects, these individuals represent the highest level of risk, simply because there is no way to foresee what they will do or how long it will take them to “get up to speed.” Controversy or “scandal” surrounding an individual and/or conflict of interest potential are also red flags.

Similarly, a high rate of turn-over or the tendency to allow vacancies to stand unfilled for a long period of time add to the level of regulatory risk in RRA’s view.

For additional information concerning the selection process in each state and the make-up of the commissions, refer to the RRA Regulatory Focus Topical Special Report entitled [The Commissioners](#).

**Commission staff/consumer interest**

Most commissions have a staff that participates in rate proceedings. In some jurisdictions the staff has a responsibility to represent the consumer interest, and in others the staff’s statutory role is less defined. In addition, there may or may not be: additional state-level organizations that are charged with representing the interests of a certain class or classes of customers, such as the Attorney General or the Consumer Advocate; private consortia or lobbying groups that represent certain customer groups; and/or large-volume commercial and industrial customers that intervene directly in rate cases.

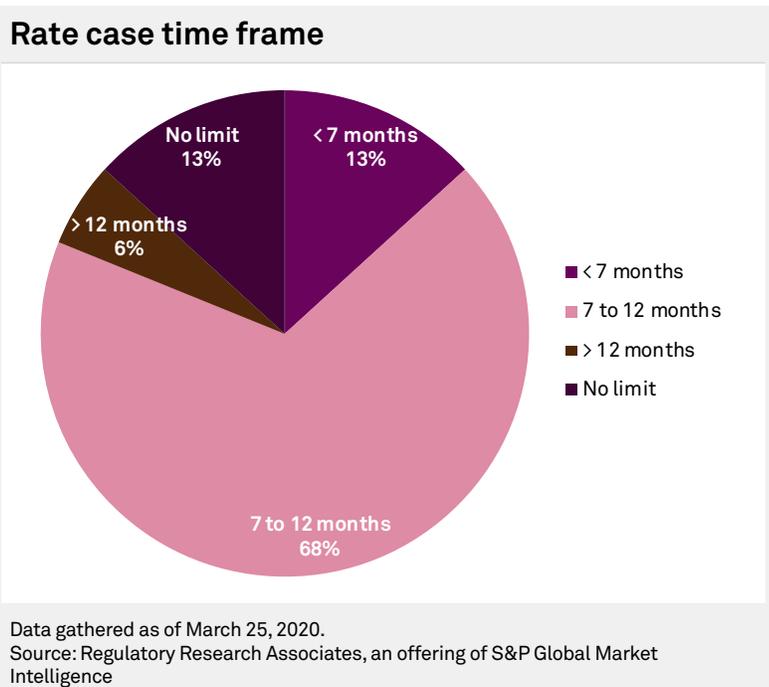
Generally speaking, the greater the number of consumer intervenors, the greater the level of uncertainty for investors. The level of risk for investors also depends on the caliber and influence of the intervening parties and the level of contentiousness in the rate case process. Even though a commission may not adopt an extreme position taken by an intervenor, the inclusion of an extreme position in the record for the case widens the range of possible outcomes, reducing certainty and increasing the risk of a negative outcome for investors. RRA’s opinion on these issues is largely based on past experience and observations.

**Settlements**

In most instances, the ability of the parties to reach agreement without having to go through a fully litigated proceeding is considered constructive, particularly since it reduces the likelihood of court review. However, RRA also endeavors to ascertain whether the settlements arise because of a truly collaborative approach among the parties, or if they result from concern by the companies that the commissioners’ views may be more extreme than the intervenors’, or that the intervenors will take a much more extreme position in a litigated framework than in a closed-door settlement negotiation.

**Rate case timing**

For each state commission, RRA considers whether there is a set time frame within which a rate case must be decided, the length of any such statutory time frame and the degree to which the commission adheres to that time frame.



Generally speaking, RRA views a set time frame as preferable, as it provides a degree of certainty as to when any new revenue may begin to be collected.

About two-thirds of state commissions nationwide have a rule or statute that requires a rate case to be decided within seven to 12 months of filing.

Shorter time frames may apply for limited-issue proceedings, but there are very few states where a rate case will take less than seven months to be decided.

In addition, a shorter time frame for a decision generally reduces the likelihood that the actual conditions during the first year the new rates will be in effect will vary markedly from the test period utilized to set new rates, thus keeping regulatory lag to a minimum.

### **Interim procedures**

The ability to implement all or a portion of a proposed rate increase on an interim basis prior to a final decision in a rate case is viewed as constructive. However, should the commission approve a rate change that is markedly below the rates implemented on an interim basis, the utility would be required to refund any related over-collections, generally with interest.

In some instances, commission approval is required prior to the implementation of an interim increase and may or may not be easy to obtain, while in others, state law or commission rules permit the companies to implement interim rate increases as a matter of course. In some instances, the commission may establish a date prior to the final decision in the case that will be the effective date of the new rates. In these instances, the company may be permitted to recoup any revenue that was not collected between the effective date and the decision date.

### **Rate base**

A commission's policies regarding rate base can also impact the ability of a utility to earn its authorized ROE. These policies are often outlined in state statutes, and the commission usually does not have much latitude with respect to these overall policies.

With regard to rate base, commissions are about evenly split between those that employ a year-end, or terminal valuation and those that utilize an average valuation, with one using a "date certain." In some instances, the commission may employ a different rate base valuation method depending on the utility type or the type of case — general rate case or limited-issue proceeding — or based on the test year selected by the company.

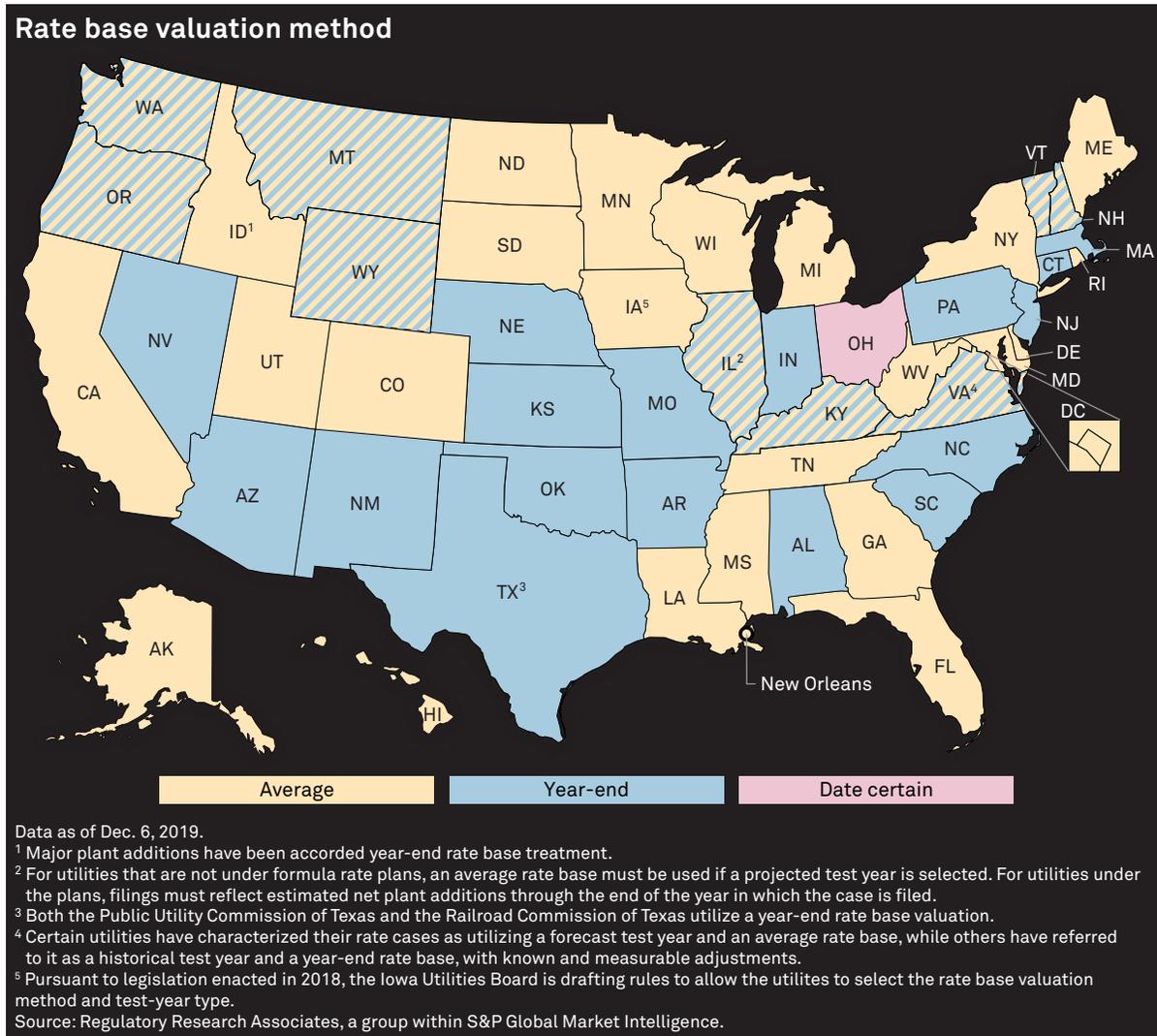
In general, assuming rate bases are rising, i.e., new investment is outpacing depreciation, a year-end valuation is preferable from an investor viewpoint.

Again, this relates to how well the parameters used to set rates reflect actual conditions that will exist during the rate-effective period; hence, the more recent the valuation, the more likely it is to approximate the actual level of rate base being employed to serve customers once the new rates are placed into effect.

Some commissions permit post-test year adjustments to rate base for "known and measurable" items, and, in general, this practice is beneficial to the utilities.

However, the rules with respect to what constitutes a known and measurable adjustment are not always specific, and there can be a good deal of controversy about what does and does not pass muster.

Another key consideration is whether state law and/or the commission generally permit the inclusion in rate base of construction work in progress, or CWIP, for a cash return. CWIP represents assets that are not yet, but ultimately will be, operational in serving customers.



Generally, investors view inclusion of CWIP in rate base for a cash return as constructive, since it helps to maintain cash flow metrics during a large construction cycle. Alternatively, the utilities accrue allowance for funds used during construction, which is essentially booking a return on the construction investment as a regulatory asset that is recoverable from ratepayers once the project in question becomes operational.

While this method bolsters earnings, it does not augment cash flow and does not support credit metrics. For a more in-depth look at rate base issues, refer to the RRA report entitled [Rate base: How would you rate your knowledge of this utility industry fundamental?](#)

**Test period**

With regard to test periods, there are a number of different practices employed, with the extremes being fully forecast at the time of filing, which is considered to be most constructive, on the one hand, and fully historical at the time of filing, considered to be least constructive, on the other.

Some states utilize a combination of the two, in which a utility is permitted to file a rate case that is based on data that is fully or partially forecast at the time of filing and is later updated to reflect actual data that becomes known during the course of the proceeding.

In these cases, the test year is historical by the time a decision is ultimately rendered, and so regulatory lag remains something of a problem.

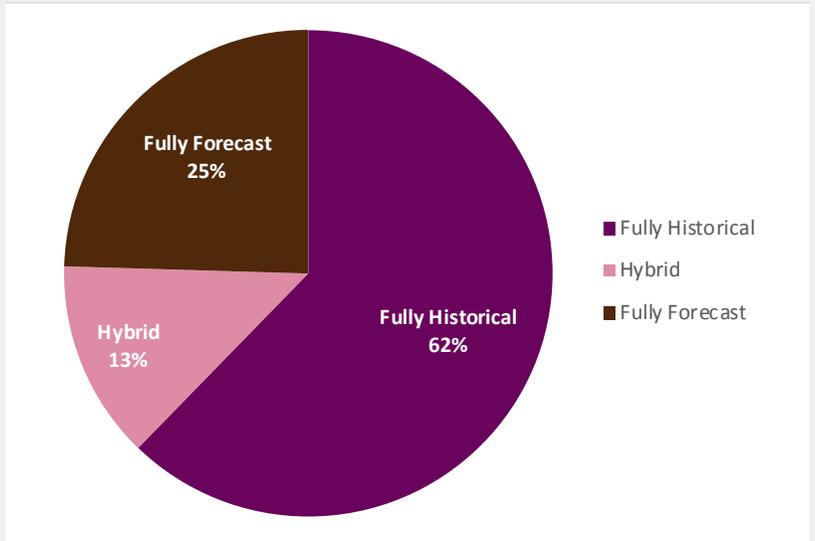
Almost two-thirds of the 53 jurisdictions covered by RRA utilize a test year that is historical at the time of filing. As with rate base valuation, in some states, commissions use different test period types for different types of proceedings or for different utility types. The accompanying map shows the predominant treatment in each state.

Many of the jurisdictions allow for known and measurable adjustments to the test year, but the statutes governing the definition of known and measurable can be ambiguous, and there can be wide disagreement among the rate case parties as to which adjustments qualify.

**Return on equity**

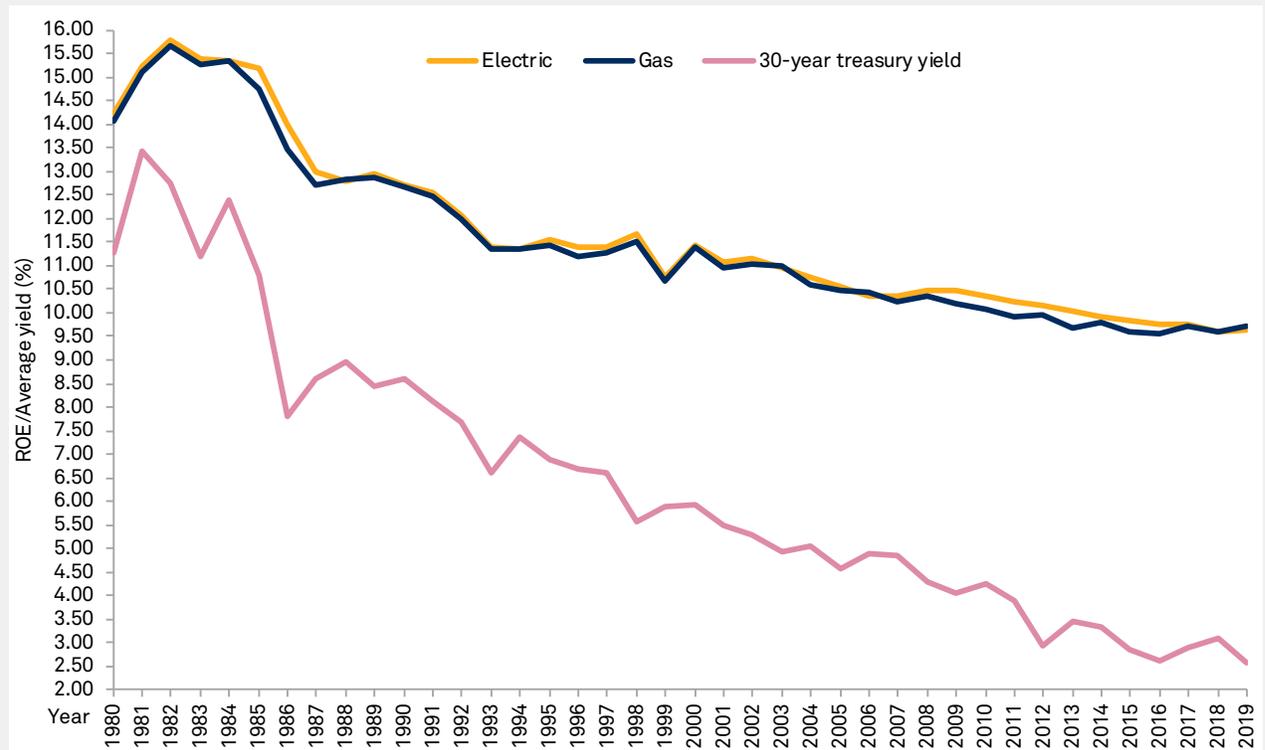
ROE is perhaps the single most litigated issue in any rate case. There are two aspects RRA considers when evaluating an individual rate case and the overall regulatory environment: (1) how the authorized ROE compares to the average of

**Rate case test year**



Data gathered as of March 25, 2020.  
Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

**Average authorized ROE in the US/30-year treasury bond yields**  
Calendar years 1980-2019



Data compiled as of March 25, 2020.  
Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

returns authorized for energy utilities nationwide over the 12 months or so immediately preceding the decision; and (2) whether the company has been accorded a reasonable opportunity to earn the authorized return in the first year of the new rates.

With regard to the first criterion, RRA looks at the ROEs historically authorized utilities in a given state and compares them to utility industry averages, as calculated in RRA's [Major Rate Case Decisions Quarterly Updates](#). When referring to these "averages," RRA means the average ROE approved in cases decided in a particular year; returns carried over from prior years are not included in the averages.

Intuitively, authorized ROEs that meet or exceed the prevailing averages at the time established are viewed as more constructive than those that fall short of these averages. However, ROEs overall have been declining steadily since 1980, falling below 10% in for the first time in 2011 for gas utilities and 2014 for electric utilities, and remaining below that benchmark since.

Interest rates have been a key factor driving authorized ROEs downward, but commission determinations that various alternative or innovative ratemaking mechanisms have reduced risk for the companies and their investors across the board have played a role as well.

Consumer advocacy organizations continue to argue that lower returns on equity are warranted because of risk-reducing factors, such as limited-issue riders, decoupling mechanisms, alternative regulation constructs and changes to basic rate design.

This presents a stark contrast to views held by both fixed-income and equity investors that utilities are becoming more [risky](#) because of large capital spending plans, limited sales growth potential, changes in the structure of the industry and the regulatory framework occasioned by new technologies and the public policy shift favoring renewable resources, federal tax reform impacts, interest rate volatility and now the challenges being posed by overall market volatility as the coronavirus pandemic drags on.

With regard to the second consideration, in the context of a rate case, a utility may be authorized a relatively high ROE, but factors such as capital structure changes, the age or "staleness" of the test period, rate base and expense disallowances, the manner in which the commission chooses to calculate test year revenue, and other adjustments may render it unlikely that the company will earn the authorized return on a financial basis.

Even if a utility is accorded a "reasonable opportunity" to earn its authorized ROE, there is no guarantee that the utility will do so. The revenue requirement and ROE established in a rate case are targets that the commission believes the established rates will allow the utility to attain.

Various factors such as weather, management efficiency, unexpected events, demographic shifts, fluctuations in economic activity and customer participation in energy conservation programs may cause revenue and earnings to vary from the targets set.

Hence, the overall decision may be restrictive from an investor viewpoint even though the authorized ROE is equal to or above the average. For a more detailed discussion of the rate case process, refer to the RRA report entitled [The Rate Case Process: A Conduit to Enlightenment](#).

### **Accounting**

RRA looks at whether a state commission has permitted unique or innovative accounting practices designed to bolster earnings. Such treatment may be approved in response to extraordinary events such as storms or for volatile expenses such as pension costs. Generally, such treatment involves deferral of expenditures that exceed the level of such costs reflected in base rates. In some instances the commission may approve an accounting adjustment to temporarily bolster certain financial metrics during the construction of new generation capacity.

From time to time, commissions have approved frameworks under which companies were permitted to, at their own discretion, adjust depreciation in order to mitigate underearnings or eliminate an overearnings situation without reducing rates. These types of practices are generally considered to be constructive from an investor viewpoint.

Federal tax law changes enacted in 2017 and effective in 2018, particularly the reduction in the corporate federal income tax rate to 21% from 35%, had sweeping impacts on utilities, with a flurry of ratemaking activity during 2018 and 2019. While the issues have been addressed for most of the RRA-covered companies, there are still some that have not.

For most of the companies that have already addressed the implications with regulators, rates have been reduced to reflect the ongoing impact of the lower tax rate, refunds to return to ratepayers related deferred over-collections are occurring over a relatively short time period and amortization of the related excess accumulated deferred income tax liabilities is occurring over varying time periods — generally over the lives of the companies’ assets for protected amounts and most often five to 10 years for unprotected amounts. RRA has been monitoring these developments and their impact on credit ratings and investor risk.

**Alternative regulation**

Generally, RRA views as constructive the adoption of alternative regulation plans that are designed to streamline the regulatory process and cost recovery or allow utilities to augment earnings in some way. These plans can be broadly or narrowly focused. Narrowly focused plans may: allow a company or companies to retain a portion of cost savings

**Alternative regulation plans in the US\***

Formula-based ratemaking	Multi-year rate plans	Earnings sharing	Incentive ROEs	Electric fuel/ Gas costs	Capacity release/Off-system sales	Full Decoupling
Alabama	California	Alabama	Colorado	Indiana	Colorado	Arizona
Arkansas	Connecticut	Arkansas	Iowa	Idaho	Delaware	California
Georgia	Dist. of Columbia <sup>1</sup>	Connecticut	Kansas <sup>1</sup>	Iowa	Florida	Connecticut
Hawaii	Florida	Florida	Mississippi	Illinois	Indiana	Georgia
Illinois	Georgia	Georgia	Montana <sup>1</sup>	Kansas	Iowa	Hawaii
Louisiana	Hawaii	Hawaii	Nevada	Kentucky	Kentucky	Idaho
Maine	Louisiana	Idaho	Ohio	Maryland	Louisiana	Indiana
Massachusetts	Maine	Iowa	Virginia	Missouri	Massachusetts	Louisiana
Minnesota	Maryland <sup>1</sup>	Kansas	Washington <sup>1</sup>	Montana	Missouri	Maine
Mississippi	Massachusetts	Louisiana	Wisconsin	New Jersey	North Dakota	Maryland
Pennsylvania <sup>1</sup>	Minnesota	Maine		Oregon	New Jersey	Massachusetts
Tennessee	New Hampshire	Massachusetts		Tennessee	Oklahoma	Nevada
Texas <sup>2</sup>	New York	Mississippi		Rhode Island	Pennsylvania	New Hampshire
Vermont	Ohio	Nevada		Utah	South Dakota	New Jersey
	Pennsylvania <sup>2</sup>	New Mexico		Vermont	Tennessee	New York
	Rhode Island	New York		Virginia	Texas <sup>2</sup>	North Carolina
	South Carolina	Oklahoma		Wyoming	Utah	Oregon
	Vermont	Oregon				Pennsylvania <sup>1</sup>
	Wisconsin	Rhode Island				Rhode Island
		Virginia				Utah
		Wisconsin				Vermont
						Washington

As of March 25, 2020. Data is preliminary.

ROE = return on equity

\* Type of plan in place for at least on utility in the state, unless otherwise noted.

<sup>1</sup> Specifically permitted by rule, law or commission order; no mechanism currently in place.

<sup>2</sup> Used by the Railroad Commission of Texas and cities for gas utilities; no such provisions in place for electric utilities, which are regulated by the Public Utility Commission of Texas.

Source: Regulatory Research Associates, a group within S&P Global Market Intelligence.

relative to a base level of some expense type, e.g., fuel, purchased power, pension cost, etc.; permit a company to retain for shareholders a portion of off-system sales revenues; or provide a company an enhanced ROE for achieving operational performance and/or customer service metrics or for investing in certain types of projects, e.g., demand-side management programs, renewable resources, new traditional plant investment.

The use of plans with somewhat broader scopes, such as ROE-based earnings sharing plans, is, for the most part, considered to be constructive, but it depends upon the level of the ROE benchmarks specified in the plan and whether there is symmetrical sharing of earnings outside the specified range.

Some states employ even more broad-based plans, such as formula-based ratemaking, where authorized return parameters are set at the inception of the plans and rates are permitted to adjust automatically on an annual basis within a certain range to reflect changes in expenses and new capital investment, similar to the paradigm in place for electric transmission at the Federal Energy Regulatory Commission.

### **Court actions**

This aspect of state regulation is particularly difficult to evaluate. Common sense would dictate that a court action that overturns restrictive commission rulings is a positive. However, the tendency for commission rulings to come before the courts and for extensive litigation as appeals go through several layers of court review may add an untenable degree of uncertainty to the regulatory process. Also, similar to commissioners, RRA looks at whether judges are appointed or elected, as political considerations are more likely to influence elected jurists.

### **Legislation**

While RRA's [Commission Profiles](#) provide statistics regarding the make-up of each state legislature, RRA has not found a specific correlation between the quality of energy legislation enacted and which political party controls the legislature. Of course, in a situation where the governor and legislature are of the same political party, generally speaking, it is easier for the governor to implement key policy initiatives, which may or may not be focused on energy issues.

Key considerations with respect to legislation include: how proscriptive newly enacted laws are; whether the bill is clear or ambiguous and open to varied interpretations; whether it balances ratepayer and shareholder interests rather than merely “protecting” the consumer; and whether the legislation takes a long-term view or is a “knee-jerk” reaction to a specific set of circumstances.

Legislative activity impacting utility regulatory issues has been [robust](#) in recent years, as state policymakers, utilities and industry stakeholders seek to address “disruptors” that challenge the traditional regulatory framework. RRA follows these developments closely with an eye toward assessing whether the states are taking a balanced, sustainable approach and how legacy utility providers will be affected by the policies being adopted.

### **Corporate governance**

The term corporate governance generally refers to a commission's ability to intervene in a utility's financial decision-making process through required preapproval of all securities issuances, limitations on leverage in utility capital structures, dividend payout limitations, ring fencing and authority over mergers. Corporate governance may also include oversight of affiliate transactions.

In general, RRA views a modest level of corporate governance provisions to be the norm, and in some circumstances, these provisions, such as ring fencing, have protected utility investors as well as ratepayers. However, a degree of oversight that would allow the commission to “micromanage” the utility's operations and limit the company's financial flexibility would be viewed as restrictive.

### Merger and acquisition activity

Though merger and acquisition activity has slowed somewhat in 2019, it was fairly robust in prior years, with more than 30 transactions aggregating to \$183 billion in transaction value announced since 2015.

Aside from the involved entities' boards of directors and shareholders, deals involving regulated utilities must pass muster with some or all of a variety of federal and state regulatory bodies. The states generally look at the day-to-day issues such as the impact on rates, safety and reliability.

Looking more closely at the role of [state regulators](#), 50 of the 53 non-federal jurisdictions RRA follows have some type of review authority over proposed mergers. In Indiana and Florida, preapproval by state regulators is not required before a transaction can proceed. In Texas, prior approval by the Public Utility Commission of Texas is required before a transaction involving an electric utility can take place, but Railroad Commission of Texas approval is not required for a transaction involving a local gas distribution company.

In evaluating a commission's stance on mergers, RRA looks at several broad issues such as whether there is a statutory time frame for consideration of a transaction and how long the process actually took.

For the 50 jurisdictions where commission preapproval is required, the review process and standards vary widely. In 20 of the jurisdictions, the commission must complete a merger review within a prescribed period of time, but in the remaining jurisdictions there is no timeline for their merger reviews, which means a commission could effectively "pocket veto" a transaction by delaying a decision until the merger agreement between the applicants expires or until pursuing the transaction is no longer feasible.

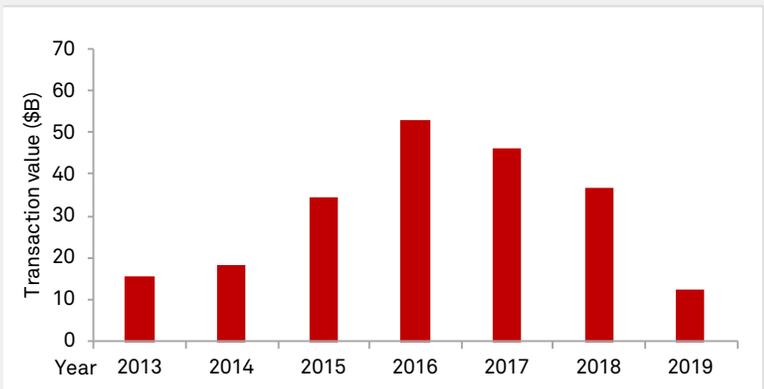
In addition, RRA considers whether a settlement was reached among the parties and, if so, whether the commission honored that settlement or required additional commitments. RRA also examines how politicized the process was: Did the governor, or in the District of Columbia the mayor, play a role? Did the transaction garner a lot of local media attention in the affected jurisdiction?

The definition of what constitutes a transaction that is subject to review can vary widely and may include sales of individual assets or a marginal minority interest as well as larger transactions where a controlling interest or the whole company is changing hands. State law often lacks specificity with respect to what constitutes a transaction that is subject to regulatory review.

In cases where the state commission has authority over mergers, RRA reviews the type of approval standard that is contained in state law and/or has been applied by the commission in specific situations.

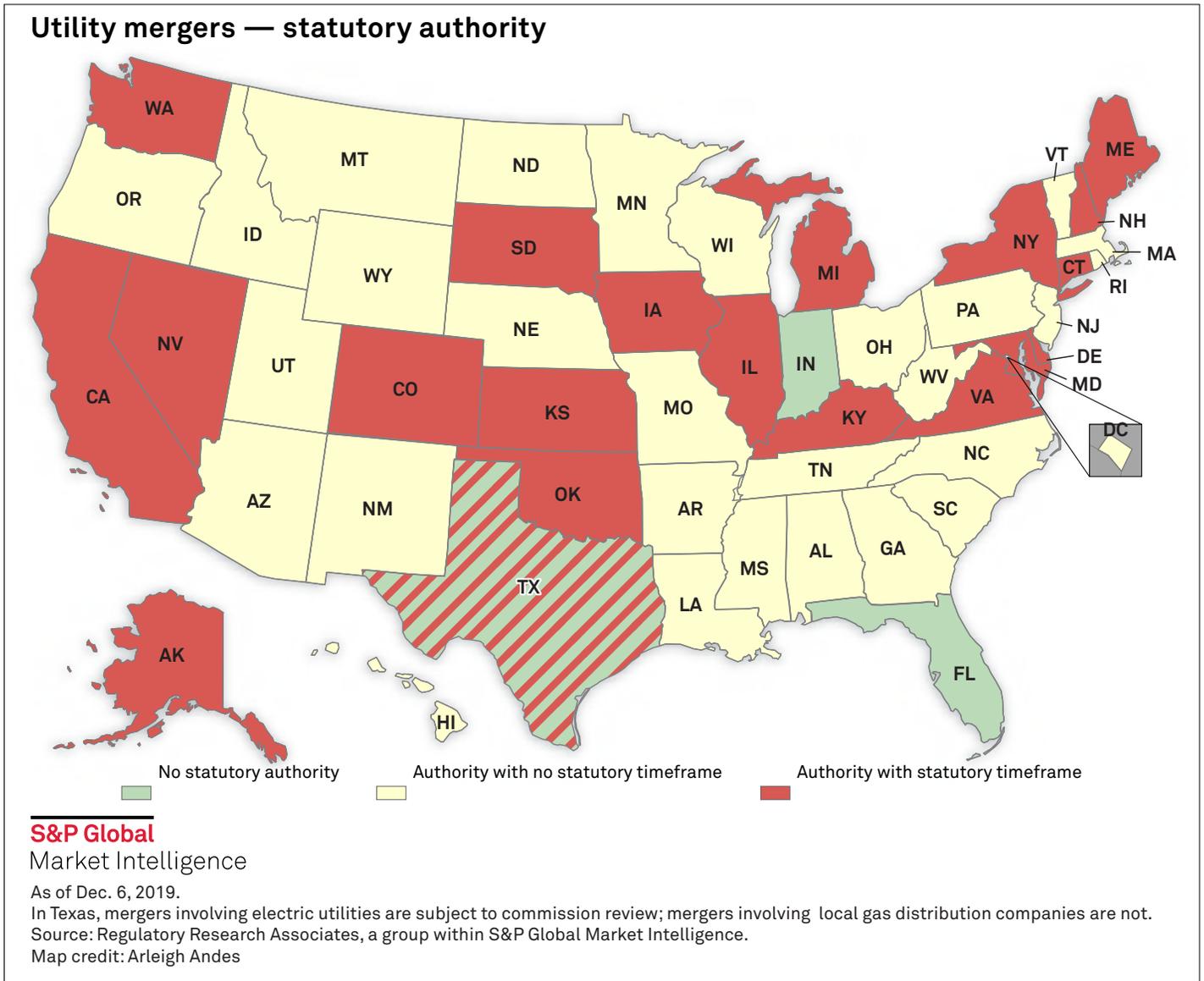
For discussion purposes, RRA groups the statutory standards into three general buckets: public interest, which is generally thought to be the least restrictive, no net ratepayer harm, which is somewhat more restrictive, and net ratepayer benefit, which is the most restrictive.

**Utility mergers announced 2013—2019**



Data gathered as of Dec. 31, 2019.

Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence



In many instances, regulators have broad discretion to interpret what the statutes may mean by these terms. So, the standard of review is often more readily apparent by looking at how prior transactions were addressed than by reading the statutory language — one commission’s public interest might be another’s net ratepayer benefit.

More narrowly, RRA reviews the conditions placed on the commission’s approval of these transactions, including: whether the company will be permitted to retain a portion of any merger-related cost savings; if guaranteed rate reductions or credits are required that are or are not directly related to merger savings; whether certain assets were required to be divested; what type of local control and work force commitments are required; whether there are requirements for certain types of investment to further the state’s public policy goals that may or may not be consistent with the companies’ business models and whether the related costs will be recoverable from ratepayers; and whether the commission placed stringent limitations on capital structure and/or dividend policy or composition of the board of directors.

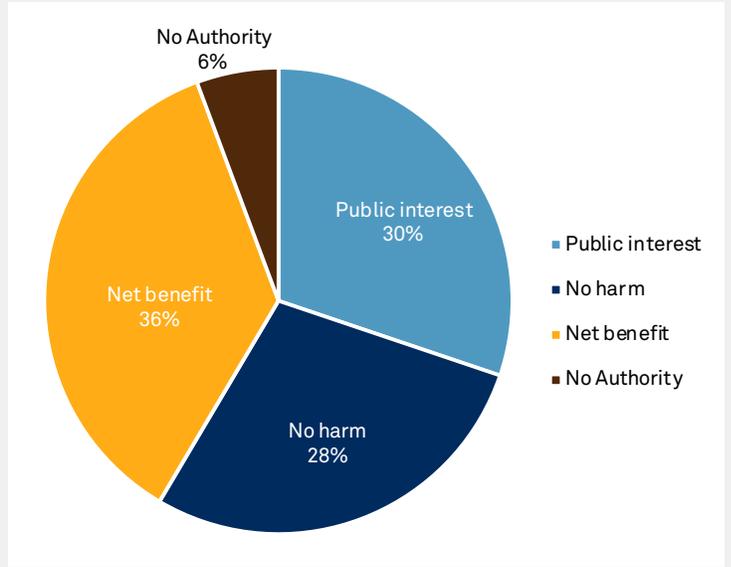
See the Merger Activity section of each [Commission Profile](#) for additional detail on statutory guidelines for merger reviews and detail concerning approved/rejected mergers and the associated conditions imposed.

**Electric regulatory reform/industry restructuring**

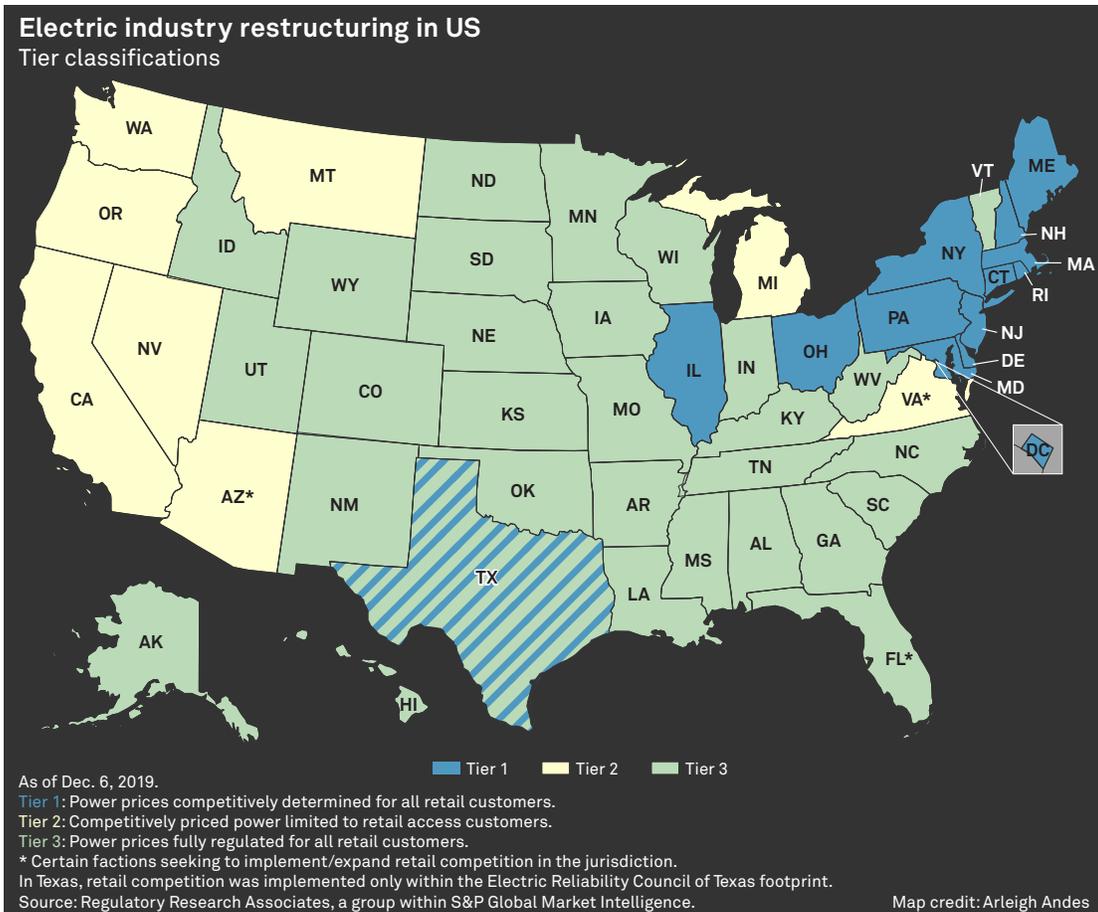
By electric industry restructuring, RRA means implementing a framework under which some or all retail customers have the opportunity to obtain their **generation** service from a competitive supplier. In a movement that began in the mid-1990s, about 20 jurisdictions have implemented retail competition for all or a portion of the customers in the utilities' service territories. The last of the transition periods ended as recently as 2011, when restructuring-related rate freezes concluded for certain Pennsylvania utilities.

RRA classifies each of the regulatory jurisdictions into one of three tiers based on their relative electric industry restructuring status.

**Merger review standards**



As of March 25, 2020.  
Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence



**The three Tiers are defined as follows.**

**Tier 1** — Power prices are competitively determined for all retail customers, both standard-offer-service and retail-access customers. Retail access is permitted for all customers. For the most part, the utilities in these states do not own generation. Please note that RRA has classified Texas as a Tier1 state even though retail competition is only available for customers served by utilities that are within the Electric Reliability Council of Texas footprint.

**Tier 2** — Competitively priced power is limited to retail-access customers. Retail access is permitted on at least a limited basis. Power prices for standard-offer-service customers remain regulated. For the most part, utilities remain vertically integrated.

**Tier 3** — Power prices are fully regulated for all retail customers. All retail customers must purchase their power from the franchised utility.

RRA generally does not view a state's decision to implement retail competition for generation as either positive or negative from an investor viewpoint. However, how the transition occurred has been a key part of RRA's evaluation of each affected jurisdiction. Issues considered by RRA include whether up-front rate reductions were required, the length of the transition periods and how stranded costs were addressed.

Now that transition periods are completed, RRA has focused more on how standard-offer or default service is procured for customers who do not select an alternative provider and how much, if any, market-price risk the utility must absorb.

However, initiatives are underway in Arizona and Virginia that could lead to an expansion of retail competition in those jurisdictions.

RRA is also monitoring states where initiatives are underway to revamp the way the transmission and distribution system is configured. These efforts have arisen from expansion of renewables and a focus on grid reliability/resiliency. RRA refers to this trend as electric industry restructuring phase two.

Similar to phase one, the recovery of [stranded costs](#) and ways to ensure universal service are real concerns. In phase two, the conversation is further complicated by the need to ensure not just the physical, but also the cybersecurity of the grid. Several states got out in front of these issues and are addressing them in a broad-based way, while others are taking a more piecemeal approach dealing with deployment of advanced metering, distributed generation and net metering, time-of-use rates, cybersecurity and other issues on an individual basis.

The pressure to resolve these issues is increasing, as customers and policymakers want the changes in place yesterday. As these issues unfold, the same issues that were of concern in the first phase of restructuring will warrant close attention.

### **Gas regulatory reform/industry restructuring**

Retail competition for gas supply is more widespread than is electric retail competition, and the transition was far less contentious as the magnitude of potential stranded asset costs was much smaller. Similar to electric retail competition, RRA generally does not view a state's decision to implement retail competition for gas service as either positive or negative from an investor viewpoint. RRA primarily considers the manner in which stranded costs were addressed and how default-service obligation-related costs are recovered.

**Securitization**

Securitization refers to the issuance of bonds backed by a specific existing revenue stream that has been “guaranteed” by regulators. State commissions have used securitization to allow utilities to recover demand-side management costs, electric industry restructuring-related stranded costs, environmental compliance costs and storm costs. RRA views the use of this mechanism as generally constructive from an investor viewpoint, as it virtually eliminates the recovery risk for the utility and frees up cash to be deployed for other purposes.

**Adjustment clauses**

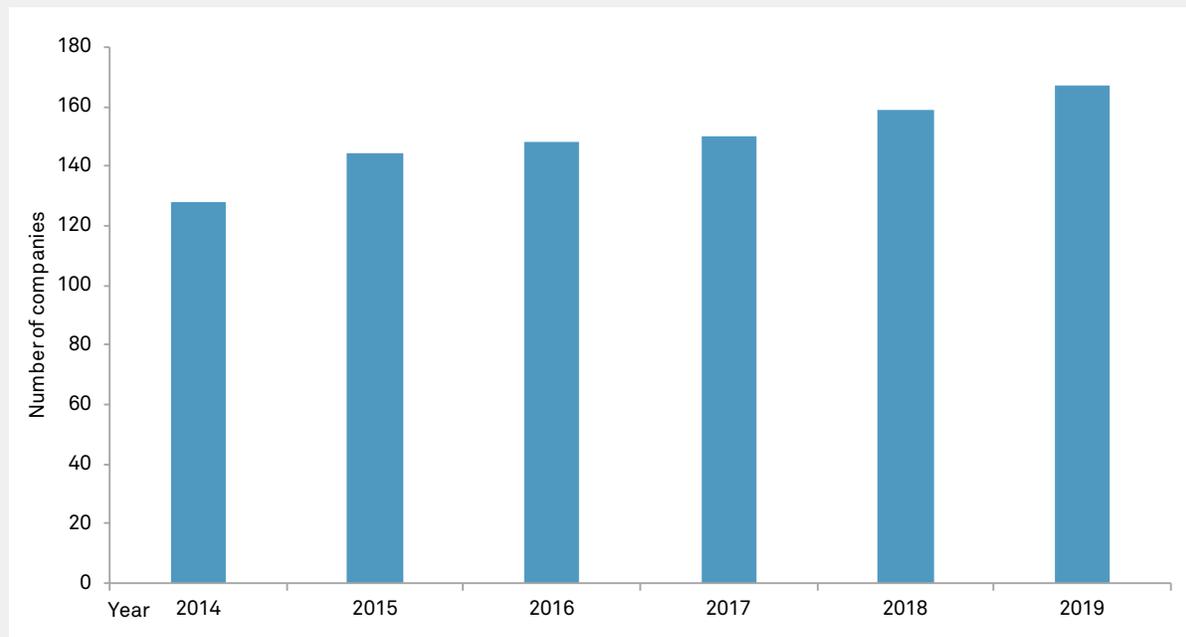
Since the 1970s, adjustment clauses have been widely utilized to allow utilities to recover fuel and purchased power costs outside a general rate case, as these costs are generally subject to a high degree of variability. In some instances, a base amount is reflected in base rates, with the clause used to reflect variations from the base level, and in others, the entire annual fuel/purchased power cost amount is reflected in the clause.

Over time, the types of costs recovered through these mechanisms were expanded in some jurisdictions to include such items as pension and healthcare costs, demand-side management program costs, Federal Energy Regulatory Commission-approved regional transmission organization costs, new generation plant investment, and transmission and distribution infrastructure spending.

RRA generally views the use of these types of mechanisms as constructive but also looks at the frequency at which the adjustments occur, whether there is a true-up mechanism, whether adjustments are forward-looking in nature where applicable, whether a cash return on construction work in progress is permitted and whether there may be some ROE incentive for certain types of investment.

**Utility operating companies with full or partial decoupling mechanisms**

RRA covered companies



As of March 16, 2020.

RRA = Regulatory Research Associates, a group within S&P Global Market Intelligence.

Source: Regulatory Research Associates, a group within S&P Global Market Intelligence.

Other mechanisms that RRA views as constructive are weather-normalization clauses that are designed to remove the impact of weather on a utility's revenue, referred to as partial decoupling mechanisms, and full decoupling mechanisms that may remove not only the impact of weather but also the earnings impacts of customer participation in energy efficiency programs and sales volatility stemming from fluctuations in the overall economic health of the service territory.

Generally, an adjustment mechanism would be viewed as less constructive if there are provisions that limit the utility's ability to fully implement revenue requirement changes under certain circumstances, e.g., if the utility is earning in excess of its authorized return.

See the RRA Regulatory Focus Topical Special Report entitled [Adjustment Clauses — A State-by-State Overview](#) and related [data tables](#) for additional detail.

### **Integrated resource planning**

RRA generally considers the existence of a resource-planning process to be constructive from an investor viewpoint as it may provide the utility at least some measure of protection from hindsight prudence reviews of its resource acquisition decisions. In some cases, the process may also provide for preapproval of the ratemaking parameters and/or a specific cost for the new facility. RRA views these types of provisions as constructive, as the utility can make more informed decisions as to whether it will proceed with a proposed project.

### **Renewable energy/emissions requirements**

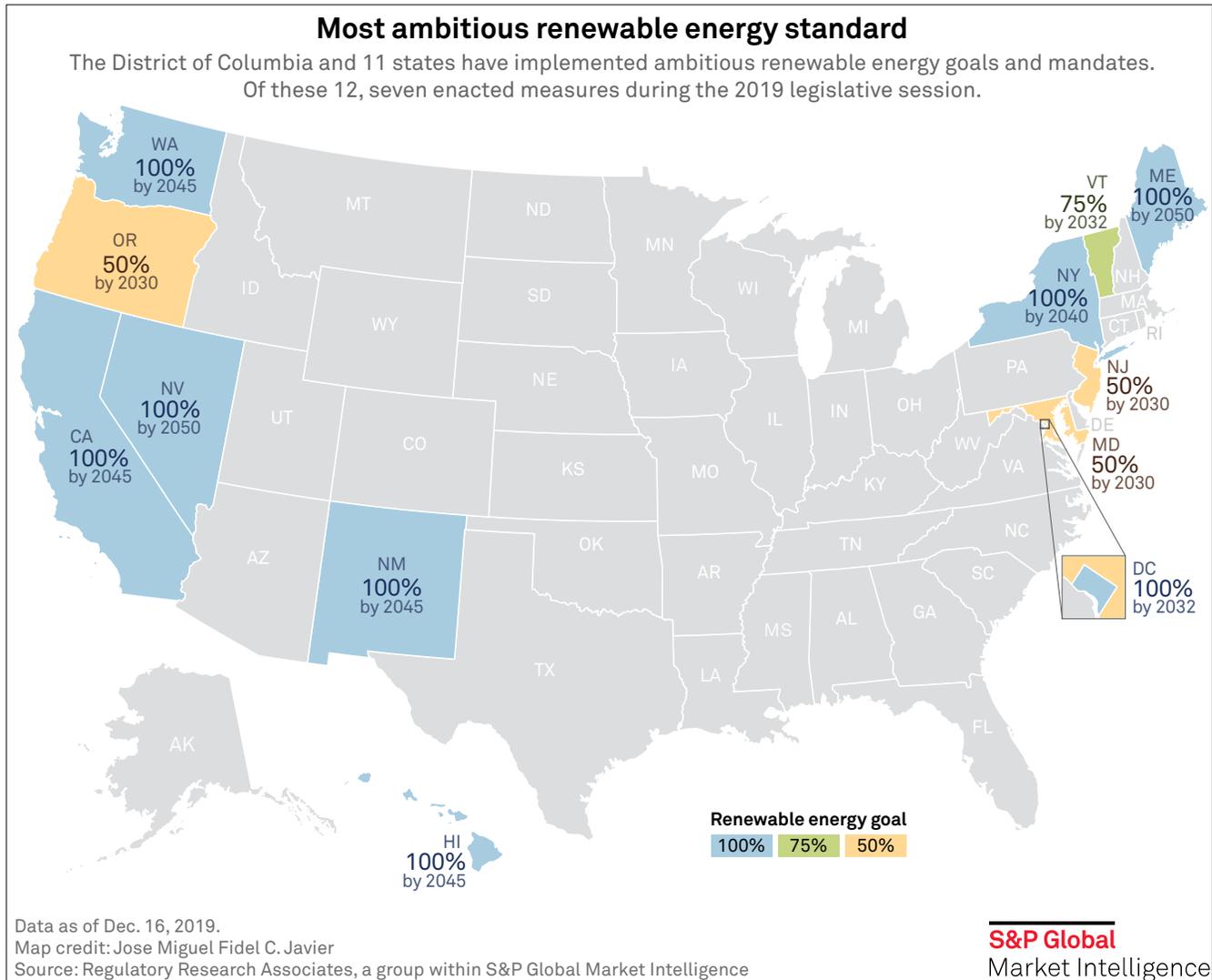
As with retail competition, RRA does not take a stand as to whether the implementation of renewable portfolio standards, or RPS, or an emissions reduction mandate is positive or negative from an investor viewpoint. However, RRA considers whether there is a defined preapproval and/or cost-recovery mechanism for investments in projects designed to comply with these standards.

RRA also reviews whether there is a mechanism such as a rate increase cap that ensures that meeting the standards does not impede the utility's ability to pursue other investments and/or recover increased costs related to other facets of its business. RRA also looks at whether incentives, such as an enhanced ROE, are available for these types of projects.

In recent years, the focus on renewables has surged across the United States, with all but 12 jurisdictions developing some type of RPS. The proliferation of renewables, particularly those that are customer-sited or distributed resources, and the related rise of battery storage and electric vehicles have raised questions regarding the traditional centralized industry framework and whether that framework needs to change, perhaps ushering in a second phase of electric industry restructuring. How these changes are implemented is something RRA will be watching closely.

With respect to emissions, the threat of a federal carbon emissions standard for utilities and the spread of state-level initiatives have caused many companies to rethink legacy coal-fired generation, causing plants to be shut down earlier than anticipated. How the commissions address these "stranded costs" also poses a risk for investors and bears monitoring.

The zero-carbon movement has also caused utilities/states to re-examine investments in nuclear facilities and, in some cases, to develop programs designed to support the continued operation of those facilities even though they may not be economic from a competitive-markets standpoint. How these issues are addressed is something that RRA is also monitoring.



**Rate structure**

RRA looks at whether there are economic development or load-retention rate structures in place and, if so, how any associated revenue shortfall is recovered.

RRA also looks at whether there have been steps taken over recent years to reduce/eliminate interclass rate subsidies, i.e., to equalize rates of return across customer classes.

In addition, RRA considers whether the commission has adopted or moved toward a straight-fixed-variable rate design, under which a greater portion of a company’s fixed costs are recovered through the fixed monthly customer charge, thus according the utility greater certainty of recovering its fixed costs.

This is increasingly important in an environment where weather patterns are more volatile, organic growth is limited due to the economy and the proliferation of energy efficiency/conservation programs, and large amounts of non-revenue-producing capital spending is required to upgrade and strengthen the grid.

Fixed vs. variable costs	
Fixed	Variable
Depreciation	Gas commodity
Delivery O&M	Electric commodity
Property taxes	Generation O&M
Return on investment	
Customer service	

As of March 25, 2020.  
Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence.

In conjunction with the influx of renewables and distributed generation, the issue of how to compensate customer-owners for excess power they put back into the grid has become increasingly important and in some instances controversial. How these pricing arrangements, known as net metering, are structured can impact the ability of the utilities to recover their fixed distribution system costs and by extension their ability to earn their authorized returns.

**Contributors:** *Charlotte Cox, Jim Davis, Russell Ernst, Lisa Fontanella, Monica Hlinka, Jason Lehman, Dan Lowrey and Amy Poszywak*

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## SECTOR COMMENT

26 March 2020



## Contacts

Jeffrey F. Cassella +1.212.553.1665  
 VP-Sr Credit Officer  
 jeffrey.cassella@moodys.com

Jairo Chung +1.212.553.5123  
 VP-Senior Analyst  
 jairo.chung@moodys.com

Nana Hamilton +1.212.553.9440  
 AVP-Analyst  
 nana.hamilton@moodys.com

Gavin MacFarlane +1.416.214.3864  
 VP-Sr Credit Officer  
 gavin.macfarlane@moodys.com

Natividad Martel, +1.212.553.4561  
 CFA  
 VP-Senior Analyst  
 natividad.martel@moodys.com

Edna R Marinelarena +1.212.553.1383  
 Analyst  
 edna.marinelarena@moodys.com

Robert Petrosino CFA +1.212.553.1946  
 VP-Senior Analyst  
 robert.petrosino@moodys.com

Laura Schumacher +1.212.553.3853  
 VP-Sr Credit Officer  
 laura.schumacher@moodys.com

Michael G. Haggarty +1.212.553.7172  
 Associate Managing Director  
 michael.haggarty@moodys.com

Jim Hempstead +1.212.553.4318  
 MD-Utilities  
 james.hempstead@moodys.com

» *Contacts continued on last page*

## Regulated Electric and Gas Utilities – US FAQ on credit implications of the coronavirus outbreak

### What is the primary near-term credit issue for regulated investor-owned utilities arising from the coronavirus outbreak?

The maintenance of sufficient liquidity to weather a prolonged period of financial volatility and turbulent capital markets are the most important credit issue facing US regulated utilities. Liquidity encompasses a company's ability to generate cash from internal sources, as well as the availability of external sources to supplement these internal sources. Utilities are among the largest debt issuers in the corporate universe and typically require consistent access to the capital markets to assure adequate sources of funding and to maintain financial flexibility. During times of distress and when capital markets are exceedingly volatile and tight, liquidity becomes critically important because access to the capital markets may be difficult.

The severity of the coming economic recession will be determined in large part by the scope and duration of the coronavirus pandemic. As a result, utilities may encounter declines in volumes and revenue, as well as increases in bad debt expense if cash-strapped customers are unable to pay their bills. These factors will limit a utility's internal cash flow, which will require greater reliance on external sources of liquidity.

### Do utilities currently have access to the capital markets?

Yes, thus far utilities have had relatively strong access. So far in March, utilities have had good access to the capital markets, raising over \$20 billion in US investment-grade debt. Tier 1 issuers commercial paper issuers, such as [Florida Power & Light Company](#) (A1 stable), [NSTAR Electric Company](#) (A1 stable) and [Northern Illinois Gas Company](#) (A2 stable), continue to have generally good access to the CP market, albeit at shorter tenors and sometimes on an overnight basis. The commercial paper (CP) market has tightened considerably for Tier 2 issuing companies, such as [Spire Inc.](#) (Baa2 stable), [The Southern Company](#) (Baa2 stable) and [Avangrid, Inc.](#) (Baa1 negative). In an effort to reduce their reliance on the volatile CP market, many companies have taken a variety of measures to bolster their liquidity. Some have entered the bond markets opportunistically to issue long-dated bonds in an effort to capitalize on low rates, while others have used uncommitted lines of credit and entered into short-term bank term loans (e.g., 364-day facilities) to shore up their liquidity position.

We do not view higher leverage related to pre-financing as credit negative because the higher debt load should be temporary. Instead, we view the removal of near-term maturity uncertainty amid capital markets volatility as positive for liquidity, much as we did during the 2007-09 recession.

Exhibit 1

**P-1 issuers continue to have better access to the CP market compared to P-2 peers**

Short-term ratings for US regulated utilities for the most recent 12 month period (mostly as of the end of 2019) versus their short-term ratings as of the end of 2007

Issuer	Current ST Rating	ST Debt Outstanding as of LTM	2007 ST Rating	ST Debt Outstanding as of FY 2007
Alabama Power Company	P-1	\$0	P-1	\$0
American Transmission Company LLC	P-1	\$263	P-1	\$105
Consumers Energy Company	P-1	\$90	WR	\$0
DTE Electric Company	P-1	\$451	P-2	\$683
Florida Power & Light Company	P-1	\$1,482	P-1	\$842
Gulf Power Company	P-1	\$155	WR	\$45
Madison Gas and Electric Company	P-1	\$55	P-1	\$61
MidAmerican Energy Company	P-1	\$0	P-1	\$86
Northern Illinois Gas Company	P-1	\$120	P-1	\$369
Northern States Power Company (Minnesota)	P-1	\$30	P-2	\$437
Northern States Power Company (Wisconsin)	P-1	\$65	NR	\$59
NSTAR Electric Company	P-1	\$77	P-1	\$257
ONE Gas, Inc	P-1	\$517	NR	-
PECO Energy Company	P-1	\$0	P-1	\$246
Peoples Gas Light and Coke Company	P-1	\$28	P-1	\$188
Public Service Electric and Gas Company	P-1	\$10	P-2	\$65
Southern California Gas Company	P-1	\$630	P-1	\$0
Virginia Electric and Power Company	P-1	\$350	P-2	\$371
Wisconsin Electric Power Company	P-1	\$37	P-1	\$354
Wisconsin Public Service Corporation	P-1	\$19	P-1	\$61
Alliant Energy Corporation	P-2	\$364	P-2	\$211
Ameren Corporation	P-2	\$440	P-2	\$1,472
Ameren Illinois Company	P-2	\$53	WR	-
American Electric Power Company, Inc.	P-2	\$2,838	P-2	\$1,167
Atlantic City Electric Company	P-2	\$70	P-2	\$52
Avangrid, Inc.	P-2	\$614	P-2	\$138
Baltimore Gas and Electric Company	P-2	\$76	P-2	\$0
Berkshire Hathaway Energy Company	P-2	\$3,214	NR	\$130
Black Hills Corporation	P-2	\$350	NR	\$37
CenterPoint Energy Resources Corp.	P-2	\$0	P-3	\$299
CenterPoint Energy, Inc.	P-2	\$868	NP	\$232
Commonwealth Edison Company	P-2	\$130	NP	\$370
Consolidated Edison Company of New York, Inc.	P-2	\$1,137	P-1	\$555
Consolidated Edison, Inc.	P-2	\$1,692	P-1	\$840
Delmarva Power & Light Company	P-2	\$56	P-2	\$286
Dominion Energy Gas Holdings, LLC	P-2	\$322	NR	-
Dominion Energy South Carolina, Inc.	P-2	\$565	P-2	\$464
Dominion Energy, Inc.	P-2	\$911	P-2	\$1,757
DTE Energy Company	P-2	\$828	P-2	\$1,084
DTE Gas Company	P-2	\$232	P-2	\$454
Duke Energy Corporation	P-2	\$3,135	P-2	\$1,080
Empire District Electric Company (The)	P-2	\$0	P-2	\$33
Entergy Corporation	P-2	\$1,947	NR	\$25
Eergy Kansas Central, Inc.	P-2	\$382	WR	\$180
Eergy Metro, Inc.	P-2	\$205	P-2	\$436

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on [www.moody's.com](http://www.moody's.com) for the most updated credit rating action information and rating history.

Issuer	Current ST Rating	ST Debt Outstanding as of LTM	2007 ST Rating	ST Debt Outstanding as of FY 2007
Evergy Missouri West, Inc.	P-2	\$168	NR	\$25
Eversource Energy	P-2	\$1,260	WR	\$79
Exelon Corporation	P-2	\$1,370	P-2	\$616
Exelon Generation Company, LLC	P-2	\$320	P-2	\$0
Hydro One Inc.	P-2	\$881	P-1	\$12
IDACORP, Inc.	P-2	\$0	P-2	\$186
Idaho Power Company	P-2	\$0	P-2	\$137
Interstate Power and Light Company	P-2	\$108	P-2	\$130
ITC Holdings Corp.	P-2	\$0	NR	\$0
Kentucky Utilities Co.	P-2	\$150	WR	\$23
Louisville Gas & Electric Company	P-2	\$238	NR	\$78
New Jersey Natural Gas Company	P-2	\$50	P-1	\$186
NextEra Energy Capital Holdings, Inc.	P-2	-	NR	-
NiSource Inc.	P-2	\$1,773	NR	\$1,463
Northwest Natural Gas Company	P-2	\$46	P-1	\$143
NorthWestern Corporation	P-2	\$0	WR	\$0
OGE Energy Corp.	P-2	\$112	P-2	\$296
Oklahoma Gas & Electric Company	P-2	\$0	P-1	\$349
Oncor Electric Delivery Company LLC	P-2	\$46	SGL-2	\$1,280
Ontario Power Generation Inc.	P-2	\$91	NR	\$304
Orange and Rockland Utilities, Inc.	P-2	\$30	P-1	\$45
PacifiCorp	P-2	\$130	P-2	\$0
Pepco Holdings, LLC	P-2	\$220	P-3	\$289
Portland General Electric Company	P-2	\$0	P-2	\$0
Potomac Electric Power Company	P-2	\$82	P-2	\$180
PPL Electric Utilities Corporation	P-2	\$0	P-2	\$41
Public Service Company of Colorado	P-2	\$39	P-2	\$271
Public Service Enterprise Group Incorporated	P-2	\$2,480	P-2	\$65
Puget Sound Energy, Inc.	P-2	\$176	NR	\$260
Questar Gas Company	P-2	\$45	WR	\$73
San Diego Gas & Electric Company	P-2	\$80	P-1	\$0
South Jersey Gas Company	P-2	\$175	WR	\$78
Southern California Edison Company	P-2	\$0	P-2	\$704
Southern Company (The)	P-2	\$2,055	P-1	\$1,272
Southern Power Company	P-2	\$1,373	P-2	\$50
Southwestern Public Service Company	P-2	\$0	P-2	\$129
Spire Inc.	P-2	\$519	NR	\$211
Union Electric Company	P-2	\$234	P-2	\$82
WGL Holdings, Inc.	P-2	\$331	NP	\$184
Wisconsin Gas LLC	P-2	\$266	P-1	\$90
Wisconsin Power and Light Company	P-2	\$168	P-1	\$82
Xcel Energy Inc.	P-2	595	P-2	\$1,089

Note: LTM financial data is based on latest 12-month data available.

Source: Moody's Investors Service, SEC Filings

### Which companies are most vulnerable to credit pressure as a result of the coronavirus?

The impact of the coronavirus outbreak on utility credit quality will largely depend on the length of the crisis and the severity of the economic recession that we expect will take hold during the first half of this year (see "[Global Macro Outlook 2020-21 \[March 25, 2020 Update\]](#): The coronavirus will cause unprecedented shock to the global economy"). The economic downturn will pose a challenge for companies with already-weak financial profiles that are trending at or below their respective downgrade thresholds.

The financial cushion that a utility company maintains – often expressed as where the latest 12 month financial credit ratio compares to the published upgrade or downgrade trigger – is always of interest to investors. But our assessment of a utility's credit quality goes beyond a specific ratio as we consider a host of other factors, particularly the regulatory environment in which it operates. Some

utilities have financial ratios that reflect the impact of extraordinary developments. For example, [Edison International's](#) (Baa3 stable) historical ratios of cash flow from operations before changes in working capital (CFO pre-WC) to debt reflect its extraordinary costs associated with past California's wildfires.

Exhibit 2

### Utility companies with weak financial profiles are most vulnerable to the impact of the coronavirus outbreak

Select list of US regulated utility holding companies at or below their downgrade threshold for ratios of CFO pre-WC to debt as of 31 December 2019

Issuer	Rating	Outlook	FY 2019 (CFO Pre-W/C) / Debt	3-Year Average (CFO Pre-W/C) / Debt	Downgrade Threshold	Cushion Between Downgrade Threshold and FY 2019
Edison International	Baa3	Stable	-2%	13%	13%	-15%
Eversource Energy	Baa1	Stable	13%	13%	15%	-2%
Sempra Energy [1]	Baa1	Negative	14%	15%	16%	-2%
CenterPoint Energy, Inc. [2]	Baa2	Stable	13%	16%	15%	-2%
Emera Inc.	Baa3	Stable	10%	10%	12%	-2%
Entergy Corporation	Baa2	Stable	14%	13%	15%	-1%
CMS Energy Corporation	Baa1	Stable	16%	17%	17%	-1%
American Electric Power Company, Inc.	Baa1	Negative	14%	17%	15%	-1%
Pinnacle West Capital Corporation	A3	Negative	20%	22%	21%	-1%
Duke Energy Corporation	Baa1	Stable	15%	14%	15%	0%
FirstEnergy Corp.	Baa3	Stable	11%	13%	11%	0%
NextEra Energy, Inc.	(P)Baa1	Stable	18%	20%	18%	0%
Consolidated Edison, Inc.	Baa2	Stable	13%	15%	13%	0%
Berkshire Hathaway Energy Company	A3	Stable	15%	16%	15%	0%
Public Service Enterprise Group Incorporated	Baa1	Stable	18%	20%	17%	1%
Fortis Inc.	Baa3	Stable	12%	11%	11%	1%
PPL Corporation	Baa2	Stable	13%	13%	12%	1%
Southern Company (The)	Baa2	Stable	15%	15%	14%	1%
DTE Energy Company	Baa2	Stable	16%	17%	15%	1%
Dominion Energy, Inc.	Baa2	Stable	15%	14%	14%	1%

[1] As noted in the 31 Dec 2019 credit opinion, assuming no changes to Sempra's business risk profile, a downgrade of Sempra could occur if the company fails to achieve a ratio of CFO pre-W/C to debt well above 16% in 2020.

[2] As noted in the 27 Feb 2020 credit opinion, CNP's ratio of CFO pre-W/C to debt downgrade threshold may be lowered to below 14% upon completion of the announced sale of its non-regulated business.

Source: Moody's Investors Service, Moody's Financial Metrics

Utilities that have a higher proportion of commercial and industrial (C&I) customers will be hard hit by declining volumes during a pandemic-triggered economic downturn. C&I demand accounts for about 50% of total regulated electric revenue and is far more vulnerable to economic disruptions than residential demand. Utilities with substantial sales to businesses in the tourism, travel and oil & gas sectors are also vulnerable (see "[Corporates - Global Heat map: Coronavirus hurts travel-driven sectors, disrupts supply chains, effects compounded with global spread](#)"). While we expect many of the most affected businesses to recover, we are also monitoring the small commercial business customer classes, where volume declines could be slower to recover.

Exhibit 3

**ALLETE and Superior are most exposed to industrial customers**

Top US regulated utility companies with the highest proportion of industrial customers

Issuer	Rating, Outlook	State	% Industrial customers (by MWh volumes)
ALLETE, Inc.	Baa1, Stable	Minnesota, Wisconsin	74%
Superior Water, Light and Power Company	A3, Stable	Wisconsin	73%
Toledo Edison Company	Baa1, Stable	Ohio	57%
Southwestern Public Service Company	Baa2, Stable	New Mexico, Texas	55%
Northern Indiana Public Service Company	Baa1, Stable	Indiana	54%
Entergy Louisiana, LLC	Baa1, Stable	Louisiana	52%
Mississippi Power Company	Baa2, Positive	Mississippi	50%
Indianapolis Power & Light Company	Baa1, Stable	Indiana	47%

Note: Electricity volumes as of year-end 2018.

Sources: S&amp;P Global Market Intelligence, Moody's Investors Service

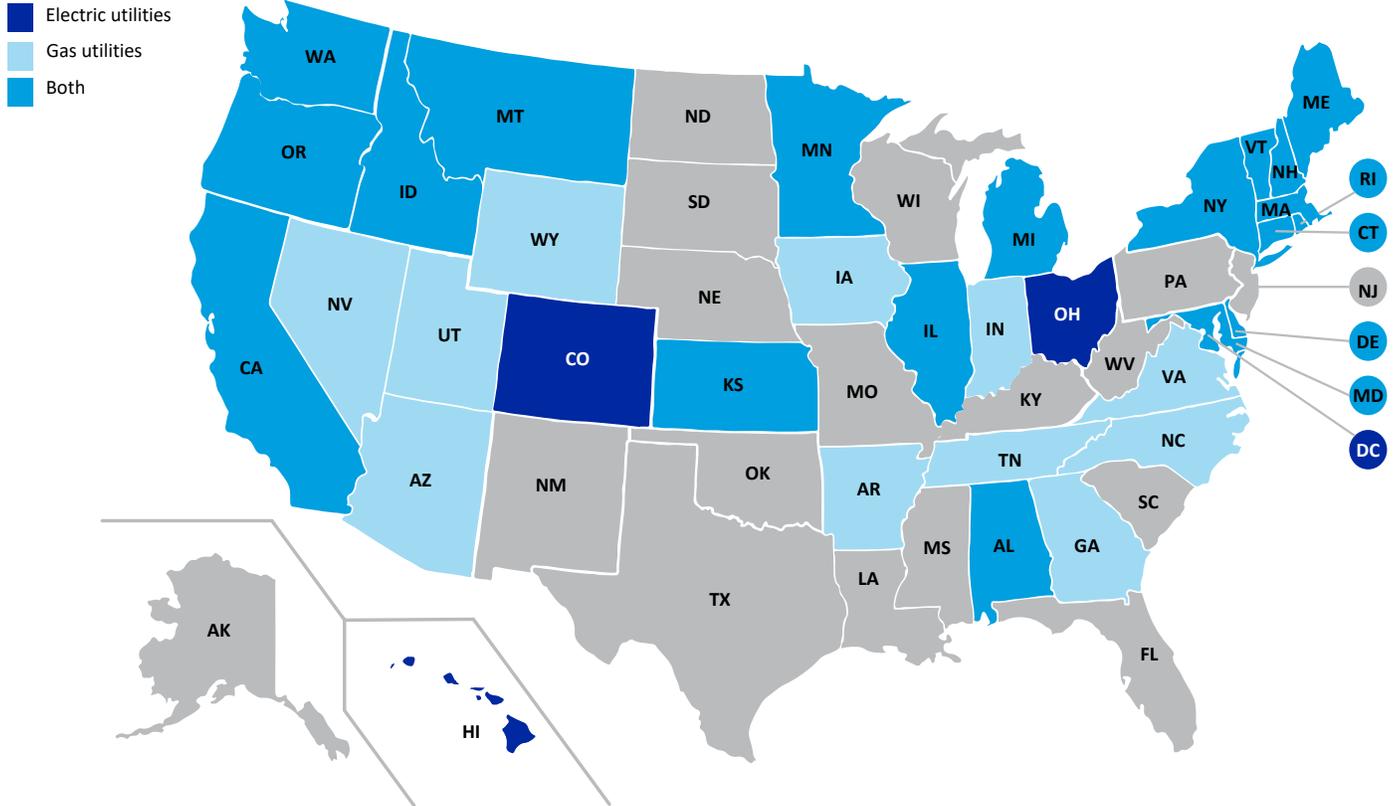
**How do utilities absorb abrupt declines in volumes or revenues?**

Regulatory support is important to recover costs associated with lost volumes, revenue or customers. Some utilities are already somewhat insulated from volume declines thanks to decoupling mechanisms. Revenue decoupling, which is widely used by local gas distribution companies (LDCs), is a ratemaking mechanism that is generally designed to eliminate or reduce the volatility of a utility's revenue on system throughput (i.e., electricity load or natural gas volumes). Decoupling helps insulate utility credit quality by safeguarding against the financial impact of a decline in electricity and natural gas consumption due to factors beyond the utility's control, such as energy efficiency, fluctuations in commodity fuel prices and weather. Because of the regulatory lag in recovering costs under these mechanisms, utilities also need to maintain sufficient liquidity until this recovery materializes.

Bad debt expense or the inability of customers to pay their bills will likely be addressed in several different ways. Many utilities already have a baseline level of bad debt expense, based on historical run-rates, which they already recover through customer rates. Some utilities, such as [Oncor Electric Delivery Company LLC](#) (A2 stable), have a bad debt expense rider/tracker that allows the utility to recover these costs in rates in a timely manner. Others may be able to defer the cost on their balance sheet as a regulatory asset and will need to address recovery in their next general rate case.

Exhibit 4

**Decoupling, widely used by LDCs, is becoming more prevalent among electric utilities**  
 US states with partial or full decoupling revenue recovery mechanisms for electric and gas utilities



Note: See list of utilities with full or partial decoupling mechanisms in the appendix.  
 Source: Moody's Investors Service, S&P Global Market Intelligence

## Appendix

Exhibit 5

### Revenue decoupling insulates utilities' revenues due to volume volatility

#### US regulated utility companies with full or partial revenue decoupling

Issuer	Decoupling (Full/Partial)	Issuer	Decoupling (Full/Partial)
Ameren Illinois Company	Partial	North Shore Gas Company	Partial
Arizona Public Service Company	Partial	Northern Illinois Gas Company	Partial
Avista Corp.	Full/Partial	Northern Indiana Public Service Company	Partial
Baltimore Gas and Electric Company	Full	Northern States Power Company (Minnesota)	Partial
Berkshire Gas Company	Full	Northern Utilities, Inc.	Partial
Black Hills Corporation	Full	Northwest Natural Gas Company	Partial
Black Hills Power, Inc.	Partial	NSTAR Electric Company	Full
CenterPoint Energy Resources Corp.	Full/Partial	Ohio Power Company	Partial
Central Hudson Gas & Electric Corporation	Full	Oklahoma Gas & Electric Company	Partial
Central Maine Power Company	Full	Orange and Rockland Utilities, Inc.	Full
Cleco Power LLC	Partial	PacifiCorp	Partial
Connecticut Light and Power Company (The)	Full	Peoples Gas Light and Coke Company	Partial
Connecticut Natural Gas Corporation	Full	Piedmont Natural Gas Company, Inc.	Full/Partial
Consolidated Edison Company of New York, Inc.	Full	Portland General Electric Company	Partial
Consumers Energy Company	Partial	Potomac Electric Power Company	Full/Partial
Dayton Power & Light Company	Partial	Public Service Co. of North Carolina, Inc.	Full
Delmarva Power & Light Company	Full	Public Service Company of Colorado	Partial
Dominion Energy South Carolina, Inc.	Partial	Public Service Company of New Hampshire	Partial
DTE Gas Company	Partial	Public Service Company of Oklahoma	Partial
Duke Energy Indiana, LLC.	Partial	Public Service Electric and Gas Company	Partial
Duke Energy Kentucky, Inc.	Partial	Puget Sound Energy, Inc.	Partial
Duke Energy Ohio, Inc.	Partial	Questar Gas Company	Full/Partial
Elizabethtown Gas Company	Partial	Rochester Gas & Electric Corporation	Full
Entergy Arkansas, LLC	Partial	San Diego Gas & Electric Company	Full
Entergy Louisiana, LLC	Partial	Sierra Pacific Power Company	Partial
Entergy Mississippi, LLC	Partial	South Jersey Gas Company	Full
Entergy New Orleans, LLC.	Partial	Southern California Edison Company	Full
Eergy Kansas Central, Inc.	Partial	Southern California Gas Company	Full
Eergy Metro, Inc.	Partial	Southern Connecticut Gas Company	Full
Eergy Missouri West, Inc.	Partial	Southern Indiana Gas & Electric Company	Full/Partial
Fitchburg Gas & Electric Light Company	Full	Southwest Gas Corporation	Full
Hawaiian Electric Company, Inc.	Full	Southwestern Electric Power Company	Partial
Indiana Gas Company, Inc.	Full	Spire Alabama Inc.	Partial
Indiana Michigan Power Company	Partial	Spire Missouri Inc.	Partial
Indianapolis Power & Light Company	Partial	Tucson Electric Power Company	Partial
Kentucky Power Company	Partial	Union Electric Company	Partial
Kentucky Utilities Co.	Partial	United Illuminating Company	Full
Louisville Gas & Electric Company	Partial	Unitil Energy Systems, Inc.	Partial
Mississippi Power Company	Partial	UNS Electric, Inc.	Partial
Nevada Power Company	Partial	UNS Gas, Inc.	Partial
New Jersey Natural Gas Company	Full	Washington Gas Light Company	Partial
New York State Electric and Gas Corporation	Full	Yankee Gas Services Company	Full

Source: Moody's Investors Service, S&P Global Market Intelligence

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### Outlooks

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- » [Regulated electric and gas utilities – US: 2020 outlook moves to stable on supportive regulation, weaker but steady credit metrics, November 2019](#)

### Sector Comments

- » [Regulated Electric, Gas and Water Utilities - US: Utilities demonstrate credit resilience in the face of coronavirus disruptions, March 2020](#)
- » [Regulated electric utilities – North America: Bill proposing fines for power shutoffs is credit negative for California utilities, January 2020](#)
- » [Regulated electric and gas utilities – US: California's wildfire fund is sufficiently capitalized to pay out claims, November 2019](#)
- » [Regulated electric and gas utilities – New York: Threat to revoke National Grid's operating license is credit negative for utilities, November 2019](#)

### Sector In-Depth

- » [Regulated electric and gas utilities – US: Grid hardening, regulatory support key to credit quality as climate hazards worsen, March 2020](#)
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- » [Regulated electric and gas utilities – New York: Threat to revoke National Grid's operating license is credit negative for utilities, November 2019](#)
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- » [Utilities and power companies – North America: Corporate governance assessments show generally credit-friendly characteristics, September 2019](#)
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- » [Regulated electric and gas utilities - North America: Free cash flow and capital allocation: external capital needs to decline in 2019, August 2019](#)
- » [Regulated electric utilities – US: Proposed California wildfire risk legislation is credit positive but questions remain, July 2019](#)
- » [Electric and gas – US: Pipeline cybersecurity standards help plug security loophole in utility supply chain, July 2019](#)
- » [Regulated water utilities - US: M&A expands to cross-sector deals, with mixed credit implications for acquirers, March 2019](#)
- » [Regulated Utilities and Power - US: PG&E bankruptcy highlights environmental, social and governance risks in California, February 2019](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

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**Analyst Contacts**

Toby Shea  
*VP-Sr Credit Officer*  
toby.shea@moodys.com

+1.212.553.1779

Ryan Wobbrock  
*VP-Sr Credit Officer*  
ryan.wobbrock@moodys.com

+1.212.553.7104

**Rating Action: Moody's assigns Baa3 rating to Pacific Gas & Electric's first mortgage bonds and B1 rating to PG&E Corp's senior secured debt; outlooks stable**

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15 Jun 2020

**Over \$32 billion of debt securities rated**

New York, June 15, 2020 -- Moody's Investors Service (Moody's) assigned a Ba2 Corporate Family Rating (CFR), Ba3-PD Probability of Default Rating (PDR) and SGL-2 Speculative Grade Liquidity Rating to PG&E Corporation (PCG or parent). Moody's also assigned a B1 rating to PCG's approximately \$4.75 billion senior secured (stock pledge only) debt.

At the same time, Moody's assigned a Baa3 rating to Pacific Gas & Electric Company's (PG&E or utility) senior secured debt. PG&E's secured debt includes approximately \$9.6 billion of reinstated senior secured first mortgage bonds, approximately \$11.9 billion of exchanged senior secured first mortgage bonds, and approximately \$5.9 billion of new, incremental first mortgage bonds. Moody's also assigned a B1 rating to PG&E's \$252 million of preferred stock. The rating outlooks for PCG and PG&E are stable.

As part of the plan of reorganization, PG&E's capital structure includes about \$9.6 billion of reinstated pre-petition debt, approximately \$11.9 billion of exchanged debt as amended in the restructuring support agreement, incremental new first mortgage bond debt of about \$5.9 billion and a \$6 billion of temporary secured term loan debt that is pari passu to the utility's first mortgage bonds. The reinstated and exchanged bonds were previously senior unsecured but are now senior secured first mortgage bonds upon emerging from bankruptcy. To the extent the temporary debt is in the form of short-dated bonds rather than a term loan, these bonds would also be pari passu to the first mortgage bonds, and therefore rated Baa3. PG&E expects to refinance this temporary debt with wildfire claim securitization bonds in the first half of 2021 if such bonds are approved by the California Public Utilities Commission (CPUC).

All of the debt in PG&E's capital structure is secured on a first lien basis by substantially all of the utility's real assets and certain tangible assets. The parent's \$4.75 billion senior secured debt issuance could be in the form of either term loans or notes, secured in this case by a pledge of the stock of PG&E. All of the proceeds received as part of the debt issuances will be held in escrow until PCG and PG&E emerge from bankruptcy. The parent's term loan will be held at PG&E Corp Term Loan B Escrow temporarily until emergence. We note that PCG will be required to issue \$9 billion of new equity as part of its emergence plan and, while an equity backstop commitment exists, challenges in executing this transaction remain. The successful execution of the equity issuance is assumed and incorporated in the organization's ratings. The ratings also incorporate our expectation that the company will receive plan confirmation from the bankruptcy court by June 30, 2020 and PG&E exits bankruptcy soon thereafter with full participation in the wildfire insurance fund established by AB 1054. Failure to receive plan confirmation will result in a redemption of the new debt.

**Assignments:**

- ..Issuer: PG&E Corporation
- .Corporate Family Rating, Assigned Ba2
- .Probability of Default Rating, Assigned Ba3-PD
- .... Speculative Grade Liquidity Rating, Assigned SGL-2
- .Senior Secured Debt, Assigned B1 (LGD5)
- ..Issuer: Pacific Gas & Electric Company
- .Senior Secured Debt, Assigned Baa3 (LGD2)
- .Preferred stock, Assigned B1 (LGD5)

## Outlook Actions:

..Issuer: PG&E Corporation

....Outlook, Assigned Stable

..Issuer: Pacific Gas & Electric Company

....Outlook, Assigned Stable

## RATINGS RATIONALE

"PG&E's ratings reflects several challenges that lie ahead for the company as it exits its second bankruptcy in the last two decades," said Jeff Cassella, VP-Senior Credit Officer. "These challenges include the substantial task of limiting wildfires in the face of rising wildfire risks largely due to climate change as well as building trust with key stakeholders including state regulators, policymakers and customers," added Cassella.

The Ba2 CFR assigned to PCG considers PG&E's position as a large, fully regulated utility operating solely within the state of California. We view the California political and regulatory environment to be unique and more complicated compared to other state regulatory jurisdictions, in large part due to the California utilities' continuing exposure to wildfire risk, an important ESG consideration and a key driver of the organization's credit quality. While the regulatory framework offers several supportive cost recovery mechanisms, like decoupling, a forward test year and above average rates of return, inverse condemnation risk is unique to California utilities.

The Baa3 rating on PG&E's first mortgage bonds and other secured debt reflects the strong security provided by the first lien on substantially all of the utility's real assets. Upon exit from bankruptcy, PG&E's secured debt will total approximately \$33 billion, representing about 50% of the book value of the company's assets and about 75% of rate base. The investment grade rating on the utility's secured debt reflects not only its senior position in the organization's capital structure, but also the substantial security provided by the utility's essential electric and gas transmission, distribution and generation assets.

PCG's ratings incorporate this more onerous political and legislative environment, the continued high degree of exposure to wildfires and the potential for future wildfire costs to be incurred by the utility under inverse condemnation. The possibility for additional wildfire events remains high due to both climate change and population growth in high fire-threat areas. However, the financial impact of future wildfire events should be mitigated by PG&E's participation in California's recently established wildfire insurance fund as well as the new, but untested, regulatory cost recovery framework outlined by AB1054[1], the wildfire bill passed by the state legislature and approved by the Governor in 2019.

AB1054 did not eliminate or alter the application of inverse condemnation, so California utilities are still responsible for paying wildfire victims for wildfire damages, regardless of fault. However, the law improves utility liquidity and enhances their ability to recover wildfire costs from ratepayers by making the prudence standard more favorable and capping the cost disallowance related to wildfire claims to 20% of T&D equity rate base over any three-year period.

Over the next three years, we expect PCG's ratio of cash flow from operations pre-working capital changes (CFO pre-W/C) to debt to be in the 12-15% range and utility PG&E's ratio of CFO pre-W/C to debt to be in the 14-16% range, including planned wildfire claim securitization bonds as on-credit debt. We expect some improvement in the companies' financial profiles through increased cash flow generation and debt reduction, particularly at the parent level. Upon exit, holding company debt will represent about 12% of consolidated debt. However, we expect holdco debt to steadily decline as the company plans to pay down this debt meaningfully over the next five years.

We acknowledge that PCG's credit metrics generally reflect a financial profile that is typically commensurate with a low investment-grade rated utility holding company. However, financial metrics alone are not representative of PCG's overall credit risk profile because of the elevated political risk and legal challenges that continue to persist. These include the company being on probation because of the 2010 San Bruno pipeline explosion, that will continue after the bankruptcy exit, highlighting the company's history of safety and governance issues. In addition, the utility needs to continue to invest heavily in hardening its grid and bolstering its wildfire risk mitigation efforts within its service territory. This will be an ongoing process in the face of climate change and extreme weather events and largely offsets the relatively strong financial metrics.

ESG considerations are a key driver of both PCG and PG&E's ratings and primarily focus on the elevated environmental risk that arises from the organization's significant exposure to wildfires that ultimately lead to its bankruptcy filing last year. PG&E's equipment has been found to be the cause of several major fires over the last few years. The wildfires, which the state of California believes is partly driven by climate change, have added to the state's urgency to combat climate change. Although the state has added significant protection with the aforementioned wildfire insurance fund, the negative financial impact of wildfires could continue to undermine the utility's financial stability and make it more difficult to carry out its decarbonization mandates to combat climate change.

Aside from wildfires, PG&E has moderate carbon transition risk compared to the rest of the US regulated sector due partly to the utility's exit from coal-fired generation many years ago. Additionally, over the long-term, PG&E continues to transition to a pure T&D utility as it self-generates only about half of its electric load with the remaining sourced through purchased power agreements. California's public policy response to climate change issues, which includes aggressive carbon targets and renewable portfolio standards as well as other developments such as community choice aggregators and the growth of rooftop solar, have created additional risk and uncertainty for utilities.

From a generation standpoint, less than 18% of PG&E's 2019 electric load was supplied by owned natural gas power plants. About 43% of its electric load was supplied through power purchase agreements, the majority of which are with renewables and hydro facilities, a positive ESG consideration. The remaining approximately 40% of its electric load was largely self-generated and consisted mostly of nuclear and hydro power.

Our credit analysis of PCG and PG&E also incorporates social risks primarily related to health and safety, demographic and societal trends, as well as customer relations as the company works to provide reliable and affordable service to customers and safe working conditions to employees. Taking into account PG&E's history of safety problems, including the San Bruno pipeline incident, infrastructure linked to wildfire ignitions and the impact of public safety power shutoffs on customers, PG&E has higher social risks compared to the typically moderate social risks experienced by most regulated electric and gas utility peers.

The coronavirus outbreak, weak global economic outlook and asset price declines are creating a severe and extensive credit shock across many sectors, regions and markets. The combined credit effects of these developments are unprecedented. We regard the coronavirus outbreak as a social risk under our ESG framework, given the substantial implications for public health and safety.

We expect PG&E to be resilient to recessionary pressures related to the coronavirus because of its rate-regulated business model and regulatory mechanisms such as decoupling revenues. Nevertheless, we are watching for electricity and gas usage declines, utility bill payment delinquency, and the regulatory response to counter these effects on earnings and cash flow. As the events related to the coronavirus continue, we are taking into consideration a wider range of potential outcomes, including more severe downside scenarios. We note that California's moratorium on utility disconnections until April 2021 is one of the longest in the US, which could result in PG&E having higher than average customer bill payment delinquencies compared to peers. The effects of the pandemic could result in financial metrics that are weaker than expected; however, we see these issues as temporary and not reflective of the long-term financial or credit profile of PCG.

As for governance, we consider PCG's management and financial strategy to be in a period of transition and uncertainty as the company exits from bankruptcy and recently added 11 new members to its 14-person Board of Directors while also searching for a permanent CEO as the current CEO is set to retire on June 30, 2020.

#### Liquidity

PCG's SGL-2 speculative grade liquidity (SGL) rating reflects a good liquidity profile supported by relatively stable cash flow generation and a high degree of availability under external credit facilities. After the bankruptcy exit, we expect PG&E to generate negative free cash flow as capital expenditures remain significant as the utility continues to invest heavily in wildfire mitigation. PCG's liquidity will be bolstered by the company's inability to distribute common stock dividends to shareholders until it achieves a specific earnings target, which we do not expect to occur until 2023.

We project PCG to have about \$250 million of cash on the balance sheet upon exit and full access to \$4 billion of revolving credit facilities. The credit facilities include PCG's \$500 million senior secured (stock pledge only) revolver and PG&E's \$3.5 billion senior secured (all asset pledge) revolver, which includes a \$1.5 billion letter of credit sublimit. Both facilities three years after the date of emergence, but each has two one-year extension options with lenders approval. If bill payment delinquencies or under-collections continue to rise due to the

coronavirus pandemic, we expect the company may need to draw on its revolving credit facilities to cover cash flow shortfalls.

These facilities do not include a material adverse change clause. The PCG credit facility has two financial maintenance covenants including a limit on debt to capitalization of no more than 70% and solely to the extent the credit facility is drawn as of the end of any quarter, a minimum cash coverage ratio of at least 1.5x prior to the date of the first dividend declaration and of at least 1.0x thereafter. The PG&E credit facility only has one financial maintenance covenant which limits the debt to capitalization ratio to no more than 65%.

## Outlook

PCG and PG&E's stable outlooks reflect our expectation that the utility will reduce wildfire risks and liabilities in its service territory through its significant wildfire mitigation investments and better maintenance of its infrastructure. The stable outlook also reflects our view that the California regulatory and legislative environment will remain unique and complicated, but ultimately credit supportive of the state's utilities, including the operation of the wildfire insurance fund during the next and future wildfire seasons. The stable outlook also incorporates our expectation that the companies' financial profiles will slowly strengthen through increased cash flow generation and holding company debt reduction.

## FACTORS THAT COULD LEAD TO AN UPGRADE OR DOWNGRADE OF THE RATINGS

### Factors that could lead to an upgrade

Because of the pending changes at the Board and senior management, execution risk related to planned equity issuance, and a lack of a track record after exiting from bankruptcy, an upgrade of PCG or PG&E's ratings is unlikely in the near term. Positive rating momentum could occur if PG&E is successful in its wildfire mitigation investments and is able to reduce both wildfire risk and potential liabilities. At the same time, positive rating momentum could occur as a result of a material strengthening of the organization's financial profile from improved cash flow generation and debt reduction, particularly at the parent.

### Factors that could lead to a downgrade

PCG and PG&E's ratings could be downgraded if the company is not successful in reducing wildfire risks in its service territory, wildfire liabilities increase materially as a result of new fires, or if there is a failure by state regulators to successfully implement the provisions of AB 1054, including the liability cap, improved prudency standards and access to the wildfire insurance fund, in a consistent and credit supportive manner. Downward rating pressure could also occur if the companies' financial profiles deteriorate such that PCG's ratio of CFO pre-W/C to debt is sustained below 10% or if PG&E's ratio of CFO pre-W/C to debt is sustained below 13%.

PG&E Corporation is a regulated utility holding company headquartered in San Francisco, California that conducts nearly all of its business through Pacific Gas and Electric Company, a regulated vertically integrated utility serving northern and central California. PG&E is regulated by the California Public Utilities Commission and by the Federal Energy Regulatory Commission. PCG and PG&E are expected to exit from their Chapter 11 bankruptcy filing in July 2020. Upon emergence, PCG's assets are expected to be over \$85 billion with total reported debt of approximately \$38 billion. PG&E serves approximately 5.4 million electric distribution customers and 4.5 million natural gas customers.

The principal methodology used in these ratings was Regulated Electric and Gas Utilities published in June 2017 and available at [https://www.moody.com/researchdocumentcontentpage.aspx?docid=PBC\\_1072530](https://www.moody.com/researchdocumentcontentpage.aspx?docid=PBC_1072530). Alternatively, please see the Rating Methodologies page on [www.moody.com](http://www.moody.com) for a copy of this methodology.

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Moody's general principles for assessing environmental, social and governance (ESG) risks in our credit analysis can be found at [https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC\\_1133569](https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1133569).

At least one ESG consideration was material to the credit rating action(s) announced and described above.

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#### REFERENCES/CITATIONS

[1] Assembly Bill 1054 - California Legislature website 12-Jul-2019

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Jeffrey F. Cassella  
VP - Senior Credit Officer  
Infrastructure Finance Group  
Moody's Investors Service, Inc.  
250 Greenwich Street  
New York, NY 10007  
U.S.A.

JOURNALISTS: 1 212 553 0376  
Client Service: 1 212 553 1653

Michael G. Haggarty  
Associate Managing Director  
Infrastructure Finance Group  
JOURNALISTS: 1 212 553 0376  
Client Service: 1 212 553 1653

Releasing Office:  
Moody's Investors Service, Inc.  
250 Greenwich Street

New York, NY 10007  
U.S.A.  
JOURNALISTS: 1 212 553 0376  
Client Service: 1 212 553 1653



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# Credit Conditions North America: Unprecedented Uncertainty Slams Credit

March 31, 2020

*(Editor's Note: S&P Global Ratings' Credit Conditions Committees meet quarterly to review macroeconomic conditions in each of four regions (Asia-Pacific, Emerging Markets ex-Asia, North America, and Europe). Discussions center on identifying credit risks and their potential ratings impact in various asset classes, as well as borrowing and lending trends for businesses and consumers. This commentary reflects views discussed in the North America committee on March 25, 2020. Given the fluidity of current conditions, we have chosen to publish a truncated version of our usual article this quarter.)*

## Key Takeaways

- **Overall.** The U.S. and Canadian economies have plunged into what will likely be historically severe recessions, with evaporating liquidity plaguing both corporate borrowers and the real economy. With the COVID-19 pandemic continuing to spread, predicting an end to this period of unprecedented uncertainty is fraught with variables.
- **Risks.** With coronavirus-containment measures hammering the U.S. labor market—almost 3.3 million Americans filed jobless claims in one week, by far a record—the concomitant demand shock threatens to prolong the economic slump and stifle an expected second-half recovery.
- **Credit.** Historically low interest rates and massive government stimulus are helping to bolster financial markets, but slumping cash flows and tight financing conditions are pressuring the credit quality of issuers across our rating practices; S&P Global Ratings has taken roughly 350 ratings actions on borrowers in North America at least partially due to the coronavirus outbreak's effects.

Credit Conditions in North America look set to remain extraordinarily difficult for borrowers at least into the second half of the year, with the economic stop associated with coronavirus-containment measures continuing with no clear end in sight. Intense pressure on the credit quality of borrowers worldwide won't soon subside, as cash flows slump and financing conditions materially diverge between investment- and speculative-grade borrowers.

Though our base case sees GDP growth rebounding in the second half as consumer demand revives and firms rush to fill back orders and restock inventories, much economic activity that depended on household discretionary spending will be lost permanently—with risk to the downside increasing in conjunction with escalating unemployment. Residual scars could linger, especially if social distancing becomes a “new normal” and/or business and consumer spending doesn't bounce back.

**Economic conditions.** With almost 200 million Americans directed to stay at home, the longest economic expansion in U.S. history has come to an abrupt halt. We forecast GDP will shrink 2.1% in the first quarter and a massive 12.7% in the second. The unemployment rate could exceed 13% in May, which would be the highest on record, going back to 1948. Even a strong second-half rebound won't be enough to get the world's biggest economy back to even for the year. We now expect a full-year contraction of 1.3% before the economy regains its growth path next year.

Roughly 3.3 million Americans filed initial jobless claims in the week ended March 20—almost five times the 1982 record high. This comes as a massive pullback in discretionary spending looks set to lead to the sharpest quarterly contraction in consumer outlays on record for April-June. In addition, we expect business investment and trade to shrink by the most since the Great Financial Crisis. And while we continue to forecast a U-shaped recovery in the second half, the path and severity of the coronavirus outbreak will dictate when the rebound will start.

The Federal Reserve has responded by slashing benchmark borrowing costs to effectively zero and announcing a slew of emergency measures to inject liquidity into the financial system and ensure the orderly functioning of markets—pledging to use “its full range of tools to support the economy.” On the fiscal side, lawmakers have agreed to a \$2 trillion stimulus package meant to address widespread health and economic problems created by the outbreak.

## Regional Credit Conditions Chair

**David C Tesher**

New York  
david.tesher@spglobal.com  
+1-212-438-2618

## U.S. Chief Economist

**Beth Ann Bovino**

New York  
bethann.bovino@spglobal.com  
+1-212-438-1652

## Senior Economist, U.S. and Canada

**Satyam Panday**

New York  
satyam.panday@spglobal.com  
+1-212-438-6009

## Global Head of Research

**Alexandra Dimitrijevic**

London  
alexandra.dimitrijevic@spglobal.com  
+44-207-176-3128

## Financing Conditions

**Nick Kraemer**

New York  
nick.kraemer@spglobal.com  
+1-212-438-1698

## Research Contributors

**Joe M Maguire**

New York  
joe.maguire@spglobal.com  
+1-212-438-7507

**Yucheng Zheng**

New York  
yucheng.zheng@spglobal.com  
+1-212-438-4436

## Contents

Appendix 1: Top North America Risks	4
Appendix 2: COVID-19 Impact On North America Sectors	5
Appendix 3: Economic Data And Forecast Summaries	9
Appendix 4: List Of Analytical Contacts	10

## Credit Conditions North America: Unprecedented Uncertainty Slams Credit

While all of this will likely help, our assessment of the U.S. economy is dour across most private sectors. Indeed, it's not clear that the monetary and fiscal stimuli will fully offset the drag on economic activity. How much GDP contracts really hinges on when and how strongly consumer demand comes back to life, which, in turn, depends on the duration of containment/mitigation policies. In our deep-recession scenario, the possible economic damage would far exceed the Great Recession.

Similarly, we now forecast a full-year contraction in Canada's GDP, down 2% with a material increase in unemployment, as the economy is battered on two fronts: the effects of the COVID-19 pandemic and the tumble in oil prices. Rail blockades and the global recession will only make it worse. The Canadian economy is also more vulnerable to a drying up of international trade than its southern neighbor is, nor was the trend of GDP growth as strong as the U.S.' heading into the crisis.

Regionally, it's worth noting that the economic damage associated with the outbreak is nonlinear. That means, for example, that if containment takes twice as long as expected, the economic damage will be more than twice as bad. Therefore, recovery could take longer and be weaker (with more lost output) than projected.

**Financing conditions.** The lending environment in the U.S. has turned sharply negative. With a recession in full swing and expected to deepen in the second quarter, further credit market deterioration is expected, particularly for speculative-grade borrowers. As is typical of a recession, borrowing costs will likely remain elevated, keeping bond and loan issuance largely subdued. Extraordinary stimulus measures by the Fed will likely help bolster liquidity, but the benefits will be largely, if not exclusively, enjoyed by investment-grade issuers until the economic recovery takes hold. We expect defaults to increase markedly this year, which will further constrain a largely frozen issuance environment for weaker borrowers.

Before this latest crisis, a long stretch of low interest rates, combined with investors' thirst for yield, enabled more firms to increase leverage or to issue rated debt for the first time. In fact, the number of spec-grade issuers grew 44% in the past decade. This is important because lower ratings typically suffer more downgrades during downturns than higher ratings do. Our Negative Bias—the proportion of issuers with negative outlooks or on CreditWatch with negative implications—has risen considerably, to about 24% from 19% before this crisis. Further, 30% of spec-grade borrowers are rated 'B-' or lower—an all-time high. This is a level at which we see higher incidences of not only downgrades but defaults.

**Sector trends.** Borrowers face adversity on three fronts: the sudden stop in the global economy, the collapse in oil prices, and record volatility in the capital markets. Together, these conditions are putting significant pressure on borrowers' creditworthiness and will undoubtedly lead to increased defaults, with the magnitude of the effects varying substantially by industry, geography, and rating level. Currently, we expect the default rate to hit 10% by year-end, as collapsing demand from social distancing measures strains working capital, free operating cash flow, and liquidity; particularly for the weakest borrowers in the most at-risk industries.

Industries most exposed to the collapse in global demand—e.g., airlines, transportation, retail, gaming/casinos, lodging, oil and gas—or those heavily dependent on cross-border supply chains are likely to suffer most, both from slumping cash flows and much tighter financing conditions. S&P Global Ratings has already taken roughly 350 ratings actions on borrowers in North America at least partially due to the coronavirus outbreak's effects (see charts 1 and 2). Notably, the ratings on two large U.S. corporations—Ford Motor Co. and Delta Airlines Inc.—have slipped into speculative-grade. Both are vulnerable to slumping demand as consumer confidence crashes and job losses mount.

Protracted uncertainty regarding demand and supply/production disruptions are adding downside pressure to credit metrics across the rating spectrum. In terms of specific rating levels, we expect that companies rated 'B' and below will come under the most pressure, as these low ratings indicate higher vulnerability to adverse business and financial, and economic conditions. By contrast, we expect entities with investment-grade ratings to exhibit stronger resilience and have more flexibility to absorb the effects of a global recession—although this isn't to say we don't expect a certain number of rating actions on these companies, particularly for those in sectors most exposed to the economic disruption.

Meanwhile, companies' draws on bank credit facilities have surged and could exceed those during the Great Financial Crisis. But most banks are, in our view, better-positioned than they were then to handle this. Based on year-end 2019 data, banks subject to the liquidity coverage ratio (or LCR, a

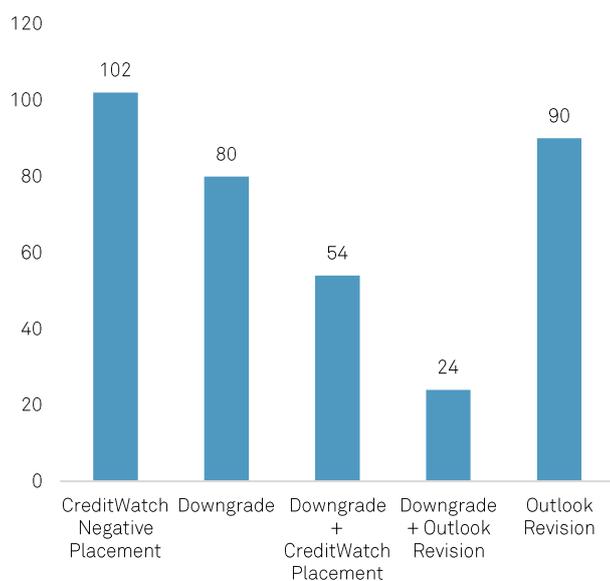
## Credit Conditions North America: Unprecedented Uncertainty Slams Credit

rule requiring them to hold enough high-quality liquid assets to cover cash outflows for 30 days) assumed that about \$550 billion would be drawn. Banks have about \$2.9 trillion of assets to withstand these draws—so even if borrowers draw the full \$550 billion, banks’ median LCR would still be close to required levels. Moreover, bank-deposit inflows have been robust, and the Fed’s new round of quantitative easing should boost deposit levels further. And when borrowers draw on revolving credit lines, they typically deposit the funds in the banks whose lines they used.

Banks also have access to liquidity either by borrowing from the Federal Home Loan Bank or the discount window (with now longer payback terms). Moreover, the Fed has put in place facilities to help investment-grade corporates borrow without having to tap existing credit lines: the Commercial Paper Funding Facility, which helps them issue short-term commercial paper for working capital purposes; and the Primary Market Corporate Credit Facility, which helps them issue longer-term bonds.

Chart 1

North America COVID-19-Related Rating Actions As Of March 27, 2020

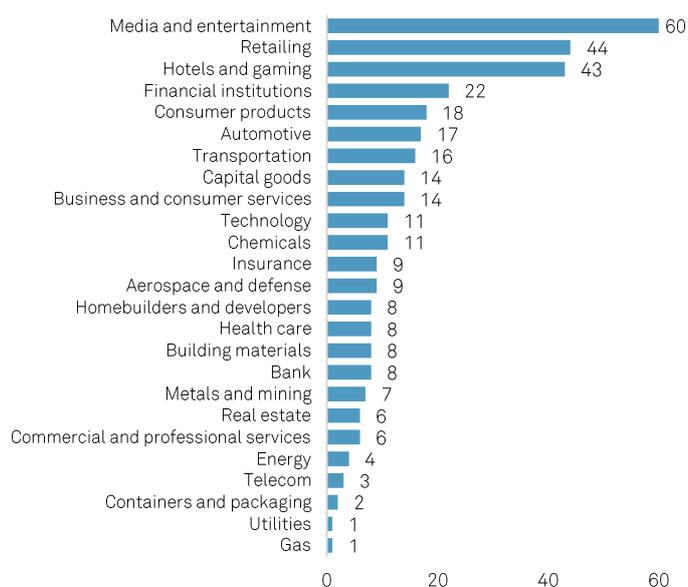


Note: These 350 rating actions pertain to ratings where we mention COVID-19 as one factor or in combination with others.

Source: S&P Global Ratings. COVID-19: Coronavirus-Related Public Rating Actions On Corporations And Sovereigns To Date, March 30, 2020.

Chart 2

North America COVID-19-Related Rating Actions By Sector As Of March 27, 2020



Note: These 350 rating actions pertain to ratings where we mention COVID-19 as one factor or in combination with others.

Source: S&P Global Ratings. COVID-19: Coronavirus-Related Public Rating Actions On Corporations And Sovereigns To Date, March 30, 2020.

S&P Global Ratings acknowledges a high degree of uncertainty about the rate of spread and peak of the coronavirus outbreak. Some government authorities estimate the pandemic will peak about midyear, and we are using this assumption in assessing the economic and credit implications. We believe the measures adopted to contain COVID-19 have pushed the global economy into recession (see our macroeconomic and credit updates here: [www.spglobal.com/ratings](http://www.spglobal.com/ratings)). As the situation evolves, we will update our assumptions and estimates accordingly. “[Coronavirus Impact: Key Takeaways From Our Articles](#)” periodically summarizes our latest research related to COVID-19.

This report does not constitute a rating action.

# Appendix 1: Top North America Risks

Table 1

## Top North America Risks

### Coronavirus outbreak widens substantially in the U.S.

**Risk level\*** Very low Moderate Elevated **High** Very high **Risk trend\*\*** Improving Unchanged **Worsening**

Some government authorities estimate the pandemic will peak about midyear. However, should this prove not to be the case, then a protracted and more prolonged period of coronavirus-containment measures will further amplify the current U.S. economic recession. Our base case assumes GDP growth rebounding in the second half as consumer demand revives and firms rush to fill back orders and restock inventories. Absent this bounce back, economic activity dependent on increased household discretionary spending will be lost—spilling over into hardening unemployment. The drag on business activity and cash-flow for borrowers across S&P Global Ratings could thus persist into 2021.

### Stresses on corporate funding continue to pressure credit quality

**Risk level\*** Very low Moderate Elevated **High** Very high **Risk trend\*\*** Improving Unchanged **Worsening**

Recent financial-market volatility underscores the liquidity and financing risks that many highly leveraged borrowers face. Fiscal stimulus and moves by the Federal Reserve to slash interest rates, repair market liquidity, and reinvigorate credit across the borrower universe may all help, but corporate bond spreads have widened sharply, especially at the speculative-grade level where issuance has all but disappeared. The build-up in corporate debt over the past decade has led to a concentration of investment-grade ratings in the 'BBB' category and spec-grade ratings in the 'B' category. In this light, investors and regulators are focused on transition and liquidity risk.

### Oil-price decline hurts Canada and U.S.

**Risk level\*** Very low Moderate Elevated **High** Very high **Risk trend\*\*** Improving Unchanged **Worsening**

Diminished global demand prospects coupled with the plunge in oil prices amid the OPEC-Russia squabble casts a shadow over the economies of Canada and the U.S.—both of which are net oil exporters. Not only will the price collapse put the oil and gas industry to the test, it may also hurt related sectors while weighing on oil-producing provinces/states.

### Trade disputes cloud world growth

**Risk level\*** Very low Moderate Elevated **High** Very high **Risk trend\*\*** Improving **Unchanged** Worsening

As companies and markets turn their focus to coronavirus, trade concerns have become less pronounced—though the uncertainty overhang continues to weigh on business confidence and growth forecasts. The “Phase One” deal between the U.S. and China doesn’t fully address the dispute over technology, intellectual property, and market access, with the economic headwinds from the COVID-19 potentially hindering China’s ability to fulfill its 2020 Phase One pledge. As such, trade tension can potentially reemerge and coincide the U.S. presidential election cycle. Meanwhile, the U.S. and Europe remain in disagreement over digital-services taxes, which may again exacerbate tensions.

### Cybersecurity threats to business activity

**Risk level\*** Very low Moderate **Elevated** High Very high **Risk trend\*\*** Improving **Unchanged** Worsening

Increasing global interconnectedness means cyber risk poses a systemic threat and significant single-entity risk. As cyberattacks become more sophisticated, new targets and methods are emerging. Companies and governments face the risk of criminal, proxy, and direct state-sponsored cyber-attacks. This has led to a fast-growing cyber-insurance market, though insured losses from cyber-attacks are still small compared with economic losses.

Sources: S&P Global Ratings.

\* **Risk levels** may be classified as very low, moderate, elevated, high, or very high, and are evaluated by considering both the likelihood and systemic impact of such an event occurring over the next one to two years. Typically these risks are not factored into our base case rating assumptions unless the risk level is very high.

\*\* **Risk trend** reflects our current view on whether the risk level could increase or decrease over the next 12 months.

## Appendix 2: COVID-19 Impact On North America Sectors

For analytical contacts, please see Appendix 4.

Table 2

### COVID-19 impact on North America sectors

Sector	Impact*	Comment
Aerospace & Defense	High	<p>The chilling effect of COVID-19 on air travel and the global economy will likely lead to order deferrals and cancellations. Cutbacks in airline capacity because of significant declines in air travel have reduced demand for aftermarket parts and services.</p> <p>Commercial aerospace companies will experience pressure in earnings and cash flow, and in turn see a reduction in headcount, furloughing employees, and other actions to offset some of the impact. Defense contractors are much less affected near-term.</p>
Autos	High	<p>Prolonged muted prospects for auto sales globally as the virus has impaired consumer discretionary spending this year. Specifically, we project that sales will decline 15%-20% in the U.S. Aftermarket suppliers are also under pressure, given less driving and sharply reduced consumer spending.</p> <p>Automakers have announced temporary production shutdowns and have switched to liquidity protection mode. However, during a complete production shutdown, a company's ability to cover its fixed costs deteriorates sharply, which would lead to faster cash burn.</p>
Building Materials	Medium	<p>Supply chain risks from China have largely abated with good logistics and higher costs, so that inventories are stocked in western Europe and North America ahead of a sharp drop in demand in the important spring and summer selling seasons.</p> <p>Even though the total manufactured products exposure is 15-20%, various components could still cause a backup in output.</p>
Capital Goods	Medium	<p>There has been direct impact from supply chain disruption as most issuers have facilities in China. From a demand standpoint, it is a growing concern as some issuers have meaningful exposure in China and outside the U.S.</p> <p>Company margins will likely suffer for 2020 due to lower production volumes and incremental operating expenses stemming from the effects of the COVID-19 pandemic.</p>
Chemicals	High	<p>The pandemic and related recessionary conditions we expect across the globe will reduce demand this year for most chemical products. Exceptions to this reduction will include chemicals used in sanitation, and similar applications.</p> <p>We expect demand declines from key end markets including auto, and general industrial to reduce demand for both commodity and specialty chemicals, although commodity petrochemicals may be hit harder. Our base case considers a decline in EBITDA for many chemical companies relative to 2019, and a related weakening in credit metrics, which will create downward pressure on credit quality in general.</p>
Consumer Products	Medium	<p>We expect a divergence in performance of sectors in the consumer products universe in the short term. U.S. consumer products companies in shelf-stable foods, home-cleaning products, and personal care are well-positioned to benefit from shelter-in-place mandates and consumers' health concerns. We believe this will have a modest positive impact on credit quality. This is attributable to the initial spike in demand from pantry loading and consumers now replenishing at a rapid rate because of shift to at-home consumption.</p> <p>That said, there is heightened risks for sectors exposed to social activity and discretionary spending. COVID-19 has heightened the risk of rating downgrades for consumer discretionary issuers, reduced revenues, and tight leverage headroom. Issuers with links to the retail and restaurant sectors are vulnerable.</p>
Financial Institutions	Medium	<p>The Fed's return to quantitative easing, zero interest rates, and commercial paper (CP) funding and primary dealer credit facilities should bolster market and bank liquidity, lowering the probability banks will face liquidity strains resulting from the coronavirus crisis and bolstering their ability and willingness to meet client demands for funding.</p> <p>Still, the crisis and ultra-low interest rates could lead to substantially lower earnings and significantly worse asset quality, particularly in industries more affected by the virus outbreak.</p>
Forest Products	Medium	<p>The impact has been limited because this is a highly automated industry often in remote areas or small urban centers in the U.S. and Canada, but has become a growing concern as we start to see a trickling effect that hinders commodity demand.</p>

## Credit Conditions North America: Unprecedented Uncertainty Slams Credit

		There is a greater risk of deficit and increased draws on credit facilities, mainly tied to the current uncertain macroeconomic, notably linked to COVID-19 and the potential for logistical disruptions.
Gaming, Leisure & Lodging	High	<p>Given the rapid increase in reported restrictions, the travel downturn could persist into the second quarter. Containment may occur by the end of the second quarter followed by a slow recovery.</p> <p>Restrictions on travel and consumer activity for a prolonged period is causing cancellations and an unprecedented decline in revenue at travel-related companies and out-of-home entertainment providers. Gaming operator and gaming equipment sectors are facing an unprecedented decline in revenue resulting from the temporary closures of casinos across the U.S.</p>
Health Care & Pharmaceuticals	Medium	<p>We anticipate limited rating actions for the health care universe. However, the situation is evolving and the longer and more widespread the outbreak, the higher the potential for more negative ratings actions.</p> <p>Hospitals, surgical centers, dental and other healthcare providers that rely on more discretionary, lower acuity procedures will see a significant decline in patient volume, and that can have an adverse ripple effect on manufacturers supplying the sector. Hospitals also face the potential that increased COVID-19 patients could stress near-term capacity and disrupt operations. Subsectors such as pharmaceuticals and life sciences may be more resilient, but would be increasingly hurt if the drop in activity were to become more prolonged.</p>
Homebuilders	Medium	<p>U.S. homebuilders are seeing a negative effect on foot traffic now, which has turned into better sales conversion from more serious buyers.</p> <p>Looking ahead, however, job losses and potential construction site closures cloud the picture for new orders over the next few months in a previously healthy U.S. housing market.</p>
Insurance	Medium	<p>Volatile financial market and recessionary economic conditions test balance sheet strength of the U.S. insurance sector. Asset risk is the most immediate risk factor. P/C insurers hold record unaffiliated common stock. Life insurers' high 'BBB' exposure presents elevated credit risk from corporates most vulnerable to the containment measures and the energy sector.</p> <p>Unprecedented low interest rates pressure life insurers' reserve adequacy and spread income prospects. However, the sector has been effectively navigating this headwind for over a decade.</p>
Media & Entertainment	High	<p>The pandemic is having meaningfully immediate negative impact across event organizers, live-events companies, travel-related companies, and movie exhibitors. More than 25 ratings actions on those sectors most exposed have already been taken.</p> <p>The broadest threat to media is a pullback in advertising spending. Advertising, which remains a key revenue component for much of the media industry, is already being reduced for certain media subsectors, with little ability to offset the majority of the declines.</p>
Metals & Mining	High	<p>Copper &amp; steel inventories rose as COVID-19 led to an industrial slowdown in China, demand-pull for intermediate metals products globally has stalled as the outbreak has spread.</p> <p>Expect several rating actions within the following weeks because of our lower metal price assumptions (lower by 5%-10%). High yield issuers could breach leverage triggers with 2021 maturities on the horizon.</p>
Midstream Energy	High	<p>The combination of the pandemic and the oil price war is hurting the U.S. midstream energy sector. Volume declines and counterparty credit quality are the top risks to the sector but the severity of these risks to midstream credit profiles is uncertain.</p> <p>Investment-grade companies are better-positioned than their spec-grade peers to deal with the severe supply and demand shocks as many companies are self-funding, credit facilities have been extended, and liquidity on revolvers is sufficient. Spec-grade companies are unable to access the capital markets and a prolonged downturn will likely cause significant credit deterioration in 2021.</p>
Oil & Gas	High	<p>The industry is facing a severe supply-demand imbalance. The price of oil has plummeted, political risks have amplified, and producers are facing negative investor sentiment, capital markets access, and coronavirus concerns.</p> <p>We assume Brent oil price will recover to US\$50/bbl level in 2021 from US\$30/bbl this year based on our expectation that COVID-19 will be contained this year leading to demand recovery; and both OPEC and Russia might come up an agreement or some U.S. shale players will be forced out of market.</p>
Oil Refineries	High	<p>Independent oil refiners' margins are under pressure from falling demand, and the drop in oil prices may significantly impact working capital and reduce cash positions.</p> <p>We believe first quarter EBITDA will be weaker than expected, due to the substantial decline in demand for jet fuel and gasoline. Cracks for both products has been negative at times, and anemic</p>

## Credit Conditions North America: Unprecedented Uncertainty Slams Credit

		demand in the second quarter will likely require massive cuts to utilization. A prolonged demand response due to COVID-19 could damage credit quality.
Public Finance	Medium	<p>USPF is seeing pressure sector wide, some on the revenue side (transport, higher education, sales tax collections), and others from growing expenditures (health care).</p> <p>The volatility ties directly to credit deterioration; in cases where revenue growth is slowing and expenditures are rising, the imbalance can grow quickly.</p>
REITs	Medium	<p>The indirect impact from sharply slower economic growth and financial market volatility could be felt across all property types as the effects of social distancing, travel restrictions, and lower oil prices will take time to deteriorate the financial health of tenants.</p> <p>We expect rating downside on North American REITs to be mitigated by key credit strengths underpinning the sector, including cash flow stability, tenant diversity, and better balance sheets relative to the prior recession.</p>
Regulated Utilities	Low	<p>We believe that the majority of North American regulated utilities are well-positioned to handle the immediate impact of COVID-19. However, the pandemic could hurt some companies, especially those issuers already facing downside ratings pressure prior to the arrival of the coronavirus.</p> <p>Some electric utilities with disproportionate exposure to commercial and industrial class of customers could be vulnerable to reduced sales volumes, absent any regulatory counter mechanisms such as decoupling.</p>
Retail & Restaurants	High	<p>Credit risks to the retail and restaurant sector have increased dramatically as the effort to contain COVID-19 results in store closures, changes to shopping habits, and heightened risk of a broad based macroeconomic decline.</p> <p>Sales will likely decline substantially in the short-term, with the hardest-hit issuers in casual dining and retail exposed to social distancing and discretionary spending (e.g., mall-based retailers). There are rating actions across the spectrum taking place with the vast majority concentrated in these retail segments.</p>
Sovereign	Low	<p>We expect investment-grade sovereigns will show stronger resilience and more flexibility to withstand the shock. The ratings of countries with greater economic resilience, stronger financial profile, and better policy-making are likely to come under less pressure compared with others.</p> <p>In contrast, those at the lower end of our scale are more vulnerable to downgrades, given their inherently weaker finances and greater vulnerability to global shocks.</p>
Structured Finance	Medium	<p>Given the forecasts for weaker economic growth and higher unemployment, we expect some weakening in structured finance collateral performance, which was stable through most of the first quarter. Further, our ratings outlook has turned cautious, and we predict a stable-to-negative or negative trend for certain sectors. Risks remain to the downside, especially if economic forecasts worsen.</p> <p>Although we note that the ultimate impact of the COVID-19 pandemic yet uncertain, we believe it is likely to affect some sectors more than others. Current areas of focus include CLOs, whole business ABS, small business ABS, aircraft ABS, subprime auto ABS (non-IG), dealer floorplan ABS, retail &amp; lodging backed CMBS, and non-QM RMBS.</p>
Technology	Medium	<p>COVID-19 will hurt enterprise and consumer IT spending, particularly, hardware and semiconductor segments. However, we expect some of the deferred spending to return gradually in the latter half of this year through heavy government stimulus in the U.S., China, and elsewhere.</p> <p>We expect significant negative ratings actions throughout the year as the impact of the revenue deferral, or revenue destruction in some cases, begins to emerge. Liquidity is a key concern among speculative-grade issuers given the market dislocation.</p>
Telecom	Low	<p>Telecom and cable providers can withstand the effects of a surge in COVID-19 cases with limited impact to credit quality given their recurring, subscription-based business models.</p> <p>There are a handful of companies that have exposure to vulnerable sectors such as transportation and tourism, which could hurt their financial and operating performance in the near-term. In addition, issuers that have exposure to small- and mid-sized business customers are at risk since they are most likely to churn in a recession.</p>
Transportation	High	<p>The ultimate impact of the coronavirus outbreak on our global airline ratings will depend on the duration and severity of the crisis, and the type and severity of measures airlines and governments take to mitigate it. Capacity reductions, along with sharply lower oil prices, will be insufficient to offset the decline in its travel demand.</p> <p>The global airline sector has weakened substantially and the pandemic threatens credit quality of operators. The aircraft-leasing sector should fare better than airlines in this coronavirus-related</p>

## Credit Conditions North America: Unprecedented Uncertainty Slams Credit

economic downturn, but will still face pressure on their revenues and cash flow. Freight transportation is less affected but will be hurt indirectly through the unfolding global recession.

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Unregulated (Merchant) Power	Medium	<p>Most merchant power companies engage in ratable hedging and a high proportion—typically 90%—of their 2020 economic generation is hedged. Still, we expect companies with load shape risk (volumetric risk in hedges) and/or a higher proportion of Large commercial and industrial (LCI) customers will be disproportionately affected. We expect some companies that do not have a countercyclical retail power business to offset the risks in wholesale power business to experience some credit pressures should the current environment last into the third quarter.</p> <p>With average peak electric demand showing signs of declining about 10% at this stage, prompt and forward prices will decline. Decline in forward prices will expose these companies to backwardation in future cash flows due to lower priced hedges, or the prospects of higher merchant exposure in the hope for better pricing discovery later in the year.</p>
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\*The impact descriptor above (high, medium, low) is our qualitative view of the risk. It does not directly translate to risk of rating actions, which depend on a number of factors including initial headroom under a rating coupled with the expected length and severity of the epidemic.

## Appendix 3: Economic Data And Forecast Summaries

Table 3

### U.S. – S&P Global Ratings Economic Outlook

	2019	2020f	2021f	2022f	2023f
Real GDP (year % ch.)	2.3	-1.3	3.2	2.5	2.0
Real consumer spending (year % ch.)	2.6	-1.4	2.6	2.8	2.2
Real equipment investment (year % ch.)	1.3	-6.3	6.3	5.6	4.3
Real nonresidential structures investment (year % ch.)	-4.3	-11.8	4.9	4.7	3.1
Real residential investment (year % ch.)	-1.5	1.9	2.7	3.0	3.2
Core CPI (year % ch.)	2.2	0.9	1.9	2.8	2.3
Unemployment rate (%)	3.7	7.1	5.7	4.7	3.8
Housing starts (annual total in mil.)	1.3	1.3	1.3	1.3	1.3
S&P Case-Shiller Home Price Index (Dec. to Dec. % ch.)	3.5	3.5	2.3	2.3	3.3
Federal Reserve's fed funds policy target rate range (year-end %)	1.5-1.75	0-0.25	0-0.25	0.5-0.75	1.25-1.5

Note: All numbers are in annual average basis, except the Fed's policy rate and housing starts. Core CPI is consumer price index excluding energy and food components. f—forecast. Forecasts were generated before the third estimate of Q4 2019 GDP was published by the BEA. Source: Oxford Economics, S&P Global Economics Forecasts.

Table 4

### Canada – S&P Global Ratings Economic Outlook

	2019	2020f	2021f	2022f
Real GDP (year % ch.)	1.6	-2.0	3.4	2.0
Real consumer spending (year % ch.)	1.6	-0.8	2.8	2.3
Real private business fixed investment (year % ch.)	-0.8	-4.7	4.5	3.2
Core CPI (year % ch.)	2.1	1.7	1.9	1.7
Unemployment rate (%)	5.7	6.7	6.0	5.5
Housing starts (annual total in thousands)	209	195	198	207
CAD/USD exchange rate (per US\$1)	1.33	1.40	1.37	1.34
Government of Canada 10-year bond yield (%)	1.59	1.18	1.47	1.50
Bank of Canada overnight rate (% end of period)	1.75	0.25	0.75	1.00

Note: All numbers are in annual average basis, except central bank rates and housing starts. Core CPI is consumer price index excluding energy and food components. f—forecast. Source: StatCan, Oxford Economics, S&P Global Economics Forecasts.

## Appendix 4: List Of Analytical Contacts

Sector	Analyst Name and Contact
Aerospace & Defense	<b>Philip Baggaley</b> +1 (212) 438-7683 philip.baggaley@spglobal.com
Autos	<b>Philip Baggaley</b> +1 (212) 438-7683 philip.baggaley@spglobal.com
Building Materials	<b>Donald Marleau</b> +1 (416) 507-2526 donald.marleau@spglobal.com
Capital Goods	<b>Ana Lai</b> +1 (212) 438-6895 ana.lai@spglobal.com
Chemicals	<b>Paul Kurias</b> +1 (212) 438-3486 paul.kurias@spglobal.com
Consumer Products	<b>Diane Shand</b> +1 (212) 438-7860 diane.shand@spglobal.com
Financial Institutions	<b>Stuart Plesser</b> +1 (212) 438-6870 stuart.plesser@spglobal.com
Forest Products	<b>Donald Marleau</b> +1 (416) 507-2526 donald.marleau@spglobal.com
Gaming, Leisure & Lodging	<b>Emile Courtney</b> +1 (212) 438-7824 emile.courtney@spglobal.com
Health Care & Pharmaceuticals	<b>Arthur Wong</b> +1 (416) 507-2561 arthur.wong@spglobal.com
Homebuilders	<b>Donald Marleau</b> +1 (416) 507-2526 donald.marleau@spglobal.com
Insurance	<b>Joseph Marinucci</b> +1 (212) 438-2012 joseph.marinucci@spglobal.com
Media & Entertainment	<b>Naveen Sarma</b> +1 (212) 438-7833 naveen.sarma@spglobal.com
Metals & Mining	<b>Donald Marleau</b> +1 (416) 507-2526 donald.marleau@spglobal.com
Midstream Energy	<b>Michael Grande</b> +1 (212) 438-2242 michael.grande@spglobal.com
Oil & Gas	<b>Thomas Watters</b> +1 (212) 438-7818 thomas.watters@spglobal.com
Oil Refineries	<b>Michael Grande</b> +1 (212) 438-2242 michael.grande@spglobal.com
Public Finance	<b>Jane Ridley</b>

## Credit Conditions North America: Unprecedented Uncertainty Slams Credit

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	+1 (303) 721-4487 jane.ridley@spglobal.com
REITs	<b>Ana Lai</b> +1 (212) 438-6895 ana.lai@spglobal.com
Regulated Utilities	<b>Gabe Grosberg</b> +1 (212) 438-6043 gabe.grosberg@spglobal.com
Retail & Restaurants	<b>Sarah Wyeth</b> +1 (212) 438-5658 sarah.wyeth@spglobal.com
Sovereign	<b>Joydeep Mukherji</b> +1 (212) 438-7351 joydeep.mukherji@spglobal.com
Structured Finance	<b>Winston Chang</b> +1 (212) 438-8123 winston.chang@spglobal.com  <b>James Manzi</b> +1 (202) 383-2028 james.manzi@spglobal.com
Technology	<b>David Tsui</b> +1 (415) 371-5063 david.tsui@spglobal.com
Telecom	<b>Allyn Arden</b> +1 (212) 438-7832 allyn.arden@spglobal.com
Transportation	<b>Philip Baggaley</b> +1 (212) 438-7683 philip.baggaley@spglobal.com
Unregulated (Merchant) Power	<b>Aneesh Prabhu</b> +1 (212) 438-1285 aneesh.prabhu@spglobal.com

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## Key Credit Factors For The Regulated Utilities Industry

**Primary Credit Analysts:**

Richard Creed, Melbourne (61) 3-9631-2045; richard.creed@standardandpoors.com  
Barbara A Eiseman, New York (1) 212-438-7666; barbara.eiseman@standardandpoors.com  
Vittoria Ferraris, Milan (39) 02-72111-207; vittoria.ferraris@standardandpoors.com  
Sergio Fuentes, Buenos Aires (54) 114-891-2131; sergio.fuentes@standardandpoors.com  
Gabe Grosberg, New York (1) 212-438-6043; gabe.grosberg@standardandpoors.com  
Parvathy Iyer, Melbourne (61) 3-9631-2034; parvathy.iyer@standardandpoors.com  
Gerrit W Jepsen, CFA, New York (1) 212-438-2529; gerrit.jepsen@standardandpoors.com  
Andreas Kindahl, Stockholm (46) 8-440-5907; andreas.kindahl@standardandpoors.com  
John D Lindstrom, Stockholm (46) 8-440-5922; john.lindstrom@standardandpoors.com  
Nicole D Martin, Toronto (1) 416-507-2560; nicole.martin@standardandpoors.com  
Sherman A Myers, New York (1) 212-438-4229; sherman.myers@standardandpoors.com  
Dimitri Nikas, New York (1) 212-438-7807; dimitri.nikas@standardandpoors.com  
Ana M Olaya-Rotonti, New York (1) 212-438-8668; ana.olaya-rotonti@standardandpoors.com  
Hiroki Shibata, Tokyo (81) 3-4550-8437; hiroki.shibata@standardandpoors.com  
Todd A Shipman, CFA, New York (1) 212-438-7676; todd.shipman@standardandpoors.com  
Alf Stenqvist, Stockholm (46) 8-440-5925; alf.stenqvist@standardandpoors.com  
Tania Tsoneva, CFA, London (44) 20-7176-3489; tania.tsoneva@standardandpoors.com  
Mark J Davidson, London (44) 20-7176-6306; mark.j.davidson@standardandpoors.com

**Criteria Officer:**

Mark Puccia, New York (1) 212-438-7233; mark.puccia@standardandpoors.com

### Table Of Contents

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SCOPE OF THE CRITERIA

SUMMARY OF THE CRITERIA

IMPACT ON OUTSTANDING RATINGS

EFFECTIVE DATE AND TRANSITION

## Table Of Contents (cont.)

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### METHODOLOGY

Part I--Business Risk Analysis

Part II--Financial Risk Analysis

Part III--Rating Modifiers

Appendix--Frequently Asked Questions

### RELATED CRITERIA AND RESEARCH

# Key Credit Factors For The Regulated Utilities Industry

*(Editor's Note: This criteria article supersedes "Key Credit Factors: Business And Financial Risks In The Investor-Owned Utilities Industry," published Nov. 26, 2008, "Assessing U.S. Utility Regulatory Environments," Nov. 7, 2007, and "Revised Methodology For Adjusting Amounts Reported By U.K. GAAP Water Companies For Infrastructure Renewals Accounting," Jan. 27, 2010.)*

1. Standard & Poor's Ratings Services is refining and adapting its methodology and assumptions for its Key Credit Factors: Criteria For Regulated Utilities. We are publishing these criteria in conjunction with our corporate criteria (see "Corporate Methodology, published Nov. 19, 2013). This article relates to our criteria article, "Principles Of Credit Ratings," Feb. 16, 2011.
2. This criteria article supersedes "Key Credit Factors: Business And Financial Risks In The Investor-Owned Utilities Industry," Nov. 26, 2008, "Criteria: Assessing U.S. Utility Regulatory Environments," Nov. 7, 2007, and "Revised Methodology For Adjusting Amounts Reported By U.K. GAAP Water Companies For Infrastructure Renewals Accounting," Jan. 27, 2010.

## SCOPE OF THE CRITERIA

3. These criteria apply to entities where regulated utilities represent a material part of their business, other than U.S. public power, water, sewer, gas, and electric cooperative utilities that are owned by federal, state, or local governmental bodies or by ratepayers. A regulated utility is defined as a corporation that offers an essential or near-essential infrastructure product, commodity, or service with little or no practical substitute (mainly electricity, water, and gas), a business model that is shielded from competition (naturally, by law, shadow regulation, or by government policies and oversight), and is subject to comprehensive regulation by a regulatory body or implicit oversight of its rates (sometimes referred to as tariffs), service quality, and terms of service. The regulators base the rates that they set on some form of cost recovery, including an economic return on assets, rather than relying on a market price. The regulated operations can range from individual parts of the utility value chain (water, gas, and electricity networks or "grids," electricity generation, retail operations, etc.) to the entire integrated chain, from procurement to sales to the end customer. In some jurisdictions, our view of government support can also affect the final rating outcome, as per our government-related entity criteria (see "General Criteria: Rating Government-Related Entities: Methodology and Assumptions," Dec. 9, 2010).

## SUMMARY OF THE CRITERIA

4. Standard & Poor's is updating its criteria for analyzing regulated utilities, applying its corporate criteria. The criteria for evaluating the competitive position of regulated utilities amend and partially supersede the "Competitive Position" section of the corporate criteria when evaluating these entities. The criteria for determining the cash flow leverage

assessment partially supersede the "Cash Flow/Leverage" section of the corporate criteria for the purpose of evaluating regulated utilities. The section on liquidity for regulated utilities partially amends existing criteria. All other sections of the corporate criteria apply to the analysis of regulated utilities.

## IMPACT ON OUTSTANDING RATINGS

5. These criteria could affect the issuer credit ratings of about 5% of regulated utilities globally due primarily to the introduction of new financial benchmarks in the corporate criteria. Almost all ratings changes are expected to be no more than one notch, and most are expected to be in an upward direction.

## EFFECTIVE DATE AND TRANSITION

6. These criteria are effective immediately on the date of publication.

## METHODOLOGY

### Part I--Business Risk Analysis

#### Industry risk

7. Within the framework of Standard & Poor's general criteria for assessing industry risk, we view regulated utilities as a "very low risk" industry (category '1'). We derive this assessment from our view of the segment's low risk ('2') cyclical and very low risk ('1') competitive risk and growth assessment.
8. In our view, demand for regulated utility services typically exhibits low cyclical, being a function of such key drivers as employment growth, household formation, and general economic trends. Pricing is non-cyclical, since it is usually based in some form on the cost of providing service.

#### Cyclical

9. We assess cyclical for regulated utilities as low risk ('2'). Utilities typically offer products and services that are essential and not easily replaceable. Based on our analysis of global Compustat data, utilities had an average peak-to-trough (PTT) decline in revenues of about 6% during recessionary periods since 1952. Over the same period, utilities had an average PTT decline in EBITDA margin of about 5% during recessionary periods, with PTT EBITDA margin declines less severe in more recent periods. The PTT drop in profitability that occurred in the most recent recession (2007-2009) was less than the long-term average.
10. With an average drop in revenues of 6% and an average profitability decline of 5%, utilities' cyclical assessment calibrates to low risk ('2'). We generally consider that the higher the level of profitability cyclical in an industry, the higher the credit risk of entities operating in that industry. However, the overall effect of cyclical on an industry's risk profile may be mitigated or exacerbated by an industry's competitive and growth environment.

### **Competitive risk and growth**

11. We view regulated utilities as warranting a very low risk ('1') competitive risk and growth assessment. For competitive risk and growth, we assess four sub-factors as low, medium, or high risk. These sub-factors are:
- Effectiveness of industry barriers to entry;
  - Level and trend of industry profit margins;
  - Risk of secular change and substitution by products, services, and technologies; and
  - Risk in growth trends.

#### **Effectiveness of barriers to entry--low risk**

12. Barriers to entry are high. Utilities are normally shielded from direct competition. Utility services are commonly naturally monopolistic (they are not efficiently delivered through competitive channels and often require access to public thoroughfares for distribution), and so regulated utilities are granted an exclusive franchise, license, or concession to serve a specified territory in exchange for accepting an obligation to serve all customers in that area and the regulation of its rates and operations.

#### **Level and trend of industry profit margins--low risk**

13. Demand is sometimes and in some places subject to a moderate degree of seasonality, and weather conditions can significantly affect sales levels at times over the short term. However, those factors even out over time, and there is little pressure on margins if a utility can pass higher costs along to customers via higher rates.

#### **Risk of secular change and substitution of products, services, and technologies--low risk**

14. Utility products and services are not overly subject to substitution. Where substitution is possible, as in the case of natural gas, consumer behavior is usually stable and there is not a lot of switching to other fuels. Where switching does occur, cost allocation and rate design practices in the regulatory process can often mitigate this risk so that utility profitability is relatively indifferent to the substitutions.

#### **Risk in industry growth trends--low risk**

15. As noted above, regulated utilities are not highly cyclical. However, the industry is often well established and, in our view, long-range demographic trends support steady demand for essential utility services over the long term. As a result, we would expect revenue growth to generally match GDP when economic growth is positive.

### **B. Country risk**

16. In assessing "country risk" for a regulated utility, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology").

### **C. Competitive position**

17. In the corporate criteria, competitive position is assessed as ('1') excellent, ('2') strong, ('3') satisfactory, ('4') fair, ('5') weak, or ('6') vulnerable.
18. The analysis of competitive position includes a review of:
- Competitive advantage,
  - Scale, scope, and diversity,
  - Operating efficiency, and
  - Profitability.

19. In the corporate criteria we assess the strength of each of the first three components. Each component is assessed as either: (1) strong, (2) strong/adequate, (3) adequate, (4) adequate/weak, or (5) weak. After assessing these components, we determine the preliminary competitive position assessment by ascribing a specific weight to each component. The applicable weightings will depend on the company's Competitive Position Group Profile. The group profile for regulated utilities is "National Industries & Utilities," with a weighting of the three components as follows: competitive advantage (60%), scale, scope, and diversity (20%), and operating efficiency (20%). Profitability is assessed by combining two sub-components: level of profitability and the volatility of profitability.

20. "Competitive advantage" cannot be measured with the same sub-factors as competitive firms because utilities are not primarily subject to influence of market forces. Therefore, these criteria supersede the "competitive advantage" section of the corporate criteria. We analyze instead a utility's "regulatory advantage" (section 1 below).

### **Assessing regulatory advantage**

21. The regulatory framework/regime's influence is of critical importance when assessing regulated utilities' credit risk because it defines the environment in which a utility operates and has a significant bearing on a utility's financial performance.

22. We base our assessment of the regulatory framework's relative credit supportiveness on our view of how regulatory stability, efficiency of tariff setting procedures, financial stability, and regulatory independence protect a utility's credit quality and its ability to recover its costs and earn a timely return. Our view of these four pillars is the foundation of a utility's regulatory support. We then assess the utility's business strategy, in particular its regulatory strategy and its ability to manage the tariff-setting process, to arrive at a final regulatory advantage assessment.

23. When assessing regulatory advantage, we first consider four pillars and sub-factors that we believe are key for a utility to recover all its costs, on time and in full, and earn a return on its capital employed:

24. Regulatory stability:

- Transparency of the key components of the rate setting and how these are assessed
- Predictability that lowers uncertainty for the utility and its stakeholders
- Consistency in the regulatory framework over time

25. Tariff-setting procedures and design:

- Recoverability of all operating and capital costs in full
- Balance of the interests and concerns of all stakeholders affected
- Incentives that are achievable and contained

26. Financial stability:

- Timeliness of cost recovery to avoid cash flow volatility
- Flexibility to allow for recovery of unexpected costs if they arise
- Attractiveness of the framework to attract long-term capital
- Capital support during construction to alleviate funding and cash flow pressure during periods of heavy investments

27. Regulatory independence and insulation:

- Market framework and energy policies that support long-term financeability of the utilities and that is clearly enshrined in law and separates the regulator's powers
- Risks of political intervention is absent so that the regulator can efficiently protect the utility's credit profile even during a stressful event

28. We have summarized the key characteristics of the assessments for regulatory advantage in table 1.

**Table 1**

Preliminary Regulatory Advantage Assessment		
Qualifier	What it means	Guidance
Strong	The utility has a major regulatory advantage due to one or a combination of factors that support cost recovery and a return on capital combined with lower than average volatility of earnings and cash flows.	The utility operates in a regulatory climate that is transparent, predictable, and consistent from a credit perspective.
	There are strong prospects that the utility can sustain this advantage over the long term.	The utility can fully and timely recover all its fixed and variable operating costs, investments and capital costs (depreciation and a reasonable return on the asset base).
	This should enable the utility to withstand economic downturns and political risks better than other utilities.	The tariff set may include a pass-through mechanism for major expenses such as commodity costs, or a higher return on new assets, effectively shielding the utility from volume and input cost risks.
		Any incentives in the regulatory scheme are contained and symmetrical.
		The tariff set includes mechanisms allowing for a tariff adjustment for the timely recovery of volatile or unexpected operating and capital costs.
		There is a track record of earning a stable, compensatory rate of return in cash through various economic and political cycles and a projected ability to maintain that record.
		There is support of cash flows during construction of large projects, and pre-approval of capital investment programs and large projects lowers the risk of subsequent disallowances of capital costs.
Adequate	The utility has some regulatory advantages and protection, but not to the extent that it leads to a superior business model or durable benefit.	It operates in a regulatory environment that is less transparent, less predictable, and less consistent from a credit perspective.
	The utility has some but not all drivers of well-managed regulatory risk. Certain regulatory factors support the business's long-term stability and viability but could result in periods of below-average levels of profitability and greater profit volatility. However, overall these regulatory drivers are partially offset by the utility's disadvantages or lack of sustainability of other factors.	The utility is exposed to delays or is not, with sufficient certainty, able to recover all of its fixed and variable operating costs, investments, and capital costs (depreciation and a reasonable return on the asset base) within a reasonable time.
		Incentive ratemaking practices are asymmetrical and material, and could detract from credit quality.
		The utility is exposed to the risk that it doesn't recover unexpected or volatile costs in a full or less than timely manner due to lack of flexible reopeners or annual revenue adjustments.
		There is an uneven track record of earning a compensatory rate of return in cash through various economic and political cycles and a projected ability to maintain that record.

**Table 1**

Preliminary Regulatory Advantage Assessment (cont.)		
		There is little or no support of cash flows during construction, and investment decisions on large projects (and therefore the risk of subsequent disallowances of capital costs) rest mostly with the utility.
		The utility operates under a regulatory system that is not sufficiently insulated from political intervention and is sometimes subject to overt political influence.
Weak	The utility suffers from a complete breakdown of regulatory protection that places the utility at a significant disadvantage.	The utility operates in an opaque regulatory climate that lacks transparency, predictability, and consistency.
	The utility's regulatory risk is such that the long-term cost recovery and investment return is highly uncertain and materially delayed, leading to volatile or weak cash flows. There is the potential for material stranded assets with no prospect of recovery.	The utility cannot fully and/or timely recover its fixed and variable operating costs, investments, and capital costs (depreciation and a reasonable return on the asset base).
		There is a track record of earning minimal or negative rates of return in cash through various economic and political cycles and a projected inability to improve that record sustainably.
		The utility must make significant capital commitments with no solid legal basis for the full recovery of capital costs.
		Ratemaking practices actively harm credit quality.
		The utility is regularly subject to overt political influence.

29. After determining the preliminary regulatory advantage assessment, we then assess the utility's business strategy. Most importantly, this factor addresses the effectiveness of a utility's management of the regulatory risk in the jurisdiction(s) where it operates. In certain jurisdictions, a utility's regulatory strategy and its ability to manage the tariff-setting process effectively so that revenues change with costs can be a compelling regulatory risk factor. A utility's approach and strategies surrounding regulatory matters can create a durable "competitive advantage" that differentiates it from peers, especially if the risk of political intervention is high. The assessment of a utility's business strategy is informed by historical performance and its forward-looking business objectives. We evaluate these objectives in the context of industry dynamics and the regulatory climate in which the utility operates, as evaluated through the factors cited in paragraphs 24-27.
30. We modify the preliminary regulatory advantage assessment to reflect this influence positively or negatively. Where business strategy has limited effect relative to peers, we view the implications as neutral and make no adjustment. A positive assessment improves the preliminary regulatory advantage assessment by one category and indicates that management's business strategy is expected to bolster its regulatory advantage through favorable commission rulings beyond what is typical for a utility in that jurisdiction. Conversely, where management's strategy or businesses decisions result in adverse regulatory outcomes relative to peers, such as failure to achieve typical cost recovery or allowed returns, we adjust the preliminary regulatory advantage assessment one category worse. In extreme cases of poor strategic execution, the preliminary regulatory advantage assessment is adjusted by two categories worse (when possible; see table 2) to reflect management decisions that are likely to result in a significantly adverse regulatory outcome relative to peers.

**Table 2**

Determining The Final Regulatory Advantage Assessment				
--Strategy modifier--				
Preliminary regulatory advantage score	Positive	Neutral	Negative	Very negative
Strong	Strong	Strong	Strong/Adequate	Adequate
Strong/Adequate	Strong	Strong/Adequate	Adequate	Adequate/Weak
Adequate	Strong/Adequate	Adequate	Adequate/Weak	Weak
Adequate/Weak	Adequate	Adequate/Weak	Weak	Weak
Weak	Adequate/Weak	Weak	Weak	Weak

### Scale, scope, and diversity

31. We consider the key factors for this component of competitive position to be primarily operational scale and diversity of the geographic, economic, and regulatory foot prints. We focus on a utility's markets, service territories, and diversity and the extent that these attributes can contribute to cash flow stability while dampening the effect of economic and market threats.
32. A utility that warrants a Strong or Strong/Adequate assessment has scale, scope, and diversity that support the stability of its revenues and profits by limiting its vulnerability to most combinations of adverse factors, events, or trends. The utility's significant advantages enable it to withstand economic, regional, competitive, and technological threats better than its peers. It typically is characterized by a combination of the following factors:
  - A large and diverse customer base with no meaningful customer concentration risk, where residential and small to medium commercial customers typically provide most operating income.
  - The utility's range of service territories and regulatory jurisdictions is better than others in the sector.
  - Exposure to multiple regulatory authorities where we assess preliminary regulatory advantage to be at least Adequate. In the case of exposure to a single regulatory regime, the regulatory advantage assessment is either Strong or Strong/Adequate.
  - No meaningful exposure to a single or few assets or suppliers that could hurt operations or could not easily be replaced.
33. A utility that warrants a Weak or Weak/Adequate assessment lacks scale, scope, and diversity such that it compromises the stability and sustainability of its revenues and profits. The utility's vulnerability to, or reliance on, various elements of this sub-factor is such that it is less likely than its peers to withstand economic, competitive, or technological threats. It typically is characterized by a combination of the following factors:
  - A small customer base, especially if burdened by customer and/or industry concentration combined with little economic diversity and average to below-average economic prospects;
  - Exposure to a single service territory and a regulatory authority with a preliminary regulatory advantage assessment of Adequate or Adequate/Weak; or
  - Dependence on a single supplier or asset that cannot easily be replaced and which hurts the utility's operations.
34. We generally believe a larger service territory with a diverse customer base and average to above-average economic growth prospects provides a utility with cushion and flexibility in the recovery of operating costs and ongoing investment (including replacement and growth capital spending), as well as lessening the effect of external shocks (i.e.,

extreme local weather) since the incremental effect on each customer declines as the scale increases.

35. We consider residential and small commercial customers as having more stable usage patterns and being less exposed to periodic economic weakness, even after accounting for some weather-driven usage variability. Significant industrial exposure along with a local economy that largely depends on one or few cyclical industries potentially contributes to the cyclical nature of a utility's load and financial performance, magnifying the effect of an economic downturn.
36. A utility's cash flow generation and stability can benefit from operating in multiple geographic regions that exhibit average to better than average levels of wealth, employment, and growth that underpin the local economy and support long-term growth. Where operations are in a single geographic region, the risk can be ameliorated if the region is sufficiently large, demonstrates economic diversity, and has at least average demographic characteristics.
37. The detriment of operating in a single large geographic area is subject to the strength of regulatory assessment. Where a utility operates in a single large geographic area and has a strong regulatory assessment, the benefit of diversity can be incremental.

### **Operating efficiency**

38. We consider the key factors for this component of competitive position to be:
  - Compliance with the terms of its operating license, including safety, reliability, and environmental standards;
  - Cost management; and
  - Capital spending: scale, scope, and management.
39. Relative to peers, we analyze how successful a utility management achieves the above factors within the levels allowed by the regulator in a manner that promotes cash flow stability. We consider how management of these factors reduces the prospect of penalties for noncompliance, operating costs being greater than allowed, and capital projects running over budget and time, which could hurt full cost recovery.
40. The relative importance of the above three factors, particularly cost and capital spending management, is determined by the type of regulation under which the utility operates. Utilities operating under robust "cost plus" regimes tend to be more insulated given the high degree of confidence costs will invariably be passed through to customers. Utilities operating under incentive-based regimes are likely to be more sensitive to achieving regulatory standards. This is particularly so in the regulatory regimes that involve active consultation between regulator and utility and market testing as opposed to just handing down an outcome on a more arbitrary basis.
41. In some jurisdictions, the absolute performance standards are less relevant than how the utility performs against the regulator's performance benchmarks. It is this performance that will drive any penalties or incentive payments and can be a determinant of the utilities' credibility on operating and asset-management plans with its regulator.
42. Therefore, we consider that utilities that perform these functions well are more likely to consistently achieve determinations that maximize the likelihood of cost recovery and full inclusion of capital spending in their asset bases. Where regulatory resets are more at the discretion of the utility, effective cost management, including of labor, may allow for more control over the timing and magnitude of rate filings to maximize the chances of a constructive outcome such as full operational and capital cost recovery while protecting against reputational risks.

43. A regulated utility that warrants a Strong or Strong/Adequate assessment for operating efficiency relative to peers generates revenues and profits through minimizing costs, increasing efficiencies, and asset utilization. It typically is characterized by a combination of the following:
- High safety record;
  - Service reliability is strong, with a track record of meeting operating performance requirements of stakeholders, including those of regulators. Moreover, the utility's asset profile (including age and technology) is such that we have confidence that it could sustain favorable performance against targets;
  - Where applicable, the utility is well-placed to meet current and potential future environmental standards;
  - Management maintains very good cost control. Utilities with the highest assessment for operating efficiency have shown an ability to manage both their fixed and variable costs in line with regulatory expectations (including labor and working capital management being in line with regulator's allowed collection cycles); or
  - There is a history of a high level of project management execution in capital spending programs, including large one-time projects, almost invariably within regulatory allowances for timing and budget.
44. A regulated utility that warrants an Adequate assessment for operating efficiency relative to peers has a combination of cost position and efficiency factors that support profit sustainability combined with average volatility. Its cost structure is similar to its peers. It typically is characterized by a combination of the following factors:
- High safety performance;
  - Service reliability is satisfactory with a track record of mostly meeting operating performance requirements of stakeholders, including those of regulators. We have confidence that a favorable performance against targets can be mostly sustained;
  - Where applicable, the utility may be challenged to comply with current and future environmental standards that could increase in the medium term;
  - Management maintains adequate cost control. Utilities that we assess as having adequate operating efficiency mostly manage their fixed and variable costs in line with regulatory expectations (including labor and working capital management being mostly in line with regulator's allowed collection cycles); or
  - There is a history of adequate project management skills in capital spending programs within regulatory allowances for timing and budget.
45. A regulated utility that warrants a weak or weak/adequate assessment for operating efficiency relative to peers has a combination of cost position and efficiency factors that fail to support profit sustainability combined with below-average volatility. Its cost structure is worse than its peers. It typically is characterized by a combination of the following:
- Poor safety performance;
  - Service reliability has been sporadic or non-existent with a track record of not meeting operating performance requirements of stakeholders, including those of regulators. We do not believe the utility can consistently meet performance targets without additional capital spending;
  - Where applicable, the utility is challenged to comply with current environmental standards and is highly vulnerable to more onerous standards;
  - Management typically exceeds operating costs authorized by regulators;
  - Inconsistent project management skills as evidenced by cost overruns and delays including for maintenance capital spending; or
  - The capital spending program is large and complex and falls into the weak or weak/adequate assessment, even if

operating efficiency is generally otherwise considered adequate.

### **Profitability**

46. A utility with above-average profitability would, relative to its peers, generally earn a rate of return at or above what regulators authorize and have minimal exposure to earnings volatility from affiliated unregulated business activities or market-sensitive regulated operations. Conversely, a utility with below-average profitability would generally earn rates of return well below the authorized return relative to its peers or have significant exposure to earnings volatility from affiliated unregulated business activities or market-sensitive regulated operations.
47. The profitability assessment consists of "level of profitability" and "volatility of profitability."

### **Level of profitability**

48. Key measures of general profitability for regulated utilities commonly include ratios, which we compare both with those of peers and those of companies in other industries to reflect different countries' regulatory frameworks and business environments:
- EBITDA margin,
  - Return on capital (ROC), and
  - Return on equity (ROE).
49. In many cases, EBITDA as a percentage of sales (i.e., EBITDA margin) is a key indicator of profitability. This is because the book value of capital does not always reflect true earning potential, for example when governments privatize or restructure incumbent state-owned utilities. Regulatory capital values can vary with those of reported capital because regulatory capital values are not inflation-indexed and could be subject to different assumptions concerning depreciation. In general, a country's inflation rate or required rate of return on equity investment is closely linked to a utility company's profitability. We do not adjust our analysis for these factors, because we can make our assessment through a peer comparison.
50. For regulated utilities subject to full cost-of-service regulation and return-on-investment requirements, we normally measure profitability using ROE, the ratio of net income available for common stockholders to average common equity. When setting rates, the regulator ultimately bases its decision on an authorized ROE. However, different factors such as variances in costs and usage may influence the return a utility is actually able to earn, and consequently our analysis of profitability for cost-of-service-based utilities centers on the utility's ability to consistently earn the authorized ROE.
51. We will use return on capital when pass-through costs distort profit margins—for instance congestion revenues or collection of third-party revenues. This is also the case when the utility uses accelerated depreciation of assets, which in our view might not be sustainable in the long run.

### **Volatility of profitability**

52. We may observe a clear difference between the volatility of actual profitability and the volatility of underlying regulatory profitability. In these cases, we could use the regulatory accounts as a proxy to judge the stability of earnings.
53. We use actual returns to calculate the standard error of regression for regulated utility issuers (only if there are at least

seven years of historical annual data to ensure meaningful results). If we believe recurring mergers and acquisitions or currency fluctuations affect the results, we may make adjustments.

## Part II--Financial Risk Analysis

### D. Accounting

54. Our analysis of a company's financial statements begins with a review of the accounting to determine whether the statements accurately measure a company's performance and position relative to its peers and the larger universe of corporate entities. To allow for globally consistent and comparable financial analyses, our rating analysis may include quantitative adjustments to a company's reported results. These adjustments also align a company's reported figures with our view of underlying economic conditions and give us a more accurate portrayal of a company's ongoing business. We discuss adjustments that pertain broadly to all corporate sectors, including this sector, in "Corporate Methodology: Ratios And Adjustments." Accounting characteristics and analytical adjustments unique to this sector are discussed below.

#### Accounting characteristics

55. Some important accounting practices for utilities include:
- For integrated electric utilities that meet native load obligations in part with third-party power contracts, we use our purchased power methodology to adjust measures for the debt-like obligation such contracts represent (see below).
  - Due to distortions in leverage measures from the substantial seasonal working-capital requirements of natural gas distribution utilities, we adjust inventory and debt balances by netting the value of inventory against outstanding short-term borrowings. This adjustment provides an accurate view of the company's balance sheet by reducing seasonal debt balances when we see a very high certainty of near-term cost recovery (see below).
  - We deconsolidate securitized debt (and associated revenues and expenses) that has been accorded specialized recovery provisions (see below).
  - For water utilities that report under U.K. GAAP, we adjust ratios for infrastructure renewals accounting, which permits water companies to capitalize the maintenance spending on their infrastructure assets (see below). The adjustments aim to make those water companies that report under U.K. GAAP more comparable to those that report under accounting regimes that do not permit infrastructure renewals accounting.
56. In the U.S. and selectively in other regions, utilities employ "regulatory accounting," which permits a rate-regulated company to defer some revenues and expenses to match the timing of the recognition of those items in rates as determined by regulators. A utility subject to regulatory accounting will therefore have assets and liabilities on its books that an unregulated corporation, or even regulated utilities in many other global regions, cannot record. We do not adjust GAAP earnings or balance-sheet figures to remove the effects of regulatory accounting. However, as more countries adopt International Financial Reporting Standards (IFRS), the use of regulatory accounting will become more scarce. IFRS does not currently provide for any recognition of the effects of rate regulation for financial reporting purposes, but it is considering the use of regulatory accounting. We do not anticipate altering our fundamental financial analysis of utilities because of the use or non-use of regulatory accounting. We will continue to analyze the effects of regulatory actions on a utility's financial health.

### **Purchased power adjustment**

57. We view long-term purchased power agreements (PPA) as creating fixed, debt-like financial obligations that represent substitutes for debt-financed capital investments in generation capacity. By adjusting financial measures to incorporate PPA fixed obligations, we achieve greater comparability of utilities that finance and build generation capacity and those that purchase capacity to satisfy new load. PPAs do benefit utilities by shifting various risks to the electricity generators, such as construction risk and most of the operating risk. The principal risk borne by a utility that relies on PPAs is recovering the costs of the financial obligation in rates. (See "Standard & Poor's Methodology For Imputing Debt for U.S. Utilities' Power Purchase Agreements," May 7, 2007, for more background and information on the adjustment.)
58. We calculate the present value (PV) of the future stream of capacity payments under the contracts as reported in the financial statement footnotes or as supplied directly by the company. The discount rate used is the same as the one used in the operating lease adjustment, i.e., 7%. For U.S. companies, notes to the financial statements enumerate capacity payments for the coming five years, and a thereafter period. Company forecasts show the detail underlying the thereafter amount, or we divide the amount reported as thereafter by the average of the capacity payments in the preceding five years to get an approximation of annual payments after year five.
59. We also consider new contracts that will start during the forecast period. The company provides us the information regarding these contracts. If these contracts represent extensions of existing PPAs, they are immediately included in the PV calculation. However, a contract sometimes is executed in anticipation of incremental future needs, so the energy will not flow until some later period and there are no interim payments. In these instances, we incorporate that contract in our projections, starting in the year that energy deliveries begin under the contract. The projected PPA debt is included in projected ratios as a current rating factor, even though it is not included in the current-year ratio calculations.
60. The PV is adjusted to reflect regulatory or legislative cost-recovery mechanisms when present. Where there is no explicit regulatory or legislative recovery of PPA costs, as in most European countries, the PV may be adjusted for other mitigating factors that reduce the risk of the PPAs to the utility, such as a limited economic importance of the PPAs to the utility's overall portfolio. The adjustment reduces the debt-equivalent amount by multiplying the PV by a specific risk factor.
61. Risk factors based on regulatory or legislative cost recovery typically range between 0% and 50%, but can be as high as 100%. A 100% risk factor would signify that substantially all risk related to contractual obligations rests on the company, with no regulatory or legislative support. A 0% risk factor indicates that the burden of the contractual payments rests solely with ratepayers, as when the utility merely acts as a conduit for the delivery of a third party's electricity. These utilities are barred from developing new generation assets, and the power supplied to their customers is sourced through a state auction or third parties that act as intermediaries between retail customers and electricity suppliers. We employ a 50% risk factor in cases where regulators use base rates for the recovery of the fixed PPA costs. If a regulator has established a separate adjustment mechanism for recovery of all prudent PPA costs, a risk factor of 25% is employed. In certain jurisdictions, true-up mechanisms are more favorable and frequent than the review of base rates, but still do not amount to pure fuel adjustment clauses. Such mechanisms may be triggered by financial thresholds or passage of prescribed periods of time. In these instances, a risk factor between 25% and 50% is

employed. Specialized, legislatively created cost-recovery mechanisms may lead to risk factors between 0% and 15%, depending on the legislative provisions for cost recovery and the supply function borne by the utility. Legislative guarantees of complete and timely recovery of costs are particularly important to achieving the lowest risk factors. We also exclude short-term PPAs where they serve merely as gap fillers, pending either the construction of new capacity or the execution of long-term PPAs.

62. Where there is no explicit regulatory or legislative recovery of PPA costs, the risk factor is generally 100%. We may use a lower risk factor if mitigating factors reduce the risk of the PPAs on the utility. Mitigating factors include a long position in owned generation capacity relative to the utility's customer supply needs that limits the importance of the PPAs to the utility or the ability to resell power in a highly liquid market at minimal loss. A utility with surplus owned generation capacity would be assigned a risk factor of less than 100%, generally 50% or lower, because we would assess its reliance on PPAs as limited. For fixed capacity payments under PPAs related to renewable power, we use a risk factor of less than 100% if the utility benefits from government subsidies. The risk factor reflects the degree of regulatory recovery through the government subsidy.
63. Given the long-term mandate of electric utilities to meet their customers' demand for electricity, and also to enable comparison of companies with different contract lengths, we may use an evergreening methodology. Evergreen treatment extends the duration of short- and intermediate-term contracts to a common length of about 12 years. To quantify the cost of the extended capacity, we use empirical data regarding the cost of developing new peaking capacity, incorporating regional differences. The cost of new capacity is translated into a dollars-per-kilowatt-year figure using a proxy weighted-average cost of capital and a proxy capital recovery period.
64. Some PPAs are treated as operating leases for accounting purposes—based on the tenor of the PPA or the residual value of the asset on the PPA's expiration. We accord PPA treatment to those obligations, in lieu of lease treatment; rather, the PV of the stream of capacity payments associated with these PPAs is reduced to reflect the applicable risk factor.
65. Long-term transmission contracts can also substitute for new generation, and, accordingly, may fall under our PPA methodology. We sometimes view these types of transmission arrangements as extensions of the power plants to which they are connected or the markets that they serve. Accordingly, we impute debt for the fixed costs associated with such transmission contracts.
66. Adjustment procedures:
  - Data requirements:
    - Future capacity payments obtained from the financial statement footnotes or from management.
    - Discount rate: 7%.
    - Analytically determined risk factor.
  - Calculations:
    - Balance sheet debt is increased by the PV of the stream of capacity payments multiplied by the risk factor.
    - Equity is not adjusted because the recharacterization of the PPA implies the creation of an asset, which offsets the debt.
    - Property, plant, and equipment and total assets are increased for the implied creation of an asset equivalent to the

debt.

- An implied interest expense for the imputed debt is determined by multiplying the discount rate by the amount of imputed debt (or average PPA imputed debt, if there is fluctuation of the level), and is added to interest expense.
- We impute a depreciation component to PPAs. The depreciation component is determined by multiplying the relevant year's capacity payment by the risk factor and then subtracting the implied PPA-related interest for that year. Accordingly, the impact of PPAs on cash flow measures is tempered.
- The cost amount attributed to depreciation is reclassified as capital spending, thereby increasing operating cash flow and funds from operations (FFO).
- Some PPA contracts refer only to a single, all-in energy price. We identify an implied capacity price within such an all-in energy price, to determine an implied capacity payment associated with the PPA. This implied capacity payment is expressed in dollars per kilowatt-year, multiplied by the number of kilowatts under contract. (In cases that exhibit markedly different capacity factors, such as wind power, the relation of capacity payment to the all-in charge is adjusted accordingly.)
- Operating income before depreciation and amortization (D&A) and EBITDA are increased for the imputed interest expense and imputed depreciation component, the total of which equals the entire amount paid for PPA (subject to the risk factor).
- Operating income after D&A and EBIT are increased for interest expense.

### **Natural gas inventory adjustment**

67. In jurisdictions where a pass-through mechanism is used to recover purchased natural gas costs of gas distribution utilities within one year, we adjust for seasonal changes in short-debt tied to building inventories of natural gas in non-peak periods for later use to meet peak loads in peak months. Such short-term debt is not considered to be part of the utility's permanent capital. Any history of non-trivial disallowances of purchased gas costs would preclude the use of this adjustment. The accounting of natural gas inventories and associated short-term debt used to finance the purchases must be segregated from other trading activities.

68. Adjustment procedures:

- Data requirements:
- Short-term debt amount associated with seasonal purchases of natural gas devoted to meeting peak-load needs of captive utility customers (obtained from the company).
- Calculations:
- Adjustment to debt--we subtract the identified short-term debt from total debt.

### **Securitized debt adjustment**

69. For regulated utilities, we deconsolidate debt (and associated revenues and expenses) that the utility issues as part of a securitization of costs that have been segregated for specialized recovery by the government entity constitutionally authorized to mandate such recovery if the securitization structure contains a number of protective features:

- An irrevocable, non-bypassable charge and an absolute transfer and first-priority security interest in transition property;
- Periodic adjustments ("true-up") of the charge to remediate over- or under-collections compared with the debt service obligation. The true-up ensures collections match debt service over time and do not diverge significantly in the short run; and,
- Reserve accounts to cover any temporary short-term shortfall in collections.

70. Full cost recovery is in most instances mandated by statute. Examples of securitized costs include "stranded costs" (above-market utility costs that are deemed unrecoverable when a transition from regulation to competition occurs) and unusually large restoration costs following a major weather event such as a hurricane. If the defined features are present, the securitization effectively makes all consumers responsible for principal and interest payments, and the utility is simply a pass-through entity for servicing the debt. We therefore remove the debt and related revenues and expenses from our measures. (See "Securitizing Stranded Costs," Jan. 18, 2001, for background information.)
71. Adjustment procedures:
- Data requirements:
  - Amount of securitized debt on the utility's balance sheet at period end;
  - Interest expense related to securitized debt for the period; and
  - Principal payments on securitized debt during the period.
- Calculations:
  - Adjustment to debt: We subtract the securitized debt from total debt.
  - Adjustment to revenues: We reduce revenue allocated to securitized debt principal and interest. The adjustment is the sum of interest and principal payments made during the year.
  - Adjustment to operating income after depreciation and amortization (D&A) and EBIT: We reduce D&A related to the securitized debt, which is assumed to equal the principal payments during the period. As a result, the reduction to operating income after D&A is only for the interest portion.
  - Adjustment to interest expense: We remove the interest expense of the securitized debt from total interest expense.
- Operating cash flows:
  - We reduce operating cash flows for revenues and increase for the assumed interest amount related to the securitized debt. This results in a net decrease to operating cash flows equal to the principal repayment amount.

### **Infrastructure renewals expenditure**

72. In England and Wales, water utilities can report under either IFRS or U.K. GAAP. Those that report under U.K. GAAP are allowed to adopt infrastructure renewals accounting, which enables the companies to capitalize the maintenance spending on their underground assets, called infrastructure renewals expenditure (IRE). Under IFRS, infrastructure renewals accounting is not permitted and maintenance expenditure is charged to earnings in the year incurred. This difference typically results in lower adjusted operating cash flows for those companies that report maintenance expenditure as an operating cash flow under IFRS, than for those that report it as capital expenditure under U.K. GAAP. We therefore make financial adjustments to amounts reported by water issuers that apply U.K. GAAP, with the aim of making ratios more comparable with those issuers that report under IFRS and U.S. GAAP. For example, we deduct IRE from EBITDA and FFO.
73. IRE does not always consist entirely of maintenance expenditure that would be expensed under IFRS. A portion of IRE can relate to costs that would be eligible for capitalization as they meet the recognition criteria for a new fixed asset set out in International Accounting Standard 16 that addresses property, plant, and equipment. In such cases, we may refine our adjustment to U.K. GAAP companies so that we only deduct from FFO the portion of IRE that would not be capitalized under IFRS. However, the information to make such a refinement would need to be of high quality, reliable, and ideally independently verified by a third party, such as the company's auditor. In the absence of this, we assume

that the entire amount of IRE would have been expensed under IFRS and we accordingly deduct the full expenditure from FFO.

74. Adjustment procedures:

- Data requirements:
- U.K. GAAP accounts typically provide little information on the portion of capital spending that relates to renewals accounting, or the related depreciation, which is referred to as the infrastructure renewals charge. The information we use for our adjustments is, however, found in the regulatory cost accounts submitted annually by the water companies to the Water Services Regulation Authority, which regulates all water companies in England and Wales.
- Calculations:
- EBITDA: Reduced by the value of IRE that was capitalized in the period.
- EBIT: Adjusted for the difference between the adjustment to EBITDA and the reduction in the depreciation expense, depending on the degree to which the actual cash spending in the current year matches the planned spending over the five-year regulatory review period.
- Cash flow from operations and FFO: Reduced by the value of IRE that was capitalized in the period.
- Capital spending: Reduced by the value of infrastructure renewals spending that we reclassify to cash flow from operations.
- Free operating cash flow: No impact, as the reduction in operating cash flows is exactly offset by the reduction in capital spending.

### E. Cash flow/leverage analysis

75. In assessing the cash flow adequacy of a regulated utility, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology"). We assess cash flow/leverage on a six-point scale ranging from ('1') minimal to ('6') highly leveraged. These scores are determined by aggregating the assessments of a range of credit ratios, predominantly cash flow-based, which complement each other by focusing attention on the different levels of a company's cash flow waterfall in relation to its obligations.
76. The corporate methodology provides benchmark ranges for various cash flow ratios we associate with different cash flow leverage assessments for standard volatility, medial volatility, and low volatility industries. The tables of benchmark ratios differ for a given ratio and cash flow leverage assessment along two dimensions: the starting point for the ratio range and the width of the ratio range.
77. If an industry's volatility levels are low, the threshold levels for the applicable ratios to achieve a given cash flow leverage assessment are less stringent, although the width of the ratio range is narrower. Conversely, if an industry has standard levels of volatility, the threshold levels for the applicable ratios to achieve a given cash flow leverage assessment may be elevated, but with a wider range of values.
78. We apply the "low-volatility" table to regulated utilities that qualify under the corporate criteria and with all of the following characteristics:
- A vast majority of operating cash flows come from regulated operations that are predominantly at the low end of the utility risk spectrum (e.g., a "network," or distribution/transmission business unexposed to commodity risk and with very low operating risk);
  - A "strong" regulatory advantage assessment;

- An established track record of normally stable credit measures that is expected to continue;
- A demonstrated long-term track record of low funding costs (credit spread) for long-term debt that is expected to continue; and
- Non-utility activities that are in a separate part of the group (as defined in our group rating methodology) that we consider to have "nonstrategic" group status and are not deemed high risk and/or volatile.

79. We apply the "medial volatility" table to companies that do not qualify under paragraph 78 with:

- A majority of operating cash flows from regulated activities with an "adequate" or better regulatory advantage assessment; or
- About one-third or more of consolidated operating cash flow comes from regulated utility activities with a "strong" regulatory advantage and where the average of its remaining activities have a competitive position assessment of '3' or better.

80. We apply the "standard-volatility" table to companies that do not qualify under paragraph 79 and with either:

- About one-third or less of its operating cash flow comes from regulated utility activities, regardless of its regulatory advantage assessment; or
- A regulatory advantage assessment of "adequate/weak" or "weak."

## Part III--Rating Modifiers

### F. Diversification/portfolio effect

81. In assessing the diversification/portfolio effect on a regulated utility, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology").

### G. Capital structure

82. In assessing the quality of the capital structure of a regulated utility, we use the same methodology as with other corporate issuers (see "Corporate Methodology").

### H. Liquidity

83. In assessing a utility's liquidity/short-term factors, our analysis is consistent with the methodology that applies to corporate issuers (See "Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers," Nov. 19, 2013) except for the standards for "adequate" liquidity set out in paragraph 84 below.

84. The relative certainty of financial performance by utilities operating under relatively predictable regulatory monopoly frameworks make these utilities attractive to investors even in times of economic stress and market turbulence compared to conventional industrials. For this reason, utilities with business risk profiles of at least "satisfactory" meet our definition of "adequate" liquidity based on a slightly lower ratio of sources to uses of funds of 1.1x compared with the standard 1.2x. Also, recognizing the cash flow stability of regulated utilities we allow more discretion when calculating covenant headroom. We consider that utilities have adequate liquidity if they generate positive sources over uses, even if forecast EBITDA declines by 10% (compared with the 15% benchmark for corporate issuers) before covenants are breached.

### **I. Financial policy**

85. In assessing financial policy on a regulated utility, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology").

### **J. Management and governance**

86. In assessing management and governance on a regulated utility, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology").

### **K. Comparable ratings analysis**

87. In assessing the comparable ratings analysis on a regulated utility, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology").

## **Appendix--Frequently Asked Questions**

### **Does Standard & Poor's expect that the business strategy modifier to the preliminary regulatory advantage will be used extensively?**

88. Globally, we expect management's influence will be neutral in most jurisdictions. Where the regulatory assessment is "strong," it is less likely that a negative business strategy modifier would be used due to the nature of the regulatory regime that led to the "strong" assessment in the first place. Utilities in "adequate/weak" and "weak" regulatory regimes are challenged to outperform due to the uncertainty of such regulatory regimes. For a positive use of the business strategy modifier, there would need to be a track record of the utility consistently outperforming the parameters laid down under a regulatory regime, and we would need to believe this could be sustained. The business strategy modifier is most likely to be used when the preliminary regulatory advantage assessment is "strong/adequate" because the starting point in the assessment is reasonably supportive, and a utility has shown it manages regulatory risk better or worse than its peers in that regulatory environment and we expect that advantage or disadvantage will persist. An example would be a utility that can consistently earn or exceed its authorized return in a jurisdiction where most other utilities struggle to do so. If a utility is treated differently by a regulator due to perceptions of poor customer service or reliability and the "operating efficiency" component of the competitive position assessment does not fully capture the effect on the business risk profile, a negative business strategy modifier could be used to accurately incorporate it into our analysis. We expect very few utilities will be assigned a "very negative" business strategy modifier.

### **Does a relatively strong or poor relationship between the utility and its regulator compared with its peers in the same jurisdiction necessarily result in a positive or negative adjustment to the preliminary regulatory advantage assessment?**

89. No. The business strategy modifier is used to differentiate a company's regulatory advantage within a jurisdiction where we believe management's business strategy has and will positively or negatively affect regulatory outcomes beyond what is typical for other utilities in that jurisdiction. For instance, in a regulatory jurisdiction where allowed returns are negotiated rather than set by formula, a utility that is consistently authorized higher returns (and is able to earn that return) could warrant a positive adjustment. A management team that cannot negotiate an approved capital spending program to improve its operating performance could be assessed negatively if its performance lags behind peers in the same regulatory jurisdiction.

**What is your definition of regulatory jurisdiction?**

90. A regulatory jurisdiction is defined as the area over which the regulator has oversight and could include single or multiple subsectors (water, gas, and power). A geographic region may have several regulatory jurisdictions. For example, the Office of Gas and Electricity Markets and the Water Services Regulation Authority in the U.K. are considered separate regulatory jurisdictions. In Ontario, Canada, the Ontario Energy Board represents a single jurisdiction with regulatory oversight for power and gas. Also, in Australia, the Australian Energy Regulator would be considered a single jurisdiction given that it is responsible for both electricity and gas transmission and distribution networks in the entire country, with the exception of Western Australia.

**Are there examples of different preliminary regulatory advantage assessments in the same country or jurisdiction?**

91. Yes. In Israel we rate a regulated integrated power utility and a regulated gas transmission system operator (TSO). The power utility's relationship with its regulator is extremely poor in our view, which led to significant cash flow volatility in a stress scenario (when terrorists blew up the gas pipeline that was then Israel's main source of natural gas, the utility was unable to negotiate compensation for expensive alternatives in its regulated tariffs). We view the gas TSO's relationship with its regulator as very supportive and stable. Because we already reflected this in very different preliminary regulatory advantage assessments, we did not modify the preliminary assessments because the two regulatory environments in Israel differ and were not the result of the companies' respective business strategies.

**How is regulatory advantage assessed for utilities that are a natural monopoly but are not regulated by a regulator or a specific regulatory framework, and do you use the regulatory modifier if they achieve favorable treatment from the government as an owner?**

92. The four regulatory pillars remain the same. On regulatory stability we look at the stability of the setup, with more emphasis on the historical track record and our expectations regarding future changes. In tariff-setting procedures and design we look at the utility's ability to fully recover operating costs, investments requirements, and debt-service obligations. In financial stability we look at the degree of flexibility in tariffs to counter volume risk or commodity risk. The flexibility can also relate to the level of indirect competition the utility faces. For example, while Nordic district heating companies operate under a natural monopoly, their tariff flexibility is partly restricted by customers' option to change to a different heating source if tariffs are significantly increased. Regulatory independence and insulation is mainly based on the perceived risk of political intervention to change the setup that could affect the utility's credit profile. Although political intervention tends to be mostly negative, in certain cases political ties due to state ownership might positively influence tariff determination. We believe that the four pillars effectively capture the benefits from the close relationship between the utility and the state as an owner; therefore, we do not foresee the use of the regulatory modifier.

**In table 1, when describing a "strong" regulatory advantage assessment, you mention that there is support of cash flows during construction of large projects, and preapproval of capital investment programs and large projects lowers the risk of subsequent disallowances of capital costs. Would this preclude a "strong" regulatory advantage assessment in jurisdictions where those practices are absent?**

93. No. The table is guidance as to what we would typically expect from a regulatory framework that we would assess as "strong." We would expect some frameworks with no capital support during construction to receive a "strong" regulatory advantage assessment if in aggregate the other factors we analyze support that conclusion.

## RELATED CRITERIA AND RESEARCH

- Corporate Methodology, Nov. 19, 2013
- Group Rating Methodology, Nov. 19, 2013
- Methodology: Industry Risk, Nov. 19, 2013
- Corporate Methodology: Ratios And Adjustments, Nov. 19, 2013
- Ratings Above The Sovereign--Corporate And Government Ratings: Methodology And Assumptions, Nov. 19, 2013
- Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Nov. 19, 2013
- Collateral Coverage And Issue Notching Rules For '1+' And '1' Recovery Ratings On Senior Bonds Secured By Utility Real Property, Feb. 14, 2013
- Methodology: Management And Governance Credit Factors For Corporate Entities and Insurers, Nov. 13, 2012
- General Criteria: Principles Of Credit Ratings, Feb. 16, 2011
- General Criteria: Rating Government-Related Entities: Methodology And Assumptions, Dec. 9, 2010

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# Common Equity Flotation Costs and Rate Making

By EUGENE F. BRIGHAM, DANA ABERWALD, and LOUIS C. GAPENSKI

The proper treatment of common stock flotation costs is an issue in almost every utility rate case, and becomes increasingly important – for reasons shown in this article – as new stock offerings decline. The article provides clarification of the issue and offers a reasonable solution.

Incorrect statements have been made about the proper treatment of common equity flotation costs in the financial literature, and this has contributed to incorrect rate case testimony and to several improper decisions. The problem seems to have arisen for two reasons: (1) During the 1970s, when most utilities were raising large amounts of equity, the case for an equity cost adjustment was generally based on the need to sell common stock at prices greater than book value so as to avoid dilution when new stock was sold, but the proper rationale for the adjustment, and the argument that should have been made, is that an adjustment is necessary to recover actual incurred costs. (2) A number of academic writers [1, 2, 3, 6, 7, 8, 11]<sup>1</sup> have attempted to deal with the problem algebraically, and while a mathematical approach has merit, the different authors based their models on different and somewhat obscure assumptions, with the result that the academic research has actually done more to confuse than to clarify the issue.

As we see it, there are two questions which need answers:

- 1) Is an adjustment needed even if a company has no plans to sell new common stock in the foreseeable future?
- 2) If an adjustment is required, should it be applied to common stock only or to total common equity (common stock plus retained earnings)?

The answers are "yes" to the first question and "total common equity" to the second. Specifically, the market-

<sup>1</sup>Numbers in brackets correspond to numbers in the list of references at the end of the article.

determined cost of equity should be adjusted (increased) to reflect issuance costs associated with past issues regardless of whether a company plans to issue stock in the future or not, and the adjustment should be applied to the total common equity, including retained earnings. The reasons for these conclusions are set forth in the balance of this article.

## Background and Approach

The flotation cost adjustment – whether for bonds, preferred stocks, or common equity – is designed to convert a market rate of return into a fair rate of return on accounting book values. Prior to the 1970s, most utilities were regulated on the basis of the comparable earnings approach. With that method no market return was involved, and hence there was no need for a common equity flotation adjustment. However, as use of market-oriented equity cost approaches, especially the discounted cash flow (DCF) method, became prevalent during the 1970s, a specific flotation adjustment became necessary. The first use of DCF, to the authors' knowledge, was by Professor Myron J. Gordon as a staff witness in an American Telephone and Telegraph Company rate case before the Federal Communications Commission in the mid-1960s. Professors Alexander A. Robichek and Ezra Solomon of Stanford University, testifying for AT&T, proved that if a commission correctly identifies and then allows a company to earn its DCF cost of equity,  $k$ , on book equity, then investors will never be able to earn  $k$  on their investment, because the capital that investors have put up will exceed the company's book equity as a result of issuance (or flotation) costs. Thus, in the very first

**Eugene F. Brigham** is graduate research professor of finance and director of the Public Utility Research Center at the University of Florida. He is the author of numerous journal articles and textbooks, and he testifies regularly concerning rate of return. **Dr. Brigham** received his PhD degree from the University of California at Berkeley.

**Dana A. Aberwald** is a research associate at the Public Utilities Research Center at the University of Florida. **Ms. Aberwald** received a BSBA degree in accounting and an MBA degree from the University of Florida and is a certified public accountant.

**Louis C. Gapenski** teaches at the University of Florida, where he is a research associate at the Public Utilities Research Center. **Mr. Gapenski** holds degrees from the Virginia Military Institute, the Naval Postgraduate School, and the University of Florida.

case where DCF methodology was used, Robichek and Solomon proved, and Gordon accepted, the idea that the allowed return on equity should exceed the DCF cost. Unfortunately, only the need for an adjustment, not the proper adjustment mechanism itself, was identified in that rate case.

The DCF method's great increase in popularity occurred during the 1970s, just when the companies were raising unprecedented amounts of new equity capital. Witnesses who used the DCF method recognized the need for an adjustment, and they had to provide a rationale to commissioners. Most witnesses gave this explanation:

- 1) If a company were allowed to earn only its DCF cost of equity, then its stock would normally sell at book value.
- 2) When new stock was issued, flotation expenses plus market pressure would drive the price of the stock below book value.
- 3) The issuance of stock at below book value would dilute the book value of the existing shares, and since future earnings and dividends are dependent upon book value, the market value of existing stock would also be diluted.
- 4) This dilution would obviously harm current stockholders; indeed, it would amount to economic confiscation.
- 5) Therefore, fair regulation requires commissioners to set authorized returns high enough to cause utility stocks to sell at prices that exceed book value by an amount sufficient to prevent below-book sales.

This argument was correct, although incomplete, and it was generally accepted during the 1970s, when most utilities were selling new stock every year or two. There were, of course, arguments about the level of flotation costs and the extent of market pressure, and hence about the proper market-to-book ratio, but the logic of some type of adjustment was rarely questioned.

However, as many utilities' construction programs neared completion in the early 1980s, and, accordingly, as new stock offerings slowed, the issue of the need for a flotation adjustment resurfaced. Patterson [6, 7] applied standard corporate finance techniques and concluded that a flotation adjustment is needed irrespective of current equity sales. Richter [11] supported Patterson's position. Arzac and Marcus [1, 2] also concluded that a flotation adjustment is always needed, but their formula produces an almost trivial adjustment factor unless the company is selling very large amounts of stock every year. Patterson and Arzac-Marcus debated in the finance journals, but they reached no reconciliation. Finally, in the latest article, Professors Bierman and Hass [3] derived yet another formula, one which produces an adjustment factor between those recommended by Patterson and Arzac-Marcus.

The issue is important, so it is necessary that we resolve the conflict. Further, since utility executives and regulators, not financial economists, must make decisions in this area, the resolution must be understandable to these decision makers. After studying the

problem, we concluded that the best way to approach a clear resolution is to set up some hypothetical, but reasonable, situations and then to test the alternative theories, asking the following question: What results do the several methods produce, and are those results fair to both consumers and investors?

### **Bonds and Preferred Stocks**

Because the proper treatment of flotation costs on bonds and preferred stocks is well known and not controversial, it helps to begin by examining that treatment as a lead-in to the analysis of common stock. First, note that debt flotation costs can be recovered in either of two ways: (1) They can be expensed and recovered from customers during the year the securities are sold, or (2) They can be capitalized and recovered over the life of the securities. The second method, which is consistent with the theory that those customers who benefit from a cost should pay for it, is generally used. Under this theory, bond flotation expenses are reflected in the embedded cost of the bond and are recovered over the life of the bond. For example, if flotation costs of 5 per cent were incurred on a \$100 million, ten-year, 15 per cent coupon bond issue, they would be handled in the following manner by most federal and state regulators:

$$\begin{aligned} \text{Cost to company} &= \frac{\text{Interest expense} + \text{Amortization of flotation costs}}{\text{Principal value} - \text{Unamortized flotation costs}} \quad (1) \\ &= \frac{\$15,000,000 + (\$5,000,000/10)}{\$100,000,000 - \$5,000,000} \\ &= \frac{\$15,500,000}{\$95,000,000} = 16.3158\% \text{ for the first year} \end{aligned}$$

Return requirements would be calculated as follows:

$$\begin{aligned} \text{Return requirements} &= \frac{\text{Cost rate}(\text{Principal value} - \text{Unamortized flotation costs})}{\text{Principal value} - \text{Unamortized flotation costs}} \quad (2) \\ &= 0.163158(\$100,000,000 - \$5,000,000) \\ &= \$15,500,000. \end{aligned}$$

In this example, the company received \$95 million of cash, which it used to purchase \$95 million of operating assets. To meet its interest expense and flotation amortization requirements, the company must have \$15.5 million in return dollars. This return will only be generated if the company earns 16.3158 per cent on its \$95 million of operating assets. Under this procedure, the percentage cost as calculated in Equation 1 declines each year, but the return dollar amount remains constant.<sup>2</sup>

<sup>2</sup>An alternative procedure that produces exactly the same result is to divide interest charges plus flotation amortization by the principal value of the issue, and then to multiply this cost rate by the principal value of the issue:

$$\text{Embedded cost rate} = \frac{\$15,500,000}{\$100,000,000} = 0.155 = 15.5\%.$$

$$\text{Return requirements} = 0.155(\$100,000,000) = \$15,500,000.$$

This procedure in effect includes both flotation costs and operating assets in the rate base.

Preferred stocks are handled similarly. Actually, utilities issue two types of preferred stocks, those with sinking funds and those that are perpetual. The adjustment formula for sinking fund preferred is exactly like that for bonds, but a difference arises in the case of perpetual preferreds. Perpetual preferred stock represents permanent capital; hence its flotation costs are not amortized.<sup>3</sup> Assuming again a \$100 million issue and a 5 per cent flotation cost, this formula applies:

$$\text{Cost to company} = \frac{\text{Dividend requirements}}{\text{Net proceeds}} = \frac{\$15,000,000}{\$95,000,000} \quad (3)$$

$$= 15.7895\%$$

Alternatively, we could write the formula as follows:

$$\text{Cost to company} = \frac{\text{Dividend rate}}{1.0 - \text{Flotation}} = \frac{15\%}{0.95} = 15.7895\% \quad (3a)$$

The return dollars can then be calculated as follows:<sup>4</sup>

$$\begin{aligned} \text{Dollars of return} &= 0.157895(\$95,000,000) \\ &= \$15,000,000. \end{aligned}$$

In this example, the preferred stockholders expect and require a return of 15 per cent on *their investment* (\$100 million), but the company must earn 15.7895 per cent on *its operating assets* (\$95 million) to provide this required return.<sup>5</sup> If the company earned only 15 per cent on the \$95 million, then the company would have after-tax revenues of only \$14,250,000 to meet investors' preferred dividend requirements of \$15 million. Obviously, then, the 15 per cent market value cost of preferred must be adjusted upward to a 15.7895 per cent return on the company's operating assets if investors are to receive the reasonable rate of return they contracted for.

### Common Stock

From a conceptual standpoint, it has long been recognized that the situation with common stock is similar to that for bonds and preferred stocks: Issuance costs are incurred; they should not be and are not expensed at the time the stock is sold; and therefore recovery must occur in subsequent years. Further, just as with bonds and preferred stock, the authorized rate of return on rate base equity must be above the rate of return to the investor; that is, the cost to the utility is above the return to the investor. The standard text-

<sup>3</sup>In effect, the flotation costs of the preferred are amortized over an infinite period, which is to say the amortization per year is zero. Investors have made a *permanent* investment, so the original investors or those who purchase the stock in the secondary market must receive a return on that investment in perpetuity.

<sup>4</sup>Of course, preferred stock dividends are not deductible, so the total revenues required to produce the return dollars is higher for preferred stock than for debt.

<sup>5</sup>Note that the return dollars for the bond exceed those for the perpetual preferred stock - \$15.5 million versus \$15 million. However, these are first-year costs only. The bond's cost rate declines over time due to the amortization of its flotation costs, whereas the cost rate associated with the preferred stock remains constant, and the rates of return to the bondholders and the preferred stockholders are identical.

$$r = \frac{\text{Expected dividend yield}}{1.0 - F} + g \quad (5)$$

Here:

- r = authorized rate of return on book equity, if stockholders are to earn their required rate of return, k,
- F = percentage flotation cost associated with common stock offerings, and
- g = the expected growth rate in earnings and dividends.

The percentage flotation factor, F, consists of two elements: (1) underwriting costs and (2) "market pressure," which is the decline in the stock price that results when the supply of shares is suddenly increased. Historically, utility underwriting expenses have averaged from 3 to 4 per cent of gross proceeds [9]. Market pressure varies over time, depending on the size of the issue, the condition of the market, and the degree to which investors were surprised by the announcement of the stock sale. Moreover, stock prices change for reasons other than new offerings, so it is difficult to obtain an exact measure of market pressure. However, several careful studies have been reported, and they indicate that market pressure is in the range of one to 3 per cent [10]. Thus, for most utilities, flotation expenses plus pressure have totaled about 5.5 per cent.

To illustrate the flotation cost adjustment process, and following Bierman and Hass for consistency, we assume that a new, start-up utility has the following characteristics:

- 1) Our hypothetical company can sell stock in the market at \$10 per share, and investors expect it to pay a dividend of one dollar and to grow at a rate of 5 per cent. Thus, its DCF cost of equity is  $k = D/P + g = 10\% + 5\% = 15\%$ , investors' required rate of return.
- 2) To raise initial capital, the company plans to sell an issue of stock, incurring flotation costs of F = 5 per cent.
- 3) Applying Equation 5, we obtain a flotation-adjusted cost of equity (r) of 15.5263 per cent:

$$r = \frac{\text{Expected dividend yield}}{1 - F} + g$$

$$= \frac{10.0\%}{0.95} + 5\%$$

$$= 10.5263\% + 5\% = 15.5263\%$$

Thus, the illustrative utility's fair rate of return on book equity according to Equation 5 is approximately 53 basis points above its 15 per cent unadjusted "bare bones DCF cost of equity."

- 4) The company will sell one share of stock and obtain net proceeds of \$9.50. This \$9.50 is also the initial book value, B, and rate base. (Obvi-

<sup>6</sup>This formula is developed in reference citation 5, Chapter 7, as well as in most other corporate finance textbooks.

ously, this amount, which we use for simplicity, could be scaled up without altering the conclusions.)

- 5) After its inception and initial stock offering, all of the company's equity is expected to come from retained earnings. In a later case, we will examine the situation when more stock is sold.
- 6) The company operates in a reasonable and prudent manner, such that by any fairness criteria, investors should be allowed to earn their 15 per cent cost of capital return, no more and no less. For simplicity, we also assume that regulation operates properly, without lags.
- 7) Initially, we assume that the market cost of capital remains constant at 15 per cent, and that the company maintains a constant payout ratio so as to keep the dividend yield and growth components at 10 per cent and 5 per cent, respectively. These assumptions are consistent with the

DCF model, but later in the article we expand the analysis by relaxing both of them.

Now these questions may be asked:

Should the flotation adjustment be applied to all common equity or, once retained earnings appear on the balance sheet, only to common stock?

For how many years should an adjustment be applied: One, two, ten, twenty, or forever?

When we applied Equation 5, the textbook formula which Patterson recommended, we found that it produces results that satisfy the fairness criterion; namely, it permits investors to earn exactly their 15 per cent cost of capital, no more and no less. This result for our initial case is demonstrated in Table 1, which was produced by a simple computer model, and it is analyzed below:

**Table 1**

Case 1: Company Earns Flotation-adjusted Cost of Equity (r) on All Common Equity

Beginning of Year

Year	Common Stock (1)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout (8)
1	\$9.50	\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.50	0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.50	0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.50	1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.50	2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.50	2.6247	12.1247	12.7628	1.0526	1.8825	1.2763	67.7966
7	9.50	3.2309	12.7309	13.4010	1.0526	1.9766	1.3401	67.7966
8	9.50	3.8675	13.3675	14.0710	1.0526	2.0755	1.4071	67.7966
9	9.50	4.5358	14.0358	14.7746	1.0526	2.1792	1.4775	67.7966
10	9.50	5.2376	14.7376	15.5133	1.0526	2.2882	1.5513	67.7966

NOTES:

1) Assumptions made in this case are as follows:

- a) Issue price = \$10
- b) Flotation cost = 5%
- c)  $k = D/P + g = 10\% + 5\% = 15\%$
- d)  $r = 15.5263\%$

2) The data in this case, and also the more complex cases, were developed with a Lotus 1-2-3 computer program.

- 1) The company's balance sheet item common stock is shown in Column 1.
- 2) Retained earnings are shown in Column 2. Initially, they are zero, but they build up over time.
- 3) Total equity as shown in Column 3 is the sum of common stock and retained earnings. Total equity grows as retained earnings build up.
- 4) Column 4 shows the stock price as determined by the basic DCF formula. It starts at \$10 and grows at a rate of 5 per cent per year, which is necessary to produce the 5 per cent capital gains yield that investors expect and should receive.<sup>7</sup>

- 5) Column 5 shows the market-to-book (M/B) ratio. Notice that the M/B always exceeds one. The only way the M/B ratio could go to one would be for the stock price to fall below the value shown in Column 4, but if that were to happen, then investors would not receive the capital gains to which they are entitled. Thus, the M/B will exceed one if investors are being treated fairly.
- 6) Earnings per share (EPS) as shown in Column 6 is the product of total equity times 0.155263, the fair rate of return as determined by Equation 5.
- 7) Dividends per share (DPS) as shown in Column 7 begin at one dollar and grow at a rate of 5 per cent per year. This growth rate is a requirement if investors are to earn their DCF cost of capital.
- 8) The payout ratio is shown in Column 8. Under

<sup>7</sup>The DCF valuation equation is

$$P_0 = \frac{D_1}{k - g}$$

This equation, solved for k, produces the standard DCF cost of capital equation,  $k = D_1/P_0 + g$ . See reference citation 5, Chapter 5, for a derivation and discussion.

the assumptions of the standard DCF constant growth model, the payout must be constant, and it is if  $r$  as determined by Equation 5 is used as the allowed return on equity.

- 9) Note also that book value per share as shown in Column 3 is growing at a constant rate, 5 per cent. The retention growth rate,  $g = br$ , where  $r$  is the return on book equity and  $b$  is the fraction of earnings, is

$$g = br = (1.0 - 0.677966)(15.5263) = 0.322(15.5263) = 5.0\%, \text{ just as it should be.}$$

Case 1 proves that Equation 5 produces the desired results: namely, returns that exactly cover the cost of equity, no more and no less. Any return on book equity different from that established by Equation 5 would produce inconsistent results. For example, suppose the authorized rate of return were cut from 15.5263 to the DCF return, 15 per cent, in Year 2. This would cause the stock price to drop from \$10.50 to the \$9.9750 book value. Thus, stockholders would suffer a loss, and they would not obtain the capital gains yield to which they are entitled. Any other type of experimentation will show exactly the same thing: If the company is not allowed to earn the cost of equity as determined by Equation 5 on total common equity, stockholders will not receive a 15 per cent return on their invested capital.

#### Sale of Additional Equity

While the only-one-equity-sale conditions used to develop Case 1 are consistent with Bierman and Hass's example, and also with some actual companies such as Comsat and the Yankee Atomic Power companies, most utilities sell additional common stock from time

to time. Therefore, we modified the computer model to analyze stock sales subsequent to the initial offering, and we report the results in Table 2 as Case 2, in which the company raises an additional share of new common equity for \$12.1247 at the beginning of Year 6. (Note that the \$12.1247 is calculated as the price of the stock at the beginning of Year 6 less flotation costs.) Earnings, dividends, and common equity all increase in Year 6 as a result of the sale, but investors continue to earn exactly 15 per cent on their investment so long as the company is allowed to earn 15.5263 per cent on its total book equity.

In Case 3, reported in Table 3, we present the results for a company that issues new equity at a flotation cost different from the cost of its original stock issue. Case 3 is similar to Case 2. Just as in Case 2, the company issues new equity at the beginning of Year 6. However, in Case 3, the equity sold at the beginning of Year 6 has a different flotation cost (3 per cent) from that of the original issue (5 per cent). With lower flotation costs, the company nets more common equity in Case 3 than in Case 2. (The dollar amount of new equity raised is calculated as the price of the share of stock at the beginning of Year 6 less the 3 per cent flotation costs incurred.)

In this example, because the new equity is sold at a different flotation cost than the old equity, a new value of  $r$  must be calculated and used to determine net income. The new  $r$  is a weighted average of  $r$  as determined by Equation 5 for each equity issue, with the weights being the fraction of total equity attributable to the new and old stock at the time the new stock is issued. Because of the lower flotation costs on the new equity, there is a corresponding drop in the market-to-book ratio in Year 6. Note, however, that after the transitional Year 6, earnings and dividends continue to grow at the required 5 per cent rate, which is neces-

**Table 2**

Case 2: Company Sells Additional Stock at the Beginning of Year 6  
Beginning of Year

Year	Common Stock (1)	New Issue (1a)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout Ratio (8)
1	\$ 9.50		\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.50		0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.50		0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.50		1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.50		2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.50	\$12.1247	2.6247	24.2493	12.7628	1.0526	1.8825	1.2763	67.7966
7	21.6247		3.8371	25.4618	13.4010	1.0526	1.9766	1.3401	67.7966
8	21.6247		5.1102	26.7349	14.0710	1.0526	2.0755	1.4071	67.7966
9	21.6247		6.4470	28.0717	14.7746	1.0526	2.1792	1.4775	67.7966
10	21.6247		7.8506	29.4752	15.5133	1.0526	2.2882	1.5513	67.7966

**NOTES:**

Assumptions made in this case are as follows:

- a) Original issue price = \$10
- b) Flotation cost = 5%
- c)  $k = D/P + g = 10\% + 5\% = 15\%$
- d)  $r = 15.5263\%$
- e) Year 6 issue price = \$12.7628
- f) Year 6 new common stock =  $\$12.7628(1 - F)$   
 $= \$12.7628(0.95)$   
 $= \$12.1247$

Table 3

## Case 3: Company Sells Additional Stock at the Beginning of Year 6 Incurring Different Flotation Costs

Beginning of Year									
Year	Common Stock (1)	New Issue (1a)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout Ratio (8)
1	\$ 9.5000		\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.5000		0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.5000		0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.5000		1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.5000		2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.5000	\$12.3799	2.6247	24.5046	12.7628	1.0526	1.8889	1.2763	67.7566
7	21.8799		3.8499	25.7298	13.4010	1.0526	1.9833	1.3401	67.5676
8	21.8799		5.1364	27.0163	14.0710	1.0526	2.0825	1.4071	67.5676
9	21.8799		6.4872	28.3671	14.7746	1.0526	2.1866	1.4775	67.5676
10	21.8799		7.9056	29.7855	15.5133	1.0526	2.2960	1.5513	67.5676

## NOTES:

Assumptions made in this case are as follows:

- Original issue price = \$10
- Year 1 Flotation cost = 5%
- $k = D/P + g = 10\% + 5\% = 15\%$
- $r_1 = 15.5263\%$
- Year 6 issue price = \$12.7628
- Year 6 flotation cost = 3%
- Year 6 new common stock =  $\$12.7628(1 - F)$   
=  $\$12.7628(0.97)$   
= \$12.3799
- Additional issue  $r = 15.3093\%$

sary if investors are to receive the 15 per cent DCF return on their investment. The stock price grows at 5 per cent throughout the ten-year period.

The fact that the company must continue to earn the flotation-adjusted cost of equity, even as retained earnings build up to a larger and larger proportion of total common equity, is counterintuitive, and so it deserves further discussion. Here are two comments:

1) *Demonstration that a weighted average cost rate is inappropriate.* It has been suggested that the authorized return on equity should be a weighted average of the flotation-adjusted cost rate,  $r = 15.5263$  per cent, and the DCF cost rate,  $k = 15$  per cent, with the weights being based on common equity and accumulated retained earnings, respectively. When we programmed our model to reflect these conditions, we obtained the results shown in Table 4. A problem obviously exists – if dividends are to grow at the 5 per cent rate that investors expect, and if earnings are based on a weighted average of  $k$  and  $r$ , then a higher and higher percentage of earnings will have to be paid out. Thus, the payout ratio will rise. In Year 34 the payout ratio will exceed 100 per cent, so retained earnings will start to decline. Retained earnings actually go negative in Year 45, and Total Common Equity goes negative in Year 46, which means the company is officially bankrupt. This example demonstrates, in yet another way, that the flotation-adjusted cost of equity must be earned on all common equity if investors are to receive the DCF return to which they are entitled under prudent management. The example also demonstrates that, if investors were informed that the regulatory treatment implied in Table 4 were going to be

employed, they would not invest in the company in the first place.

2) *Logical explanation.* To understand *why* the Equation 5 value must be applied to all common equity, retained earnings as well as equity raised by selling stock, one must trace through the valuation process. Notice that, in Year 1, investors require a return of 15 per cent on their \$10 investment, or \$1.50. However, the company earns only \$1.4750, of which it pays out one dollar as a dividend and retains 47.5 cents. To give the investor the fifty-cent increase in market value (or capital gain) needed to add to the one dollar dividend to produce the \$1.50, or 15 per cent, total DCF return, the 47.5 cents must earn more than 15 per cent. Specifically, it must earn the flotation adjusted cost of equity,  $r = 15.5263$  per cent. This same thought process can be continued in other years, ad infinitum, and the ultimate conclusion is that both the original common equity and all retained earnings must earn  $r = 15.5263$  per cent.

If the preceding paragraph is not clear, we can put it another way. The investor expects and is entitled to earn, under prudent management, a return of 15 per cent on his or her investment. Thus, dividends plus capital gains must total 15 per cent, or \$1.50 in the first year. Ten per cent, or one dollar, will come from dividends, so 5 per cent, or 50 cents, must come from capital gains. To obtain a capital gain yield of 50 cents from 47.5 cents of retained earnings, the retained earnings must earn a return greater than  $k = 15$  per cent; specifically, the retained earnings must be allowed to earn  $r = 15.5263$  per cent. (If the 47.5 cents earned 15 per cent, then it would be worth exactly 47.5 cents, not 50 cents.) In Year 2, retained earnings will rise by

5 per cent from 47.5 cents to 49.875 cents; the capital gains then must rise from 50 cents to  $.50(1.05) = 52.5$  cents; the only way this can happen is for the second-year retained earnings to be allowed to earn  $r = 15.5263$  per cent; and so on.

### The Effect of the Payout Ratio on the Flotation Cost Adjustment

Even though fair regulation requires that retained earnings be allowed to earn the flotation adjusted cost of equity, the level of retained earnings as affected by the payout ratio does have a material effect on the size of the adjustment.

To illustrate this point, assume (1) that two utilities both have a 15 per cent market cost of equity, that is,  $k = 15$  per cent; (2) that both companies sell at a price of \$20; but (3) that one company has a policy of paying out 25 per cent of its earnings and retaining 75 per cent, while the other has the reverse dividend policy. Assume further that both companies earn 15 per cent on their \$20 market value, so earnings per share are  $.15(\$20) = \$3$ . The high payout company has a dividend of  $.75(\$3) = \$2.25$ , while the low payout company has a dividend of  $.25(\$3) = 75$  cents. At the same time, the low payout company, which plows most of its earnings back into the business, will have a growth rate of  $g = .75(15 \text{ per cent}) = 11.25$  per cent, while the high payout company will have  $g = .25(15 \text{ per cent}) = 3.75$  per cent.

Under these conditions, the following situation would exist for the two illustrative companies:

$$\begin{aligned} \text{Low payout Company: } k &= \frac{D_1}{P_0} + g = \frac{\$0.75}{\$20} + 11.25\% \\ &= 3.75\% + 11.25\% = 15\% \end{aligned}$$

$$\begin{aligned} \text{High payout Company: } k &= \frac{D_1}{P_0} + g = \frac{\$2.25}{\$20} + 3.75\% \\ &= 11.25\% + 3.75\% = 15\% \end{aligned}$$

Applying the adjustment formula,

$$r = \frac{\text{Expected dividend yield}}{1 - F} + g,$$

we find this situation, assuming that issuance costs are 5 per cent:

$$\begin{aligned} \text{High payout Company: } r &= \frac{11.25\%}{0.95} + 3.75\% \\ &= 11.842\% + 3.75\% = 15.592\% \end{aligned}$$

$$\begin{aligned} \text{Low payout Company: } r &= \frac{3.75\%}{0.95} + 11.25\% \\ &= 3.947 + 11.25\% = 15.197\% \\ \text{Difference} &= 0.395\% \end{aligned}$$

Thus, we see that the company which retains most of its earnings, and which consequently has more retained

Table 4

Case 4: Company Earns Weighted Average k

Year	Common Stock (1)	Retained Earnings (2)	Total Equity (3)	EPS (4)	DPS (5)	Payout Rate (6)	Weighted k (7)
1	\$9.5000	\$ 0.0000	\$ 9.5000	\$1.4750	\$1 0000	67.7966%	0.1553
2	9.5000	0.4750	9.9750	1.5463	1.0500	67.9062	0.1550
3	9.5000	0.9713	10.4713	1.6207	1.1025	68.0267	0.1548
4	9.5000	1.4894	10.9894	1.6984	1.1576	68.1591	0.1545
5	9.5000	2.0302	11.5302	1.7795	1.2155	68.3047	0.1543
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
33	9.5000	23.2219	32.7219	4.9583	4.7649	96.1006	0.1515
34	9.5000	23.4152	32.9152	4.9873	5.0032	100.3188	0.1515
35	9.5000	23.3993	32.8993	4.9849	5.2533	105.3852	0.1515
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
45	9.5000	-2.3443	7.1557	1.1234	8.2791	736.9935	0.1570
46	The company goes bankrupt.						

NOTES:

1) Assumptions made in this case are as follows:

- Issue price = \$10
- Flotation cost = 5%
- $k = D/P + g = 10\% + 5\% = 15\%$
- $r = 15.5263\%$

2) The dividend in Year 45 cannot grow by the 5 per cent growth rate, because if it did total equity would become negative. Therefore, the Year 45 dividend is calculated as the remaining portion of total equity + earnings in Year 45:  $\$7.1557 + \$1.1234 = \$8.2791$ .

**Table 5**

## Case 5: Company Sells Additional Stock and k Changes

Beginning of Year

Year	Common Stock (1)	New Issue (1a)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout Ratio (8)
1	\$ 9.5000		\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.5000		0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.5000		0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.5000		1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.5000		2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.5000	\$12.3799	2.6247	24.5046	12.7628	1.0526	1.8889	1.2763	67.5676
7	21.8799		3.8499	25.7298	13.4010	1.0526	1.9833	1.3401	67.5676
8	21.8799		5.1364	27.0163	14.0710	1.0526	1.8123	1.4071	77.6398
9	21.8799		5.9469	27.8268	14.4931	1.0526	1.8667	1.4493	77.6398
10	21.8799		6.7817	28.6616	14.9279	1.0526	1.9227	1.4928	77.6398

## NOTES:

Assumptions made in this case are as follows:

- a) Original issue price = \$10
- b) Year 1 flotation cost = 5%
- c) Issue 1  $r = 15.5263\%$
- d) Year 6 issue price = \$12.7628
- e) Year 6 flotation cost = 3%
- f) Year 6 new common stock =  $\$12.7628(1 - F)$   
=  $\$12.7628(0.97)$   
=  $\$12.3799$
- g) Additional issue  $r = 15.3093\%$
- h) Years 1-7,  $k = D/P + g = 10\% + 5\% = 15\%$
- i) Years 8-10,  $k = D/P + g = 10\% + 3\% = 13\%$

**Table 6**

## Case 6: Company Sells Additional Stock and k Changes

Beginning of Year

Year	Common Stock (1)	New Issue (1a)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout Ratio (8)
1	\$ 9.5000		\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.5000		0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.5000		0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.5000		1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.5000		2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.5000	\$12.3799	2.6247	24.5046	12.7628	1.0526	1.8889	1.2763	67.5676
7	21.8799		3.8499	25.7298	13.4010	1.0526	1.9833	1.3401	67.5676
8	21.8799		5.1364	27.0163	14.0710	1.0526	1.8011	1.1257	62.5000
9	21.8799		5.9469	27.3671	14.7746	1.0526	1.8911	1.1820	62.5000
10	21.8799		6.7817	29.7855	15.5133	1.0526	1.9857	1.2411	62.5000

## NOTES:

Assumptions made in this case are as follows:

- a) Original issue price = \$10
- b) Year 1 flotation cost = 5%
- c) Issue 1  $r = 15.5263\%$
- d) Year 6 issue price = \$12.7628
- e) Year 6 flotation cost = 3%
- f) Year 6 new common stock =  $\$12.7628(1 - F)$   
=  $\$12.7628(0.97)$   
=  $\$12.3799$
- g) Additional issue  $r = 15.3093\%$
- h) Years 1-7,  $k = D/P + g = 10\% + 5\% = 15\%$
- i) Years 8-10,  $k = D/P + g = 10\% + 3\% = 13\%$

earnings and a smaller dollar amount of flotation costs, also has the lower flotation-adjusted cost of equity. This demonstrates that the issuance cost adjustment formula is itself adjusted to reflect the extent to which a company finances by retaining earnings rather than by selling new common stock.

### Changes in the DCF Cost of Equity

We also analyzed the effects of changes in the DCF cost of equity over time. While a change in the DCF  $k$  causes a change in earnings, dividends, and the growth rate, the flotation adjustment process is not affected - Equation 5 still produces a fair rate of return on book value. This is demonstrated in Tables 5 and 6. It should be noted that the effects of the adjustment as derived by Equation 5 do vary with the level of the DCF cost and with the split between dividend yield and growth. In Case 5, we analyze the effects of a change in the growth rate with the dividend yield held constant, while in Case 6, reversing them, we analyze the effects of a change in the dividend yield with the growth rate held constant. Both cases use Case 3 as their base case. In each instance, a new value for  $r$ , based on Equation 5, can be established, and this return on book value permits investors to earn their new DCF cost of equity.

### Capitalizing Flotation Costs

Bierman and Hass, almost as an afterthought toward the end of their article, suggested that utilities should be allowed to record the *gross amount* of equity sales and to earn a DCF return on gross equity capital. This would amount to capitalizing flotation costs. These capitalized costs could then be amortized over some prescribed period or else be kept on the books indefinitely.

To show this, we set up computer models using our various cases but capitalizing flotation costs. One can see that earnings, dividends, and stock prices are all exactly like those shown in our tables. Thus, capitalizing flotation costs produces exactly the same results as Equation 5.

Capitalizing flotation costs has much to recommend it, for it would eliminate the confusion that has existed. However, a fundamental problem exists for any company that has incurred flotation costs in the past, that is, for virtually the entire utility industry: How would the fact that past flotation costs were not capitalized be dealt with? In other words, capitalizing flotation costs would be an excellent procedure for a new, start-up, company, but such a plan would not be feasible for an existing company without somehow adjusting for past costs. Such an adjustment could be made, but a discussion of it goes beyond the scope of this article.

### Conclusion

The proper treatment of equity flotation costs has caused much confusion. Had such costs been either capitalized in the past or else expensed on an as-incurred basis, there would be no problem, but since neither of these practices has generally been followed, the DCF return must be adjusted to produce a fair rate of return on book equity.

Further, the adjustment is always required, irrespective of whether or not a company has plans to sell new stock in the future, and the adjusted return must be earned on total equity, including retained earnings. Otherwise, it would be impossible for investors to earn the cost of equity, even under prudent and efficient management.

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### **Alternative Sources of Equity**

A second controversy is whether a flotation cost allowance should be allowed because a company can always obtain equity from sources other than a public issue of common stock, such as a rights issue for example. There are several sources of equity capital available to a firm, including: public common stock issues, conversions of convertible preferred stock, dividend reinvestment plans, employees' savings plans, warrants, and stock dividend programs. Each carries its own set of administrative costs and flotation cost components, including discounts, commissions, corporate expenses, offering spread, and market pressure.

Equity capital raised through a public issue is typically more expensive than alternate sources of equity. Rights issues, when available, are less expensive, but direct costs still would be incurred. Of course, a rights issue assumes that a willing underwriter and a willing market could be found for such offerings in the first place, an unlikely event in public capital markets for small unproven companies. Internal sources of equity, including dividend reinvestment and/or employee stock option plans, are also typically less expensive, unless a discount on the purchase price is inherent in the plan, in which case they are often equivalent to a public issue. Direct costs are also incurred in an employee stock savings plan and/or a shareholder dividend reinvestment plan.

The flotation cost allowance is still warranted, however, because it is a composite factor that reflects the historical mix of all these sources of equity. The flotation cost allowance applicable to all the company's book equity is actually a weighted average of the current allowances required for each past financing, that is, the flotation cost allowance factor is a build-up of historical flotation cost adjustments associated and traceable to each component of equity source. However, it is impractical and prohibitive to start from the inception of a company and source all present equity from various equity vintages and types of equity capital raised by the company. One way of circumventing the problem of vintaging each form of equity is to source book equity by broad categories of equity, such as dividend reinvestment plan equity, stock option equity, and public issue equity, and calculate a weighted average flotation factor. That is also onerous and cumbersome. A practical solution is to rely on the results of the empirical studies discussed earlier that quantify the average flotation cost factor of a large sample of utility stock offerings.

### **Efficient Markets**

A third controversy centers around the argument that the omission of flotation cost is justified on the grounds that, in an efficient market, the stock price already reflects any accretion or dilution resulting from new issuances of securities and that a flotation cost adjustment results in a double counting effect. The simple fact of the matter is that whatever stock price is set by the

market, the company issuing stock will always net an amount less than the stock price due to the presence of intermediation and flotation costs. As a result, the company must earn slightly more on its reduced rate base in order to produce a return equal to that required by shareholders.

Existing shareholders are made worse off when a company issues new stock below the market price, irrespective of how "efficient" that stock price may be. As seen in an earlier example, the new issue results in a transfer of wealth from existing to new shareholders. This is true regardless of the degree of efficiency of the market.

It has also been argued that a flotation cost allowance is inequitable since it results in a windfall gain to shareholders. This argument is erroneous. As stated previously, the company's common equity account is credited by an amount less than the market value of the issue, so that the company must earn slightly more on its reduced rate base in order to produce a return equal to that required by shareholders. Moreover, existing shareholders are made worse off when a company issues new stock below the market price.

The suggestion that the flotation cost allowance is unwarranted because investors factor this shortcoming in the stock price implies that it is appropriate to use a deficient model because such a deficiency is reflected in stock prices. In other words, it is appropriate to use a deficient model because investors are aware of this. Such circular reasoning could be used to justify any regulatory policy. For example, under this reasoning, it would be appropriate to authorize a return on equity of 1% because investors reflect this fact in the stock price. This is clearly illogical and erroneous. Any regulatory policy, as irrational as it may be, can be justified using this argument.

### **Absence of Imminent Stock Issues**

Another controversy is whether the flotation cost allowance should still be applied when the utility is not contemplating an imminent common stock issue. Some argue that flotation costs are real and should be recognized in calculating the fair return on equity, but only at the time when the expenses are incurred. In other words, the flotation cost allowance should not continue indefinitely, but should be made in the year in which the sale of securities occurs, with no need for continuing compensation in future years. This argument implies that the company has already been compensated for these costs and/or the initial contributed capital was obtained freely, devoid of any flotation costs, which is an unlikely assumption, and certainly not applicable to most utilities. If the flotation costs of past stock issues have been fully recovered, the argument has merit. If that assumption is not met, the argument is without merit. The flotation cost adjustment cannot be strictly forward-looking unless all past flotation costs associated with past issues have been recovered.

## Avista Corp.

**Primary Credit Analyst:**

Tony Bettinelli, San Francisco (1) 415-371-5067; antonio\_bettinelli@standardandpoors.com

**Secondary Credit Analyst:**

Anne Selting, San Francisco (1) 415-371-5009; anne\_selting@standardandpoors.com

### Table Of Contents

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Major Rating Factors

Rationale

Outlook

# Avista Corp.

## Major Rating Factors

### Strengths:

- Regulated integrated electric and natural gas utility operations that provide relatively stable cash flows, serving a broad, three-state service territory, although Washington state continues to provide the majority of utility revenues and cash flow;
- Progress in recent rate cases that has enhanced the company's prospects for staying current with fuel prices and recovering its infrastructure investments;
- Power and gas adjusters in all states, which helps the company mitigate its exposure to volatile commodity costs;
- Limited non-regulated operations in that Advantage IQ Inc., a utility billing services and expense management company, is the only material unregulated business and remains a relatively small contributor of earnings and cash flow; and
- The absence of need for sizable new generation investment for several years.

### Corporate Credit Rating

BBB-/Positive/A-3

### Weaknesses:

- High exposure to hydro risk, given that owned and contracted hydro generation constitutes nearly 40%-45% of the utility's total power supply portfolio, which creates inherent cash flow volatility but also lower power supply costs on average;
- Deadbands in the company's Washington state energy recovery mechanism, which is weaker than that of more credit-supportive states, and a history of deferral balances and rate lag, although the company has reduced its exposure through hedging and frequent rate case filings; and
- Deferrals related to a long-term, 270-megawatt power purchase contract, which reverted to the company in 2010 but which the company is not collecting in rates.

## Rationale

The 'BBB-' rating on Avista Corp. reflects an "excellent" business risk profile and an "aggressive" financial risk profile under Standard & Poor's Ratings Services' corporate risk profile matrix. The business risk profile is supported by stable, geographically diverse, regulated electric and gas utility operations with low rates. These businesses operate in the near-absence of competition with regulated returns. The company's chief risks include the electric utility's exposure to replacement power costs, particularly in low water years, which its fuel and purchased-power mechanisms in Idaho and Washington help to manage, timely recovery of utility expenditures, and access to capital markets. The company's management of regulatory relationships in its three jurisdictions is a critical underpinning of its investment grade credit quality.

The company has filed frequent rate cases in recent years to lessen rate lag, which has been a credit risk for Avista's utility operations. The company's most significant regulatory exposure is in Washington, where in December 2009 it received electric and gas base rate increases of roughly one-third of a partial settlement agreement. Half of the

difference between the company's authorized electric rate increase and the agreement was related to exclusion of the costs related to power purchase agreement associated with the Lancaster Plant. The Washington Utilities and Transportation Commission did allow the company to defer these costs, along with a carrying charge, for future rate recovery. General rate cases, which include those costs, are ongoing in Washington and Idaho.

The company also has flexibility in implementing rate changes through its Energy Recovery Mechanism in Washington and the Power Cost Adjustment in Idaho, but the threshold it must meet to true up undercollected rates in Washington is high, and the company does not automatically collect deferred costs. Each year, uncollected costs are subject to defined sharing bands, allowing the company to potentially defer certain portions for collection from customers. This mechanism is weaker than that of many utilities operating in western states with high hydrological or gas generation exposure. Purchased gas adjustments for gas distribution units in all three jurisdictions mitigate gas supply risk, along with hedging.

The rating on Avista reflects an "aggressive" financial risk profile resulting from higher leverage and weaker cash flow coverage than for non-utility corporate issuers. The company's consolidated financial performance improved in 2008 and 2009 from a poor 2007, when trading losses from its now-divested marketing arm Avista Energy, below-average hydroelectric generation, and out-of-date test years in Washington and Idaho weakened financials. Cash flows were significantly stronger in 2008 and 2009, due largely to rate increases in Washington and Idaho; near-normal hydro conditions, which resulted in continued reductions in the company's deferred power balances; and continued stable performance from Advantage IQ, a small, unregulated business that audits large customers' energy bills.

Key credit ratios improved in 2008 and 2009. For the 12 months ended March 31, 2010, Avista's adjusted funds from operations (FFO) to total debt was 19%, slightly bolstered by overcollected gas costs that are likely to reverse as cash is returned to customers. (Credit metrics are adjusted to include the debt equivalent of leases, purchased-power obligations, and other postretirement employee benefit obligations.) Cash-flow-based coverage ratios have improved slightly but steadily over the past two quarters, based on the impact of multiple rate increases over the past 12 months. Leverage remains reasonable for the rating, with adjusted debt to total capitalization at 55% as of March 31, 2010.

Advantage IQ remains a small, modestly profitable operation for Avista. Earnings decreased somewhat in 2008, with expectations of modestly slower internal growth in earnings. The company also retains various small investments, including METALfx, a custom industrial metal fabricator. Avista continues to dispose of or phase out these types of businesses, which are small.

### **Short-term credit factors**

The 'A-3' short-term rating reflects our long-term issuer credit rating. Avista's liquidity is "less than adequate," under our corporate liquidity criteria. An analysis of sources and uses over the next 12 months, absent access to capital markets, shows coverage that is less than 1.2x, primarily due to the maturing of the company's credit facilities in April of 2011. Standard & Poor's believes the company will be able to renew these facilities, which will result in coverage that supports a finding of "adequate" liquidity.

Avista maintains a \$320 million line of credit for Avista Utilities that matures in April 2011. In addition, in November 2009 the company entered into a \$75 million line of credit that replaced its maturing \$200 million facility. The new facility expires in April 2011. As of March 31, 2010, the company had \$347.1 million available under its credit facilities. Both credit lines have standard covenants such as a maximum debt-to-capitalization ratio

of 70% and EBITDA interest coverage of more than 1.6x. Also, Avista Utilities can sell up to \$50 million of receivables through a wholly owned, bankruptcy-remote subsidiary. No borrowings were outstanding under this facility as of March 31, 2010. Notably, the company has no significant debt maturities in the near term. As of March 31, 2010, the company had cash and cash equivalents amounting to \$39.6 million.

Advantage IQ provides for its own liquidity requirements through a credit line totaling \$15 million that is secured by substantially all of the subsidiary's assets.

### Recovery analysis

We rate the first mortgage bonds 'BBB+', two notches higher than the corporate credit rating, with a recovery rating of '1+', reflecting our highest expectation for full recovery of principal in a payment default scenario. Under Standard & Poor's criteria, first mortgage bonds with a '1+' recovery rating issued by companies in the 'BBB' rating category are rated two notches above the corporate credit rating.

## Outlook

The positive outlook on Avista reflects the possibility of a one-notch upgrade provided that our expectations of adjusted FFO to debt averaging 17% and adjusted debt leverage at or below expected levels of 57% are met, and that adequate liquidity is achieved and maintained. The company is poised to achieve our expectations for cash flow metrics given the favorable cash flow impact of the 2009 base rate increase, as well as the completion of equity issuances announced this year. We could revise the outlook to stable if our cash flow expectations are not met due to issues such as a worsening recessionary environment, adverse hydro conditions that lead to large deferral balances, or rate case activity that does not yield timely and sufficient regulatory relief.

**Table 1.**

<b>Avista Corp. -- Peer Comparison*</b>				
	<b>Avista Corp.</b>	<b>IDACORP Inc.</b>	<b>Portland General Electric Co.</b>	<b>NorthWestern Corp.</b>
Rating as of July 16, 2010	BBB-/Positive/A-3	BBB/Stable/A-2	BBB/Stable/A-2	BBB/Stable/--
	<b>--Average of past three fiscal years--</b>			
<b>(Mil. \$)</b>				
Revenues	1,535.7	963.2	1,764.0	1,193.9
Net income from cont. oper.	66.4	101.7	109.0	64.7
Funds from operations (FFO)	233.3	201.3	326.5	206.8
Capital expenditures	216.7	257.4	511.4	142.7
Cash and short-term investments	23.0	23.3	38.0	14.3
Debt	1,302.9	1,708.1	1,875.2	980.8
Preferred stock	46.4	0.0	0.0	0.0
Equity	1,033.5	1,303.8	1,404.3	791.2
Debt and equity	2,336.5	3,011.9	3,279.5	1,772.0
<b>Adjusted ratios</b>				
EBIT interest coverage (x)	2.3	2.3	2.2	2.4
FFO int. cov. (x)	3.7	3.2	3.5	3.7
FFO/debt (%)	17.9	11.8	17.4	21.1
Discretionary cash flow/debt (%)	(1.9)	(8.1)	(14.4)	0.9
Net cash flow/capex (%)	89.1	57.0	51.5	111.0

**Table 1.**

<b>Avista Corp. -- Peer Comparison* (cont.)</b>				
Total debt/debt plus equity (%)	55.8	56.7	57.2	55.3
Return on common equity (%)	6.1	7.3	6.3	7.9
Common dividend payout ratio (unadj.) (%)	56.7	53.8	59.6	74.8

\*Fully adjusted (including postretirement obligations).

**Table 2.**

<b>Avista Corp. -- Financial Summary*</b>					
<b>--Fiscal year ended Dec. 31--</b>					
	<b>2009</b>	<b>2008</b>	<b>2007</b>	<b>2006</b>	<b>2005</b>
Rating history	BBB-/Positive/A-3	BBB-/Stable/A-3	BB+/Positive/B-1	BB+/Stable/B-1	BB+/Stable/B-1
<b>(Mil. \$)</b>					
Revenues	1,512.6	1,676.8	1,417.8	1,506.3	1,359.6
Net income from continuing operations	87.1	73.6	38.5	73.1	45.2
Funds from operations (FFO)	263.2	251.7	184.9	187.9	189.5
Capital expenditures	224.7	220.3	205.2	162.2	216.0
Cash and short-term investments	37.0	24.3	7.8	28.2	25.9
Debt	1,331.9	1,361.0	1,215.9	1,349.0	1,484.8
Preferred stock	25.8	56.7	56.7	0.0	0.0
Equity	1,076.4	1,053.6	970.7	916.8	733.2
Debt and equity	2,408.3	2,414.6	2,186.5	2,265.8	2,218.0
<b>Adjusted ratios</b>					
EBIT interest coverage (x)	3.0	2.5	1.7	2.1	1.6
FFO int. cov. (x)	4.3	4.0	3.0	2.7	2.7
FFO/debt (%)	19.8	18.5	15.2	13.9	12.8
Discretionary cash flow/debt (%)	1.8	(9.0)	2.1	1.1	(7.4)
Net cash flow/capex (%)	97.0	96.1	73.0	98.6	75.5
Debt/debt and equity (%)	55.3	56.4	55.6	59.5	66.9
Return on common equity (%)	8.2	6.6	3.3	8.3	5.7
Common dividend payout ratio (unadj.) (%)	50.9	50.4	81.7	38.2	58.5

\*Fully adjusted (including postretirement obligations).

**Table 3.**

<b>Reconciliation Of Avista Corp. Reported Amounts With Standard &amp; Poor's Adjusted Amounts (Mil. \$)*</b>										
<b>--Fiscal year ended Dec. 31, 2009--</b>										
<b>Avista Corp. reported amounts</b>										
	<b>Debt</b>	<b>Shareholders' equity</b>	<b>Operating income (before D&amp;A)</b>	<b>Operating income (before D&amp;A)</b>	<b>Operating income (after D&amp;A)</b>	<b>Interest expense</b>	<b>Cash flow from operations</b>	<b>Cash flow from operations</b>	<b>Dividends paid</b>	<b>Capital expenditures</b>
Reported	1,215.6	1,050.6	300.4	300.4	200.7	66.5	258.8	258.8	44.4	208.5
<b>Standard &amp; Poor's adjustments</b>										
Operating leases	21.4	--	4.4	0.8	0.8	0.8	3.5	3.5	--	16.8

**Table 3.**

<b>Reconciliation Of Avista Corp. Reported Amounts With Standard &amp; Poor's Adjusted Amounts (Mil. \$)* (cont.)</b>										
Intermediate hybrids reported as debt	(25.8)	25.8	--	--	--	(1.0)	1.0	1.0	1.0	--
Postretirement benefit obligations	81.0	--	18.0	18.0	18.0	5.2	24.1	24.1	--	--
Capitalized interest	--	--	--	--	--	0.5	(0.5)	(0.5)	--	(0.5)
Share-based compensation expense	--	--	--	2.9	--	--	--	--	--	--
Power purchase agreements	37.1	--	9.3	9.3	2.1	2.1	7.2	7.2	--	--
Asset retirement obligations	2.6	--	0.3	0.3	0.3	0.3	0.2	0.2	--	--
Reclassification of nonoperating income (expenses)	--	--	--	--	0.8	--	--	--	--	--
Reclassification of working-capital cash flow changes	--	--	--	--	--	--	--	(31.0)	--	--
Total adjustments	116.3	25.8	31.9	31.3	21.9	7.9	35.5	4.5	1.0	16.2

**Standard & Poor's adjusted amounts**

	<b>Debt</b>	<b>Equity</b>	<b>Operating income (before D&amp;A)</b>	<b>EBITDA</b>	<b>EBIT</b>	<b>Interest expense</b>	<b>Cash flow from operations</b>	<b>Funds from operations</b>	<b>Dividends paid</b>	<b>Capital expenditures</b>
Adjusted	1,331.9	1,076.4	332.4	331.7	222.6	74.4	294.3	263.2	45.3	224.7

\*Avista Corp. reported amounts shown are taken from the company's financial statements but might include adjustments made by data providers or reclassifications made by Standard & Poor's analysts. Please note that two reported amounts (operating income before D&A and cash flow from operations) are used to derive more than one Standard & Poor's-adjusted amount (operating income before D&A and EBITDA, and cash flow from operations and funds from operations, respectively). Consequently, the first section in some tables may feature duplicate descriptions and amounts.

**Ratings Detail (As Of July 23, 2010)\*****Avista Corp.**

Corporate Credit Rating	BBB-/Positive/A-3
Preferred Stock (1 Issue)	BB
Senior Secured (16 Issues)	BBB+

**Corporate Credit Ratings History**

10-Aug-2009	BBB-/Positive/A-3
07-Feb-2008	BBB-/Stable/A-3
17-Apr-2007	BB+/Positive/B-1
22-Sep-2005	BB+/Stable/B-1

**Business Risk Profile**

Excellent

**Financial Risk Profile**

Aggressive

**Ratings Detail** (As Of July 23, 2010)\***(cont.)**

\*Unless otherwise noted, all ratings in this report are global scale ratings. Standard & Poor's credit ratings on the global scale are comparable across countries. Standard & Poor's credit ratings on a national scale are relative to obligors or obligations within that specific country.

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## SECTOR COMMENT

Rate this Research



# US utility sector upgrades driven by stable and transparent regulatory frameworks

### Table of Contents:

SUPPORTIVE REGULATORY FRAMEWORKS	2
STABLE AND PREDICTABLE FINANCIAL PROFILE	2
CRITICAL INFRASTRUCTURE ASSETS	4
STRONG, STABLE ACCESS TO CAPITAL	5
NOTABLE UPGRADES	6
COMPANIES NOT UPGRADED	8
APPENDIX A: SELECTED UTILITY SECTOR RATING CHANGES	14
APPENDIX B: SELECTED FINANCIAL RATIOS – BY SECTOR CLASSIFICATION, BY RATING	19
APPENDIX C: SELECTED FINANCIAL DATA – BY SECTOR CLASSIFICATION, BY RATING	20
APPENDIX D: COMPANIES NOT PLACED ON REVIEW FOR UPGRADE	21
MOODY'S RELATED RESEARCH	22

### Analyst Contacts:

NEW YORK	+1.212.553.1653
Lesley Ritter	+1.212.553.1607
<i>Analyst</i>	
lesley.ritter@moody's.com	
Natividad Martel	+1.212.553.4561
<i>Vice President</i>	
natividad.martel@moody's.com	
Tiago Ferreira	+1.212.553.1722
<i>Associate Analyst</i>	
tiago.ferreira@moody's.com	
Maurizio Asperti	+1.212.553.6836
<i>Associate Analyst</i>	
maurizio.asperti@moody's.com	
Larry Hess	+1.212.553.3837
<i>Managing Director - Utilities</i>	
william.hess@moody's.com	

» contacts continued on th page 21

- » We recently upgraded most US investor-owned utilities and many of their holding companies due to our view that the US regulatory environment has improved over the past several years. Most of the companies placed on review for upgrade in November 2013<sup>1</sup> were upgraded in late January 2014, and most by one notch. Please see Appendix A for a list of companies that were upgraded.
- » US regulated utilities appear financially secure, thanks to their suite of transparent and timely cost and investment recovery mechanisms. When compared with other regulatory environments in developed countries<sup>2</sup>, the overall regulatory environment for US utilities has steadily improved over the past few years and is expected to remain supportive and constructive for at least the next 3-5 years.
- » A more favorable regulatory environment allows US regulated utilities to generate relatively stable and predictable revenue and cash flow, which can support a material amount of leverage. But most US utilities maintain a conservative capital structure, where the ratios of debt to EBITDA and cash flow to debt hover in the 4.0x and 20% range, respectively. Key financial ratios are likely to decline over the next few years, as interest rates rise and tax payments increase with the expiration of bonus depreciation.
- » US utilities own and operate enormous, capital intensive, long-lived critical infrastructure assets. They are often one of the larger companies residing in a particular state, they pay big property taxes and employ lots of people. The importance of utilities to state and local governments is not lost on elected officials, and utilities maintain very effective constituency outreach programs.
- » Utilities have demonstrated strong, stable access to the capital markets. Utilities do not maintain high cash balances, but their committed credit facilities are typically syndicated across several banks and contain few, if any, borrowing constraints. However, a combination of significant capital investments and sizable shareholder dividends that are typically well beyond the cash generated from operations means that utilities are generally in a negative free cash flow position.
- » A handful of companies placed on review in late 2013 were not upgraded. Some of the reasons include sizable non-utility businesses with higher business risk, or a large amount of debt at the holding company as a percentage of total consolidated debt. For a few issuers, ratings weren't upgraded because these companies were viewed as being appropriately positioned at their existing rating category, relative to their rated peers.

<sup>1</sup> See press release: [Moody's places ratings of most US regulated utilities on review for upgrade, November 08, 2013.](#)

<sup>2</sup> For example: Australia, Canada, Japan, South Korea and the United Kingdom.

## Supportive regulatory frameworks

Over the past few years, the US regulatory environment has been very supportive of utilities. We think this is partly a function of regulators acknowledging that their utility infrastructure needs a material amount of ongoing investment for maintenance, refurbishment and renovation purposes. Utility infrastructure is necessary to facilitate a growing economy, and since utility investments help create jobs, utilities have been able to garner support from both politicians and regulators to authorize prudently incurred investments in these critical assets. We also think regulators prefer to regulate financially healthy utilities. Recent legislation that helps utilities recover their costs and investments in a more timely manner are evidenced in Virginia, South Carolina, Florida and Illinois.

We think political risks are also manageable, in part, because elected officials are increasingly viewing their local utilities as a reliable source of investment into the local infrastructure. Investments bring jobs, and employment growth helps the economy. This is part of the “virtuous circle” for regulated utilities, and we see a few more years of continued smooth sailing, where elected officials, their regulators, consumer groups and utilities share a common understanding with respect to strengthening this infrastructure sector.

From a practical perspective, a few regulatory hot spots of contentiousness will flare up over our rating horizon, but it is unclear at this time as to which utilities might be affected. We have generally seen such situations result in outcomes that were difficult for utilities but not punitive, and they have generally been isolated incidents rather than a broad pandemic. As a result, we continue to keep an eye on the magnitude of rate increases, and how likely those rates can be absorbed by the service territory or market before consumers become intolerant, in order to identify utilities that are exceptions to the generally positive regulatory environment.

## Stable and predictable financial profile

A transparent suite of timely recovery mechanisms helps utilities generate stable and predictable revenues and cash flows, which can support a material amount of leverage. But most US utilities maintain a relatively solid capital structure, where the ratios of debt to EBITDA and cash flow to debt hovers in the 4.0x and 20% range, respectively. Key financial ratios are likely to decline over the next few years, as interest rates rise and tax payments increase with the expiration of bonus depreciation.

In the table below, we illustrate the sector's financial stability by showing the historical medians for most of the companies included in our US utility rated universe. We show the 4-year (2009 – 2012) and 2-year (2011 – 2012) average medians by rating category. We also include the latest twelve months ended September 2013. In general, lower debt to EBITDA and dividend payout ratios correspond with higher credit ratings, as do higher cash flow to debt ratios. We note that A1 rated companies invest more heavily in their assets, relative to depreciation and amortization (D&A). Because we show these financial ratios by rating category, the rating category might include different kinds of companies included in our peer groups. For example, the Baa1 rating category might include parent holding companies (which also include hybrid integrated companies), vertically integrated, transmission and distribution, local gas distribution or transmission only companies.

## EXHIBIT 1

**US regulated utilities – selected financial ratios, by rating category (medians)**

Rating	Debt / EBITDA			CFO / debt			Dividend payout			Cap Ex / D&A		
	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM
A1	2.7	2.8	3.0	31%	32%	25%	35%	33%	39%	2.4	2.7	2.7
A2	3.3	3.3	3.5	27%	26%	22%	67%	70%	64%	1.8	1.9	2.0
A3	3.9	4.0	4.0	22%	23%	22%	56%	67%	52%	2.1	1.9	2.2
Baa1	4.1	4.2	4.0	19%	20%	19%	61%	64%	52%	1.8	1.9	2.2
Baa2	4.3	4.3	4.5	17%	17%	17%	56%	56%	78%	1.7	1.9	2.1
Baa3	4.2	4.4	4.3	18%	17%	18%	120%	91%	99%	1.3	1.5	1.4

We also examined the broad peer group of utilities by sector classification. For example, we looked at the selected financial ratios for parent holding companies, vertically integrated utilities, transmission and distribution utilities and natural gas local distribution companies. We note that the financial ratios by sector classification means that both A3 and Baa3 rated companies might be included in the “Vertically Integrated” peer group and in other peer groups. We observe that the ratio of cash flow to debt is better for the utilities than it is for the parent holding companies<sup>3</sup>.

## EXHIBIT 2

**US regulated utilities – selected financial ratios, by sector classification**

Sector		Debt / EBITDA			CFO / debt			Dividend payout			Cap Ex / D&A		
		4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM
Holding companies	Median	4.5	4.7	4.4	18%	18%	17%	68%	69%	69%	2.3	2.3	2.5
	Total	4.1	4.3	4.2	19%	19%	18%	67%	73%	78%	2.0	2.1	2.1
LDC's	Median	4.0	4.0	4.1	24%	22%	22%	75%	70%	76%	2.0	2.2	3.1
	Total	3.5	3.5	3.4	26%	25%	23%	60%	61%	58%	2.1	2.3	2.5
T&D (electric or gas)	Median	4.0	3.7	4.2	21%	22%	20%	97%	88%	57%	1.6	1.9	1.5
	Total	3.7	3.7	3.7	22%	22%	20%	92%	86%	67%	1.5	1.8	1.9
Transmission	Median	2.3	2.3	2.5	37%	33%	26%	82%	92%	71%	5.7	6.4	6.4
	Total	3.9	3.9	4.1	20%	19%	16%	80%	83%	58%	4.7	5.3	5.5
Vertically Integrated	Median	3.7	3.7	3.7	22%	23%	20%	53%	59%	56%	2.0	2.0	2.1
	Total	3.6	3.6	3.6	23%	23%	23%	59%	64%	68%	2.1	2.1	2.1

<sup>3</sup> See [Appendix A](#) for a table of selected financial ratios by sector classification, by rating

## Critical infrastructure assets

US utilities own and operate enormous, capital intensive, long-lived critical infrastructure assets. They are often cited as being one of the larger companies residing in a particular state, pay big property taxes and employ lots of people. The importance of utilities to state and local governments is not lost on elected officials, and utilities maintain very effective constituency outreach programs<sup>4</sup>.

## EXHIBIT 3

### US regulated utilities – selected financial data, by rating category (\$ billions)

Rating	Revenues			EBITDA			CFO			Debt		
	4-yr avg	2-yr avg	LTM									
<b>Medians</b>												
A1	\$2.6	\$2.7	\$2.8	\$0.8	\$0.8	\$0.8	\$0.6	\$0.7	\$0.6	\$2.1	\$2.2	\$2.4
A2	\$1.6	\$1.5	\$1.4	\$0.4	\$0.5	\$0.5	\$0.4	\$0.4	\$0.4	\$1.5	\$1.6	\$1.7
A3	\$1.7	\$1.7	\$1.7	\$0.4	\$0.5	\$0.5	\$0.4	\$0.4	\$0.4	\$1.7	\$1.8	\$1.9
Baa1	\$1.6	\$1.6	\$1.6	\$0.4	\$0.4	\$0.5	\$0.3	\$0.4	\$0.4	\$1.7	\$1.8	\$1.9
Baa2	\$1.6	\$1.6	\$1.6	\$0.8	\$0.5	\$0.5	\$0.3	\$0.4	\$0.4	\$2.0	\$2.1	\$2.3
Baa3	\$1.7	\$1.7	\$1.6	\$0.5	\$0.5	\$0.5	\$0.4	\$0.4	\$0.4	\$2.2	\$2.2	\$2.3
<b>Total</b>												
A1	\$50.3	\$50.2	\$51.3	\$15.8	\$16.3	\$17.5	\$13.2	\$13.7	\$14.2	\$50.7	\$54.8	\$58.3
A2	\$86.4	\$85.4	\$86.6	\$25.6	\$27.1	\$29.0	\$22.2	\$23.6	\$22.8	\$86.6	\$92.0	\$98.9
A3	\$151.3	\$154.0	\$166.8	\$47.5	\$49.9	\$54.2	\$39.3	\$42.5	\$45.3	\$187.3	\$199.4	\$221.6
Baa1	\$468.5	\$473.4	\$499.6	\$144.4	\$150.8	\$160.0	\$117.3	\$125.7	\$130.9	\$576.9	\$610.6	\$668.0
Baa2	\$1.7	\$1.6	\$1.6	\$32.7	\$32.2	\$40.4	\$25.5	\$26.9	\$27.1	\$125.1	\$129.1	\$135.8
Baa3	\$5.4	\$5.6	\$5.6	\$17.6	\$18.8	\$18.2	\$1.7	\$1.8	\$1.8	\$81.3	\$89.6	\$94.8

## EXHIBIT 4

### US regulated utilities – selected financial data, by sector classification (\$ billions)

Sector		Revenue			EBITDA			CFO			Total Debt		
		4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM
Holding companies	Median	\$4.0	\$4.1	\$4.5	\$1.1	\$1.1	\$1.2	\$0.9	\$1.0	\$0.9	\$5.2	\$5.3	\$5.2
	Total	\$337.4	\$342.1	\$358.4	\$106.3	\$109.7	\$121.9	\$84.7	\$89.8	\$92.1	\$437.5	\$467.0	\$509.5
LDC's	Median	\$0.7	\$0.7	\$0.6	\$0.1	\$0.2	\$0.2	\$0.1	\$0.1	\$0.1	\$0.6	\$0.6	\$0.6
	Total	\$26.8	\$25.7	\$26.0	\$5.9	\$6.3	\$6.5	\$5.4	\$5.4	\$5.1	\$20.5	\$22.0	\$22.3
T&D (electric or gas)	Median	\$1.4	\$1.2	\$1.1	\$0.3	\$0.4	\$0.3	\$0.3	\$0.3	\$0.3	\$1.3	\$1.3	\$1.4
	Total	\$74.7	\$70.5	\$67.3	\$21.3	\$21.8	\$22.5	\$16.8	\$17.7	\$16.5	\$78.1	\$80.0	\$84.2
Transmission	Median	\$0.3	\$0.3	\$0.3	\$0.2	\$0.2	\$0.2	\$0.1	\$0.1	\$0.1	\$0.4	\$0.5	\$0.6
	Total	\$2.0	\$2.2	\$2.5	\$1.4	\$1.5	\$1.7	\$1.1	\$1.1	\$1.2	\$5.5	\$6.0	\$7.1
Vertically Integrated	Median	\$1.7	\$1.7	\$1.7	\$0.5	\$0.5	\$0.5	\$0.4	\$0.4	\$0.4	\$1.7	\$1.8	\$1.9
	Total	\$195.3	\$197.9	\$202.7	\$60.1	\$62.9	\$65.5	\$49.2	\$52.4	\$53.6	\$215.9	\$227.7	\$237.5

<sup>4</sup> See [Appendix B](#) for a table of selected financial data, by sector classification by rating

## Strong, Stable access to capital

Our view of the supportive US utility regulatory environments resulted in several rating upgrades where companies attained an A2 rating from A3, or Baa2 from Baa3. Consistent with these long term rating changes, some utilities also achieved a change in their short-term commercial paper (CP) ratings. For more information on the linkage between long term ratings and short term ratings, please see [Moody's Rating Symbols and Definitions](#).

### EXHIBIT 5

#### Selected companies that received short-term commercial paper rating changes\*

Name	Sector	Old Rating	New Rating	Rating Outlook	Short term Rating
Questar Corporation	Holdco	A3	A2	Stable	P-1 from P-2
Wisconsin Energy Corporation	Holdco	A3	A2	Stable	P-1 from P-2
DTE Gas Company	LDC	A3	A2	Stable	P-1 from P-2
Northern Illinois Gas Company	LDC	A3	A2	Stable	P-1 from P-2
Peoples Gas Light and Coke Company	LDC	A3	A2	Stable	P-1 from P-2
Consolidated Edison Company of New York, Inc.	T&D (electric or gas)	A3	A2	Stable	P-1 from P-2
PECO Energy Company	T&D (electric or gas)	A3	A2	Stable	P-1 from P-2
Public Service Electric and Gas Company	T&D (electric or gas)	A3	A2	Stable	P-1 from P-2
Atmos Energy Corporation	LDC	Baa1	A2	Stable	P-1 from P-2
DTE Electric Company	Vertically Integrated	A3	A2	Stable	P-1 from P-2
Northern States Power Company (Minnesota)	Vertically Integrated	A3	A2	Stable	P-1 from P-2
Northern States Power Company (Wisconsin)	Vertically Integrated	A3	A2	Stable	P-1 from P-2
Southern California Edison Company	Vertically Integrated	A3	A2	Stable	P-1 from P-2
Piedmont Natural Gas Company, Inc.	LDC	A3	A2	Stable	P-1 from P-2
South Jersey Gas Company	LDC	A3	A2	Stable	P-1 from P-2
Vectren Utility Holdings, Inc.	Vertically Integrated	A3	A2	Stable	P-1 from P-2
Virginia Electric and Power Company	Vertically Integrated	A3	A2	Stable	P-1 from P-2
Pinnacle West Capital Corporation	Holdco	Baa2	Baa1	Stable	P-2 from P-3
Ameren Corporation	Holdco	Baa3	Baa2	Stable	P-2 from P-3
NiSource Finance	Holdco	Baa3	Baa2	Stable	P-2 from P-3
Union Electric Company	Vertically Integrated	Baa2	Baa1	Stable	P-2 from P-3
Kansas City Power & Light Greater MO Op.	Vertically Integrated	Baa3	Baa2	Stable	P-2 from P-3

\*Not all short-term ratings are listed here. Instead, we show a list of upgrades associated with the short term commercial paper rating. This list does not include utilities that may have had short-term ratings on industrial development bonds, such as Duke Indiana and Duke Carolinas. In Duke's case, both companies had their short-term IDB ratings upgraded (both VMIG and Prime ratings), but are not included on our list, but are available on the individual company's press releases.

Utility credit facilities are usually unsecured, so we tend to examine the few instances of secured revolving credits more closely. In many cases, security for credit facilities was initially granted when the utility incurred financial stress and/or was rated below investment grade. Similar to first mortgage bonds, secured credit facilities at the utility level are mostly viewed as having a materially lower risk of incurring any losses given a default. As a result, the costs and fees for secured credit facilities are typically lower than unsecured credit facilities, which regulators may view in a positive light, although we typically view utilities with secured credit facilities as possessing somewhat less financial flexibility.

One of the big credit positives that unsecured credit facilities provide utilities is the "ability" to raise capital or secure continued liquidity through a secured facility. This is a type of financial flexibility that can be useful for utilities experiencing a period of financial distress, since the security may be

granted in exchange for accommodations from lenders such as an increase in facility size, longer maturities, or easing of financial covenants or other terms.

## EXHIBIT 6

**Selected companies with secured credit facilities**

Name	Sector	Old	New	Outlook	Comment
Avista Corp.	Vertically Integrated	Baa2	Baa1	Stable	Secured Revolver
Consumers Energy Company	Vertically Integrated	Baa1	A3	Stable	Secured Revolver
Oncor Electric Delivery Company LLC	T&D (electric or gas)	Baa3	Baa3	Stable	Secured Revolver
Puget Energy, Inc.	Holdco	Ba1	Baa3	Stable	Cross - Over / secured rev.
UNS Energy Corporation	Holdco	Baa3	Baa2	Stable	Secured Revolver
Westar Energy, Inc.	Holdco	Baa2	Baa1	Stable	Secured Revolver

**Notable upgrades**

Two companies were upgraded by 2-rating notches, Edison International (EIX: A3 stable) and Western Massachusetts Electric Company (WMECO: A3 stable). Prospectively, both companies are increasing the stability and predictability of their revenues and cash flows, because they are becoming more regulated.

## EXHIBIT 7

**Selected companies with 2 notch rating upgrades**

Name	Sector	Old	New	Outlook
Atmos Energy Corporation	LDC	Baa1	A2	Stable
Edison International	Holdco	Baa2	A3	Stable
Western Massachusetts Electric Company	T&D (electric or gas)	Baa2	A3	Stable

For EIX, the increase in regulated revenues and cash flows (as a percentage of the total) will result from the divestiture of its risky non-utility businesses. In this case, EIX has benefitted because the former merchant generation operations at Edison Mission Energy (EME not rated) are no longer part of the consolidated entity, and we view the litigation risk from suits by EME creditors as manageable for EIX.

With the recent completion of a large transmission project in December 2013, WMECO is increasing the portion of its revenues derived from FERC-regulated transmission only assets. The FERC regulatory environment is viewed as being both transparent and predictable over the long term, with a very timely suite of cost recovery mechanisms and a reasonable assurance of a guaranteed return.

Four companies crossed over to the investment grade rating category from the non-investment grade category. Three are parent holding companies, all of which own solid investment grade utility operating subsidiaries.

## EXHIBIT 8

**Selected companies that crossed-over into investment grade from non-investment grade**

Name	Sector	Old	New	Outlook
PNM Resources, Inc.	Holdco	Ba1	Baa3	Positive
Entergy Texas, Inc.	Vertically Integrated	Ba1	Baa3	Stable
Puget Energy, Inc.	Holdco	Ba1	Baa3	Stable
IPALCO	Holdco	Ba1	Baa3	Stable

For Entergy Texas Inc (ET: Baa3 stable), where we think Texas regulation is less favorable for non-ERCOT, vertically integrated utilities than they are on the unbundled transmission and distribution utilities, we see a steadily improving financial profile, including a sustainable production of cash flow to debt in the low-teen's, at a minimum. However, ET has the most most challenging regulatory relations of all the Texas utilities.

Puget Energy's (PE: Baa3 Stable) cross over to investment grade reflects an expectation for sustained improvement in the company's financials, due to supportive regulatory treatment. For example, the most recent rate case decision for its utility Puget Sound Energy, Inc. (PSE: Baa1, stable) by the Washington Utilities and Transportation Commission's (WUTC) allowance for a full electric and gas revenue decoupling mechanism and a series of predetermined annual delivery rate increases, including cost escalation factors.

Five issuers in two corporate families, Cleco Corporation (Cleco: Baa2, positive) and PNM Resources Inc. (PNM: Baa3, positive), continue to exhibit materially favorable regulatory or financial trends, reflected in the positive rating outlooks assigned at the conclusion of our review. For the remainder of the companies, stable rating outlooks were the norm.

## EXHIBIT 9

**Selected companies with positive rating outlooks**

Name	Sector	Old	New	Outlook	Comment
Cleco Corporation	Holdco	Baa3	Baa2	Positive	
Cleco Power LLC	Vertically Integrated	Baa2	Baa1	Positive	
PNM Resources, Inc.	Holdco	Ba1	Baa3	Positive	Cross - Over
Texas-New Mexico Power Company	T&D (electric or gas)	Baa2	Baa1	Positive	
Public Service Company of New Mexico	Vertically Integrated	Baa3	Baa2	Positive	

For PNM, as soon as its San Juan Generating Station environmental compliance requirement is resolved, or close to it, and assuming financial metrics remain consistent with our expectations, additional rating upgrades could be considered. For Cleco, the positive outlooks reflect our expectation that Cleco Power LLC (CNL: Baa1, positive) will receive a constructive outcome on its latest regulatory filing, including the extension of its formula rate plan for another five-year period. This would follow the December 2013 approval received from the Louisiana Public Service Commission to transfer the Coughlin power plant to CLN.

## EXHIBIT 10

**Selected companies still on review for possible upgrade**

Name	Sector	Old	New	Outlook	Comment
Brooklyn Union Gas Company	LDC	A3	A3	RUR - up	
Key Span Gas East Corp	LDC	A3	A3	RUR - up	
Niagara Mohawk Power Corp	T&D (electric or gas)	A3	A3	RUR - up	
New England Power Corp	T&D (electric or gas)	A3	A3	RUR - uP	

## Companies not upgraded

For some holding companies with material non-utility businesses, rating upgrades were constrained. Our analysis was heavily influenced by the size, composition and strategy of those non-utility businesses. We widened the notching between some parent holding companies and their operating subsidiaries, especially if there was significant non-utility subsidiary debt or parent holding company debt. Negative rating consequences might also hold back the rating at the utility subsidiary, since parent holding company debt could be viewed as a proxy for utility subordinated debt or preferred stock.

As part of our review process, several corporate families are now characterized by a wider rating notching differential between the parent and one or more utility subsidiaries.

EXHIBIT 11

### Parent holding companies with a three notch differential from one or more subsidiaries

Parent	Rating	Subsidiary	Rating	Notch differential
NextEra	Baa1	Florida Power & Light	A1	3
Sempra	Baa1	San Diego Gas & Electric	A1	3
Exelon Corp	Baa2	PECO Energy	A2	3
Dominion Resources	Baa2	VEPCO / DomGas	A2	3
PS Enterprises Group	Baa2	Public Service Electric & Gas	A2	3
Southern Company	Baa1	Alabama Power	A1	3
Integrus Energy	Baa1	Wisconsin Public Service	A1	3
Duquesne Light Holdgs.	Baa3	Duquesne Light Company	A3	3

In the table below, we show the utilities and holdcos that were placed on review for upgrade but were not upgraded. For these companies, ratings were confirmed at their existing rating categories<sup>5</sup>.

EXHIBIT 12

### Selected companies that were not upgraded

Name	Sector	Old	New	Outlook	Summary Rationale
American Transmission Company LLC	Transmission	A1	A1	Stable	Credit supportive FERC regulation already incorporated
Madison Gas and Electric Company	Vertically Integrated	A1	A1	Stable	Credit supportive regulation already incorporated
NSTAR Electric Company	T&D (electric or gas)	A2	A2	Stable	Credit supportive regulation already incorporated
International Transmission Company	Transmission	A3	A3	Stable	Credit supportive FERC regulation already incorporated
ITC Midwest LLC	Transmission	A3	A3	Stable	Credit supportive FERC regulation already incorporated
Michigan Electric Transmission Company, LLC	Transmission	A3	A3	Stable	Credit supportive FERC regulation already incorporated
Otter Tail Power Company	Vertically Integrated	A3	A3	Stable	Supportive regulation already incorporated
Integrus Energy Group, Inc.	Holdco	Baa1	Baa1	Stable	Non-utility business / Holdco debt
ITC Great Plains LLC	Transmission	Baa1	Baa1	Stable	Credit supportive FERC regulation already incorporated
Hawaiian Electric Company, Inc.	Vertically Integrated	Baa1	Baa1	Stable	Declining metrics, higher leverage
Duke Energy Kentucky, Inc.	Vertically Integrated	Baa1	Baa1	Stable	Declining metrics, higher leverage
Dominion Resources Inc.	Holdco	Baa2	Baa2	Stable	Non-utility business / Holdco debt
Hawaiian Electric Industries, Inc.	Holdco	Baa2	Baa2	Stable	Declining metrics, higher leverage
LG&E and KU Energy LLC	Holdco	Baa2	Baa2	Stable	Holdco debt
Bay State Gas Company	LDC	Baa2	Baa2	Stable	Supportive regulation already incorporated

<sup>5</sup> See [Appendix C](#) for a table of selected companies that were not placed on review for upgrade on 8 November 2013.

## EXHIBIT 12

**Selected companies that were not upgraded**

Name	Sector	Old	New	Outlook	Summary Rationale
ITC Holdings Corp.	Transmission	Baa2	Baa2	Stable	Credit supportive FERC regulation already incorporated
Entergy Arkansas, Inc.	Vertically Integrated	Baa2	Baa2	Stable	Supportive regulation already incorporated
Kentucky Power Company	Vertically Integrated	Baa2	Baa2	Stable	Supportive regulation already incorporated
Duquesne Light Holdings, Inc.	Holdco	Baa3	Baa3	Stable	Non-utility business / Holdco debt
Pepco Holdings, Inc.	Holdco	Baa3	Baa3	Stable	Holdco debt
PPL Corporation	Holdco	Baa3	Baa3	Stable	Holdco debt
Atlantic City Electric Company	T&D (electric or gas)	Baa2	Baa2	Stable	Supportive regulation already incorporated

For a few companies, such as Madison Gas and Electric Company (MG&E: A1, stable) and NSTAR Electric Company (NSTAR Electric: A2, stable), their ratings already captured our view about the credit supportiveness of their regulatory environment and they exhibit prospective financials that are commensurate with their rating category. Their ratings also compare well with similarly rated utilities that operate in commensurately sized metro areas. The same can be said for Otter Tail Power Company (OTP: A3, stable), where we confirmed the utility at A3 and upgraded the parent holding company Otter Tail Corporation (OTC: Baa2, stable) to Baa2, thus narrowing the notching differential between the parent and the subsidiary.

The FERC regulated transmission companies, namely American Transmission Company LLC (ATC: A, stable) and ITC Holdings Corp. (ITC: Baa2, stable) and its operating subsidiaries, were not upgraded because the credit supportive FERC regulatory framework is already sufficiently incorporated into our credit analysis. Moreover, unlike most state regulatory jurisdictions, which are improving, we see the FERC maintaining a relatively steady level of supportiveness, which is high.

We summarize the rationale behind our rating confirmations for the rest of the companies in the pages that follow.

### American Transmission Company (A1, stable)

The rating confirmation for American Transmission Company (ATC) reflects our view of the supportive regulatory framework of the FERC. We believe ATC's A1 issuer rating is well positioned reflecting the relatively stable and predictable cash flows supported by a federal regulatory framework governed by the FERC that promotes a tariff framework that allows timely recovery of operating and investment costs. The rating also considers ATC's low business risk profile, which is characterized by limited exposure to demand volatility and solid market position. The rating is constrained by ATC's small size, lack of geographic diversification, financial metrics that are weak for the rating but mitigated by the favorable FERC regulatory framework and the funding requirements associated with the company's significant capital expenditure program.

Our view of the supportive federal regulatory framework governed by the FERC is balanced against the current Section 206 complaint filed against the regional rate used by Transmission Owners in the Midcontinent Independent System Operator, Inc. (MISO) in November 2013. To date, FERC has taken no action on this complaint, which the TOs have filed a motion to dismiss. While it is too early in the process to determine the ultimate credit impact of any final outcome from the Section 206 complaint on ATC, we believe the final resolution of a similar Section 206 complaint filed at FERC currently being litigated against TOs in the New England ISO will provide some clarity on how similar cases will be treated going forward as to FERC's policies on these matters. We expect a final resolution by the FERC on the New England Section 206 complaint by the second quarter of 2014.

Given that ATC's credit metrics are expected to continue to be weak for its rating, ongoing favorable regulatory support provided by the FERC regulatory construct represents an essential factor in ATC's ability to maintain its financial strength.

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### ITC Holdings Corp (Baa2, stable) & subsidiaries

The rating confirmation for ITC Holdings Corp (ITC) and its subsidiaries reflects our view of the supportive regulatory framework of the FERC. We believe ITC Holdings' Baa2 senior unsecured rating is well positioned reflecting the relatively stable and predictable cash flows provided by its electric transmission operating subsidiaries and a solid market position. The Baa2 rating is constrained by the significant amount of debt maintained at the parent level and consolidated credit metrics that are weak for the rating but mitigated by the favorable FERC regulatory framework. The rating also considers the significant capital expenditure program currently being undertaken at ITC Holdings' operating subsidiaries.

Our view of the supportive federal regulatory framework governed by the FERC is balanced against the current Section 206 complaint filed against the regional rate used by Transmission Owners in the MISO including ITC's MISO-based subsidiaries (ITC Transmission, METC and ITC Midwest) in November 2013. To date, FERC has taken no action on this complaint, which the TOs have filed a motion to dismiss. While it is too early in the process to determine the ultimate credit impact of any final outcome from the Section 206 complaint on ITC's MISO-based subsidiaries, we believe the final resolution of a similar Section 206 complaint filed at FERC currently being litigated against the TOs in the New England ISO will provide some clarity on how similar cases will be treated going forward as to FERC's policies on these matters. We expect a final resolution by the FERC on the New England Section 206 complaint by the second quarter of 2014. Given that ITC's credit metrics are expected to continue to be weak for its rating, ongoing favorable regulatory support provided by the FERC regulatory construct represents an essential factor in ITC's ability to maintain its financial strength.

The ratings of ITC's subsidiaries reflect the same supportive FERC regulatory framework that provides a robust set of timely recovery mechanisms and healthy returns resulting in strong credit metrics. However, ITC's subsidiary ratings are constrained by the significant leverage at its parent, ITC Holdings, Corp. ITC has historically issued debt at the parent level to finance acquisitions, which accounts for approximately 70% of total parent level debt, as well as to finance equity infusions to its transmission subsidiaries. This holdco/opco financing approach used within the industry creates a benefit of double leverage by having higher equity ratios at the utility subsidiaries. As of September 30, 2013, parent level debt represented approximately 54% of ITC's consolidated debt. ITC has indicated it expects to continue funding its operations with internally generated cash, revolving credit facilities and long-term debt at the operating subsidiaries and parent as necessary.

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### Madison Gas & Electric Company (A1, stable)

The rating confirmation of MG&E's rating reflects our view that the utility already captures the regulatory environment in Wisconsin as above average relative to its integrated utility peers. The rating further acknowledges that MG&E's credit metrics have historically been strong for the rating category but are expected to soften as the company funds its near term capital expenditure program with a mix of internally generated funds and incremental debt, but should remain in line with comparable A1 rated utilities. Finally, the rating captures MG&E's comparatively small and concentrated service territory relative to the other utilities in the same rating category.

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### **NSTAR Electric Company (A2, stable)**

The rating confirmation of NSTAR Electric reflects our view that the regulatory environment in Massachusetts is slightly above average for T&D utilities, and those associated benefits have already been incorporated with NSTAR's current rating. The rating further acknowledges that NSTAR Electric's credit metrics are commensurate with the mid range of the A-rating category and that it compares well relative to other A2-rated transmission and distribution peers operating in a single metro area. It also captures that NSTAR Electric has a standalone \$450 million committed credit facility and that the utility's historical ability to report significant amounts of positive free cash flow has diminished in recent years.

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### **Otter Tail Power Company (A3, stable)**

The rating confirmation of OTP reflects the overall credit supportive regulatory environments which the utility currently operates; a robust suite of recovery mechanisms that provide timely recovery of prudent costs and investments; and reasonably diverse service territory spread across three states. The rating also factors in the expected slight decline in financial metrics due to the current substantial capex program to grow rate base, including sizeable investments in transmission assets, as well as the continued pressure from material upstream dividend distributions to help the parent meet its somewhat aggressive dividend policy.

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### **Duke Energy Kentucky, Inc (Baa1, stable)**

The rating confirmation of Duke Energy Kentucky, Inc. reflects adequate but declining financial metrics, increasing capital expenditures, and anticipated higher debt levels that offset the generally credit supportive regulatory environment in Kentucky. The utility's cash flow pre-working capital to debt ratio has fallen from the 25% range in 2011 and prior years to the 20% range more recently, and is likely to fall into the high teens as debt levels rise. The utility has not filed for a rate increase in several years and has no immediate plans to file a base rate case. Duke Energy Kentucky Inc's small size and status as a subsidiary of Baa1 rated Duke Energy Ohio, which was not placed on review for upgrade in November, are also rating constraints.

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### **Hawaiian Electric Industries, Inc. (Baa2, stable) and utility subsidiary**

The rating confirmation of Hawaiian Electric Company, Inc. (HECO: Baa1, stable) reflects a weak financial profile. The ratings of Hawaiian Electric Industries, Inc (HEI: Baa2, stable) at current levels reflect the relatively stable earnings and cash flow historically provided by both the vertically integrated utility businesses at HECO and the stable banking operations at American Savings Bank. The ratings also recognize the challenges at HECO and its subsidiaries, which have some of the highest retail electric rates in the country. The utility operations face heavy pressure from regulators and stakeholders to reduce rates and dependence on fuel oil. While rate reduction initiatives involving infrastructure improvements and new generation may present investment opportunities for the utilities, they also present the potential for under-recovery. HEI projects \$2.9 billion of capital expenditures at the utilities over the next five years, which is sizable compared with the total authorized rate base of \$2.2 billion. HECO benefits from a robust suite of regulatory mechanisms to mitigate this risk, including the revenue adjustment mechanism (RAM), which allows for rate base additions in between rate cases. The banking subsidiary, which provides about one-third of operating income to HEI, is managing well through the housing downturn and the low net interest margin environment.

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### **IntegrYS Energy Group (Baa1, stable)**

The confirmation of IntegrYS Energy Group's (IntegrYS: Baa1, stable) rating takes into consideration the company's sizable non-regulated energy marketing business, currently making up about 10-15% of consolidated earnings as well as the substantial amount of debt held at the parent. Today's rating action assumes IntegrYS' management will keep holding company debt around 30% of consolidated debt, while maintaining the size of its unregulated segment at current levels. It further assumes that management would take necessary actions to address any deterioration in its business risk profile if required in the future.

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### **Bay State Gas Company (Baa2, stable)**

The rating confirmation of Bay State Gas Company (Bay State: Baa2, stable) reflects the inter-company relationship with its parent, NiSource. This intercompany relationship constrains Bay State's rating at the parent rating level because Bay State's debt is being guaranteed by its Baa2 rated parent.

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### **Dominion Resources Inc. (Baa2 stable)**

The rating confirmation of Dominion Resources Inc (Dominion: Baa2, stable) reflects high leverage at the parent holding company. We also see weak near term cash flow generation at the non-utilities businesses; a sustained period of high capital investments, much of which is associated with a risky, multi-year construction program to construct an LNG export terminal (which will also create some asset concentration risk), and; a more welcoming stance towards corporate financial engineering, which contribute to a more complex capital structure and a net reduction of financial flexibility.

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### **Duquesne Light Holdings, Inc (Baa3, stable)**

The rating confirmation of Duquesne Light Holdings, Inc (DLH: Baa3, stable) reflects the high level of parent company debt and unregulated operations which do not benefit from our more favorable view of the US regulatory environment.

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### **Pepco Holdings Inc. (Baa3, stable) and subsidiary**

The rating confirmation of Pepco Holdings Inc.'s (PHI: Baa3, stable) reflects meaningful parent company debt and an aggressive dividend payout policy primarily funded through incremental debt issuances prevented upward movement in its rating.

Despite generally improving regulatory environments across the US, Atlantic City Electric Company's (ACE: Baa2, stable) regulatory construct has not benefitted from similar developments. For instance, unlike the majority of its sister utilities, ACE does have access to a decoupling mechanism that would improve the predictability of its earnings by eliminating fluctuations based on weather and changes in customer usage patterns. Furthermore, ACE continues to wrestle with significant lag in its earnings which keep the company's financial metrics squarely in the mid-Baa range.

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### **Kentucky Power Company (Baa2, stable)**

The rating confirmation of Kentucky Power Company (KEPCO: Baa2, stable) reflects the high leverage, a large capital expenditure program and weak financial metrics. The settlement outcome of last October clears the path to complete the transfer of the Mitchell Plant (including considerations of potential greenhouse initiatives), and the conversion of the Big Sandy Unit 1 to natural gas. KEPCO'S financial metrics for LTM third-quarter 2013, are reasonably within the range for the rating

category. However, on a forward looking basis, a large capital expenditure program and increased leverage will contribute to weaker financial metrics such as CFO pre-WC to debt averaging between 12-14% and CFO pre WC – Div to debt between 9-11%.

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### Entergy Arkansas, Inc. (Baa2, stable)

The rating confirmation of Entergy Arkansas Inc. (EA: Baa2, stable) reflects less favorable rate case outcomes in May 2010 and December 2013. Arkansas operates under traditional rate of return regulation rather than the more credit supportive formula rate plans in place in Louisiana and Mississippi, where Entergy's other large subsidiaries operate. The rate of return regulation contributes to regulatory lag at EA. Under Arkansas regulation, the test year is either fully historical or 6 months historical and 6 months projected. However, there are fuel and certain other riders that help offset some aspects of the lag.

LTM third-quarter 2013 metrics are consistent with that of fiscal year end 2012, with Cash Flow Interest Coverage of 4.5x and CFO pre-WC to debt of 13%. According to Moody's adjusted projections, EA will be able to maintain appropriate metrics for the rating, including CFO pre-WC to debt, and CFO pre-WC – Div to debt of around 16% and 14% respectively.

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### PPL Corporation (Baa3, stable)

The rating confirmation of PPL Corporation (PPL: Baa3, stable) reflects the upgrades of its US regulated utilities, which represent 31% of consolidated earnings, but these upgrades were not sufficient to shift PPL's consolidated credit profile as their financial metrics remain weak for its rating category. LKE did not receive an upgrade because of the high debt level at LKE relative to the consolidated LKE. Moreover, because there is free movement of cash between PPL and LKE, PPL has a constraining effect on LKE's ratings.

## Appendix A: Selected utility sector rating changes

Name	Sector	Old	New	Outlook
AES Corporation, (The)	HoldCo	Ba3	Ba3	Stable
Indianapolis Power & Light Company	Integrated	Baa2	Baa1	Stable
IPALCO Enterprises, Inc.	HoldCo	Ba1	Baa3	Stable
AGL Resources Inc.	HoldCo	Baa1	A3	Stable
AGL Resources Inc.	HoldCo	Baa1	A3	Stable
Atlanta Gas Light Company	LDC	A3	A2	Stable
Northern Illinois Gas	LDC	A3	A2	Stable
Pivotal Utility Holdings	LDC	A3	A2	Stable
ALLETE, Inc.	Integrated	Baa1	A3	Stable
Superior Water, Light and Power Company	Integrated	Baa1	A3	Stable
Alliant Energy Corporation	HoldCo	Baa1	A3	Stable
Wisconsin Power and Light Company	Integrated	A2	A1	Stable
Ameren Corporation	HoldCo	Baa3	Baa2	Stable
Ameren Illinois Company	T&D	Baa2	Baa1	Stable
Union Electric Company	Integrated	Baa2	Baa1	Stable
American Electric Power Company, Inc.	HoldCo	Baa2	Baa1	Stable
AEP Texas Central Company	T&D	Baa2	Baa1	Stable
AEP Texas North Company	T&D	Baa2	Baa1	Stable
Appalachian Power Company	Integrated	Baa2	Baa1	Stable
Indiana Michigan Power Company	Integrated	Baa2	Baa1	Stable
Public Service Company of Oklahoma	Integrated	Baa1	A3	Stable
Southwestern Electric Power Company	Integrated	Baa3	Baa2	Stable
Atmos Energy Corporation	LDC	Baa1	A2	Stable
Avista Corp.	Integrated	Baa2	Baa1	Stable
MidAmerican Energy Holdings Co.	HoldCo	Baa1	A3	Stable
MidAmerican Energy Company	Integrated	A2	A1	Stable
MidAmerican Funding, LLC	HoldCo	A3	A2	Stable
PacifiCorp	Integrated	Baa1	A3	Stable
NV Energy Inc.	HoldCo	Baa3	Baa2	Stable
Nevada Power Company	Integrated	Baa2	Baa1	Stable
Sierra Pacific Power Company	Integrated	Baa2	Baa1	Stable
Black Hills Corporation	HoldCo	Baa2	Baa1	Stable
Black Hills Power, Inc.	Integrated	Baa1	A3	Stable
CenterPoint Energy, Inc.	HoldCo	Baa2	Baa1	Stable
CenterPoint Energy Houston Electric, LLC	T&D	Baa1	A3	Stable

Name	Sector	Old	New	Outlook
CH Energy Group, Inc.	HoldCo	not rated		
Central Hudson Gas & Electric Corporation	T&D	A3	A2	Stable
Cleco Corporation	HoldCo	Baa3	Baa2	Positive
Cleco Power LLC	Integrated	Baa2	Baa1	Positive
CMS Energy Corporation	HoldCo	Baa3	Baa2	Stable
Consumers Energy Company	Integrated	Baa1	A3	Stable
Consolidated Edison, Inc.	HoldCo	Baa1	A3	Stable
Consolidated Edison Company of New York, Inc.	T&D	A3	A2	Stable
Orange and Rockland Utilities, Inc.	T&D	Baa1	A3	Stable
Dominion Resources Inc.	HoldCo	Baa2	Baa2	Stable
Dominion Gas Holdings	LDC	A3	A2	Stable
Virginia Electric and Power Company	Integrated	A3	A2	Stable
DTE Energy Company	HoldCo	Baa1	A3	Stable
DTE Electric Company	Integrated	A3	A2	Stable
DTE Gas Company	LDC	A3	A2	Stable
Duke Energy Corporation	HoldCo	A3	Baa1	Stable
Duke Energy Carolinas, LLC	Integrated	A2	A1	Stable
Duke Energy Florida, Inc.	Integrated	Baa1	A3	Stable
Duke Energy Indiana, Inc.	Integrated	A3	A2	Stable
Duke Energy Progress, Inc.	Integrated	A2	A1	Stable
Progress Energy, Inc.	HoldCo	Baa2	Baa1	Stable
Duquesne Light Holdings, Inc.	HoldCo	Baa3	Baa3	Stable
Duquesne Light Company	T&D	Baa1	A3	Stable
Edison International	HoldCo	Baa2	A3	Stable
Southern California Edison Company	Integrated	A3	A2	Stable
El Paso Electric Company	Integrated	Baa2	Baa1	Stable
Empire District Electric Company (The)	Integrated	Baa2	Baa1	Stable
Portland General Electric Company	Integrated	Baa1	A3	Stable
Entergy Corporation	HoldCo	Baa3	Baa3	Stable
Entergy Gulf States Louisiana, LLC	Integrated	Baa2	Baa1	Stable
Entergy Louisiana, LLC	Integrated	Baa2	Baa1	Stable
Entergy Mississippi, Inc.	Integrated	Baa3	Baa2	Stable
Entergy Texas, Inc.	Integrated	Ba1	Baa3	Stable

Name	Sector	Old	New	Outlook
Exelon Corporation	HoldCo	Baa2	Baa2	Stable
Baltimore Gas and Electric Company	T&D	Baa1	A3	Stable
Commonwealth Edison Company	T&D	Baa2	Baa1	Stable
PECO Energy Company	T&D	A3	A2	Stable
Great Plains Energy Incorporated	HoldCo	Baa3	Baa2	Stable
Kansas City Power & Light Company	Integrated	Baa2	Baa1	Stable
Kansas City Power & Light Greater MO Oper	Integrated	Baa3	Baa2	Stable
Iberdrola S.A.	HoldCo	Baa1	Baa1	Negative
Central Maine Power Company	T&D	Baa1	A3	Stable
New York State Electric and Gas Corporation	T&D	Baa1	A3	Stable
Rochester Gas & Electric Corporation	T&D	Baa2	Baa1	Stable
IDACORP, Inc.	HoldCo	Baa2	Baa1	Stable
Idaho Power Company	Integrated	Baa1	A3	Stable
Integrus Energy Group, Inc.	HoldCo	Baa1	Baa1	Stable
North Shore Gas Company	LDC	A3	A2	Stable
Peoples Gas Light and Coke Company	LDC	A3	A2	Stable
Wisconsin Public Service Corporation	Integrated	A2	A1	Stable
Laclede Group, Inc. (The)	LDC	Baa2	Baa1	Stable
Laclede Gas Company	LDC	Baa1	A3	Stable
LDC HOLDINGS LLC	HoldCo	not rated		
PNG Companies LLC	LDC	Baa3	Baa2	Stable
New Jersey Resources Corp	HoldCo	not rated		
New Jersey Natural Gas Company	LDC	Aa3	Aa2	Stable
NextEra Energy, Inc.	HoldCo	Baa1	Baa1	Stable
Florida Power & Light Company	Integrated	A2	A1	Stable
NiSource Inc.	HoldCo	(P)Ba2 (preferred)	(P)Ba1 (preferred)	Stable
NiSource Finance	HoldCo	Baa3	Baa2	Stable
Northern Indiana Public Service Company	Integrated	Baa2	Baa1	Stable
Northeast Utilities	HoldCo	Baa1	Baa1	Stable
Connecticut Light and Power Company	T&D	Baa2	Baa1	Stable
Public Service Company of New Hampshire	Integrated	Baa2	Baa1	Stable
Western Massachusetts Electric Company	T&D	Baa2	A3	Stable
Yankee Gas Services Company	LDC	Baa2	Baa1	Stable
NorthWestern Corporation	Integrated	Baa1	A3	Stable

Name	Sector	Old	New	Outlook
OGE Energy Corp.	HoldCo	Baa1	A3	Stable
Oklahoma Gas & Electric Company	Integrated	A2	A1	Stable
Otter Tail Corporation	HoldCo	Baa3	Baa2	Stable
Pepco Holdings, Inc.	HoldCo	Baa3	Baa3	Stable
Delmarva Power & Light Company	T&D	Baa2	Baa1	Stable
Potomac Electric Power Company	T&D	Baa2	Baa1	Stable
Piedmont Natural Gas Company, Inc.	LDC	A3	A2	Stable
Pinnacle West Capital Corporation	HoldCo	Baa2	Baa1	Stable
Arizona Public Service Company	Integrated	Baa1	A3	Stable
PNM Resources, Inc.	HoldCo	Ba1	Baa3	Positive
Public Service Company of New Mexico	Integrated	Baa3	Baa2	Positive
Texas-New Mexico Power Company	T&D	Baa2	Baa1	Positive
PPL Corporation	HoldCo	Baa3	Baa3	Stable
Kentucky Utilities Co.	Integrated	Baa1	A3	Stable
Louisville Gas & Electric	Integrated	Baa1	A3	Stable
PPL Electric Utilities Corporation	T&D	Baa2	Baa1	Stable
Public Service Enterprise Group Incorporated	HoldCo	(P)Baa2	(P)Baa2	Stable
Public Service Electric and Gas Company	T&D	A3	A2	Stable
Puget Energy, Inc.	HoldCo	Ba1	Baa3	Stable
Puget Sound Energy, Inc.	Integrated	Baa2	Baa1	Stable
Questar Corporation	HoldCo	A3	A2	Stable
Questar Gas Company	LDC	A3	A2	Stable
SEMCO Energy, Inc.	LDC	Baa2	Baa1	Stable
Sempra Energy	HoldCo	Baa1	Baa1	Stable
San Diego Gas & Electric Company	Integrated	A2	A1	Stable
Southern California Gas Company	LDC	A2	A1	Stable
SourceGas Holdings LLC	HoldCo	not rated		
SourceGas LLC	LDC	Baa3	Baa2	Stable
South Jersey Industries Inc	HoldCo	not rated		
South Jersey Gas Company	LDC	A3	A2	Stable
Southern Company (The)	HoldCo	Baa1	Baa1	Stable
Alabama Power Company	Integrated	A2	A1	Stable
Gulf Power Company	Integrated	A3	A2	Stable

Name	Sector	Old	New	Outlook
Southwest Gas Corporation	LDC	Baa1	A3	Stable
TECO Energy, Inc.	HoldCo	Baa2	Baa1	Stable
Tampa Electric Company	Integrated	A3	A2	Stable
UGI Corporation	HoldCo	not rated		
UGI Utilities, Inc.	LDC	A3	A2	Stable
UIL Holdings Corporation	HoldCo	Baa3	Baa2	Stable
Berkshire Gas Company	LDC	Baa2	Baa1	Stable
Connecticut Natural Gas Corporation	LDC	Baa1	A3	Stable
Southern Connecticut Gas Company	LDC	Baa2	Baa1	Stable
United Illuminating Company	T&D	Baa2	Baa1	Stable
UNS Energy Corporation	HoldCo	Baa3	Baa2	Stable
Tucson Electric Power Company	Integrated	Baa2	Baa1	Stable
UNS Electric, Inc.	Integrated	Baa2	Baa1	Stable
UNS Gas, Inc.	LDC	Baa2	Baa1	Stable
Vectren Utility Holdings, Inc.	HoldCo	A3	A2	Stable
Indiana Gas Company, Inc.	LDC	A3	A2	Stable
Southern Indiana Gas & Electric Company	Integrated	A3	A2	Stable
Westar Energy, Inc.	HoldCo	Baa2	Baa1	Stable
WGL Holdings, Inc.	HoldCo	no long term rating		
Washington Gas Light Company	LDC	A2	A1	Stable
Wisconsin Energy Corporation	HoldCo	A3	A2	Stable
Wisconsin Electric Power Company	Integrated	A2	A1	Stable
Wisconsin Gas LLC	LDC	A2	A1	Stable
Xcel Energy Inc.	HoldCo	Baa1	A3	Stable
Northern States Power Company (Minnesota)	Integrated	A3	A2	Stable
Northern States Power Company (Wisconsin)	Integrated	A3	A2	Stable
Public Service Company of Colorado	Integrated	Baa1	A3	Stable
Southwestern Public Service Company	Integrated	Baa2	Baa1	Stable

## Appendix B: Selected financial ratios – by sector classification, by rating

Name		Debt / EBITDA			CFO / debt			Dividend payout			Cap Ex / D&A		
		4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM
Holding companies	Median	4.3	4.3	3.8	21%	22%	23%	51%	60%	62%	2.7	2.8	2.7
A2 and A3 rated	Total	4.1	4.2	4.3	21%	20%	19%	56%	59%	60%	2.2	2.2	2.2
Holding companies	Median	4.6	5.0	3.8	19%	15%	18%	66%	71%	59%	1.7	1.8	1.5
Baa1 rated	Total	4.1	4.2	4.4	19%	19%	18%	65%	65%	74%	2.2	2.3	2.2
Holding companies	Median	5.4	5.3	5.2	14%	15%	16%	71%	79%	110%	2.0	2.0	1.9
Baa2 and lower rated	Total	4.1	4.3	3.9	19%	19%	17%	83%	99%	103%	1.7	1.9	2.0
LDC's	Median	3.9	3.8	3.8	24%	23%	19%	71%	78%	79%	1.9	2.3	2.4
A - rated	Total	3.3	3.3	3.4	27%	26%	23%	63%	65%	58%	2.0	2.3	2.6
LDC's	Median	3.8	3.9	3.4	26%	21%	26%	82%	76%	74%	1.7	1.9	2.0
Baa1 and Baa2 rated	Total	4.0	4.0	3.3	23%	21%	23%	42%	39%	52%	2.3	2.0	2.1
T&D (electric or gas)	Median	2.9	2.8	2.7	27%	30%	26%	60%	67%	37%	1.7	2.0	1.8
A - rated	Total	3.5	3.5	3.6	24%	26%	22%	67%	67%	57%	1.8	2.0	2.1
T&D (electric or gas)	Median	5.0	4.6	4.3	16%	16%	16%	72%	69%	55%	1.9	2.0	2.3
Baa1 rated	Total	3.9	3.8	3.8	21%	20%	18%	98%	89%	66%	1.6	1.8	2.1
T&D (electric or gas)	Median	3.6	4.1	4.5	21%	18%	19%	155%	141%	87%	1.0	1.0	1.0
Baa2 and lower rated	Total	3.6	3.7	3.8	20%	20%	20%	133%	127%	95%	1.2	1.4	1.3
Transmission	Median	2.3	2.3	2.5	37%	33%	26%	82%	92%	71%	5.7	6.4	6.4
	Total	3.9	3.9	4.1	20%	19%	16%	80%	83%	58%	4.7	5.3	5.5
Vertically Integrated	Median	3.6	3.7	4.1	25%	25%	17%	29%	29%	33%	2.0	1.9	1.8
A1 rated	Total	3.1	3.2	3.2	27%	26%	25%	45%	46%	63%	2.3	2.4	2.0
Vertically Integrated	Median	3.6	3.6	3.7	22%	20%	18%	76%	80%	61%	2.2	2.2	2.2
A2 rated	Total	3.2	3.2	3.1	27%	26%	25%	57%	58%	51%	2.2	2.1	2.1
Vertically Integrated	Median	3.9	4.0	4.0	22%	22%	20%	50%	64%	48%	2.1	1.9	2.2
A3 rated	Total	3.8	3.8	3.8	22%	23%	23%	66%	84%	71%	2.0	1.9	2.1
Vertically Integrated	Median	3.8	3.9	4.2	18%	18%	17%	69%	74%	73%	1.8	1.8	2.1
Baa1 rated	Total	4.2	4.1	4.5	19%	19%	19%	67%	70%	103%	1.9	2.0	2.2
Vertically Integrated	Median	5.8	5.7	5.4	14%	16%	17%	55%	47%	74%	2.1	1.9	2.1
Baa2 and lower rated	Total	4.4	4.3	4.0	16%	18%	17%	65%	46%	65%	2.3	2.4	2.4

## Appendix C: Selected financial data – by sector classification, by rating

Name		Revenue			EBITDA			CFO			Total Debt		
		4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM	4-yr avg	2-yr avg	LTM
Holding companies	Median	\$4.0	\$4.1	\$4.5	\$1.1	\$1.2	\$1.4	\$1.0	\$1.2	\$1.2	\$4.9	\$5.3	\$5.2
A2 and A3 rated	Total	\$90.5	\$92.4	\$103.7	\$28.6	\$30.2	\$34.0	\$24.1	\$25.8	\$27.9	\$117.6	\$126.9	\$147.2
Holding companies	Median	\$5.9	\$5.5	\$7.2	\$1.6	\$1.7	\$2.4	\$1.3	\$1.2	\$1.7	\$7.3	\$8.6	\$9.2
Baa1 rated	Total	\$111.0	\$111.0	\$114.9	\$35.3	\$36.5	\$37.5	\$27.5	\$29.3	\$29.7	\$145.7	\$153.8	\$163.4
Holding companies	Median	\$3.2	\$3.2	\$3.1	\$1.0	\$1.0	\$1.0	\$0.7	\$0.8	\$0.8	\$5.1	\$5.3	\$5.1
Baa2 and lower rated	Total	\$135.9	\$138.7	\$139.8	\$42.3	\$43.0	\$50.4	\$33.0	\$34.7	\$34.5	\$174.2	\$186.3	\$198.8
LDC's	Median	\$0.9	\$0.9	\$0.8	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.7	\$0.8	\$0.8
A - rated	Total	\$19.0	\$18.6	\$18.7	\$4.5	\$4.9	\$5.1	\$4.1	\$4.3	\$4.0	\$14.9	\$16.4	\$17.7
LDC's	Median	\$0.4	\$0.4	\$0.4	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.3	\$0.3	\$0.3
Baa1 and Baa2 rated	Total	\$7.7	\$7.1	\$7.4	\$1.4	\$1.4	\$1.4	\$1.3	\$1.2	\$1.0	\$5.6	\$5.6	\$4.6
T&D (electric or gas)	Median	\$1.7	\$1.6	\$1.6	\$0.6	\$0.6	\$0.7	\$0.5	\$0.5	\$0.5	\$1.7	\$1.8	\$1.8
A - rated	Total	\$27.4	\$25.8	\$25.3	\$7.9	\$8.1	\$8.5	\$6.5	\$7.2	\$6.6	\$27.4	\$28.3	\$30.7
T&D (electric or gas)	Median	\$1.3	\$1.2	\$1.2	\$0.3	\$0.4	\$0.4	\$0.3	\$0.3	\$0.3	\$1.6	\$1.7	\$1.8
Baa1 rated	Total	\$31.4	\$30.4	\$28.3	\$8.2	\$8.6	\$9.0	\$6.7	\$6.6	\$6.1	\$32.1	\$32.8	\$34.2
T&D (electric or gas)	Median	\$1.3	\$1.1	\$0.9	\$0.4	\$0.3	\$0.3	\$0.3	\$0.2	\$0.3	\$1.3	\$1.3	\$1.4
Baa2 and lower rated	Total	\$16.0	\$14.4	\$13.7	\$5.2	\$5.1	\$5.1	\$3.6	\$3.8	\$3.8	\$18.6	\$18.9	\$19.3
Transmission	Median	\$0.3	\$0.3	\$0.3	\$0.2	\$0.2	\$0.2	\$0.1	\$0.1	\$0.1	\$0.4	\$0.5	\$0.6
	Total	\$2.0	\$2.2	\$2.5	\$1.4	\$1.5	\$1.7	\$1.1	\$1.1	\$1.2	\$5.5	\$6.0	\$7.1
Vertically Integrated	Median	\$3.4	\$3.5	\$3.7	\$1.0	\$1.1	\$1.2	\$0.9	\$1.0	\$0.8	\$3.7	\$4.1	\$4.8
A1 rated	Total	\$39.7	\$39.7	\$40.7	\$13.0	\$13.5	\$14.7	\$10.9	\$11.2	\$11.7	\$40.2	\$43.2	\$46.6
Vertically Integrated	Median	\$3.3	\$3.3	\$3.3	\$0.9	\$0.9	\$1.0	\$0.7	\$0.7	\$0.6	\$3.2	\$3.4	\$3.6
A2 rated	Total	\$40.1	\$40.7	\$42.4	\$12.8	\$13.7	\$14.9	\$11.0	\$11.3	\$11.5	\$40.8	\$43.6	\$46.8
Vertically Integrated	Median	\$1.7	\$1.7	\$1.7	\$0.4	\$0.5	\$0.5	\$0.4	\$0.4	\$0.4	\$1.7	\$1.8	\$1.9
A3 rated	Total	\$66.4	\$67.2	\$68.6	\$20.3	\$21.0	\$21.5	\$16.6	\$18.2	\$18.8	\$76.1	\$79.2	\$80.9
Vertically Integrated	Median	\$1.5	\$1.5	\$1.6	\$0.4	\$0.4	\$0.4	\$0.3	\$0.3	\$0.3	\$1.5	\$1.6	\$1.7
Baa1 rated	Total	\$36.8	\$37.7	\$38.0	\$10.5	\$11.1	\$10.6	\$8.2	\$8.9	\$8.9	\$43.6	\$45.8	\$47.7
Vertically Integrated	Median	\$1.2	\$1.2	\$1.3	\$0.3	\$0.3	\$0.3	\$0.2	\$0.3	\$0.3	\$1.6	\$1.6	\$1.6
Baa2 and lower rated	Total	\$12.3	\$12.5	\$12.9	\$3.5	\$3.7	\$3.9	\$2.5	\$2.8	\$2.6	\$15.2	\$15.8	\$15.6

## Appendix D: Companies not placed on review for upgrade

Name	Sector	Old	New	Outlook	Comment
Northwest Natural Gas Company	LDC	A3	A3	Negative	Not placed on review on November 8
Public Service Co. of North Carolina, Inc.	LDC	A3	A3	Stable	Not placed on review on November 8
Georgia Power Company	Vertically Integrated	A3	A3	Stable	Not placed on review on November 8
Pacific Gas & Electric Company	Vertically Integrated	A3	A3	Stable	Not placed on review on November 8
Interstate Power and Light Company	Vertically Integrated	A3	A3	Stable	Not placed on review on November 8
Oncor Electric Delivery Company LLC	T&D (electric or gas)	Ba2	Ba2	Stable	Not placed on review on November 8
DPL Inc.	Holdco	Ba2	Ba2	Stable	Not placed on review on November 8
Entergy New Orleans, Inc.	Vertically Integrated	Ba2	Ba2	Stable	Not placed on review on November 8
NextEra Energy, Inc.	Holdco	Baa1	Baa1	Stable	Not placed on review on November 8
PG&E Corporation	Holdco	Baa1	Baa1	Stable	Not placed on review on November 8
Sempra Energy	Holdco	Baa1	Baa1	Stable	Not placed on review on November 8
Southern Company (The)	Holdco	Baa1	Baa1	Stable	Not placed on review on November 8
Duke Energy Ohio, Inc.	T&D (electric or gas)	Baa1	Baa1	Stable	Not placed on review on November 8
Monongahela Power Company	T&D (electric or gas)	Baa1	Baa1	Stable	Not placed on review on November 8
Ohio Power Company	T&D (electric or gas)	Baa1	Baa1	Stable	Not placed on review on November 8
Mississippi Power Company	Vertically Integrated	Baa1	Baa1	Stable	Not placed on review on November 8
Exelon Corporation	Holdco	Baa2	Baa2	Stable	Not placed on review on November 8
Public Service Enterprise Group Incorporated	Holdco	Baa2	Baa2	Stable	Not placed on review on November 8
CenterPoint Energy Resources Corp.	LDC	Baa2	Baa2	Stable	Not placed on review on November 8
Jersey Central Power & Light Company	T&D (electric or gas)	Baa2	Baa2	Negative	Not placed on review on November 8
Metropolitan Edison Company	T&D (electric or gas)	Baa2	Baa2	Stable	Not placed on review on November 8
Ohio Edison Company	T&D (electric or gas)	Baa2	Baa2	Stable	Not placed on review on November 8
Pennsylvania Electric Company	T&D (electric or gas)	Baa2	Baa2	Stable	Not placed on review on November 8
Pennsylvania Power Company	T&D (electric or gas)	Baa2	Baa2	Stable	Not placed on review on November 8
South Carolina Electric & Gas Company	Vertically Integrated	Baa2	Baa2	Stable	Not placed on review on November 8
Entergy Corporation	Holdco	Baa3	Baa3	Stable	Not placed on review on November 8
FirstEnergy Corp.	Holdco	Baa3	Baa3	Negative	Not placed on review on November 8
SCANA Corporation	Holdco	Baa3	Baa3	Stable	Not placed on review on November 8
Cleveland Electric Illuminating Company (The)	T&D (electric or gas)	Baa3	Baa3	Stable	Not placed on review on November 8
Dayton Power & Light Company	T&D (electric or gas)	Baa3	Baa3	Stable	Not placed on review on November 8
Potomac Edison Company (The)	T&D (electric or gas)	Baa3	Baa3	Stable	Not placed on review on November 8
Toledo Edison Company	T&D (electric or gas)	Baa3	Baa3	Stable	Not placed on review on November 8

## Moody's Related Research

### Industry Outlooks:

- » [US Regulated Utilities: Regulation Provides Stability as Business Model Faces Challenges, July 2013 \(156754\)](#)
- » [US Unregulated Power: Headwinds continue for the merchant power players, July 2013 \(156302\)](#)
- » [US Coal Industry: US Coal Industry Outlook Stabilizes as Business Conditions Hit Bottom, August 2013 \(157309\)](#)
- » [US Coal Industry: US Coal Industry Faces Steady but Weak 2014, With No Relief in Sight, December 2013 \(161317\)](#)

### Special Comments:

- » [US Oil and Gas Industry: Promise of Stronger Valuations Expands MLP Model Beyond Traditional Midstream Home, January 2014 \(163537\)](#)
- » [May The FERC Be With You: FERC Remains Supportive of Electric Transmission Investment, but Regulatory Risks Are Growing, May 2013 \(153066\)](#)
- » [YieldCos: Fantastic for Shareholders; Less So for Bondholders, November 2013 \(160121\)](#)
- » [Pacific Northwest Utilities: Regulatory Support Paves Way for Improving Credit Profiles, November 2012 \(146170\)](#)
- » [The 21st Century Electric Utility: Substantial uncertainties exist when assessing long-term credit implications, May 2010 \(124891\)](#)
- » [Vogtle Nuclear Project Highlights Credit Strengths and Weaknesses of Three Electric Utility Business Models, October 2013 \(159411\)](#)

### Rating Methodology:

- » [Regulated Electric and Gas Utilities, December 2013 \(157160\)](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

Rate this Research



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» contacts continued from page 1

### Analyst Contacts:

**NEW YORK** +1.212.553.1653

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Mihoko Manabe +1.212.553.1942  
*Senior Vice President*  
 mihoko.manabe@moodys.com

Toby Shea +1.212.553.1779  
*Vice President - Senior Analyst*  
 toby.shea@moodys.com

Susana Vivas +1.212.553.1722  
*Vice President-Senior Analyst*  
 susana.vivas@moodys.com

Jeffrey Cassella +1.212.553.1665  
*Analyst*  
 jeffrey.cassella@moodys.com

Ryan Wobbrock +1.212.553.7104  
*Assistant Vice President - Analyst*  
 ryan.wobbrock@moodys.com

Swami Venkataraman +1.212.553.7950  
*Vice President - Senior Credit Officer*  
 swami.venkat@moodys.com

Sam Asher +1.212.553.1482  
*Associate Analyst*  
 sam.asher@moodys.com

Franklin Sherman +1.212.553.4635  
*Associate Analyst*  
 franklin.sherman@moodys.com

Susan Lam +1.212.553.4351  
*Associate Analyst*  
 susan.lam@moodys.com

Sid Menon +1.212.553.0165  
*Associate Analyst*  
 siddharth.menon@moodys.com

Caroline Guerrero +1.212.535.0511  
*Associate Analyst*  
 caroline.guerrero@moodys.com

Jairo Chung +1.212.553.5123  
*Associate Analyst*  
 jairo.chung@moodys.com

Jim Hempstead +1.212.553.4318  
*Associate Managing Director*  
 james.hempstead@moodys.com

Michael Haggarty +1.212.553.7172  
*Senior Vice President*  
 michael.haggarty@moodys.com

Walter Winrow +1.212.553.7943  
*Managing Director - Global Project and  
 Infrastructure Finance*  
 walter.winrow@moodys.com

---

Report Number: 163726

**Author**  
Jim Hempstead

**Production Associate**  
Vikas Baisla

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# RRA Regulatory Focus Adjustment Clauses

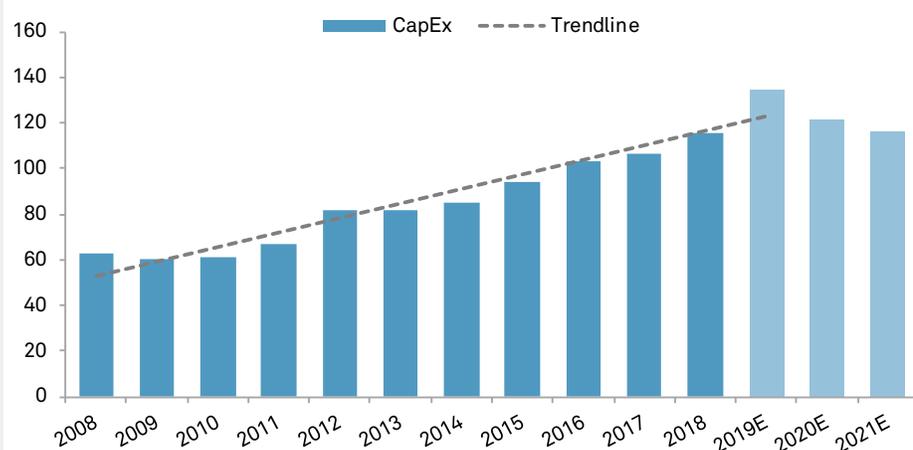
## A State-by-State Overview

In the face of the robust expansion of utility capital expenditures in recent years, increases in various expenses, and sluggish demand growth in most parts of the U.S., industry stakeholders have developed innovative strategies to achieve timely rate recognition. As shown in the image below, CapEx for the companies covered by Regulatory Research Associates, a group within S&P Global Market Intelligence, is estimated to exceed \$134 billion for the full year 2019, more than twice the amount spent in 2008.

### For Detailed Data

Click [here](#) to see supporting data tables.

Energy utility actual and estimated capital expenditures (\$B)



Compiled Oct. 16, 2019.  
Source: S&P Global Market Intelligence

A key component of these strategies has been the implementation of adjustment clauses to address recovery of these expenditures as well as issues related to rising/volatile costs and lackluster sales growth. These mechanisms have contributed to steady earnings growth in the sector. Utility earnings for the 12 months ended June 30, 2019, grew modestly, with an average gain of 1.4% over prior-year results. In terms of projected energy industry profitability, S&P Global Market Intelligence consensus EPS projections call for electric utility EPS to grow 2.8% in 2019 for companies in the RRA utility universe, with 4.7% expansion forecast in 2020 and 4.6% in 2021. Multi-utility EPS is forecast to grow 2.3% in 2019 and 6.4% and 6.8% in 2020 and 2021, respectively.

A defining characteristic of an adjustment clause is that it effectively shifts the risk associated with recovery of the expense in question from shareholders to customers. If the clause operates as designed, the company is able to change its rates to recover its costs on a current basis, without any negative effect on the bottom line and without the expense and delay that accompany a rate case filing.

**Russell Ernst, CFA**  
Principal Analyst

**Amy Poszywak**  
Research Analyst

**Sales & subscriptions**  
Sales\_NorthAm@spglobal.com

**Enquiries**  
support.mi@spglobal.com

The electric and natural gas utilities' use of adjustment clauses to recover variations in certain costs outside of the traditional rate case process has its origins in the 1973 Arab oil embargo, when fuel costs skyrocketed, leaving the utilities with no way to recover the increased costs in a timely manner. At that time, the only remedy for the utilities was to file a rate case; however, rate proceedings frequently took more than a year to litigate, and fuel prices climbed more rapidly than the utilities could obtain rate recognition of the increased costs. Certain jurisdictions permitted the utilities to have more than one rate case pending simultaneously, though most did not.

In the years following the embargo, utility earnings were under considerable pressure, a situation that prompted some jurisdictions to establish a more constructive framework to allow more timely recovery of cost increases that were beyond the control of the utilities.

The result was the creation of the fuel adjustment clause, or FAC, essentially a single-issue ratemaking process whereby a utility is permitted to implement periodic rate adjustments to reflect changes in its cost of fuel. The utility is generally authorized to defer incremental variations in its fuel costs to offset any effect on earnings from the variation. The deferred amount is then recovered from, or refunded to, ratepayers in the next FAC rate adjustment. In some circumstances, the FAC includes a forward-looking component that is subject to true-up provisions. In addition to fuel costs, most jurisdictions allow the utilities' purchased power expense to be included in the FAC.

Over the ensuing years, the use of adjustment clauses has expanded greatly. Adjustment clauses are generally reserved for expenses that are outside the control of the utility or are required by law or rule. Some jurisdictions have approved the use of adjustment clauses for recovery of environmental compliance, energy efficiency and conservation program expenses, transmission charges allocated to the utility by the Federal Energy Regulatory Commission, and/or expenses related to meeting renewable resource requirements. Such mechanisms have also been approved to pass through to customers all or a portion of the margins that the company receives from selling excess power or pipeline capacity in the open market through off-system sales.

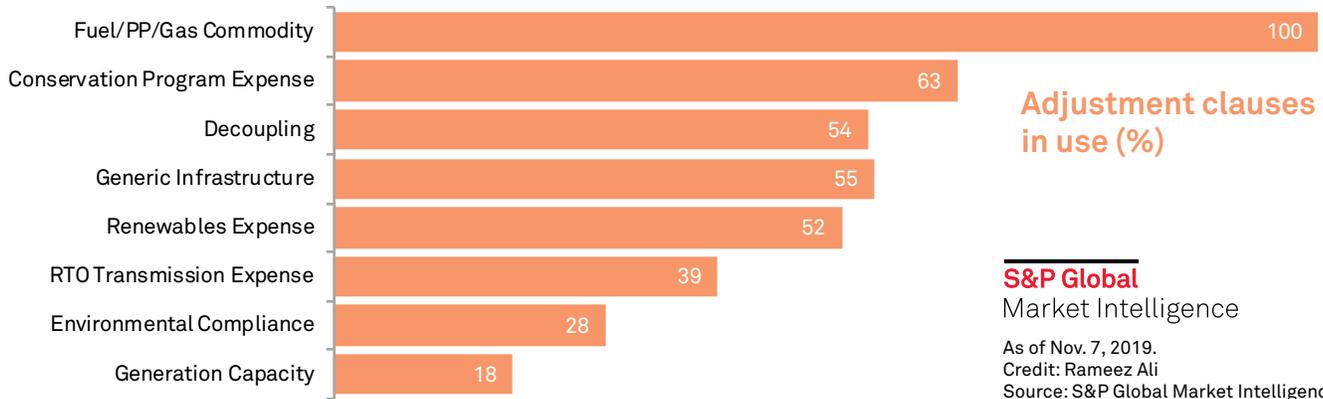
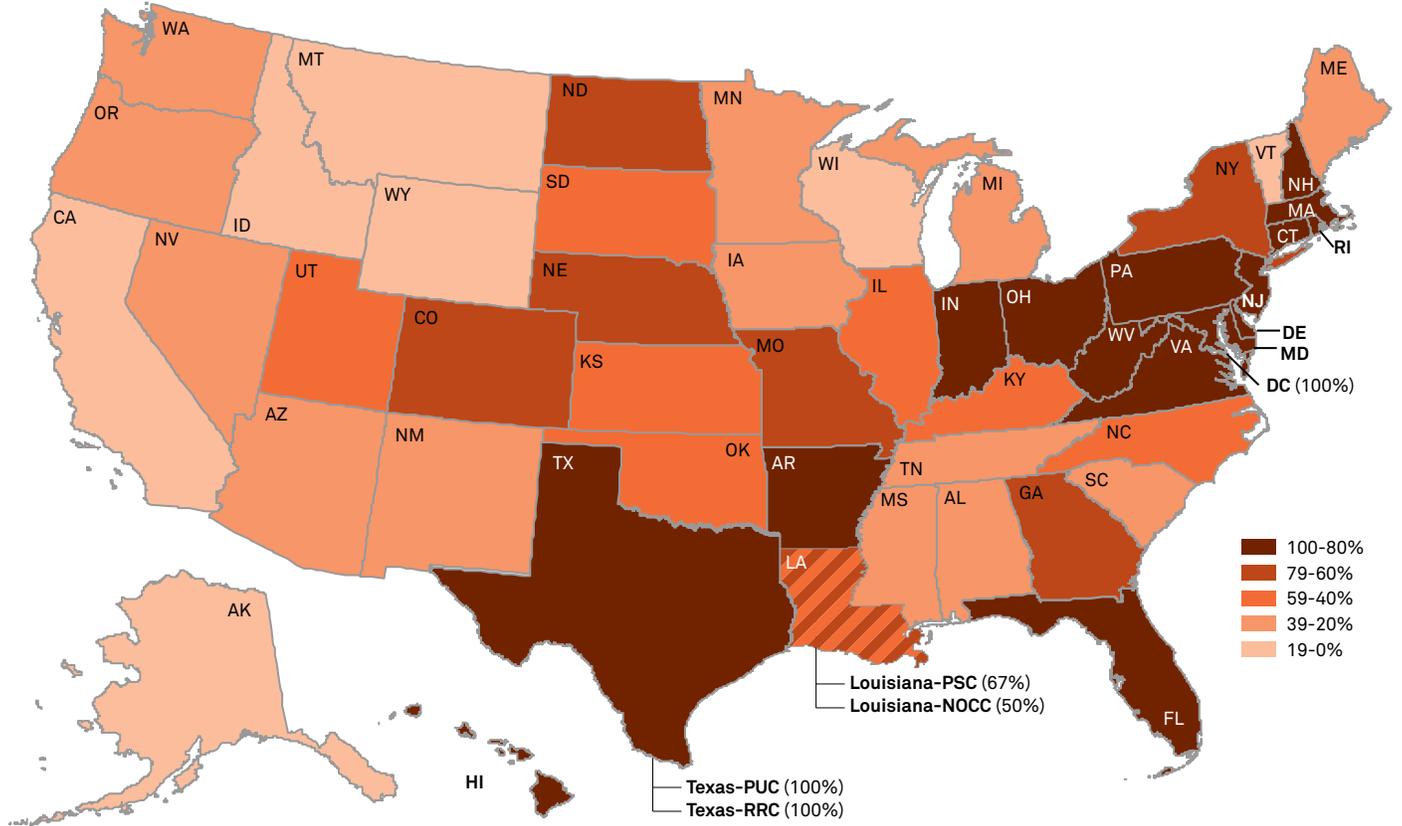
Another type of adjustment clause, a decoupling mechanism, enables utilities to offset the effect on revenues of fluctuations in sales caused by customer participation in energy efficiency programs, deviations from "normal" temperature patterns, or economic conditions. RRA considers a decoupling mechanism that adjusts for all three of these factors to be a "full" decoupling mechanism and designates those that address only one or two of these factors as "partial" decoupling mechanisms. RRA also assigns a partial decoupling tag to those mechanisms that include rate caps or other limitations.

More recently and with greater frequency, commissions have approved mechanisms that permit the costs associated with the construction of new generation capacity or delivery infrastructure to be reflected in rates, effectively including these items in rate base without a full rate case. In some instances, these mechanisms may even provide the utilities a cash return on construction work in progress. As shown in the top image on the next page, these types of mechanisms are more common in the Eastern U.S. and less so in the West.

As shown in the graphic on the next page, certain types of adjustment clauses are more prevalent than others. For example, those that address electric fuel and gas commodity charges are in place in all jurisdictions. Also, about two-thirds of all utilities have riders in place to recover costs related to energy efficiency programs, and roughly **half** of the utilities utilize some type of decoupling mechanism.

This report covers the key adjustment clauses used by the largest electric and gas utilities in the 53 jurisdictions covered by RRA. This report does not address surcharges that have been approved to enable a utility to recover specific one-time items, e.g., excess storm-restoration costs incurred in a given year, because under that scenario, the utility is recovering over a defined period of time a fixed amount that has already been incurred.

**Utilities with adjustment clauses for new capital (%)**



**S&P Global**  
Market Intelligence  
As of Nov. 7, 2019.  
Credit: Rameez Ali  
Source: S&P Global Market Intelligence

This report also does not include expense trackers, which provide for the deferral of variations in certain costs for potential recovery at a future time when the commission will consider the net accumulated balance for inclusion in rates. Although an expense tracker is designed to keep the utility's earnings whole, rates and cash flows do not change on a current basis. Expense trackers are sometimes authorized to account for variations in pension-related costs. Although there are similarities between each of these types of ratemaking provisions, only adjustment clauses allow rates to change on an expedited basis in accordance with cost changes.

The [accompanying table](#) includes footnotes (denoted by "√\*" or "--\*"), beginning on the next page, where a clarification regarding the specific adjustment clause is necessary. Further details concerning the adjustment clauses included in this report can be found in each of RRA's [Commission Profiles](#).

### **Regulatory agency abbreviations**

ACC	Arizona Corporation Commission
ARC	Alaska Regulatory Commission
BPU	Board of Public Utilities (New Jersey)
DPU	Department of Public Utilities (Massachusetts)
ICC	Illinois Commerce Commission
IUB	Iowa Utilities Board
KCC	Kansas Corporation Commission
NCUC	North Carolina Utilities Commission
NOCC	New Orleans City Council
OCC	Oklahoma Corporation Commission
PRC	Public Regulation Commission (New Mexico)
PSC	Public Service Commission
PUC	Public Utility(ies) Commission
PURA	Public Utilities Regulatory Authority (Connecticut)
RRC	Railroad Commission (Texas)
SCC	State Corporation Commission (Virginia)
URC	Utility Regulatory Commission (Indiana)
WUTC	Washington Utilities and Transportation Commission

**Contributors:** Charlotte Cox, Jim Davis, Monica Hlinka, Lillian Federico, Lisa Fontanella, Jason Lehmann, Dan Lowrey and Amy Poszywak

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**Use of adjustment clauses (as of November 2019)**

State/ Company	Ultimate parent ticker	Type of service	Type of adjustment clause													
			Electric fuel/gas commodity/purch. power	Conserv. program expense	Decoupling		Renewables expense	Environmental compliance	New capital		RTO-related transmission expense	Other				
					Full	Partial			Generation capacity	Generic infrastructure						
<b>ALABAMA</b>																
Alabama Power Co.	SO	Elec.	✓	*	--	--	--	✓	✓	*	✓	*	--	--	✓	*
Spire Alabama Inc.	SR	Gas	✓	*	--	--	✓	*	--	--	--	--	--	--	✓	*
Spire Gulf Inc.	SR	Gas	✓	*	--	--	✓	*	--	--	--	--	--	--	✓	*
<b>ALASKA</b>																
Alaska Electric Light and Power Co.	AVA	Elec.	✓	--	--	--	--	--	--	--	--	--	--	--	--	--
Enstar Natural Gas Co.	ALA	Gas	✓	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>ARIZONA</b>																
Arizona Public Service Co.	PNW	Elec.	✓	✓	--	✓	*	✓	✓	--	--	✓	✓	✓	✓	*
Southwest Gas Corp.	SWX	Gas	✓	✓	✓	--	*	--	--	--	✓	*	--	--	✓	*
Tucson Electric Power Co.	FTS	Elec.	✓	✓	--	✓	*	✓	✓	--	--	--	--	--	✓	*
UNS Electric Inc.	FTS	Elec.	✓	✓	--	✓	*	✓	--	--	--	--	✓	✓	✓	*
UNS Gas Inc.	FTS	Gas	✓	--	--	✓	*	--	--	--	--	--	--	--	✓	*
<b>ARKANSAS</b>																
Arkansas Oklahoma Gas Corp.	--	Gas	✓	✓	✓	--	--	--	--	--	✓	*	--	--	✓	*
CenterPoint Energy Resources Corp.	CNP	Gas	✓	✓	✓	--	--	--	--	--	✓	*	--	--	✓	*
Entergy Arkansas LLC	ETR	Elec.	✓	✓	--	✓	*	✓	--	✓	*	✓	*	✓	✓	*
Oklahoma Gas and Electric Co.	OGE	Elec.	✓	*	✓	✓	*	✓	✓	✓	--	--	✓	✓	✓	*
Black Hills Energy Arkansas Inc.	BKH	Gas	✓	✓	✓	--	--	--	--	--	✓	*	--	--	✓	*
Southwestern Electric Power Co.	AEP	Elec.	✓	✓	--	✓	*	--	✓	✓	--	--	✓	✓	✓	*
<b>CALIFORNIA</b>																
Pacific Gas & Electric Co.	PCG	Elec.	✓	--	✓	--	--	--	--	--	--	--	--	--	✓	*
Pacific Gas & Electric Co.	PCG	Gas	✓	--	✓	--	--	--	--	--	--	--	--	--	--	--
San Diego Gas & Electric Co.	SRE	Elec.	✓	--	✓	--	--	--	--	--	--	--	--	--	✓	*
San Diego Gas & Electric Co.	SRE	Gas	✓	--	✓	--	--	--	--	--	--	--	--	--	--	--
Southern California Edison Co.	EIX	Elec.	✓	--	✓	--	--	--	--	--	--	--	--	--	✓	*
Southern California Gas Co.	SRE	Gas	✓	--	✓	--	--	--	--	--	--	--	--	--	--	--
Southwest Gas Corp.	SWX	Gas	✓	--	✓	--	--	--	--	--	--	--	--	--	--	--
<b>COLORADO</b>																
Black Hills Colorado Electric Inc.	BKH	Elec.	✓	✓	--	--	✓	--	✓	*	✓	*	--	--	✓	*
Public Service Co. of Colorado	XEL	Elec.	✓	✓	--	--	*	✓	✓	*	✓	*	✓	*	✓	*
Public Service Co. of Colorado	XEL	Gas	✓	✓	--	✓	*	--	--	--	✓	*	--	--	--	--
Black Hills Gas Distribution LLC	BKH	Gas	✓	✓	--	--	--	--	--	--	--	--	--	--	--	--
<b>CONNECTICUT</b>																
Connecticut Light and Power Co.	ES	Elec.	--	*	✓	✓	*	--	--	--	✓	*	✓	✓	--	--
Connecticut Natural Gas Co.	IBE	Gas	✓	✓	✓	*	--	--	--	--	✓	*	--	--	--	--
Southern Connecticut Gas Co.	IBE	Gas	✓	✓	✓	*	--	--	--	--	✓	*	--	--	--	--
United Illuminating Co.	IBE	Elec.	--	*	✓	✓	*	--	--	--	--	--	✓	✓	--	--
Yankee Gas Services Co.	ES	Gas	✓	✓	✓	*	--	--	--	--	✓	*	--	--	--	--
<b>DELAWARE</b>																
Chesapeake Utilities Corp.	CPK	Gas	✓	--	--	--	--	--	✓	*	--	✓	*	--	✓	*
Delmarva Power & Light Co.	EXC	Elec.	--	*	--	--	--	--	--	--	✓	*	✓	✓	✓	*
Delmarva Power & Light Co.	EXC	Gas	✓	--	--	--	--	--	✓	*	--	✓	*	--	✓	*
<b>DISTRICT OF COLUMBIA</b>																
Potomac Electric Power Co.	EXC	Elec.	--	*	--	--	✓	*	✓	*	--	✓	*	--	✓	*
Washington Gas Light	ALA	Gas	✓	--	--	--	✓	*	--	--	✓	*	--	--	✓	*

**Use of adjustment clauses (as of November 2019)**

State/ Company	Ultimate parent ticker	Type of service	Type of adjustment clause											
			Electric fuel/gas commodity/purch. power	Conserv. program expense	Decoupling		Renewables expense	Environmental compliance	New capital		RTO-related transmission expense	Other		
					Full	Partial			Generation capacity	Generic infrastructure				
<b>FLORIDA</b>														
Florida Power & Light Co.	NEE	Elec.	✓	✓	--	--	--	✓	✓	*	--	*	✓	*
Duke Energy Florida LLC	DUK	Elec.	✓	✓	--	--	--	✓	✓	*	--	*	✓	*
Florida Public Utilities Co.	CPK	Elec.	✓	✓	--	--	--	✓	✓	*	--	*	✓	*
Florida Public Utilities Co.	CPK	Gas	✓	✓	--	--	--	✓	--	✓	*	--	✓	*
Gulf Power Co.	NEE	Elec.	✓	✓	--	--	--	✓	✓	*	--	*	✓	*
Peoples Gas System	EMA	Gas	✓	✓	--	--	--	✓	--	✓	*	--	✓	*
Pivotal Utility Holdings Inc.	NEE	Gas	✓	✓	--	--	--	✓	--	✓	*	--	✓	*
Tampa Electric Co.	EMA	Elec.	✓	✓	--	--	--	✓	✓	*	--	*	✓	*
<b>GEORGIA</b>														
Atlanta Gas Light Co.	SO	Gas	--	*	--	*	--	✓	*	--	✓	*	--	--
Georgia Power Co.	SO	Elec.	✓	--	--	--	--	✓	*	--	--	--	--	--
Liberty Utilities (Peach State Nat. Gas) Corp.	AQN	Gas	✓	*	--	✓	*	--	--	--	--	--	--	--
<b>HAWAII</b>														
Hawaiian Electric Co. Inc.	HE	Elec.	✓	✓	✓	--	✓	--	✓	*	✓	*	✓	*
Hawaii Electric Light Co. Inc.	HE	Elec.	✓	✓	✓	--	✓	--	✓	*	✓	*	✓	*
Maui Electric Co. Ltd.	HE	Elec.	✓	✓	✓	--	✓	--	✓	*	✓	*	✓	*
<b>IDAHO</b>														
Avista Corp.	AVA	Elec.	✓	*	✓	✓	*	--	--	--	--	--	--	--
Avista Corp.	AVA	Gas	✓	✓	✓	*	--	--	--	--	--	--	--	--
Idaho Power Co.	IDA	Elec.	✓	*	✓	✓	*	--	--	--	--	--	--	--
PacifiCorp	BRK.A	Elec.	✓	*	✓	--	--	--	--	--	--	--	--	--
<b>ILLINOIS</b>														
Ameren Illinois Co.	AEE	Elec.	--	*	✓	--	--	✓	✓	*	--	--	✓	✓
Ameren Illinois Co.	AEE	Gas	✓	✓	--	✓	*	✓	✓	*	--	✓	*	✓
Commonwealth Edison Co.	EXC	Elec.	--	*	✓	--	--	✓	✓	*	--	✓	*	✓
Liberty Utilities (Midstates Natural Gas) Corp.	AQN	Gas	✓	✓	--	✓	*	--	--	--	--	--	✓	*
MidAmerican Energy Co.	BRK.A	Elec.	✓	*	✓	--	--	✓	--	--	--	✓	✓	*
MidAmerican Energy Co.	BRK.A	Gas	✓	✓	--	--	--	--	--	--	--	*	✓	*
North Shore Gas Co.	WEC	Gas	✓	✓	--	✓	*	--	✓	*	--	✓	*	✓
Northern Illinois Gas Co.	SO	Gas	✓	✓	--	✓	*	--	✓	*	--	✓	*	✓
Peoples Gas Light & Coke Co.	WEC	Gas	✓	✓	--	✓	*	--	✓	*	--	✓	*	✓
<b>INDIANA</b>														
Duke Energy Indiana LLC	DUK	Elec.	✓	✓	--	✓	*	✓	✓	*	✓	*	✓	*
Indiana Gas Co.	CNP	Gas	✓	✓	✓	--	--	--	--	✓	*	--	✓	*
Indiana Michigan Power Co.	AEP	Elec.	✓	✓	--	✓	*	✓	✓	*	--	✓	*	✓
Indianapolis Power & Light Co.	AES	Elec.	✓	✓	--	✓	*	✓	✓	*	--	✓	*	✓
Northern Indiana Public Service Co.	NI	Elec.	✓	✓	--	✓	*	✓	✓	*	--	✓	*	✓
Northern Indiana Public Service Co.	NI	Gas	✓	✓	--	--	--	--	--	✓	*	--	✓	*
Southern Indiana Gas & Electric Co.	CNP	Elec.	✓	✓	--	✓	*	--	✓	*	--	✓	*	✓
Southern Indiana Gas & Electric Co.	CNP	Gas	✓	✓	✓	--	--	--	--	✓	*	--	✓	*
<b>IOWA</b>														
Black Hills Iowa Gas Utility Co.	BKH	Gas	✓	✓	--	--	--	--	--	✓	--	--	✓	*
Interstate Power & Light Co.	LNT	Elec.	✓	✓	--	--	✓	✓	*	--	--	✓	✓	*
Interstate Power & Light Co.	LNT	Gas	✓	✓	--	--	--	--	--	--	--	--	✓	*
MidAmerican Energy Co.	BRK.A	Elec.	✓	✓	--	--	✓	✓	*	--	--	✓	✓	*
MidAmerican Energy Co.	BRK.A	Gas	✓	✓	--	--	--	--	--	--	--	--	✓	*

**Use of adjustment clauses (as of November 2019)**

State/ Company	Ultimate parent ticker	Type of service	Electric fuel/gas commodity/purch. power	Conserv. program expense	Type of adjustment clause							
					Full	Partial	Renewables expense	Environmental compliance	Generation capacity	Generic infrastructure	RTO-related transmission expense	Other
<b>KANSAS</b>												
Atmos Energy Corp.	ATO	Gas	✓	-- *	--	✓ *	--	--	--	✓ *	--	✓ *
Black Hills/Kansas Gas Utility Co.	BKH	Gas	✓	-- *	--	✓ *	--	--	--	✓ *	--	✓ *
Empire District Electric Co.	AQN	Elec.	✓	✓ *	--	--	--	✓	--	--	✓	✓ *
Energy Kansas Central Inc.	EVRG	Elec.	✓	✓ *	--	✓ *	✓	✓	--	--	✓	✓ *
Energy Kansas South Inc.	EVRG	Elec.	✓	✓ *	--	✓ *	✓	✓	--	--	✓	✓ *
Energy Metro Inc.	EVRG	Elec.	✓	✓ *	--	--	--	--	--	✓ *	✓	✓ *
Kansas Gas Service Co.	OGS	Gas	✓	-- *	--	✓ *	--	--	--	✓ *	--	✓ *
<b>KENTUCKY</b>												
Atmos Energy Corp.	ATO	Gas	✓	✓	--	✓ *	--	--	--	✓ *	--	✓ *
Columbia Gas of Kentucky Inc.	NI	Gas	✓	✓	--	✓ *	--	--	--	✓ *	--	✓ *
Delta Natural Gas Co.	--	Gas	✓	✓	--	✓ *	--	--	--	✓ *	--	✓ *
Duke Energy Kentucky Inc.	DUK	Elec.	✓	✓	--	✓ *	✓	✓ *	--	--	--	✓ *
Duke Energy Kentucky Inc.	DUK	Gas	✓	✓	--	✓ *	--	--	--	--	--	✓ *
Kentucky Power Co.	AEP	Elec.	✓	✓	--	✓ *	✓	✓ *	--	--	--	✓ *
Kentucky Utilities Co.	PPL	Elec.	✓	✓	--	✓ *	✓	✓ *	--	--	--	✓ *
Louisville Gas & Electric Co.	PPL	Elec.	✓	✓	--	✓ *	✓	✓ *	--	--	--	✓ *
Louisville Gas & Electric Co.	PPL	Gas	✓	✓	--	✓ *	--	--	--	✓ *	--	✓ *
<b>LOUISIANA-NOCC</b>												
Entergy New Orleans LLC	ETR	Elec.	✓	✓	--	✓ *	--	✓ *	✓ *	--	✓	✓ *
Entergy New Orleans LLC	ETR	Gas	✓	--	--	--	--	--	--	--	--	✓ *
<b>LOUISIANA PSC</b>												
Atmos Energy Corp.	ATO	Gas	✓	--	--	✓ *	--	--	--	✓ *	--	--
CenterPoint Energy Resources Corp.	CNP	Gas	✓	--	--	✓ *	--	--	--	--	--	--
Cleco Power LLC	--	Elec.	✓	✓	--	✓ *	--	✓ *	✓ *	✓ *	✓ *	✓ *
Entergy Louisiana LLC	ETR	Elec.	✓	✓	--	✓ *	--	✓ *	✓ *	✓ *	✓ *	✓ *
Entergy Louisiana LLC	ETR	Gas	✓	--	--	✓ *	--	--	--	✓ *	--	--
Southwestern Electric Power Co.	AEP	Elec.	✓	✓	--	✓ *	--	✓ *	--	--	--	✓ *
<b>MAINE</b>												
Central Maine Power Co.	IBE	Elec.	--	*	--	✓ *	--	--	--	--	--	✓ *
Emera Maine	EMA	Elec.	--	*	--	--	--	--	--	--	--	--
Maine Natural Gas	IBE	Gas	✓	--	--	--	--	--	--	--	--	--
Northern Utilities, Inc.	UTL	Gas	✓	--	--	--	--	✓ *	--	✓ *	--	--
<b>MARYLAND</b>												
Baltimore Gas & Electric Co.	EXC	Elec.	--	*	✓	✓	--	--	--	--	*	✓ *
Baltimore Gas & Electric Co.	EXC	Gas	✓	✓	✓	--	--	--	--	✓ *	--	✓ *
Columbia Gas of Maryland Inc.	NI	Gas	✓	✓	--	✓ *	--	--	--	✓ *	--	✓ *
Delmarva Power & Light Co.	EXC	Elec.	--	*	✓	✓	--	--	--	--	*	--
Potomac Edison Co.	FE	Elec.	--	*	✓	--	--	--	--	✓ *	--	✓ *
Potomac Electric Power Co.	EXC	Elec.	--	*	✓	✓	--	--	--	--	*	✓ *
Washington Gas Light Co.	ALA	Gas	✓	✓	--	✓ *	--	--	--	✓ *	--	✓ *
<b>MASSACHUSETTS</b>												
Bay State Gas Co.	NI	Gas	✓	✓ *	✓	--	--	✓ *	--	✓ *	--	✓ *
Berkshire Gas Co.	IBE	Gas	✓	✓ *	--	--	--	✓ *	--	✓ *	--	✓ *
Boston Gas Co./Colonial Gas Co.	NGG	Gas	✓	✓ *	✓	--	--	✓ *	--	✓ *	--	✓ *
Fitchburg Gas & Electric	UTL	Elec.	--	*	✓ *	✓	✓ *	--	--	✓ *	✓	✓ *
Fitchburg Gas & Electric	UTL	Gas	✓	✓ *	✓	--	--	✓ *	--	✓ *	--	✓ *
Liberty Utilities (New England Natural Gas Co.) C	AQN	Gas	✓	✓ *	✓	--	--	✓ *	--	✓ *	--	✓ *
Massachusetts Electric Co.	NGG	Elec.	--	*	✓ *	✓	--	✓ *	✓ *	✓ *	✓	✓ *
NSTAR Electric Co.	ES	Elec.	--	*	✓ *	✓	--	✓ *	--	✓ *	✓	✓ *
NSTAR Gas Co.	ES	Gas	✓	✓ *	✓	--	--	✓ *	--	✓ *	--	✓ *

**Use of adjustment clauses (as of November 2019)**

State/ Company	Ultimate parent ticker	Type of service	Electric fuel/gas commodity/purch. power	Conserv. program expense	Type of adjustment clause									
					Decoupling		Renewables expense	Environmental compliance	New capital		RTO-related transmission expense	Other		
Full	Partial	Generation capacity	Generic infrastructure											
<b>MICHIGAN</b>														
Consumers Energy Co.	CMS	Elec.	✓	✓	--	*	--	✓	--	--	--	✓	*	--
Consumers Energy Co.	CMS	Gas	✓	✓	--	✓	*	--	--	--	✓	*	--	--
DTE Electric Co.	DTE	Elec.	✓	✓	--	*	--	✓	--	--	--	✓	*	--
DTE Gas Co.	DTE	Gas	✓	✓	--	✓	*	--	--	--	✓	*	--	--
Indiana Michigan Power Co.	AEP	Elec.	✓	✓	--	*	--	✓	--	--	--	--	--	✓
Michigan Gas Utilities Corp.	WEC	Gas	✓	✓	--	--	--	--	--	--	--	--	--	--
SEMCO Energy Gas Co.	ALA	Gas	✓	✓	--	--	--	--	--	--	✓	*	--	--
Upper Peninsula Power Co.	--	Elec.	✓	✓	--	*	--	✓	--	--	--	✓	*	--
Wisconsin Electric Power Co.	WEC	Elec.	✓	✓	--	*	--	✓	--	--	--	--	--	--
<b>MINNESOTA</b>														
ALLETE (Minnesota Power)	ALE	Elec.	✓	✓	--	--	✓	✓	--	--	--	✓	✓	✓
CenterPoint Energy Resources Corp.	CNP	Gas	✓	✓	--	✓	*	--	--	--	--	--	--	--
Minnesota Energy Resources Corp.	WEC	Gas	✓	✓	--	✓	*	--	--	--	✓	*	--	--
Northern States Power Co.-Minnesota	XEL	Elec.	✓	✓	--	✓	*	✓	✓	--	--	✓	✓	--
Northern States Power Co.-Minnesota	XEL	Gas	✓	✓	--	--	--	--	--	--	✓	*	--	--
Otter Tail Power Co.	OTTR	Elec.	✓	✓	--	--	✓	✓	--	--	--	✓	✓	--
<b>MISSISSIPPI</b>														
Atmos Energy Corp.	ATO	Gas	✓	✓	--	✓	*	--	--	--	✓	*	--	--
Entergy Mississippi LLC	ETR	Elec.	✓	✓	--	✓	*	--	✓	*	--	✓	✓	✓
Mississippi Power Co.	SO	Elec.	✓	✓	--	✓	*	--	✓	*	--	--	--	✓
<b>MISSOURI</b>														
Empire District Electric Co.	AQN	Elec.	✓	--	--	--	*	--	*	✓	*	--	✓	*
Empire District Gas Co.	AQN	Gas	✓	--	--	--	*	--	--	--	--	--	--	✓
Energy Metro Inc.	EVRG	Elec.	✓	✓	*	--	✓	*	✓	*	✓	*	✓	*
Energy Missouri West Inc.	EVRG	Elec.	✓	✓	*	--	✓	*	✓	*	✓	*	✓	*
Spire Missouri Inc. - East	SR	Gas	✓	--	--	--	✓	*	--	--	✓	*	✓	✓
Spire Missouri Inc. - West	SR	Gas	✓	--	--	--	*	--	--	--	✓	*	✓	✓
Liberty Utilities (Midstates Natural Gas) Corp.	AQN	Gas	✓	--	--	✓	*	--	--	--	✓	*	✓	✓
Union Electric Co.	AEE	Elec.	✓	✓	*	--	✓	*	✓	*	✓	*	✓	*
Union Electric Co.	AEE	Gas	✓	--	--	✓	*	--	--	--	✓	*	✓	✓
<b>MONTANA</b>														
MDU Resources Group Inc.	MDU	Elec.	✓	✓	--	--	--	--	--	--	--	--	--	✓
MDU Resources Group Inc.	MDU	Gas	✓	✓	--	✓	*	--	--	--	--	--	--	✓
NorthWestern Corp.	NWE	Elec.	✓	*	✓	--	--	✓	--	--	--	--	--	✓
NorthWestern Corp.	NWE	Gas	✓	✓	*	--	--	--	--	--	--	--	--	✓
<b>NEBRASKA</b>														
Black Hills Gas Distribution LLC	BKH	Gas	✓	--	--	--	--	--	--	--	✓	*	--	✓
Black Hills Nebraska Gas Utility Co. LLC	BKH	Gas	✓	--	--	--	--	--	--	--	✓	*	--	✓
Northwestern Corp.	NWE	Gas	✓	--	--	--	--	--	--	--	--	*	--	✓
<b>NEVADA</b>														
Nevada Power Co.	BRK.A	Elec.	✓	✓	--	✓	*	--	--	--	--	--	--	--
Sierra Pacific Power Co.	BRK.A	Elec.	✓	✓	--	✓	*	✓	--	--	--	--	--	--
Sierra Pacific Power Co.	BRK.A	Gas	✓	--	--	--	--	--	--	--	--	--	--	--
Southwest Gas Corp.	SWX	Gas	✓	--	✓	*	--	--	--	--	✓	*	--	✓
<b>NEW HAMPSHIRE</b>														
Liberty Utilities Co. (EnergyNorth Natural Gas)	AQN	Gas	✓	--	✓	*	--	--	--	--	✓	*	--	--
Liberty Utilities Co. (Granite State Electric)	AQN	Elec.	--	*	--	--	✓	*	--	--	✓	*	--	--
Northern Utilities Inc.	UTL	Gas	✓	--	--	✓	*	--	--	--	--	--	--	--
Public Service Co. of New Hampshire	ES	Elec.	✓	*	--	--	✓	*	--	--	✓	*	✓	--
Unitil Energy Systems Inc.	UTL	Elec.	--	*	--	--	✓	*	--	--	✓	*	--	--

**Use of adjustment clauses (as of November 2019)**

State/ Company	Ultimate parent ticker	Type of service	Type of adjustment clause											
			Electric fuel/gas commodity/purch. power	Conserv. program expense	Decoupling		Renewables expense	Environmental compliance	New capital		RTO-related transmission expense	Other		
					Full	Partial				Generation capacity	Generic infrastructure			
<b>NEW JERSEY</b>														
Atlantic City Electric Co.	EXC	Elec.	--	*	✓	*	--	--	✓	--	*	--	✓	*
Jersey Central Power & Light Co.	FE	Elec.	--	*	✓	*	--	--	✓	✓	*	--	✓	*
New Jersey Natural Gas Co.	NJR	Gas	✓	*	✓	*	✓	*	--	✓	*	--	✓	*
Elizabethown Gas Co.	SJI	Gas	✓	*	✓	*	--	✓	*	✓	*	--	✓	*
Public Service Electric & Gas Co.	PEG	Elec.	--	*	✓	*	--	--	✓	--	*	--	✓	*
Public Service Electric & Gas Co.	PEG	Gas	✓	*	✓	*	--	✓	*	✓	*	--	✓	*
Rockland Electric Co.	ED	Elec.	--	*	✓	*	--	--	✓	--	*	--	✓	*
South Jersey Gas Co.	SJI	Gas	✓	*	✓	*	✓	*	--	✓	*	--	✓	*
<b>NEW MEXICO</b>														
El Paso Electric Co.	EE	Elec.	✓		✓		--	--	--	--	--	--	✓	*
New Mexico Gas Co.	EMA	Gas	✓		✓		--	--	--	--	--	--	✓	*
Public Service Co. of New Mexico	PNM	Elec.	✓		✓		--	--	✓	*	--	--	✓	*
Southwestern Public Service Co.	XEL	Elec.	✓		✓		--	--	✓		--	--	✓	*
<b>NEW YORK</b>														
Brooklyn Union Gas Co.	NGG	Gas	✓			✓	--	--	✓	*	--	✓	*	--
Central Hudson Gas & Electric Corp.	FTS	Elec.	--	*	--	✓	--	--	✓	--	--	--	✓	*
Central Hudson Gas & Electric Corp.	FTS	Gas	✓		--	✓	--	--	✓	--	✓	*	✓	*
Consolidated Edison Co. of New York, Inc.	ED	Elec.	--	*	--	✓	--	✓	--	--	--	--	✓	*
Consolidated Edison Co. of New York, Inc.	ED	Gas	✓		--	✓	--	--	--	--	✓	*	✓	--
KeySpan Gas East Corp.	NGG	Gas	✓		--	✓	--	--	--	--	✓	*	✓	--
National Fuel Gas Distribution Corp.	NFG	Gas	✓		--	✓	--	--	--	--	✓	*	✓	--
New York State Electric & Gas Corp.	IBE	Elec.	--	*	--	✓	--	✓	--	--	--	--	✓	*
New York State Electric & Gas Corp.	IBE	Gas	✓		--	✓	--	--	--	--	✓	*	✓	*
Niagara Mohawk Power Corp.	NGG	Elec.	--	*	--	✓	--	✓	--	--	--	--	✓	*
Niagara Mohawk Power Corp.	NGG	Gas	✓		--	✓	--	--	--	--	✓	*	✓	--
Orange & Rockland Utilities, Inc.	ED	Elec.	--	*	--	✓	--	✓	--	--	--	--	✓	*
Orange & Rockland Utilities, Inc.	ED	Gas	✓		--	✓	--	--	--	--	✓	*	✓	--
Rochester Gas and Electric Corp.	IBE	Elec.	--	*	--	✓	--	✓	--	--	--	--	✓	*
Rochester Gas and Electric Corp.	IBE	Gas	✓		--	✓	--	--	--	--	✓	*	✓	*
<b>NORTH CAROLINA</b>														
Duke Energy Carolinas LLC	DUK	Elec.	✓		✓	*	--	--	*	✓	*	--	--	--
Duke Energy Progress LLC	DUK	Elec.	✓		✓	*	--	--	*	✓	*	--	--	--
Piedmont Natural Gas Co. Inc.	DUK	Gas	✓		✓	*	--	--	--	--	✓	*	--	--
Public Service Co. of North Carolina	D	Gas	✓		--	✓	*	--	--	--	✓	*	--	--
Virginia Electric & Power Co.	D	Elec.	✓		✓	*	--	--	*	✓	*	--	--	--
<b>NORTH DAKOTA</b>														
MDU Resources Group Inc.	MDU	Elec.	✓		--	--	--	--	✓	*	✓	*	✓	*
MDU Resources Group Inc.	MDU	Gas	✓		--	--	✓	*	--	--	--	--	✓	*
Northern States Power Co. -Minnesota	XEL	Elec.	✓		--	--	--	--	--	*	--	✓	*	✓
Northern States Power Co. -Minnesota	XEL	Gas	✓		--	--	*	--	--	--	--	--	✓	*
Otter Tail Power Co.	OTTR	Elec.	✓		--	--	--	--	✓	*	✓	*	✓	*
<b>OHIO</b>														
Cleve. Elec. Illum./Ohio Ed./Toledo Ed.	FE	Elec.	--	*	✓	*	--	✓	*	✓	--	✓	*	✓
Columbia Gas of Ohio Inc.	NI	Gas	--	*	✓		--	*	--	--	✓	*	✓	*
Dayton Power & Light Co.	AES	Elec.	--	*	✓	*	--	✓	*	✓	--	✓	*	✓
Duke Energy Ohio Inc.	DUK	Elec.	--	*	✓	*	--	✓	*	✓	--	✓	*	✓
Duke Energy Ohio Inc.	DUK	Gas	✓	*	--	--	*	--	--	✓	*	--	✓	*
East Ohio Gas Co.	D	Gas	--	*	✓		--	*	--	--	✓	*	✓	*
Ohio Power Co.	AEP	Elec.	--	*	✓	*	--	✓	*	✓	--	✓	*	✓
Vectren Energy Delivery of Ohio Inc.	CNP	Gas	--	*	✓		--	*	--	--	✓	*	✓	*

**Use of adjustment clauses (as of November 2019)**

State/ Company	Ultimate parent ticker	Type of service	Electric fuel/gas commodity/purch. power	Conserv. program expense	Type of adjustment clause							
					Full	Partial	Renewables expense	Environmental compliance	Generation capacity	Generic infrastructure	RTO-related transmission expense	Other
<b>OKLAHOMA</b>												
CenterPoint Energy Resources Corp.	CNP	Gas	✓	✓ * --	✓ *	--	--	--	--	--	--	✓ *
Oklahoma Gas & Electric Co.	OGE	Elec.	✓	✓ * --	✓ *	✓	✓ *	✓	✓ *	--	✓ *	✓ *
Oklahoma Natural Gas Co.	OGS	Gas	✓	✓ * --	✓ *	--	--	--	--	--	--	✓ *
Public Service Co. of Oklahoma	AEP	Elec.	✓	✓ * --	✓ *	✓	✓ *	✓	✓ *	--	✓	✓ *
<b>OREGON</b>												
Avista Corp.	AVA	Gas	✓	✓	✓ *	--	--	--	--	--	--	--
Cascade Natural Gas Corp.	MDU	Gas	✓	--	--	✓ *	--	✓ *	--	--	--	--
Idaho Power Co.	IDA	Elec.	✓	✓	--	--	✓	--	--	--	--	--
Northwest Natural Gas Co.	NWN	Gas	✓	✓ * --	✓ *	--	✓ *	✓ *	--	--	--	--
PacifiCorp	BRK.A	Elec.	✓	✓	--	--	✓	--	✓ *	--	--	✓ *
Portland General Electric Co.	POR	Elec.	✓	✓	--	✓ *	✓	✓ *	✓ *	--	--	--
<b>PENNSYLVANIA</b>												
Columbia Gas of Pennsylvania Inc.	NI	Gas	✓	* --	--	✓ *	--	--	--	--	✓ *	✓ *
Duquesne Light Co.	--	Elec.	--	* ✓ *	--	--	--	* --	--	--	✓ *	✓ *
Equitable Gas Co. LLC	--	Gas	--	* --	--	--	--	--	--	--	✓ *	✓ *
Metropolitan Edison Co.	FE	Elec.	--	* ✓ *	--	--	--	* --	--	--	✓ *	✓ *
National Fuel Gas Distribution Corp.	NFG	Gas	✓	* --	--	--	--	--	--	--	* --	✓ *
PECO Energy Co.	EXC	Elec.	--	* ✓ *	--	--	--	* --	--	--	✓ *	✓ *
PECO Energy Co.	EXC	Gas	✓	* ✓	--	--	--	--	--	--	✓ *	✓ *
Pennsylvania Electric Co.	FE	Elec.	--	* ✓ *	--	--	--	* --	--	--	✓ *	✓ *
Pennsylvania Power Co.	FE	Elec.	--	* ✓ *	--	--	--	* --	--	--	✓ *	✓ *
Peoples Natural Gas Co. LLC	--	Gas	✓	* --	--	--	--	--	--	--	✓ *	✓ *
PPL Electric Utilities Corp.	PPL	Elec.	--	* ✓ *	--	--	--	* --	--	--	✓ *	✓ *
UGI Central Penn Gas Inc.	UGI	Gas	✓	* --	--	--	--	--	--	--	✓ *	✓ *
UGI Penn Natural Gas Inc.	UGI	Gas	✓	* --	* --	--	--	--	--	--	✓ *	✓ *
UGI Utilities Inc.	UGI	Elec.	--	* ✓ *	--	--	--	* --	--	--	✓ *	✓ *
UGI Utilities Inc.	UGI	Gas	✓	* --	--	--	--	--	--	--	✓ *	✓ *
West Penn Power Co.	FE	Elec.	--	* ✓ *	--	--	--	* --	--	--	✓ *	✓ *
<b>RHODE ISLAND</b>												
Narragansett Electric Co.	NGG	Elec.	--	* ✓	✓	--	--	--	--	--	✓ *	✓ *
Narragansett Electric Co.	NGG	Gas	✓	✓ *	✓	--	--	✓ *	✓ *	--	✓ *	✓ *
<b>SOUTH CAROLINA</b>												
Duke Energy Progress LLC	DUK	Elec.	✓	✓	--	--	--	✓ *	--	* --	--	--
Duke Energy Carolinas LLC	DUK	Elec.	✓	✓	--	--	--	✓ *	--	* --	--	--
Piedmont Natural Gas Co. Inc.	DUK	Gas	✓	✓	--	✓ *	--	--	--	--	--	--
Dominion Energy South Carolina Inc.	D	Elec.	✓	✓	--	--	--	✓ *	✓ *	--	--	--
Dominion Energy South Carolina Inc.	D	Gas	✓	✓	--	✓ *	--	--	--	--	--	--
<b>SOUTH DAKOTA</b>												
Black Hills Power Inc.	BKH	Elec.	✓	✓ *	--	✓ *	✓ *	✓ *	✓	--	--	✓ *
MDU Resources Group Inc.	MDU	Elec.	✓	--	--	--	--	✓ *	--	--	✓ *	✓ *
MDU Resources Group Inc.	MDU	Gas	✓	✓	--	✓ *	--	--	--	--	--	--
Northern States Power Co. -Minnesota	XEL	Elec.	✓	✓ *	--	✓ *	--	✓	✓ *	✓ *	✓ *	✓ *
NorthWestern Corp.	NWE	Elec.	✓	✓	--	--	--	--	--	--	--	--
NorthWestern Corp.	NWE	Gas	✓	--	--	--	--	--	--	--	--	--
Otter Tail Power Corp.	OTTR	Elec.	✓	✓ *	--	--	✓ *	✓	✓ *	✓	✓	--
<b>TENNESSEE</b>												
Atmos Energy Corp.	ATO	Gas	✓	--	--	✓ *	--	--	--	--	--	✓ *
Chattanooga Gas Co.	SO	Gas	✓	--	✓ *	--	--	--	--	--	--	✓ *
Kingsport Power Co.	AEP	Elec.	✓	--	--	--	--	--	--	--	--	--
Piedmont Natural Gas Co. Inc.	DUK	Gas	✓	--	--	✓ *	--	--	--	--	✓	✓ *

**Use of adjustment clauses (as of November 2019)**

State/ Company	Ultimate parent ticker	Type of service	Type of adjustment clause											
			Electric fuel/gas commodity/purch. power	Conserv. program expense	Decoupling		Renewables expense	Environmental compliance	New capital		RTO-related transmission expense	Other		
					Full	Partial			Generation capacity	Generic infrastructure				
<b>TEXAS PUC</b>														
AEP Texas	AEP	Elec.	--	*	✓	--	--	--	--	--	✓	*	✓	*
CenterPoint Energy Houston Electric	CNP	Elec.	--	*	✓	--	--	--	--	--	✓	*	✓	*
Cross Texas Transmission	--	Elec.	--	*	--	--	--	--	--	--	✓	*	--	--
El Paso Electric Co.	EE	Elec.	✓	*	✓	--	--	--	--	*	✓	*	--	*
Electric Transmission Texas LLC	BRK.A/AEP	Elec.	--	*	--	--	--	--	--	--	✓	*	✓	--
Entergy Texas Inc.	ETR	Elec.	✓	*	✓	--	--	--	--	*	✓	*	--	✓
Lone Star Transmission LLC	NEE	Elec.	--	*	--	--	--	--	--	--	✓	*	--	--
Oncor Electric Delivery Co. LLC	SRE	Elec.	--	*	✓	--	--	--	--	--	✓	*	✓	*
Sharyland Utilities LLC	--	Elec.	--	*	--	--	--	--	--	--	✓	*	--	✓
Southwestern Electric Power Co.	AEP	Elec.	✓	*	✓	--	--	--	--	*	✓	*	✓	--
Southwestern Public Service Co.	XEL	Elec.	✓	*	✓	--	--	--	--	*	✓	*	✓	✓
Texas-New Mexico Power	PNM	Elec.	--	*	✓	--	--	--	--	--	✓	*	✓	*
Wind Energy Transmission Texas LLC	--	Elec.	--	*	--	--	--	--	--	--	✓	*	--	--
<b>TEXAS RRC</b>														
Atmos Energy Corp.	ATO	Gas	✓	*	--	--	✓	*	--	--	✓	*	--	✓
CenterPoint Energy Resources Corp.	CNP	Gas	✓	*	--	--	--	--	--	--	✓	*	--	--
Texas Gas Service Co. Inc.	OGS	Gas	✓	*	--	--	✓	*	--	--	✓	*	--	--
<b>UTAH</b>														
PacifiCorp	BRK.A	Elec.	✓		✓	--	--	✓	*	--	--	--	--	--
Questar Gas Co.	D	Gas	✓		✓	✓	*	--	--	--	✓	*	--	✓
<b>VERMONT</b>														
Green Mountain Power Corp.	--	Elec.	✓	*	--	--	--	--	--	--	--	--	--	--
<b>VIRGINIA</b>														
Appalachian Power Co.	AEP	Elec.	✓	*	✓	*	--	--	✓	*	--	*	✓	*
Columbia Gas of Virginia Inc.	NI	Gas	✓		✓	*	--	✓	*	--	--	✓	*	--
Kentucky Utilities Co.	PPL	Elec.	✓	*	--	*	--	--	*	--	--	*	--	--
Roanoke Gas Co.	RGCO	Gas	✓		--	--	✓	*	--	--	✓	*	--	--
Virginia Electric & Power Co.	D	Elec.	✓	*	✓	*	--	--	✓	*	✓	*	✓	*
Virginia Natural Gas	SO	Gas	✓		--	*	--	✓	*	--	--	✓	*	--
Washington Gas Light Co.	ALA	Gas	✓		--	*	--	✓	*	--	--	✓	*	--
<b>WASHINGTON</b>														
Avista Corp.	AVA	Elec.	✓	*	✓	--	✓	*	✓	--	--	--	--	--
Avista Corp.	AVA	Gas	✓		✓	--	✓	*	--	--	--	--	--	--
Cascade Natural Gas Corp.	MDU	Gas	✓		✓	--	✓	*	--	--	✓	--	--	--
Northwest Natural Gas Co.	NWN	Gas	✓		✓	--	--	--	--	--	--	--	--	--
PacifiCorp	BRK.A	Elec.	✓	*	✓	--	✓	*	✓	--	--	--	--	--
Puget Sound Energy Inc.	--	Elec.	✓		✓	--	✓	*	✓	--	--	--	--	--
Puget Sound Energy Inc.	--	Gas	✓		✓	--	✓	*	--	--	✓	--	--	--
<b>WEST VIRGINIA</b>														
Appalachian Power Co./Wheeling Power Co.	AEP	Elec.	✓		✓	--	--	✓	--	*	--	*	--	✓
Hope Gas Inc.	D	Gas	✓		--	--	--	--	--	--	✓	*	--	✓
Monongahela Power Co.	FE	Elec.	✓		✓	--	--	--	--	--	✓	*	--	✓
Mountaineer Gas Co.	--	Gas	✓		--	--	--	--	--	--	✓	*	--	✓
Potomac Edison Co.	FE	Elec.	✓		✓	--	--	--	--	--	✓	*	--	✓

**Use of adjustment clauses (as of November 2019)**

State/ Company	Ultimate parent ticker	Type of service	Type of adjustment clause													
			Electric fuel/gas commodity/purch. power	Conserv. program expense	Decoupling		Renewables expense	Environmental compliance	New capital		RTO-related transmission expense	Other				
					Full	Partial			Generation capacity	Generic infrastructure						
<b>WISCONSIN</b>																
Madison Gas & Electric Co.	MGEE	Elec.	✓	*	--	*	--	--	✓	--	*	--	*	--	✓	*
Madison Gas & Electric Co.	MGEE	Gas	✓	--	--	--	--	--	--	--	*	--	*	--	✓	*
Northern States Power Co. -Wisconsin	XEL	Elec.	✓	*	--	*	--	--	--	--	*	--	*	--	✓	*
Northern States Power Co. -Wisconsin	XEL	Gas	✓	--	--	--	--	--	--	--	*	--	*	--	✓	*
Wisconsin Electric Power Co.	WEC	Elec.	✓	*	--	*	--	--	✓	--	*	--	*	--	✓	*
Wisconsin Electric Power Co.	WEC	Gas	✓	--	--	--	--	--	--	--	*	--	*	--	✓	*
Wisconsin Gas LLC	WEC	Gas	✓	--	--	--	--	--	--	--	*	--	*	--	✓	*
Wisconsin Power & Light Co.	LNT	Elec.	✓	*	--	*	--	--	--	--	*	--	*	--	✓	*
Wisconsin Power & Light Co.	LNT	Gas	✓	--	--	--	--	--	--	--	*	--	*	--	✓	*
Wisconsin Public Service Corp.	WEC	Elec.	✓	*	--	*	--	--	--	--	*	--	*	--	✓	*
Wisconsin Public Service Corp.	WEC	Gas	✓	--	--	--	--	--	--	--	*	--	*	--	✓	*
<b>WYOMING</b>																
Black Hills Wyoming Gas	BKH	Gas	✓	✓	--	✓	*	--	--	--	✓	*	--	--	--	--
Cheyenne Light Fuel & Power Co.	BKH	Elec.	✓	✓	--	✓	*	✓	*	--	--	--	--	--	✓	*
MDU Resources Group Inc.	MDU	Elec.	✓	--	--	--	✓	*	--	--	--	--	--	--	--	--
MDU Resources Group Inc.	MDU	Gas	✓	--	--	✓	*	--	--	--	--	--	--	--	--	--
PacifiCorp	BRK.A	Elec.	✓	✓	--	--	✓	*	✓	*	--	--	--	--	✓	*
Questar Gas Co.	D	Gas	✓	--	--	✓	*	--	--	--	--	--	--	--	--	--

Key:  
 ✓ Adjustment clause exists for the company/state/operation.  
 \* See text for further information.

As of: Nov. 7, 2019.

## FOOTNOTES

### Alabama

*Electric fuel/gas commodity/purchased power* — The certificated new plant, or Rate CNP, adjustment clause for Alabama Power Co. provides for recovery of costs, excluding fuel, associated with certified purchased power agreements. Adjustments under the clause are subject to a staff and Alabama PSC review process that includes public hearings. Alabama Power also utilizes an energy cost recovery adjustment clause. Spire Alabama and Spire Gulf utilize a competitive fuel clause that allows the companies to immediately adjust prices to compete with any alternate fuel or gas supply source, with no loss of earnings margin.

*Decoupling* — Spire Alabama Inc. has a temperature adjustment rider, and Spire Gulf Inc. uses a weather impact normalization factor.

*Environmental compliance/generation capacity* — The Rate CNP adjustment clause used by Alabama Power provides for recovery of costs related to the commercial operation of certified generating facilities, certified purchased power agreements and environmental mandates. Recoverable environmental costs include applicable operation and maintenance expenses, depreciation and a return on capital beginning with 2005 investments, and a true-up of prior-period over/under-recovered amounts. Such costs are generally subject to PSC review but not to a full evidentiary hearing.

*Other* — The tariffs of the major energy utilities include adjustment provisions to reflect changes in income taxes and certain general and local taxes.

### Arizona

*Decoupling* — Arizona Public Service Co., or APS, utilizes a lost fixed cost recovery, or LFCR, mechanism designed to make the company whole for contributions to fixed-cost recovery that are lost due to customer participation in energy efficiency and distributed energy, such as rooftop solar, programs. The LFCR is capped at 1% of annual revenues, with any excess being deferred with interest to be recovered through a future annual adjustment.

A full decoupling mechanism, called the delivery charge adjustment, is in place for Southwest Gas Corp. The mechanism compares actual revenues with revenues authorized in the company's last general rate case.

Tucson Electric Power Co., or TEP, also operates under an LFCR mechanism designed to mitigate the revenue impact of lost sales associated with the ACC's energy efficiency standards and the distributed generation requirements under the commission's renewable energy standards. The annual adjustments are capped at 2% of retail revenues, with any excess to be deferred for future recovery. The LFCR mechanism also includes a provision through which TEP recovers lost revenues associated with "reliability must-run generation."

UNS Electric Inc. also utilizes an LFCR mechanism under which the company is permitted to implement annual rate adjustments related to any shortfall in recovery of fixed costs due to energy efficiency and distributed generation. The LFCR is not intended to recover fixed costs due to other factors, such as weather or general economic conditions and, as such, is not considered a full decoupling mechanism. The annual adjustments are to be capped at 1%, with any amount in excess of 1% to be deferred for future recovery.

UNS Gas Inc. is subject to an incentive-based LFCR plan that allows the company to attain greater amounts of fixed-cost recovery as it meets its commission-defined energy efficiency goals. Residential customers are permitted to opt out of the LFCR provisions if they agree to a rate structure that incorporates a higher basic service fixed monthly charge. The LFCR is capped at 1% of annual revenues, with any excess being deferred with interest to be recovered through a future annual adjustment.

Generic infrastructure — A surcharge is in place for Southwest Gas that pertains to a distribution pipeline replacement program associated with pre-1970 vintage steel pipes. Southwest Gas also has a mechanism in place that provides for the recovery of costs associated with programs through which the company replaces certain assets located on customers' properties with assets that are owned and operated by the utility.

Other — All utilities recover franchise fees through an adjustable line item on the monthly bill.

## Arkansas

Electric fuel/gas commodity/purchased power — Oklahoma Gas and Electric Co.'s, or OG&E's, energy cost recovery rider provides for the flow-through to ratepayers of 100% of the Arkansas jurisdictional proceeds from the sale of excess SO<sub>2</sub> emission allowances as well as a share of the value of "green credits" resulting from the monetized environmental benefits of generation at the company's Centennial Wind Farm equal to the portion of the project dedicated to serving the Arkansas jurisdiction. Entergy Arkansas LLC, or EA, utilizes a capacity cost recovery rider.

Decoupling — A generic framework, effectively a partial decoupling mechanism, is in place that provides for the electric and gas utilities to recover the lost contribution to fixed costs associated with energy efficiency-related usage reductions and to retain a portion of the net benefits related to these programs. The gas utilities have been using full decoupling mechanisms for several years.

Generation capacity — EA utilizes a capacity acquisition rider to recover costs associated with its investment in certain generation facilities and a capacity cost recovery rider to flow through the net costs related to the company's purchases of capacity to serve retail customers.

Generic infrastructure — EA uses a rider to recover costs associated with certain government-mandated investments. A gas main replacement program is in place for CenterPoint Energy Resources Corp., or CER, Black Hills Energy Arkansas Inc., or BHEA, and Arkansas Oklahoma Gas Corp., or AOG, under which the companies are authorized to recover the cost of replacing cast-iron and bare-steel gas mains and associated services through a mechanism. BHEA and CER also have an at-risk meter relocation program rider in place to permit timely recovery of the costs associated with moving meters from customers' property lines to the structures being served.

Other — EA uses a storm recovery charges rider to collect from ratepayers the amounts required to service its related securitization bonds. OG&E uses a "smart grid" rider. AOG, CER, EA, OG&E, BHEA and Southwestern Electric Power Co. have mechanisms in place to recover variations in certain taxes and franchise fees.

## California

Other — The California PUC on Oct. 24, 2019, authorized the state's largest electric utilities to impose a non-bypassable charge on ratepayers that will be matched equally with contributions from the utilities to help establish a \$21 billion wildfire insurance fund. The fund is intended to improve the financial stability of utilities against growing liabilities associated with wildfires in the state and promote electric service reliability, while also offering some protections to ratepayers. Consideration of the charge by the PUC was mandated by Assembly Bill 1054, a broad response by the state legislature to the growing threat of catastrophic wildfires. The charge will take effect in 2020 and replace an existing charge established by the Department of Water Resources after the state's 2001 energy crisis.

## Colorado

Decoupling — An adjustment clause is in place for Public Service Company of Colorado's, or PSCO's, gas operations that provides for recovery of lost revenues associated with customer participation in demand-side management programs.

For PSCO's electric operations, the Colorado PUC approved a pilot partial decoupling mechanism for the company's residential and small commercial customers in 2017. However, the mechanism is not yet in place. Annual adjustments under the mechanism are to be capped at 3% of class revenues.

Environmental compliance — A rider is in place for PSCO that provides for a cash return on construction work in progress, or CWIP, and addresses costs associated with the installation of environmental controls at the coal-fired Pawnee and Hayden facilities.

Generation capacity — Black Hills Colorado Electric Utility Inc., or BHCE, has a rider in place that reflects the company's investment in the gas-fired LM6000 plant at the Pueblo Generating Station. The rider was not rolled into base rates in the company's last rate case and is accorded a lower ROE than that established for BHCE's other Colorado jurisdictional operations. The rider is to remain in place until BHCE's next rate case. A similar rider is in place for PSCO that reflects the company's investment in the Cherokee natural gas combined-cycle plants and certain environmental controls at other facilities.

Generic infrastructure — PSCO and BHCE are permitted to recover through a transmission cost adjustment, or TCA, clause, prudent costs incurred in planning, developing and completing construction or expansion of transmission facilities for which the Colorado PUC has granted a certificate of public convenience and necessity or has otherwise determined to be necessary. Through the TCA, the utilities may earn a cash return on CWIP for investments in grid reliability or new or upgraded transmission facilities.

PSCO operates under a pipeline system integrity adjustment mechanism for its gas operations, through which the company recovers the costs associated with reliability improvements and compliance with certain federal safety regulations. The mechanism is to remain in place through 2021.

Other — PSCO utilizes an adjustment clause for steam service, under which it recovers the difference between its actual cost of fuel and the costs recovered in base rates.

PSCO shares with customers margins from generation-based short-term energy trading and proprietary trading through its fuel and purchased power adjustment mechanism. BHCE's fuel cost/purchased power expense cost adjustment mechanism includes off-system sales margin-sharing provisions.

## Connecticut

Electric fuel/gas commodity/purchased power — Connecticut Light and Power Co., or CL&P, and United Illuminating Co. no longer own generation, and both are permitted to recover, on a current basis, their full costs of providing generation service to those customers who do not choose an alternative supplier. These costs are flowed to ratepayers outside of a rate case.

Decoupling — State law mandates the adoption of decoupling mechanisms for electric and gas utilities. All of the state's energy utilities have decoupling mechanisms in place.

Generic infrastructure — A system expansion reconciliation mechanism is in place that permits the gas utilities to reconcile gas-expansion-related revenue annually between rate cases. Yankee Gas Services Co., Connecticut Natural Gas Co. and Southern Connecticut Gas Co. also utilize a distribution integrity management program mechanism that allows for recovery, between rate cases, of the costs associated with main replacement activity. A capital tracker is in place for CL&P for capital additions for system resiliency and grid modernization.

## Delaware

Electric fuel/gas commodity/purchased power — In conjunction with the implementation of retail competition, Delmarva Power and Light Co.'s electric fuel adjustment was largely eliminated. Power to meet standard offer service needs is now procured competitively and reflected in rates on a current basis.

Environmental compliance — Chesapeake Utilities Corp. has a rider in place to recover environmental costs associated with cleaning up former manufactured gas plants. Delmarva has a mechanism in place for its gas operations to recover costs associated with the clean-up of a manufactured gas plant.

Generic infrastructure — State law allows electric and natural gas utilities to implement a distribution system improvement charge. Similar to the surcharge used by water utilities that operate in the state, electric and natural gas utilities are allowed to add a charge to customer bills for replacement capital improvements made to the distribution system between rate cases.

Other — Chesapeake Utilities has a mechanism in place to recover variations in certain taxes and fees. Delmarva is permitted to recover the cost of relocation of aerial and underground facilities required or necessitated by the Department of Transportation or other government agency projects.

## District of Columbia

Electric fuel/gas commodity/purchased power — Fuel and purchased power adjustment clauses are permitted by law. However, with the onset of electric retail competition, Potomac Electric Power Co., or Pepco, divested most of its generation assets, and those that were not divested have since been retired. Pepco purchases the power to meet its standard offer service, or SOS, requirements via a competitive bidding process, and prices paid by SOS customers reflect the weighted average of the winning bids. SOS prices are adjusted on a current basis.

Decoupling — A bill stabilization adjustment mechanism is in place for Pepco that is designed to mitigate the volatility of revenues and customer bills caused by abnormal weather and customer participation in energy efficiency programs.

Renewables expense — The utilities' rates include a charge to fund the Sustainable Energy Trust Fund; amounts collected are remitted to the third-party Sustainable Energy Utility. Additionally, Pepco and Washington Gas Light Co., or WGL, have in place a charge to contribute to the Energy Assistance Trust Fund.

Generic infrastructure — State law provides for the district to issue bonds, finance or securitize a portion of the costs associated with a plan under which Pepco is to relocate certain above-ground distribution facilities below ground. In addition, the bill authorizes the District of Columbia PSC to approve a mechanism to achieve rate recognition of the unsecuritized portion of the project. Pepco has a mechanism in place to recover costs associated with work performed to underground certain electric power lines in the District. The utility also has a rider in place to recover costs imposed on it associated with work performed by the District Department of Transportation to place underground certain electric power lines in the District.

The PSC has approved a \$1 billion, 40-year accelerated pipeline replacement program for WGL and a related mechanism.

Other — Part of WGL's purchased gas charge provides for recovery of uncollectible expenses related to gas commodity charges. WGL is permitted to recover carrying costs on storage balances and over/under-collected gas costs through separate charges. Pepco and WGL have a mechanism in place to recover variations in certain taxes and fees.

## Florida

**Generation capacity** — Electric utilities are permitted to recover all prudently incurred site-selection and preconstruction costs, including carrying charges, for nuclear and integrated gasification combined-cycle, or IGCC, power plants through the capacity cost recovery clause, or CCRC. A cash return on construction work in progress for nuclear plant construction and uprates and IGCC construction is also reflected in the CCRC.

DEF is allowed to petition the commission for cost recovery for installation of solar generation capacity through a solar base rate adjustment, or SoBRA, mechanism. Tampa Electric Co., or TE, also has a SoBRA mechanism. The SoBRA replaced the generation base rate adjustment previously in place for TE. Florida Power & Light Co. is authorized to recover the costs of solar generation through a SoBRA upon each unit's commercial operation date if it is determined to be cost-effective and the costs are reasonable.

**Generic infrastructure** — Peoples Gas System utilizes a rider to recover the costs associated with accelerating the replacement of cast-iron and bare-steel distribution pipes on its system. The smaller gas utilities, Florida Public Utilities Co., the Florida division of Chesapeake Utilities, and Pivotal Utility Holdings Inc., use similar riders.

On June 27, 2019, Gov. Ron DeSantis signed into law legislation establishing a storm protection plan cost recovery clause for electric utilities in the state. The law allows utilities to seek more timely recovery of storm hardening investments outside a general rate case. The law requires utilities to submit to the PSC a 10-year plan explaining "the systematic approach the utility will follow to achieve the objectives of reducing restoration costs and outage times associated with extreme weather events and enhancing reliability." Such grid-hardening activities include burying transmission lines and vegetation management. The PSC in June 2019 opened a rulemaking to implement the legislation.

**Other** — Certain fees and taxes, such as franchise fees and gross receipts taxes, are recovered through a line item on customer bills, with the charge adjusted based on customer usage. The fuel and purchased power cost recovery clause reflects gains from economy energy sales. Electric utilities are provided a storm cost recovery mechanism, allowing them to petition the PSC to recover costs incurred from storms that exceed and/or deplete their storm reserve and to replenish the reserve.

## Georgia

**Electric fuel/gas commodity/purchased power** — As a result of the restructuring of the natural gas industry in Georgia, Atlanta Gas Light Co., or ATGL, no longer procures gas for its customers and, thus, is no longer subject to the purchased gas adjustment mechanism, or PGAM. The much smaller Liberty Utilities (Peach State Natural Gas) Corp., which is still regulated under a non-restructured framework, utilizes a non-automatic PGAM.

**Decoupling** — Liberty Utilities (Peach State Natural Gas) is subject to the Georgia rate adjustment mechanism, or GRAM, an alternative regulatory framework. The GRAM provides for a "revenue true-up," under which the company is to compare actual revenues to the previous revenue projection. ATGL operates under a straight fixed-variable rate design.

**Environmental compliance** — ATGL is authorized to recover cleanup costs related to former manufactured gas plant sites through an environmental response cost recovery rider, or ERCRR. Costs that are recoverable under the ERCRR include investigation, testing, remediation and/or litigation costs or other liabilities.

**Generation capacity** — A nuclear construction cost recovery tariff is in place for Georgia Power, or GP, that enables GP to earn a cash return on construction work in progress related to the Plant Vogtle Units 3 and 4 nuclear units. The tariff is revised annually.

**Generic infrastructure** — The PSC approved a strategic infrastructure development and enhancement, or STRIDE, program for ATGL in 2009, specifying infrastructure investments for a 10-year period. Every three years, ATGL is required to file its proposed program for the next three years for Georgia PSC review and approval. The incremental costs associated with the program's investment are included in base rates each Oct. 1.

## Hawaii

Generation capacity/generic infrastructure — As part of their alternative regulation frameworks, Hawaiian Electric Co. Inc., Hawaii Electric Light Co. Inc. and Maui Electric Co. Ltd. are permitted to recognize, between rate cases, rate base additions and increases in operations and maintenance expenses as well as certain depreciation and amortization expenses.

Other — An integrated resource planning, or IRP, cost recovery charge is in place for the state's utilities to facilitate recovery of the planning costs associated with the IRP process. A public benefit fund charge is in place for the large electric utilities. The charge addresses costs related to energy efficiency programs managed by a third-party administrator.

## Idaho

Electric fuel/gas commodity/purchased power — Avista Corp.'s power cost adjustment enables the company to defer, in a balancing account, for subsequent recovery/refund to customers, 90% of the difference between actual net power costs and the amount included in retail rates. Idaho Power Co., or IP, has a similar mechanism in place with a sharing provision under which annual rate adjustments reflect 95% of the cost variations associated with water supply for hydroelectric production, wholesale energy prices and retail load changes. An energy cost adjustment mechanism is in place for PacifiCorp that allows for the recovery of 90% of the difference between actual power costs and those included in rates.

Decoupling — IP operates under a decoupling mechanism referred to as a fixed cost adjustment, or FCA, which is designed to adjust the company's electric rates to recover fixed costs independent of the volume of energy sales. The FCA calculation reflects actual sales, and there is a 3% cap on annual rate increases that may be implemented under the mechanism. Unrecovered balances are to be carried forward to future years, with interest.

Avista Corp. operates under an electric and gas decoupling mechanism, also referred to as an FCA. There is a 3% annual cap on rate increases that may be implemented under the mechanism. Unrecovered balances are to be carried forward to future years, with interest.

## Illinois

Electric fuel/gas commodity/purchased power — Historically, the large electric utilities, namely Ameren Illinois Co., or AI, and Commonwealth Edison Co., or ComEd, were permitted to recover fuel costs and the energy component of purchased power costs through a monthly automatic fuel adjustment clause, or FAC. Their FACs were discontinued in conjunction with the implementation of electric industry restructuring. The power to meet the utilities' standard offer service, or SOS, obligations is now procured competitively. SOS costs and revenues are subject to an annual true-up mechanism. MidAmerican Energy Co. continues to use an FAC, as the company was not subject to all the provisions of the restructuring law and continues to own generation plants to serve its customers. The company's FAC allows recovery of the costs associated with purchasing emission allowances.

Decoupling — AI, Liberty Utilities (Midstates Natural Gas) Corp., Northern Illinois Gas Co., or NI-Gas, North Shore Gas Co. and Peoples Gas Light and Coke Co. have volume balancing adjustment riders in place that account for the impact on fixed cost recovery of energy efficiency efforts and weather.

Environmental compliance — AI uses a hazardous materials adjustment clause rider, largely to address asbestos-related litigation and remediation costs. AI, ComEd, Peoples, North Shore and NI-Gas use riders to recover costs related to the investigation and cleanup of manufactured gas plants.

Generic infrastructure — AI, ComEd, North Shore and NI-Gas have riders in place to recover certain costs associated with maintaining infrastructure in accordance with requirements imposed by local governments. In accordance with state law, the ICC is permitted to approve adjustment clauses for the local gas distribution companies to recover the costs associated with their infrastructure replacement programs, and the ICC has done so for Peoples, NI-Gas and AI.

Other — As permitted by state statutes, AI, ComEd, Liberty Utilities, NI-Gas, Peoples, North Shore and MidAmerican Energy utilize riders to facilitate recovery of variations in bad-debt costs. AI, ComEd, Liberty Utilities, MidAmerican Energy, Peoples, North Shore and NI-Gas have mechanisms in place to recover variations in certain taxes and franchise fees.

## Indiana

Decoupling — Indianapolis Power and Light Co.'s, or IP&L's, Indiana Michigan Power Co.'s, or IMP's, Duke Energy Indiana Co.'s, or DEI's, Northern Indiana Public Service Company's, or NIPSCO's, and Southern Indiana Gas and Electric's, or SIGECO's, electric energy efficiency riders provide for recovery of net lost revenues and shared savings, subject to commission approval.

Environmental compliance — State law allows the Indiana URC to authorize electric utilities to recover, through a rate adjustment mechanism, 80% of the costs associated with certain federally mandated emissions-control and transmission/distribution reliability projects. The remaining 20% of such costs are to be deferred for future recovery. Environmental cost recovery riders are in place for DEI, NIPSCO, IP&L, IMP and SIGECO. Through these riders, the utilities are permitted to recover the related operations and maintenance costs and depreciation expenses after the environmental facilities become operational as well as a return on the related investment. These riders also provide for recovery of the net costs associated with the purchase of emission allowance credits.

Generation capacity — With respect to DEI's Edwardsport integrated gasification combined-cycle plant, the company was authorized to earn a cash return on construction work in progress associated with the plant, which commenced commercial operation in 2013, through a rider. The company now recovers the plant's operating costs through the rider.

Generic infrastructure — State law allows the URC to authorize utilities to implement a transmission, distribution and storage system improvement charge rider to facilitate recovery of the costs associated with certain electric and gas infrastructure expansion projects, including those intended to improve safety or reliability, modernize the utility's system or improve an area's economic development prospects. The URC has approved such a rider for DEI, Indiana Gas Co., or IG, SIGECO's electric and gas operations and NIPSCO's electric and gas operations. IMP and NIPSCO use a rider to recover costs associated with certain government-mandated investments. SIGECO uses a rider to recover the costs associated with clean energy investments.

Other — DEI, IMP, IP&L, NIPSCO and SIGECO are permitted to share with ratepayers, through a rider, off-system sales margins that vary from the amount reflected in the companies' base rates. SIGECO utilizes a rider that reflects: municipal wholesale margins; net emission allowance costs; interruptible sales billing credits; non-fuel purchased power costs; and ratepayers' share of the difference between actual wholesale power margins and the level of such margins included in base rates. SIGECO and IG have riders in place for a portion of the incremental changes in unaccounted-for gas costs and the gas-cost component of bad debts. NIPSCO includes unaccounted-for gas costs in a rider.

## Iowa

Environmental compliance — Incremental revenues and costs associated with sales or purchases of emission allowances may be reflected in Interstate Power and Light Co.'s, or IP&L's, and MidAmerican Energy Co.'s energy adjustment clauses.

Other — Black Hills Iowa Gas Utility Co., IP&L and MidAmerican Energy have mechanisms in place to recover variations in certain taxes and franchise fees.

## Kansas

Conservation program expense/decoupling — State law allows electric and gas utilities to request KCC approval to implement energy efficiency-related cost-recovery mechanisms. Evergy Kansas Central Inc. and Evergy Kansas South Inc., formerly known as Westar Energy and Kansas Gas and Electric, respectively, participate in certain energy efficiency programs and recover program-related costs and related lost revenues through the companies' energy efficiency cost-recovery riders. Weather normalization adjustment clauses are in place for Atmos Energy Corp., Black Hills/Kansas Gas Utility Co., or KGU, and Kansas Gas Service Co., or KGS.

Generic infrastructure — Evergy Metro Inc., formerly known as Kansas City Power and Light Co., has a rider in place to recover the costs associated with certain projects to underground transmission and distribution infrastructure. State law permits local gas distribution companies to utilize a gas system reliability surcharge, or GSRS, mechanism to recover the costs associated with gas distribution system replacement projects between base rate proceedings, subject to annual true-up. Atmos, KGS and KGU have a GSRS in place.

Other — Although not an adjustment clause per se, the KCC is statutorily authorized to permit the utilities to file "abbreviated" rate cases within 12 months of a commission rate order in the utility's most recent base rate proceeding. Such filings must incorporate all the regulatory procedures, principles and rate-of-return parameters established by the KCC in that order.

Evergy Metro Inc., Evergy Kansas Central Inc., Evergy Kansas South Inc. and Empire District Electric Co. flow to ratepayers, through their energy cost adjustment mechanisms, off-system sales margins that vary from a base level and the net cost of emissions allowances. Evergy Metro Inc., Evergy Kansas Central Inc., Evergy Kansas South Inc., Empire, Atmos, KGU and KGS have mechanisms in place to recover variations in certain taxes and franchise fees. KGU recovers 100% of the gas cost component of bad-debt expense through the company's purchased gas adjustment clause filings.

## Kentucky

Decoupling — Weather normalization adjustment mechanisms are in place for Atmos Energy Corp., Columbia Gas of Kentucky Inc., or CGK, Delta Natural Gas Co., or Delta, Duke Energy Kentucky Inc.'s, or DEK's gas operations, and Louisville Gas and Electric's, or LG&E's, gas operations. DEK, LG&E, Atmos, CGK and Delta utilize energy efficiency riders to facilitate recovery of costs associated with gas energy efficiency programs; these riders include certain incentive provisions and permit recovery of lost revenues related to these programs. LG&E, DEK, Kentucky Utilities Co., or KU, and Kentucky Power Co., or KP, also utilize a similar mechanism for their electric businesses.

Environmental compliance — DEK, LG&E, KU and KP are permitted to recover the costs associated with environmental-related investments, including the cost of emission allowances, and earn a cash return on the related construction work in progress through a cost-recovery mechanism.

Generic infrastructure — Atmos, CGK, Delta and LG&E utilize riders to facilitate recovery of certain costs associated with their gas distribution infrastructure replacement programs.

Other — Off-system sales, or OSS, sharing mechanisms are in place for DEK's electric operations and for KP. 100% of DEK's emission allowance sales margins flow to ratepayers through the OSS mechanism. LG&E and KU allocate a portion of their OSS margins to ratepayers through the fuel adjustment clause proceedings. Atmos, CGK, Delta, DEK, KP, LG&E and KU have mechanisms in place to recover variations in certain taxes and franchise fees.

## Louisiana - NOCC

Decoupling — Entergy New Orleans LLC, or ENO's, fuel clause includes, only for legacy Entergy Louisiana Algiers service territory customers, a provision that provides for the recovery of the lost contribution to fixed costs associated with customer participation in energy efficiency programs.

Environmental compliance — An environmental adjustment clause is in place for ENO, through which the company recovers costs associated with the purchase and use of emission allowances.

Generation capacity — A rider is in place for ENO, through which the company reflects capacity costs associated with the Ninemile 6 plant.

Other — ENO uses a storm reserve rider for both its electric and gas operations.

## Louisiana PSC

Decoupling — Energy efficiency riders are in place for the state's electric utilities through which the companies recover costs associated with administering their programs and the lost contribution to fixed costs associated with customer participation in the programs. CenterPoint Energy Resources Corp., Atmos Energy and the gas operations of Entergy Louisiana LLC, or EL, utilize weather normalization adjustment mechanisms.

Environmental compliance — The electric utilities may use an environmental adjustment clause to recover from ratepayers the costs associated with the acquisition of emissions credits to comply with federal, state and local environmental standards. In addition, the utilities credit ratepayers through the clause any revenues associated with the sale or transfer of emission allowances.

Generation capacity — A component of EL's formula rate plan, or FRP, provides for the recovery of costs associated with new generation and capacity additions, including the Ninemile 6 facility. Cleco Power LLC's FRP includes provisions to reflect in rates certain capacity additions.

Generic infrastructure — Cleco's FRP includes provisions to reflect in rates certain infrastructure costs. As part of its rate stabilization clause, Atmos has a mechanism in place that provides for the recovery of costs associated with system integrity management programs. An infrastructure investment recovery rider is in place for EL's gas operations. EL's FRP includes a provision that reflects transmission capital additions in rates.

RTO-related transmission expense — EL and Cleco recover certain transmission-related costs through their FRPs.

Other — Customers' share of Southwestern Electric Power Co.'s, or SWEPCO's, off-system sales margins flow through the company's fuel adjustment clause. Economic development riders are in place for EL, Cleco and SWEPCO.

## Maine

Electric fuel/gas commodity/purchased power — Electric fuel adjustment clauses are no longer utilized due to the implementation of retail choice. For the most part, the state's electric utilities no longer own generation and, by law, are not allowed to provide standard offer service, or SOS. SOS providers are selected through a bidding process conducted by the Maine PUC. The full cost of SOS is recovered from ratepayers.

Decoupling — Central Maine Power Co., or CMP, is subject to a full decoupling mechanism, with any related annual adjustments capped at 2% of distribution revenues and any under-collections in excess of the capped to be deferred for future recovery. No cap is applied to the amount of over-collections to be returned to ratepayers.

Environmental compliance — Northern Utilities Inc. recovers manufactured gas site remediation expenses through an environmental remediation charge.

Generic infrastructure — In 2013, the PUC adopted a targeted infrastructure replacement adjustment, or TIRA, for Northern Utilities. The TIRA allowed for annual recovery of the company's investments in targeted operational and safety-related infrastructure replacement and upgrade projects, including the company's cast-iron replacement program. The TIRA had an initial term of four years and covered targeted capital expenditures in 2013 through 2016. In February 2018, the PUC approved an extension of the TIRA to allow for the recovery of investments in calendar years 2017 through 2024 or the year following the end of investment in eligible facilities under the company's cast-iron replacement program. Rate increases under the TIRA are subject to a 4% rate cap of weather-normalized distribution revenues. However, Northern Utilities is permitted to seek PUC approval to adjust the rate cap if the cap has been exceeded two times.

Other — CMP is permitted to recover variations in storm costs versus the levels included in base rates through a rider.

## Maryland

Electric fuel/gas commodity/purchased power — The electric fuel rate adjustment was eliminated, coincident with the implementation of competition in the provision of electric supply. The power to meet default service requirements is obtained via competitive bids and the costs are recovered from ratepayers on a current basis.

Decoupling — Columbia Gas of Maryland Inc., or CGM, and Washington Gas Light Co., or WGL, have revenue-normalization adjustment mechanisms in place for residential customers only that address customer participation in energy efficiency/conservation programs. However, the companies have separate weather normalization mechanisms in place that apply to all customer classes.

Generic infrastructure — The PSC has approved limited-term electric infrastructure mechanisms, known as grid resiliency charges. Such mechanisms were in place for Potomac Electric Power Co., or Pepco, Delmarva Power & Light Co. and Baltimore Gas and Electric, or BGE, but have since expired. A grid resiliency program and recovery mechanism was approved for Potomac Edison Co. in March 2019, covering the years 2019 through 2022.

State law permits the Maryland PSC to authorize gas utilities to implement riders to reflect costs associated with approved accelerated infrastructure replacement programs, establishing the Strategic Infrastructure Development and Enhancement, or STRIDE, program. The PSC has approved gas STRIDE programs and associated riders for BGE, WGL and CGM.

Other — BGE, CGM, Potomac Edison, Pepco and WGL have mechanisms in place to recover variations in certain taxes and fees.

## Massachusetts

Electric fuel/gas commodity/purchased power — Quarterly electric fuel and purchased power adjustments were eliminated coincident with the start of retail competition. Rates for basic service, known as default service, are market-based; such rates reflect the competitive contracts for basic service supply entered into by the distribution utility. The utilities are not at risk for fluctuations in market prices.

Conservation program expense/environmental compliance/other — The Massachusetts DPU has adopted energy efficiency reconciliation factors, or EERF, for the state's electric utilities. The EERF is a fully reconciling funding mechanism designed to recover the costs associated with the state's electric energy efficiency investments that are in excess of the level collected from other funding sources, including the systems benefits charge, proceeds from the forward capacity market and proceeds from the Regional Greenhouse Gas Initiative.

Local gas distribution adjustment clauses, or LDACs, are in place, with rate changes implemented on a semiannual basis, to reflect recovery of reconcilable gas distribution-related costs that are not included in base rates. Such expenses may include demand-side management costs, environmental response costs associated with manufactured

gas plants, residential arrearage management programs, low-income discounts, pension and related costs, the revenue requirement on targeted infrastructure recovery factors, gas system enhancement plan, or GSEP, investment, and attorney general expenses. LDACs are applicable to all firm customers.

*Renewables expense/generation capacity* — A solar cost adjustment tariff is in place for NSTAR Electric Co., Massachusetts Electric Co.'s, or ME's, and Fitchburg Gas and Electric Co.'s, or FG&E's, investments in certain solar generation facilities.

*Generic infrastructure* — Under state law, each of the LDCs files with the DPU a plan, called a GSEP to address aging or leaking natural gas infrastructure. The related costs/investments may be recovered through a GSEP provision.

Initially, LDCs that seek to participate in the program must file a plan that is designed to remove leak-prone cast-iron and unprotected steel piping from the LDC's system over a 20-year period. Participating LDCs must file by Oct. 1 of each year a list of projects the utility plans to complete during the upcoming construction season as well as proposed adjustments to distribution rates effective May 1 of the following year that will allow for recovery of program-related costs. The law specifies the criteria that the DPU must apply during its evaluation of the LDC's plan, and, if the plan meets those criteria, the Department must approve the plan and the adjusted distribution rates. On or before May 1 of each year during an LDC's program, the LDC must file final documentation for projects completed during the prior year to demonstrate substantial compliance with its plan in effect for that year and that project costs were reasonably and prudently incurred. The LDC's May 1 filing reconciles the estimated costs that were approved for recovery to the actual costs incurred during the year, and adjustments to distribution rates, for recovery or refund, are made accordingly. The ROE authorized in the company's most recent rate case is to be utilized in its GSEP. Annual changes in the revenue requirement eligible for recovery may not exceed 1.5% of the company's most recent calendar year total firm revenues, including gas revenues attributable to sales and transportation customers. Any revenue requirement approved by the DPU in excess of the cap may be deferred for recovery in the following year.

A capital cost adjustment mechanism is in place for FG&E's electric division that permits the company to recover costs associated with post-test-year capital additions. The mechanism contains an annual spending cap and a cap on annual rate increases under the mechanism of 1% of total revenues, with any amounts above the cap to be deferred for future recovery with carrying charges. To the extent that FG&E's capital expenditures exceed the amount it is allowed to recover through the mechanism, the company can seek to include such investment in rate base in its next base distribution rate proceeding.

The state's electric utilities utilize a cost recovery mechanism for grid modernization investments. NSTAR Electric also utilizes an annual reconciling factor for its resiliency tree work program.

*Other* — Recovery mechanisms for pension and post-employment benefits other than pensions are in place for ME, NSTAR Electric, NSTAR Gas, FG&E, Liberty Utilities (New England Gas), Boston Gas, Colonial Gas and Bay State Gas. Such costs are to be recovered through the LDAC reconciliation mechanism for gas utilities and a separate rate component for electric utilities.

## Michigan

*Decoupling* — The Michigan PSC had approved the implementation of electric revenue decoupling mechanisms, or RDMs, for Consumers Energy Co., or CE, Upper Peninsula Power Co., or UPP, and DTE Electric Co., or DTE E; however, the Michigan Court of Appeals has ruled that the PSC does not have statutory authority to approve RDMs for electric utilities. In addition, state law now permits the PSC to adopt electric revenue decoupling mechanisms only for small electric utilities.

State law permits a gas utility that spends at least 0.5% of its revenue on energy efficiency programs to institute an RDM. A gas RDM is currently in place for DTE Gas, or DTE-G, and CE.

Generic infrastructure — DTE-G utilizes an infrastructure recovery mechanism, or IRM, that enables it to earn a return of and on the costs associated with capital investment in the company's meter move-out, accelerated main replacement, and pipeline integrity programs. In a 2017 rate case decision, the PSC authorized CE's gas operations an IRM that enables the company to recover incremental capital investments beyond the test year in both 2018 and 2019, subject to reconciliation. However, CE withdrew its request for a continuation of the IRM in a gas rate case decided Sept. 26, 2019.

SEMCO Energy Gas Co. has a rider that provides recovery relating to its main replacement program which allows the company to accelerate the replacement of older portions of its system.

RTO-related transmission expense — CE, DTE-E and UPP recover transmission costs through the power supply cost-recovery mechanism.

Other — An economic development rider for certain large-use customers is in place for Indiana Michigan Power Co.

## Minnesota

Decoupling — Minnesota Energy Resources Corp., or MER, is operating under a pilot revenue decoupling mechanism, or RDM, that applies to the company's residential and small commercial/industrial rate classes. There is a 10% symmetrical cap on revenue changes generated through the application of the RDM, and the mechanism utilizes per-customer distribution revenues for each rate group.

CenterPoint Energy Resources Corp., or CER, operates under an RDM that applies to all customer classes except market-rate customers and is subject to a cap on annual adjustments under the mechanism that is equal to 10% of non-gas margin revenue after removing conservation costs.

Northern States Power Co.-Minnesota, or NSP-M has an electric RDM in place such that full decoupling is to be applied to residential and non-demand metered commercial customer classes subject to a 3% cap; an annual true-up with a 3% cap is to be utilized for the non-decoupled customer classes.

Generic infrastructure — NSP-M uses a gas utility infrastructure cost rider to recover the costs associated with certain gas infrastructure upgrades, especially those that are safety-related, outside of a general rate case.

MER uses a rider for costs associated with the company's Rochester Natural Gas Extension Project under the state's natural gas extension project statute.

## Mississippi

Decoupling — Atmos Energy utilizes a weather normalization adjustment rider that is in place during the months of November through April. Entergy Mississippi LLC, or EM, Mississippi Power Co., or MP, and Atmos have energy efficiency riders in place that provide for recovery of program costs and the lost contributions to fixed costs associated with such programs.

Environmental compliance — EM and MP are permitted to recover emission allowance expenses through their fuel adjustment clauses. MP utilizes an environmental compliance overview plan that establishes procedures to facilitate the Mississippi PSC's review of the company's environmental compliance strategy and provides for rate recovery of costs, including the cost of capital, associated with PSC-approved environmental projects on an annual basis outside of a base rate case.

Generic infrastructure — A rider designed to recover costs associated with certain system integrity projects is in place for Atmos.

Other — EM and MP have in place an ad valorem tax adjustment rider. A storm reserve rider is in place for EM.

## Missouri

Conservation program expense/decoupling — Legislation enacted in June 2018 provides for the Missouri PSC to approve decoupling mechanisms for the electric utilities that address the impact on revenues of variations in usage due to the effects of weather and conservation initiatives. Evergy Metro Inc., formerly known as Kansas City Power and Light Co., has in place a mechanism that provides for recovery of demand-side management program-related costs and a related “throughput disincentive” and may provide for a performance incentive based upon measurable, verified energy efficiency savings. Evergy Missouri West Inc., formerly known as KCP&L-Greater Missouri Operations Co., and Union Electric Co., or UE, have similar mechanisms in place for their electric operations. Local gas distribution companies may request PSC approval of a mechanism to reflect the impact on revenues of changes in customer usage due to variations in weather and/or conservation. Spire Missouri Inc. has a weather normalization rider in place for its east and west territories, as does Liberty Utilities (Midstates Natural Gas) Corp. UE uses a rider that is effectively a partial decoupling mechanism for residential and commercial customers.

Renewables expense — The PSC’s rules specify that electric utilities may file for a renewable energy standards rate adjustment mechanism, or RESRAM, to reflect prudently incurred costs or a pass-through of benefits received as a result of compliance with the state’s renewable energy standards. The RESRAM is to be capped at a 1% annual rate impact. Evergy Missouri West Inc. and UE have a RESRAM in place. Evergy Metro Inc. and Evergy Missouri West Inc. have a rider in place that allows certain customers to voluntarily obtain the generation output from renewable energy resources.

Environmental compliance — The PSC’s rules pertaining to environmental cost recovery mechanisms, or ECRMs, specify that a portion of the utility’s environmental costs may be recovered through an ECRM and a portion may be recovered through base rates. The annual recovery of these costs is to be capped at 2.5% of the utility’s Missouri gross jurisdictional revenues, less certain taxes. None of the utilities currently have an ECRM in place. However, Empire District Electric Co., Evergy Metro Inc., Evergy Missouri West Inc. and UE recover emission allowance costs through their fuel adjustment clauses, or FACs.

Generic infrastructure — Evergy Metro Inc., Evergy Missouri West Inc. and UE use a rider to recover costs associated with certain government-mandated investments. Liberty Utilities (Midstates Natural Gas) Corp., Spire Missouri Inc., Missouri Gas Energy, or MGE, and UE utilize an infrastructure system replacement surcharge to recover costs associated with certain gas distribution system replacement projects.

RTO-related transmission expense — Empire’s, Evergy Metro Inc.’s, Evergy Missouri West Inc.’s and UE’s FACs reflect variations in certain transmission-related costs.

Other — Off-system sales margins that vary from the levels included in base rates flow through the FACs of Empire, Evergy Metro Inc., Evergy Missouri West Inc. and UE. Liberty Utilities (Midstates Natural Gas), Empire, Evergy Metro Inc., Evergy Missouri West Inc., Spire Missouri Inc., MGE and UE have mechanisms in place to recover variations in certain taxes and franchise fees.

## Montana

Electric fuel/gas commodity/purchased power — In accordance with the state’s restructuring statutes, NorthWestern Corp. sold its generation assets and entered into purchased power contracts with competitive suppliers to serve provider-of-last-resort customers.

NorthWestern recovers supply costs through a power costs and credits adjustment mechanism that allows the company to adjust for differences between the recovered and actual amounts of the utility’s base power costs and credits, transitional costs and qualifying facility, or QF, costs. Regarding the base power costs and credits, 90% of the difference between the recorded and actual costs is rebated to customers when costs are less than revenues or recorded as a surcharge when costs are greater than the revenues. For transitional and QF costs, 100% of the difference is rebated to customers when costs are less than the revenues or surcharged to ratepayers when costs are greater.

Conservation program expense — NorthWestern's gas operations are able to recover costs associated with public purpose programs for cost-effective local energy conservation and low-income weatherization efforts.

Decoupling — MDU Resources Group Inc. utilizes a mechanism to recover the costs associated with gas conservation programs as well as to recoup revenues lost as a result of the programs.

Other — A competitive transition charge mechanism is in place for NorthWestern through which the company recovers electric restructuring-related out-of-market costs associated with certain purchased power contracts. A similar transition charge is in place for the company's gas operations. NorthWestern is also currently reflecting, in its gas commodity mechanism on an interim basis, costs related to certain natural gas production assets it recently acquired, pending a review by the PSC. For MDU, off-system sales margins are allocated to ratepayers and shareholders through the fuel clause. MDU recovers universal service program gas costs through a rider. MDU has a mechanism in place to recover variations in certain taxes and fees.

## Nebraska

Generic infrastructure — Gas utilities are allowed to apply for approval to use an infrastructure system replacement cost recovery, or ISRCR, rider. The ISRCR rider is to provide for timely recovery of certain capital investments outside of a general rate case and is to be capped at 10% of a utility's Nebraska-jurisdictional annual base revenue level. Following PSC approval, an ISRCR rider is to expire upon the earlier of the implementation of new rates stemming from the conclusion of a general rate case filed subsequent to the PSC's approval of the ISRCR rider or 60 months. Black Hills Nebraska Gas Utility has an ISRCR rider in place. Black Hills Gas Distribution, or BHGD, has a forward-looking system safety and integrity rider tariff and a system and integrity rider charge in place.

Other — BHGD uses a rider through which the company recovers external rate case expenses of the Office of the Public Advocate and the PSC that are assessed to the utility. All the utilities have line items on their bills through which variations in franchise fees are recovered.

## Nevada

Decoupling — The lost revenues associated with energy efficiency and conservation programs for Sierra Pacific Power and Nevada Power are recovered using a periodically adjusted balancing account, referred to as a lost revenue adjustment mechanism.

State law and PUC rules include provisions, such as revenue decoupling, to address disincentives to gas company participation in energy conservation programs. Southwest Gas has a decoupling mechanism in place.

Generic infrastructure — PUC rules allow for the establishment of a gas infrastructure replacement mechanism that will permit the utilities to recover between rate cases the revenue requirement associated with their gas infrastructure replacement projects. Southwest Gas currently has such a rider in place.

Other — Southwest Gas utilizes a mechanism designed to allow the company to recover from or refund to ratepayers the difference between actual bad-debt expenses and the level reflected in base rates.

## New Hampshire

Electric fuel/gas commodity/purchased power — Fuel and purchased power adjustment clauses had been utilized prior to the implementation of retail choice in the early 2000s. Public Service Company of New Hampshire, or PSNH, now recovers its power costs through a periodically adjusted default service rate, which reflects the revenue requirements of its generating assets and the cost of power purchases. It also includes a reconciliation of the difference between the company's costs and revenues for the previous period.

Liberty Utilities (Granite State Electric) and Unitil Energy Systems sold their generation as part of their restructuring agreements. These distribution-only companies supply default energy service through a request-for-proposals process supervised by the PUC.

Decoupling — In 2016, the PUC established an energy efficiency resource standard, or EERS, for New Hampshire's electric and gas utilities that became effective Jan. 1, 2018. The utilities implemented lost revenue adjustment mechanisms, or LRAMs, effective Jan. 1, 2017, to recover lost revenue due to the installation of energy efficiency measures. The PUC ordered the utilities to seek approval of a decoupling mechanism or other lost-revenue recovery mechanism as an alternate to the LRAM in their first distribution rate cases after the first EERS triennium, if not before.

In a rate case decided on April 17, 2018, for Liberty Utilities (EnergyNorth Natural Gas) Corp., the PUC adopted a full decoupling mechanism effective Nov. 1, 2018. The PUC said adoption of the decoupling mechanism “reduces the risk that Liberty will not recover its authorized revenue requirement” and “the stabilized cash flow should improve the company’s credit rating and thus its access to lower cost debt.” In light of the decoupling mechanism, the PUC ordered Liberty Utilities to file its next rate case using a historical test year no later than Dec. 31, 2020, to reset test-year revenues.

Generic infrastructure — A cast-iron/bare-steel rate adjustment mechanism is in effect for Liberty Utilities (EnergyNorth Natural Gas). Reliability enhancement and vegetation management programs and accompanying riders are in effect for Liberty Utilities (Granite State Electric), PSNH and Unitil Energy Systems. The programs provide for recovery of both the capital investment and increases to operation and maintenance expenses necessary for ongoing system reliability and vegetation management efforts.

## **New Jersey**

Electric fuel/purchased power/gas commodity — Both electric and gas customers may purchase power from competitive suppliers. Electric utilities procure power to meet customer basic generation service in the wholesale market and are permitted to flow these costs to ratepayers on a dollar-for-dollar basis through the basic generation service charge. For local gas distribution companies, basic gas supply service charges for non-switching residential and small-commercial customers are adjusted periodically to reflect fluctuations in gas commodity prices.

Conservation program expense — Costs associated with the NJ Clean Energy Program, a legislatively mandated initiative to encourage the initiation of energy efficiency and renewable energy programs, are included for recovery through the non-bypassable societal benefits charge on customer bills.

Decoupling — Weather normalization clauses are in place for Elizabethtown Gas and the gas operations of Public Service Electric and Gas, or PSEG. A version of a revenue decoupling mechanism is in place for New Jersey Natural Gas, or NJNG, and South Jersey Gas, or SJG. Operation of the mechanisms is contingent on the companies achieving certain capacity-reduction targets and earnings tests as specified in their BPU-approved conservation incentive programs.

Environmental compliance — The electric and gas utilities were permitted to recover through a rider costs, including a return on the related investment, associated with participation in the Regional Greenhouse Gas Initiative, including energy efficiency, demand response and solar initiatives. Participation in the initiative was suspended by former Gov. Chris Christie in 2011. Jersey Central Power and Light, or JCPL, Pivotal Utility Holdings, PSEG, NJNG and SJG are permitted to recover costs associated with former manufactured gas plant site cleanup outside of base rates through an adjustment mechanism. Such expenses are deferred and recovered over rolling seven-year periods, including carrying costs on the unamortized balance.

Generic infrastructure — Following Hurricane Sandy, the BPU directed utilities to develop mitigation and hardening infrastructure modernization plans and indicated that it would be open to innovative cost recovery mechanisms for such plans. The BPU subsequently approved modernization plans and related recovery mechanisms for several utilities: PSEG — the Energy Strong program; Atlantic City Electric Co., or ACE — PowerAhead; Rockland Electric —

Storm Hardening Program; NJNG — the Reinvestment in System Enhancement program and the Safe Acceleration and Facility Enhancement program; Elizabethtown Gas — Elizabethtown Natural Gas Distribution Utility Reinforcement Effort; and South Jersey Gas — the Storm Hardening and Reliability program.

In December 2017, the BPU adopted a rule outlining an infrastructure investment program, or IIP. The IIP framework allows for expedited rate treatment of BPU-approved infrastructure improvement programs on an ongoing basis. ACE, PSEG and JCPL have filed for approval of plans under the new rule.

*Other* — All utilities have mechanisms in place to recover variations in certain taxes and fees. In addition, electric utilities recover certain costs associated with low-income customer assistance programs and other public-policy driven initiatives through a societal benefits charge. Costs associated with the restructuring-related buyout/buy-down of electric non-utility generation contracts and other regulatory asset balances are recovered through non-bypassable charges.

## **New Mexico**

*Environmental compliance* — An SO<sub>2</sub> rider is in place for Public Service Co. of New Mexico, or PSNM, through which customers are credited their share of revenues from allowance sales.

*Generic infrastructure* — PSNM has riders in place that are designed to recover costs associated with undergrounding distribution projects in Rio Rancho and Albuquerque.

*Other* — All utilities have mechanisms in place to recover variations in certain state and local taxes and franchise fees.

## **New York**

*Electric fuel/gas commodity/purchased power* — Historically, all energy utilities used an electric fuel adjustment clause, or FAC. With electric industry restructuring, however, generation was divested, and the electric companies have largely transitioned from the FAC to a market power adjustment clause, or MAC, or a commodity adjustment clause, or CAC. The MAC/CAC allows the distribution utilities to flow through the costs of power procured to serve customers who have not selected an alternative supplier.

*Generic infrastructure* — The state's gas utilities use riders to recover certain costs associated with the replacement of leak-prone pipe above targeted miles established in rates.

*Environmental compliance* — Brooklyn Union Gas Co. has a site investigation and remediation, or SIR, mechanism in place. If actual SIR expenses exceed the rate allowance by \$25 million, the company can implement a surcharge for the recovery of up to 2% of its prior-year aggregate revenues.

*Other* — New York State Electric and Gas Corp., or NYSEG, Rochester Gas and Electric Corp., or RG&E, and Central Hudson Gas and Electric Corp., or CHG&E, have rate adjustment mechanisms, or RAMs, in place that return to or collect from ratepayers eligible deferrals and costs on a timely basis subject to a cap. For NYSEG and RG&E, RAM-eligible deferrals are property taxes, major storm, gas leak prone pipe, certain Reforming the Energy Vision, or REV, costs and fees, and for NYSEG only, electric pole attachments.

For CHG&E's electric and gas operations, the RAM will return or collect the net balance of reconciliations for the following cost elements: property taxes, major storm, gas leak-prone pipe, and certain REV costs and SIR. While the other major utilities do not have RAMs, all major New York utilities reconcile such major cost elements as pension and other post-employment benefits, property taxes and SIR and may defer for future recovery any costs not provided in current rates. Consolidated Edison Co. of New York Inc. recovers via the MAC incentives earned under its earning adjustment mechanisms as well as costs and incentives related to non-wires alternatives.

## North Carolina

Conservation program expense — State law authorizes the NCUC to approve an annual rider outside of a general rate case for electric utilities to recover all reasonable and prudent costs incurred for the adoption and implementation of demand-side management, or DSM, and energy efficiency, or EE, programs. The NCUC has authorized the major electric utilities to retain a percentage of the net savings associated with their DSM/EE programs.

Decoupling — Piedmont Natural Gas utilizes a margin decoupling mechanism/tracker that decouples the recovery of authorized margins from sales levels. Public Service Co. of North Carolina, or PSNC, also has such a mechanism in place.

Renewables expense — Costs incurred by electric utilities to procure renewable energy are recoverable through the fuel adjustment clause, or FAC, and the renewable energy portfolio standard, or REPS, rider, subject to certain caps. The avoided cost is recoverable through the FAC, and payments in excess of the avoided cost are recoverable through the REPS rider. Incremental operations and maintenance costs and annual research and development expenses up to \$1 million are also recoverable through the REPS rider. The cost of utility-owned renewable generating facilities is recovered through a combination of the FAC, the REPS rider and base rates.

Environmental compliance — The costs of certain reagents, such as limestone, used in reducing or treating electric power plant emissions may be recovered through the FAC.

Generic infrastructure — Piedmont Natural Gas uses an integrity management rider, or IMR, that allows the company to track and recover capital expenditures incurred to comply with federal pipeline safety and integrity requirements outside of a general rate case. PSNC uses an IMR to recover capital expenditures related to the company's transmission and distribution pipeline integrity management programs.

## North Dakota

Decoupling — MDU Resources', or MDU's, gas operations are subject to a weather normalization adjustment mechanism that is in effect for the winter heating season from Nov. 1 through May 1. Northern States Power-Minnesota, or NSP-M, operates under straight fixed-variable gas rates.

Generation capacity — MDU operates under a generation resource recovery rider through which it recovers costs associated with its Reciprocating Internal Combustion Engine Project at its Lewis & Clark Station, which will then be rolled into rate base during MDU's first rate case after Dec. 31, 2019.

In a recently approved rate case settlement, Otter Tail Power was authorized to establish a generation cost recovery rider to reflect costs associated with the utility's proposed Astoria Station and Merricourt Wind projects. Regarding the Hoot Lake plant, Otter Tail is to evaluate any retirement-related changes to costs of service and include them in the Generation Cost Recovery rider until they can be transferred into base rates.

Environmental compliance/generic infrastructure — Electric utilities are permitted to earn a cash return on construction work in progress through a separate rate adjustment mechanism for investments in transmission infrastructure and for federally mandated environmental compliance projects. Once the facilities achieve commercial operation, the facilities are reflected in rate base as part of a general rate proceeding, and the surcharge terminates. NSP is operating under a transmission cost recovery rider. MDU and Otter Tail are operating under separate transmission and environmental cost recovery riders.

Otter Tail transferred costs related to environmental reagents and emissions allowance expenses out of base rates and into a newly established energy adjustment rider. Additionally, Otter Tail transferred Coyote Station's, a coal-fired power plant, lime expense out of base rates and into the rider.

Generic infrastructure — Otter Tail, MDU and NSP-M recover costs associated with investments in renewable energy facilities through a renewable resource cost recovery rider.

*Other* — Through NSP-M’s fuel and purchased power adjustment, or FPPA, clause, the company shares equally with ratepayers prospective “non-asset-based” wholesale power margins, or WPMs. Through its FPPA clause, Otter Tail allocates ratepayers’ share of asset-based WPMs.

## Ohio

*Electric fuel/gas commodity/purchased power/generic infrastructure/other* — As a result of electric industry restructuring, utilities operate under electric security plans, or ESPs, that provide for the pass-through of the utilities’ cost of power to serve standard service offer customers.

The current ESPs for Cleveland Electric Illuminating Co., or CEI, Ohio Edison Co., or OE, and Toledo Edison Co., or TE, include delivery capital recovery riders that reflect a return of and on incremental distribution, sub-transmission and general plant-in-service investments not already included in the companies’ base rates.

Under Duke Energy Ohio’s, or DEO’s, current ESP, the company’s generation requirements for non-switching customers are procured and priced through a competitive bid process, or CBP. The related riders are fully bypassable for switching customers.

Ohio Power Co.’s, or OP’s, ESP allows the company to utilize riders for costs related to distribution investment, enhanced service reliability and storm damage recovery.

Dayton Power and Light Co.’s, or DP&L’s, ESP includes a distribution modernization rider that provides credit support to the company.

East Ohio Gas Co., or EOG, Columbia Gas of Ohio Inc., or CGO, and Vectren Energy Delivery of Ohio, or VEDO, conduct auctions for competitive suppliers to bid to directly serve customers. The companies had previously obtained their gas supplies through negotiated bilateral contracts, but under the current plan, the companies conduct an auction that allows suppliers to compete to supply portions of the gas supply requirements. Customers who do not choose a specific competitive supplier are randomly assigned a supplier based on the auction results. DEO is the only major gas utility in the state to continue to use the gas cost recovery clause.

*Conservation program expense/decoupling* — The ESPs for each of the Ohio electric utilities include a rider that allows for recovery of energy efficiency program costs and lost distribution margin associated with these programs. OP has a full decoupling mechanism in place for residential and small commercial customers. Ohio’s gas distribution companies, namely EOG, CGO, VEDO and DEO all operate under straight fixed-variable prices.

*Environmental compliance* — DEO recovers certain costs related to former manufactured gas plant sites through a rider.

*Generic infrastructure* — The current ESPs in place for CEI/OE/TE, DP&L and DEO include riders that reflect costs associated with incremental distribution-related investments not already included in base rates. OP’s ESP allows the company to utilize riders for costs related to distribution investment. CGO has a rider in place for infrastructure replacement costs. VEDO has riders in place through which it recovers the costs associated with certain infrastructure replacement investments. EOG has riders in place to recover costs related to its pipeline infrastructure replacement program and its installation of automated meter-reading equipment. DEO uses a rider to recover the costs associated with its gas delivery infrastructure improvement program.

*Other* — DEO has a rider in place for incremental vegetation management costs. All utilities have mechanisms in place to recover variations in certain taxes and fees. CEI/OE/TE, OP, DP&L, DEO, EOG, CGO and VEDO have riders in place to recover variations in uncollectible expense.

## Oklahoma

Conservation program expense/decoupling — Oklahoma Gas and Electric Co., or OG&E, and Public Service Co. of Oklahoma, or PSO, utilize riders to recover the costs associated with energy efficiency programs, related lost revenues and certain incentives. CenterPoint Energy Resources Corp., or CER, and Oklahoma Natural Gas Co., or ONG, utilize a weather normalization mechanism and also recover the costs associated with their energy efficiency programs and certain incentives through their performance-based ratemaking plan riders.

Environmental compliance/other — OCC rules permit the commission to approve requests to recover costs associated with environmental compliance through a rider. OG&E's storm cost recovery rider includes provisions that require a credit to ratepayers for the Oklahoma jurisdictional portion of net revenues received from the sale of SO2 credits.

Generic infrastructure — OG&E uses a rider for the Oklahoma jurisdictional costs associated with certain transmission projects that have been approved by the Southwest Power Pool and that have been completed by the company.

Other — OG&E uses a storm cost recovery rider to reflect differences between the level of storm costs reflected in base rates and the level of such costs actually incurred in a given year. Ratepayers' share of off-systems sales margins flow through PSO's fixed-cost adjustment rider. OCC rules permit the commission to allow utilities to recover security/safety-related costs through a surcharge/rate rider. OG&E, PSO, CER and ONG have a mechanism in place to recover variations in certain taxes and franchise fees. ONG has a rider in place for costs related to lost, used and unaccounted-for gas.

## Oregon

Conservation program expense — Northwest Natural Gas, or NWNG, is authorized to recover costs associated with its energy efficiency program for industrial customers.

Decoupling — An electric revenue decoupling mechanism is to be in effect for Portland General Electric, or PGE, through 2022. The mechanism is designed to provide for the recovery of the revenue shortfall resulting from reduced consumption patterns associated with residential and certain commercial customers' conservation efforts.

NWNG uses a decoupling mechanism designed to counteract the impact on revenues of changes in average residential and commercial customers' consumption patterns due to conservation efforts. The company has a separate weather-adjusted rate mechanism in place for these customers.

Cascade Natural Gas, or CNG, has a partial decoupling mechanism, which adjusts for both conservation-related demand reductions and deviations from normal weather. The mechanism has no set termination date but is currently under review.

A full decoupling mechanism is in place for Avista's residential and commercial rate groups. The mechanism was reviewed by the PUC in Avista's general rate case that concluded in October 2019 (Docket No. UG-366).

Environmental compliance — CNG employs an environmental remediation cost adjustment to recover costs for a former manufactured plant. NWNG utilizes a site remediation and recovery mechanism to provide for recovery of costs incurred and that continue to be incurred for environmental remediation of legacy manufactured gas plant operations. PGE has an environmental remediation cost recovery adjustment that recovers the costs and revenues associated with the Portland Harbor Superfund site and other environmental obligations.

Generation capacity — PacifiCorp is authorized to recover costs associated with its Lake Side 2 generation investment and interconnection as well as costs to construct or otherwise acquire renewable generation facilities and the associated transmission. PGE is authorized to recover the revenue requirements of qualifying company-owned or contracted new renewable energy resource and energy storage projects associated with renewable energy resources not otherwise included in rates.

Other — PacifiCorp collects a surcharge to fund costs of removing dams on the Klamath River.

## **Pennsylvania**

Electric fuel/gas commodity/purchased power/renewables expense — In conjunction with electric industry restructuring, the electric energy cost rate was eliminated. Generation required to meet provider-of-last-resort, or POLR, obligations for each company is competitively procured and priced. Renewable resource requirements are included in this process. Prices for POLR service are adjusted on a current basis as each procurement occurs.

A non-automatic procedure is in place for recovery of fluctuations in gas costs. Such filings may be made no more often than once every 12 months; however, quarterly updates to reflect unrecovered gas costs from the prior quarter are permitted.

Conservation program expense — State law and PUC rules allow electric distribution utilities to recover on an expedited basis through an adjustment clause outside of a rate case the costs associated with legislatively mandated/PUC-approved energy conservation programs. Such programs are in place for Duquesne Light, Metropolitan Edison, or MetEd, Pennsylvania Electric, or Penelec, Pennsylvania Power, or PPC, West Penn Power, or WPP, PECO Energy, PPL Electric Utilities, or PPL-E, and UGI Utilities electric operations, or UGIU Electric.

Decoupling — Columbia Gas of Pennsylvania, or CGP, has a weather normalization adjustment in place for residential customers.

Generic infrastructure — State law allows the PUC to approve automatic adjustment clauses to recognize, between general rate cases, utility investments in certain infrastructure projects. Distribution system improvement charges, or DSICs, have been approved for CGP, Duquesne Light, PECO's gas and electric operations, PPL-E, Peoples Natural Gas, Equitable Gas, UGI Central Penn Gas, UGI Penn Natural Gas, Peoples TWP, MetEd, Penelec, PPC and WPP. National Fuel Gas is the only RRA-covered company that does not use a DSIC. Adjustments occur quarterly, unless the company is found to be earning in excess of the ROE set in the company's last rate case or of a generic benchmark set by the PUC if the company's most recent ROE authorization was more than three years prior to the proposed adjustment.

MetEd, Penelec, PPC and WPP recover costs associated with smart-meter deployment plans through a rider between rate cases.

Other — All utilities have mechanisms in place to recover variations in certain taxes and franchise fees. PECO recovers nuclear decommissioning costs through a rider. PPL-E has an expedited cost recovery mechanism in place to address storm restoration costs that vary from certain levels. PPL-E recovers universal service program costs through a rider. MetEd, Penelec, PPC and WPP also have riders in place for universal service and uncollectible costs.

## **Rhode Island**

Electric fuel/gas commodity/purchased power — Prior to the implementation of electric industry restructuring, automatic fuel adjustment clauses were used by the utilities. In accordance with the restructuring law and PUC-approved restructuring plans, investor-owned utilities are to provide standard offer service to customers who do not select an alternative provider through 2020. The cost of providing this service is fully recoverable, with such rates reset on a periodic basis.

Conservation program expense/environmental compliance — Narragansett Electric Co., or NE, utilizes an annual distribution adjustment clause, or DAC, for its gas operations to recover costs associated with energy efficiency programs and environmental response.

Generic infrastructure — State law permits NE to submit for PUC approval annual infrastructure spending plans for its electric and gas operations and recovery of expenses associated with an inspection and maintenance program and a vegetation management program.

*Other* — A pension adjustment mechanism is in place for NE's electric and gas operations that reconciles actual pension and other post-employment benefits expense to the level reflected in base rates. NE recovers electric commodity-related uncollectibles, including associated administrative costs, through its standard offer service rate. In addition, the company recovers transmission-related bad debt through a transmission-related uncollectible mechanism. NE reflects credits associated with margins from non-firm sales and transportation, earnings sharing and service quality adjustments through the DAC.

## South Carolina

*Decoupling* — Weather normalization adjustments are in place for the gas operations of South Carolina Electric and Gas, or SCE&G, and Piedmont Natural Gas that apply only to residential and small commercial customers.

*Environmental compliance* — Emissions allowance costs and the cost of certain materials used in reducing or treating electric power plant emissions are reflected in the fuel clause.

*Generation capacity* — The South Carolina Legislature on June 28, 2018, overrode Gov. Henry McMaster's veto of House Bill 4375, which among other things, prospectively repeals the state's Base Load Review Act, or BLRA; thus, no future projects could fall under its purview.

Previously, under the BLRA, the PSC was permitted to issue a BLRA order, which constituted an upfront determination that a generating plant is "used and useful" and that associated proposed capital expenditures are prudent and ultimately should be reflected in rates as long as the plant is constructed within the estimated construction schedule, including contingencies and capital budget. For nuclear plants only, if requested by a utility, the BLRA order would specify initial revised rates reflecting the utility's pre-construction and development costs. At least one year after its filing of a BLRA application, and no more frequently than annually thereafter, the utility was permitted to file for PSC approval of revised rates reflecting a cash return on a nuclear plant's construction work in progress, or CWIP.

The PSC had already issued a BLRA order for SCE&G's two-unit expansion of its V.C. Summer nuclear plant, and the company is currently earning a cash return on part of the plant's CWIP. However, in July 2017, SCE&G ceased construction and abandoned the two new Summer units. In addition, H.B. 4375 reduced the amount in rates that SCE&G had been collecting under the BLRA. As part of its agreement to acquire SCE&G parent company SCANA Corp., Dominion Energy Inc. agreed to provide refunds and restitution to SCE&G customers associated with the Summer project of \$2 billion over 20 years. SCE&G will exclude from rate recovery \$2.4 billion of costs related to the project. SCE&G also will not file an application for a general rate case with the South Carolina Public Service Commission with a requested effective date earlier than January 2020 under the merger agreement.

## South Dakota

*Conservation program expense/decoupling* — A DSM cost adjustment mechanism is in place for Northern States Power-Minnesota, or NSP-M, through which the company recovers costs associated with DSM/efficiency programs. The mechanism includes a 30% bonus to account for lost margins related to DSM/efficiency measures. Black Hills Power, or BHP, operates under an efficiency adjustment rider through which the company recovers the cost of its energy efficiency programs as well as any lost revenues associated with the programs. Weather impacts are not reflected in the mechanism.

MDU Resources Group Inc.'s gas operation has a mechanism in place which allows the utility to recover costs of a portfolio of conservation programs, including a DSM financial performance incentive. The gas utility also utilizes a weather normalization mechanism.

Otter Tail Power has a mechanism in place that recovers costs associated with its investment in energy efficiency programs.

Renewables expense — Otter Tail has a rider in place, on a voluntary basis, which allows customers to purchase wind-generated energy in 100-kWh blocks. Black Hills Power utilizes a voluntary renewable energy tariff for commercial retail customers with an aggregate usage of 300,000 kWh or more per year and for government accounts desiring renewable energy.

Environmental compliance — MDU is permitted to recover costs incurred by complying with federal and state environmental mandates. Costs may include capital costs and operating expenses incurred for environmental improvements to existing generating facilities.

Generation capacity/generic infrastructure — NSP-M utilizes an infrastructure rider to recover costs associated with certain generation, transmission and distribution capital additions once the related facilities have achieved commercial operation and to reflect certain changes in property taxes. NSP-M also has a transmission cost recovery rider in place.

MDU's electric operation has in place a transmission cost recovery rider in which the utility is permitted to recover the net balance of the capital and operating costs and revenue credits of transmission-related expenses and revenues. Costs to be recovered under the transmission recovery shall include new or modified transmission facilities, such as transmission lines and other transmission-related equipment such as substations, transformers and other equipment constructed to improve the power delivery capability or reliability of the transmission system, as well as federally regulated costs charged to or incurred by MDU to increase regional transmission capacity or reliability that are not reflected in the rates established in the most recent general rate case. MDU also has an infrastructure rider in place that recovers the costs associated with infrastructure investments.

Otter Tail has a mechanism in place that allows the utility to share back revenues associated with new load growth and to recover costs associated with new generation facilities.

Other — Through its fuel and purchased power adjustment clause, BHP credits ratepayers a portion of the margins from renewable energy credit sales and power marketing income. NSP-M operates under certain wholesale power margin sharing provisions and allocates ratepayers' share of any such margins through its fuel clause. NSP-M also credits ratepayers a portion of revenues generated from renewable energy credit sales through its fuel clause.

## Tennessee

Decoupling — Weather normalization adjustment, or WNA, clauses are in place for Atmos Energy and Piedmont Natural Gas, or PNG. A full revenue decoupling mechanism is in place for Chattanooga Gas, or CG's, residential and small commercial customers. A WNA rider is also in place for CG's industrial, commercial and other customers that do not operate under the decoupling mechanism.

Other — Atmos Energy, PNG and CG utilize riders related to capacity management and release, off-system sales, and capacity assignment.

Atmos and CG operate under riders through which the companies share with ratepayers gross profit margin reductions associated with large industrial or commercial customers that are served under negotiated contracts and are able to bypass the utilities' distribution system. Through its purchased gas adjustment rider, PNG recovers margin losses associated with bypassable customers being served under negotiated contracts.

## Texas PUC

Electric fuel/purchased power — For vertically integrated electric utilities in territories that have not implemented retail competition, fuel and purchased power costs are recovered through a separate fuel factor, that may be adjusted, following hearings, based on projected fuel costs for the period the fuel factor will be in effect, subject to true-up. Capacity costs associated with purchased power are recovered through base rates, while energy costs are reflected in the fuel factor.

For companies that implemented retail competition, i.e., within the Electric Reliability Council of Texas, the transmission and distribution utilities do not participate in generation procurement, and fuel/purchased power adjustment clauses were eliminated.

*Generation capacity* — Legislation enacted in June 2019 allows vertically integrated utilities, i.e., El Paso Electric, or EPE, Entergy Texas, Southwestern Electric Power, or SWEPCO, and Southwestern Public Service, or SWPS, to seek recovery of new generation investment through a limited-issue rider.

*Generic infrastructure* — The PUC may approve periodic distribution cost recovery factors, or DCRFs for both vertically integrated and transmission-and-distribution-only electric utilities. The PUC may prohibit a utility from implementing a rate change under the mechanism if the commission determines that the utility is earning in excess of its authorized return prior to the adjustment. Amounts approved for recovery under the DCRF are to be rolled into base rates in the utility's subsequent rate case. DCRFs have been approved for AEP Texas, CenterPoint Energy Houston Electric, EPE, Entergy Texas, Oncor Electric Delivery, Sharyland Utilities, SWEPCO and SWPS.

State law permits the utilities to recover costs associated with deployment of advanced metering technology through a separate surcharge, and the PUC has for the most part approved such mechanisms when requested. Advanced metering surcharges are in place for AEP Texas, CenterPoint, Entergy Texas, Oncor Electric Delivery and Texas-New Mexico Power, or TNMP.

For the service territories in which retail competition has been implemented, i.e., within ERCOT, transmission service providers are permitted to file up to twice annually, outside of a base rate case, to implement rate changes to reflect new transmission facilities through an interim transmission cost-of-service, or TCOS, mechanism. TCOS mechanisms have been approved for AEP Texas, CenterPoint, Oncor and TNMP, as well as transmission-only entities such as Cross Texas Transmission, Electric Transmission of Texas, Lone Star Transmission, Sharyland Utilities and Wind Energy Transmission Texas.

Utilities that have not implemented retail competition may file once annually between rate cases for adjustments to reflect new investment in transmission facilities. This procedure is known as a transmission cost recovery factor, or TCRF, mechanism.

*RTO-related transmission expense* — Transmission revenue requirements established through either base rates or the TCOS procedure are allocated among the distribution service providers, or DSPs, within ERCOT based on PUC-approved load-based allocation factors established under the commission's "transmission matrix." The DSPs are permitted to adjust rates twice annually to reflect changes in wholesale transmission costs assigned to the DSP by ERCOT. These changes flow through a mechanism also known as a TCRF, which is in place for AEP Texas, CenterPoint, Oncor and TNMP.

In a 2018 rate case, Entergy Texas proposed a rider for the recovery of costs assigned to the company's retail business by the Federal Energy Regulatory Commission, but the proposal was withdrawn as part of a settlement.

*Other* — A rider is in place for Entergy that allows for recovery of variations in storm costs versus the level included in base rates on a current basis. CenterPoint, Entergy and TNMP have adjustment clauses in place to reflect changes in municipal franchise fees. EPE has a rider in place to recover lost revenue associated with the provision of discounted service to military bases, while SWPS recovers lost revenue associated with the provision of discounts to state universities through a rider.

## **Texas RRC**

*Gas commodity* — Purchased gas cost recovery factors, or GCRFs, may be implemented under certain circumstances. The RRC has approved the use of GCRFs for Atmos Energy, Texas Gas Service, or TGS, and CenterPoint Energy Resources, or CER.

*Decoupling* — Weather normalization adjustments are in place for Atmos and TGS.

Generic infrastructure — Surcharge mechanisms for gas reliability infrastructure program, or GRIP, costs are in place for CER's Houston, South Texas, Beaumont/East Texas and Texas Coast Divisions. A similar mechanism is in place for most of the cities served by Atmos' Mid-Tex and West Texas Divisions. Operations in the City of Dallas and its environs, which are part of the Mid-Tex Division, are subject to a Dallas Annual Rate Review Mechanism that takes into account several factors including new infrastructure investment. The remaining Mid-Tex Division is subject to an annual formula ratemaking tariff, known as the annual Rate Review Mechanism, or RRM, which takes into account several factors including new infrastructure investment. Certain cities within the West Texas division are subject to a similar tariff, while others, such as Amarillo and Lubbock, operate with annually updated GRIP mechanisms. An annual cost-of-service adjustment mechanism, similar to the RRM, is in place for TGS.

Other — Gas-commodity-related uncollectibles are recovered through Atmos' GCRF.

## Utah

Decoupling — A weather normalization adjustment, or WNA, is in place for Questar Gas; however, customers may elect not to participate in the WNA. Questar Gas also utilizes a conservation-enabling tariff, or CET, which decouples non-gas revenues from the volume of gas used by general service, or GS customers. Under the CET, a margin-per-customer target is specified for each month, with non-weather-related differences to be deferred and recovered from, or refunded to, GS customers via periodic rate adjustments. Annual CET accruals are limited to 5% of base distribution non-gas, or DNG, revenues. Per a settlement adopted in the PSC's review of Dominion Resources' acquisition of Questar Gas parent Questar Corp., incremental CET accruals that exceed the 5% cap do not earn interest, as had previously been permitted. The amortization of CET accruals is limited to 2.5% of the total Utah-jurisdictional base DNG GS revenues. Together, the WNA and CET act as a full revenue decoupling mechanism.

Renewables expense — PacifiCorp operates under a renewable energy credit, or REC, mechanism that tracks variations in REC revenues from a base level established in the most recent general rate case, with any differences to flow to customers via an annual credit or surcharge. Separately, an adjustment mechanism is in place for PacifiCorp through which the company recovers costs associated with its solar program.

Generic infrastructure — A pilot infrastructure replacement adjustment mechanism is in place for Questar Gas that permits the company to recover between rate cases the incremental costs associated with the replacement of high-pressure natural gas feeder lines. The mechanism is to be adjusted at least annually and has an annual budget cap.

Other — Questar Gas flows ratepayers' share of its capacity release revenue via its semiannual gas-cost pass-through proceedings.

## Vermont

Electric fuel/gas commodity/purchased power — Power cost adjustment, or PCA, mechanisms are permitted, provided that the mechanisms are part of an alternative regulation plan. Green Mountain Power Corp has a PCA in place under which the company absorbs up to \$307,000 of power cost overruns and is permitted to keep \$150,000 of power cost savings per quarter.

## Virginia

Electric fuel/gas commodity/purchased power — Electric energy and capacity charges for "economy" purchases are included in the electric fuel factor calculation. Energy charges associated with reliability purchases may flow through the fuel factor, but capacity charges are recovered through base rates.

Conservation program expense — State law permits the SCC to approve rider mechanisms for the recovery of utilities' conservation and energy efficiency program costs. Such mechanisms are in place for Virginia Electric and Power, or VEPCO, Appalachian Power, or APCO, and Columbia Gas of Virginia, or CGV.

Decoupling — A weather normalization adjustment, or WNA, rider is in place for Virginia Natural Gas, or VNG, and Washington Gas Light, or WGL, Atmos Energy, CGV and Roanoke Gas.

A separate revenue normalization adjustment, or decoupling, mechanism is in place that is designed to mitigate the impact on WGL's, VNG's and CGV's revenues of customers' participation in energy conservation programs.

Renewables expense — The SCC may approve riders for the recovery of costs associated with meeting an SCC-approved voluntary renewable portfolio standard, or RPS, plan known as the RPS-RAC. Such riders are in place for APCO and VEPCO. State law initially included an incentive for compliance, but this was removed.

Environmental compliance — State statutes permitted the electric utilities to seek SCC approval to begin recovering costs associated with environmental compliance and reliability improvement programs through an environmental and reliability factor, or ERF. In 2006, the SCC authorized APCO to implement an ERF that was in place through 2010, after which the related revenue requirement was rolled into base rates. In 2013, the SCC authorized APCO to implement a new environmental revenue adjustment clause, known as an E-RAC. The E-RAC has expired.

As permitted by state law, the SCC has approved an adjustment mechanism, known as Rider E, under which VEPCO is permitted to recover costs incurred to comply with the U.S. Environmental Protection Agency and Virginia Waste Management Board regulations related Clean Water Act requirements and for the storage and disposal of coal combustion residuals, or CCR, commonly referred to as coal ash, produced at the company facilities that continue to burn coal to produce electricity.

Generation capacity — Legislation enacted in 2007 required the SCC to approve riders for the recovery of investment in certain types of generation facilities, including a cash return on CWIP.

Legislation enacted in 2016 authorizes an investor-owned electric utility to recover the costs of purchasing certain solar generation facilities through a rate adjustment clause. A bill enacted in 2017 added pumped storage and hydroelectric generation facilities to the list of assets that are eligible to be included in VEPCO's/APCO's generation riders and investments to extend the lives of nuclear plants. Legislation enacted in 2018 calls for the SCC to approve recovery through riders of utility-owned solar and wind resources.

Several riders have been approved for VEPCO and APCO under these statutes.

Generic infrastructure — The SCC may approve annually adjusted riders for the recovery of costs/investments, including a cash return on construction work in progress, or CWIP, associated with utility projects to replace existing overhead distribution facilities of 69 kV or less located within the Commonwealth with underground facilities. Such a rider is in place for VEPCO.

The SCC may also allow a natural gas utility that invests in natural gas facility replacement projects to recover, in the form of a rider, a return on investment, a revenue conversion factor, depreciation, property taxes and carrying costs on over/under-recovery of the related costs. Eligible infrastructure replacement is defined as natural gas facility replacement projects that (i) enhance safety or reliability by reducing system integrity risks associated with customer outages, corrosion, equipment failures, material failures or natural forces; (ii) do not increase revenues by directly connecting the infrastructure replacement to new customers; (iii) reduce or have the potential to reduce greenhouse gas emissions; (iv) are commenced on or after Jan. 1, 2010; and (v) are not included in the natural gas utility's rate base in its most recent rate case. Such riders have been approved for CGV, Roanoke Gas, VNG and WGL.

RTO-related transmission expense — VEPCO uses a transmission cost recovery rider, known as Rider T, to reflect charges allocated to the utility by the PJM Interconnection. A similar mechanism, known as the T-RAC, is in place for APCO.

Other — WGL and CGV are permitted to recover carrying charges on storage gas balances and over/under-collected gas costs, hexane costs and commodity-related uncollectibles expense through an adjustment mechanism. APCO and VEPCO have mechanisms in place to recover variations in certain taxes and franchise fees.

## Washington

Electric fuel/gas commodity/purchased power — Avista Corp.'s energy recovery mechanism includes a graduated sharing of differences from a benchmark level. Power cost adjustment mechanisms are in place for PacifiCorp and Puget Sound Energy, or PSE, that allow for variations in power costs to be apportioned, on a graduated scale, between the company and customers.

Decoupling — Revenue decoupling mechanisms were approved for PSE's electric and gas operations in general rate cases decided in December 2017.

Full decoupling mechanisms for Avista's electric and gas operations are to be in place through 2019, incorporate an earnings test and demand-reduction targets, and specify caps on the increases to be implemented under the mechanism. In the company's current rate proceedings, Avista has proposed extending its decoupling mechanisms through March 2025.

Cascade Natural Gas' decoupling mechanism incorporates an earnings test and a conservation target as well as caps on annual increases.

PacifiCorp's decoupling mechanism incorporates an earnings test and demand reduction targets as well as caps increases that may be implemented under the mechanism.

## West Virginia

Environmental compliance/generation capacity/generic infrastructure — In the past, the PSC has approved temporary riders to provide recognition between rate cases of certain electric generation and infrastructure investments.

State law allows the PSC to approve expedited cost recovery mechanisms associated with commission-approved multiyear gas infrastructure improvement plans; such treatment has been approved for Mountaineer Gas and Hope Gas.

Monongahela Power Co., Potomac Edison and Appalachian Power Co./Wheeling Power Co. use a vegetation management rider.

Other — The utilities have mechanisms in place to recover variations in certain taxes and franchise fees.

## Wisconsin

Electric fuel/gas commodity/purchased power — Under the Wisconsin PSC's electric fuel rules, which apply to the state's five largest investor-owned utilities, each utility forecasts monthly and annual fuel and purchased power costs on a prospective basis. If a company's actual fuel and purchased power costs are outside a monthly or cumulative monthly variance range around the forecasts and the utility can demonstrate that these costs will likely be outside the annual range, the PSC may conduct a hearing to establish new rates. Currently, the annual variance range is plus or minus 2%. An electric utility is permitted to defer any fuel costs that are outside of its annual symmetrical variance range for subsequent recovery or refund. However, the utility is prohibited from recovering deferrals if the company is found to be earning in excess of its authorized equity return.

Conservation program expense — Wisconsin has a statewide energy efficiency and renewable resources program called Focus on Energy, which is funded through a non-bypassable charge on customer bills. Program cost recovery is handled via individual rate cases. A conservation escrow account is used for voluntary energy efficiency and programs. Program costs are recovered through rates, the money goes into an escrow account, and then the costs are adjusted in the next rate case.

Generation capacity/generic infrastructure/other — At times, the PSC has authorized the utilities to file a limited-issue reopener, or LIR, of a previously completed base rate case instead of a full rate case. The LIR provides for recognition of certain specified investments and/or expenses and does not involve the re-determination of rate of return.

Other — All utilities have mechanisms in place to recover variations in certain taxes and franchise fees.

## Wyoming

Decoupling — Cheyenne Light Fuel and Power's, or CLF&P's, demand-side management, or DSM, mechanism for its electric operations includes a provision that provides for the recovery of "lost margins" associated with customer participation in the DSM programs.

Black Hills Wyoming Gas\*, formally known as Black Hills Gas Distribution, has a partial decoupling mechanism in place for small and medium general service class distribution customers. The mechanism does not address revenue variations due to weather. The utility, also formally part of CLF&P's gas operations, has a DSM mechanism similar to CLF&P's electric operations.

Questar Gas has a weather normalization adjustment mechanism in place.

MDU Resources Group's gas operation utilizes an optional weather normalization mechanism.

Renewables expense/environmental compliance — Optional renewable energy riders are in place for CLF&P, MDU Resources and PacifiCorp. PacifiCorp operates under an adjustment mechanism that is designed to recover from or refund to ratepayers 100% of the difference between actual renewable energy and SO2 emission allowance credit revenue levels and the levels reflected in base rates.

PacifiCorp has in place a voluntary bulk renewable energy rider that serves the utility's nonresidential electric customers and requires a minimum purchase of 121,200 kWh per year.

CLF&P utilizes a voluntary renewable energy tariff serves commercial retail customers with an aggregate usage of 300,000 kWh or more per year and government accounts desiring renewable energy.

Generic infrastructure — Black Hills Wyoming Gas, formally known as CLF&P's gas operations, utilizes a pipeline safety and integrity mechanism to recover costs associated with the investments in pipeline infrastructure.

Other — Through an incentive provision of its fuel clause, CLF&P allocates a portion of off-system sales margins to ratepayers.

\* BHWG consists of four legacy Black Hills Wyoming subsidiaries and gas assets: CLF&P's gas operations; Black Hills Energy, a division of CLF&P, also known as Black Hills Northeast Wyoming and formerly known as MGTC Inc.; Black Hills Northwest Wyoming Gas Utility Co. LLC, formerly known as Energy West Wyoming; and Black Hills Gas Distribution LLC, formerly known as SourceGas.

Society of Utility and  
Regulatory Financial Analysts



**THE COST OF CAPITAL –  
A PRACTITIONER’S GUIDE**

**BY**

**DAVID C. PARCELL**

**PREPARED FOR THE SOCIETY OF UTILITY  
AND REGULATORY FINANCIAL ANALYSTS  
(SURFA)**

**2010 EDITION**

**Author’s Note:** This manual has been prepared as an educational reference on cost of capital concepts. Its purpose is to describe a broad array of cost of capital models and techniques. No cost of equity model or other concept is recommended or emphasized, nor is any procedure for employing any model recommended. Furthermore, no opinions or preferences are expressed by either the author or the Society of Utility and Regulatory Financial Analysts.

This part of the manual describes the major cost of equity methods. In doing so, no particular method is being endorsed. Rather, the description of each model is done from an informational perspective in order for the reader to review the theoretical basis of each model, the assumptions of each model, and various ways to estimate the inputs of each model. The following chapters describe, in alphabetical order, the most commonly-used cost of equity models – capital asset pricing model, comparable earnings, discounted cash flow, and risk premium.

### Use of Models

All methods and models are necessarily based upon simplifying assumptions which are employed in order to make the particular method usable in rate proceedings or for other uses in finance. It is often argued that certain of these assumptions are not reflective of actual capital market behavior. While this is true, it is important for the analyst to recognize and focus not on the strict existence of the model's assumptions but rather whether the relaxation of these assumptions limits the usefulness of the model to explain or predict economic phenomena, including stock prices. In the final analysis, the value of any return on equity method depends on its ability to capture market expectations and provide a reasonable working approximation of stock valuation. "The 'end result' doctrine is reminiscent of the philosophy of economic positivism, which states that the value of a model or theory should not be assessed by the severity or realism of its assumptions, but rather by its ability to explain or accurately economic phenomena." (Morin, 2006, 14).

On the other hand, economic and financial models are simplified representations, constructed by theoreticians, which attempt to describe how investors should act or react in making investment decisions in the "real world." Thus, models attempt to describe how investors behave. However, it is unlikely that the typical investor consults models to learn how to behave in the financial markets. In particular, as noted above, each model employs simplifying assumptions which permit an application of economic and financial theory to assist in developing rigorous models to explain investor behavior. As noted, it is not necessary for these assumptions to be explicitly verifiable for the models to be useful tools. Yet, both analysts

and regulators should recognize that no model can be refined to the extent that the cost of common equity for any firm can be reduced to a simple formulistic exercise and be exactly measured. Investor expectations differ and it is apparent that all investors do not rely upon the same information and models in making investment decisions. Consequently, so single model and model variant can be demonstrated to capture all investor expectations.

Furthermore, no single model is so inherently precise that it can be relied on solely to the exclusion of other theoretically sound models. Each model requires the exercise of judgment as to the reasonableness of the underlying assumptions of the methodology and on the reasonableness of the proxies used to validate the theory. Each model has its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises, most of which cannot be validated empirically. Investors clearly do not subscribe to any singular method, nor does the stock price reflect the application of any one single method by investors. Therefore, it is essential that estimates of investors' required rate of return produced by one method be compared with those produced by other methods, and that all cost of equity estimates be required to pass fundamental tests of reasonableness and economic logic. "The concept of a fair rate of return, therefore, represents a range or a zone of reasonableness" (Phillips, 1988, 357-358).

Two texts have evaluated the various cost of equity models (Kolbe, Read and Hall, 1986; Thompson, 1991). These texts, while informative to the process of evaluating alternative methods, do not establish a single model as superior to the others. In addition, the texts do not evaluate the alternative methodologies available for implementing each model. Nevertheless, they do provide informative insights to the interested reader.

### **Classification of Models**

There are numerous ways that the various cost of equity models can be classified. One way is to classify models according to their underlying financial theory. The capital asset pricing model (CAPM) is based upon portfolio theory; the comparable earnings method is based upon the economic concept of opportunity cost; the discounted cash flow (DCF) model is based on the

**NEW  
REGULATORY  
FINANCE**

**Roger A. Morin, PhD**

**2006  
PUBLIC UTILITIES REPORTS, INC.  
Vienna, Virginia**

models, such as the Arbitrage Pricing Model (APM) and the Fama-French Three-Factor Model, assert that there are several broad factors that influence security returns and formally quantify the impact of these factors on security returns. What weights should be assigned to the competing approaches? Who is the winner? The quick answer is that all the relevant capital market data and financial theories available should be used in estimating the cost of capital.

## 15.2 Use of Multiple Methods

There are four broad generic methodologies available to measure the cost of equity: DCF, Risk Premium, and Capital Asset Pricing Model (CAPM), which are market-oriented, and Comparable Earnings, which is accounting-oriented. Each generic market-based methodology in turn contains several variants: For example, the Empirical CAPM and the Fama-French Three-Factor Model are sub-species of the CAPM methodology. The multiple-stage DCF model is a variation of the generic DCF approach.

Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate the theory. The inability of the DCF model to account for changes in relative market valuation, discussed below, is a vivid example of the potential shortcomings of the DCF model when applied to a given company. Similarly, the inability of the CAPM to account for variables that affect security returns other than beta tarnishes its use.

No one individual method provides the necessary level of precision for determining a fair return, but each method provides useful evidence to facilitate the exercise of an informed judgment. Reliance on any single method or preset formula is inappropriate when dealing with investor expectations because of possible measurement difficulties and vagaries in individual companies' market data.

Examples of such vagaries include dividend suspension, insufficient or unrepresentative historical data due to a recent merger, increased competition, impending merger or acquisition, and a new corporate identity due to restructuring activities. To illustrate, there were difficulties in applying cost of capital methodologies while the electric utility industry was experiencing structural change in the late 1990s and early 2000s. The traditional cost of equity estimation methodologies were difficult to implement during the fast-changing circumstances of the electric utility industry during that period. This is because utility company historical data had become less meaningful for an industry in a state of change. Past earnings and dividend trends were simply not indicative of the future. For example, historical growth rates of earnings and dividends had been depressed by eroding margins due to a variety of factors, including structural transformation and the transition to a more competitive

environment. As a result, historical data were not representative of the future long-term earning power of these companies. Moreover, historical growth rates were not representative of future trends for several electric utilities involved in mergers and acquisitions, as these companies going forward were not the same companies for which historical data were available. A similar argument applied to historical risk measures. Historical risk measures, such as beta, were downward-biased in assessing the current industry risk circumstances.

As a general proposition, it is extremely dangerous to rely on only one generic methodology to estimate equity costs. The difficulty is compounded when only one variant of that methodology is employed. It is compounded even further when that one methodology is applied to a single company. Hence, several methodologies applied to several comparable-risk companies should be employed to estimate the cost of common equity. The advantage of using several different approaches is that the results of each one can be used to check the others. If the cost of equity estimation process is limited to one methodology, such as DCF or CAPM, it may severely bias the results. One major problem that results from using only one methodology is the lack of corroborating evidence. There is simply no objective cross check on the result. All the market data and financial theories available should be used in making an estimate.

There is no single model that conclusively determines or estimates the expected return for an individual firm. Each methodology possesses its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises that cannot be validated empirically. Investors do not necessarily subscribe to any one method, nor does the stock price reflect the application of any one single method by the price-setting investor. There is no monopoly as to which method is used by investors. In the absence of any hard evidence as to which method outdoes the other, all relevant evidence should be used and weighted equally, in order to minimize judgmental error, measurement error, and conceptual infirmities. A regulator should rely on the results of a variety of methods applied to a variety of comparable groups, and not on one particular method. There is no guarantee that a single DCF result is necessarily the ideal predictor of the stock price and of the cost of equity reflected in that price, just as there is no guarantee that a single CAPM or Risk Premium result constitutes the perfect explanation of that stock price. The DCF, CAPM, and Risk Premium models are three different ways of getting a handle on the same problem.

If a regulatory commission relies on a single cost of equity estimate or on a single methodology, that commission greatly limits its flexibility and increases the risk of authorizing unreasonable rates of return. The results from one

methodology or from a one-company sample are likely to contain a high degree of measurement error and may be distorted by short-term aberrations. A commission's hands should not be bound to one single company-specific estimate of equity costs, nor should the commission ignore relevant evidence and back itself into a corner.

The financial literature supports the use of multiple methods. Professor Eugene Brigham, a widely respected scholar and finance academician, asserts:<sup>1</sup>

Three methods typically are used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash flow (DCF) method, and (3) the bond-yield-plus-risk-premium approach. These methods are not mutually exclusive—no method dominates the others, and all are subject to error when used in practice. Therefore, when faced with the task of estimating a company's cost of equity, we generally use all three methods and then choose among them on the basis of our confidence in the data used for each in the specific case at hand.

Another prominent finance scholar, Professor Stewart Myers, in an early pioneering article on regulatory finance, stated:<sup>2</sup>

Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, only a fool throws away useful information. That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data.

Reliance on multiple tests recognizes that no single methodology produces a precise definitive estimate of the cost of equity. As stated in Bonbright, Danielsen, and Kamerschen (1988), "*no single or group test or technique is conclusive.*" Only a fool discards relevant evidence.

### 15.3 Musings on DCF

While the DCF model has been fashionable in regulatory proceedings, although not nearly as much in academic circles, uncritical acceptance of the standard DCF equation vests the model with a degree of accuracy that simply is not

<sup>1</sup> See Brigham and Ehrhardt (2005).

<sup>2</sup> See Myers (1972).

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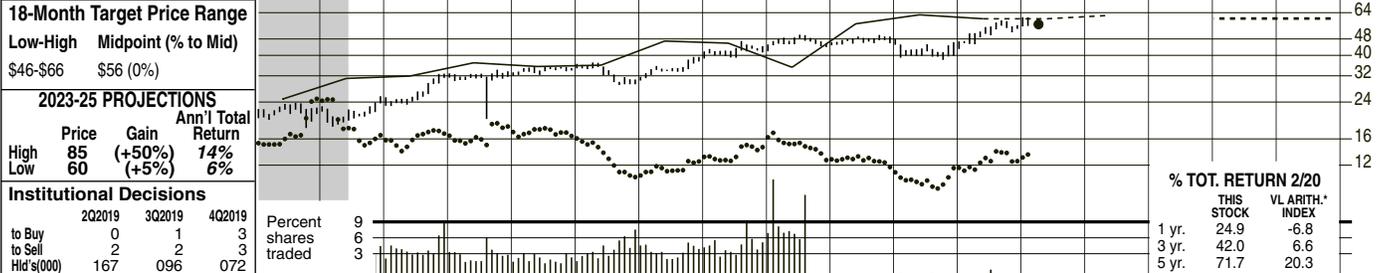
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<sup>3</sup> See Phil

TIMELINESS <b>3</b> Lowered 10/4/19	High: 25.6	32.8	34.3	35.4	37.0	39.4	46.9	50.3	50.0	48.0	58.8	60.9							Target Price Range
SAFETY <b>2</b> Raised 12/23/16	Low: 18.3	23.0	20.0	32.1	28.9	30.4	38.7	42.0	44.7	38.1	42.9	55.0							2023 2024 2025
TECHNICAL <b>3</b> Raised 2/14/20	LEGENDS — 9.0 x "Cash Flow" p sh ... Relative Price Strength Options: Yes Shaded area indicates recession																		
BETA .50 (1.00 = Market)																			



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
10.42	10.61	10.51	12.02	11.87	12.75	13.55	16.81	15.72	16.78	20.67	18.95	20.36	27.21	27.87	25.20	<b>25.40</b>	<b>25.80</b>	Revenues per sh <sup>E</sup>	<b>30.10</b>
2.38	2.52	2.65	2.98	2.75	3.45	3.54	4.11	3.93	4.00	5.20	5.09	3.90	6.29	6.95	6.65	<b>6.65</b>	<b>6.90</b>	"Cash Flow" per sh	<b>8.25</b>
1.14	1.10	1.12	1.32	1.26	1.52	1.65	1.97	1.76	1.64	2.82	2.71	1.32	2.72	3.04	2.77	<b>2.80</b>	<b>3.05</b>	Earnings per sh <sup>A</sup>	<b>4.00</b>
.88	.89	.89	.90	.97	1.03	1.16	1.31	1.36	1.41	1.48	1.66	2.00	2.13	2.28	2.38	<b>2.46</b>	<b>2.54</b>	Div'ds Decl'd per sh <sup>C</sup>	<b>2.76</b>
1.39	1.17	1.75	2.26	4.86	2.89	4.60	3.93	3.41	2.42	3.02	2.51	4.91	6.68	9.23	10.29	<b>8.20</b>	<b>7.10</b>	Cap'l Spending per sh	<b>3.90</b>
12.28	12.41	12.69	12.20	13.78	13.31	14.16	11.80	12.60	15.68	18.60	23.71	28.55	27.89	31.24	38.40	<b>38.35</b>	<b>38.40</b>	Book Value per sh <sup>B</sup>	<b>39.60</b>
108.87	110.10	110.93	111.47	112.21	112.98	114.62	122.83	130.98	132.89	143.78	147.21	210.02	228.78	234.12	242.48	<b>244.00</b>	<b>246.00</b>	Common Shs Outst'g <sup>D</sup>	<b>255.00</b>
15.9	17.2	18.0	15.7	17.2	14.0	16.1	16.2	19.4	20.1	12.3	15.5	35.2	17.3	13.8	19.0	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	<b>18.0</b>
.84	.92	.97	.83	1.04	.93	1.02	1.02	1.23	1.13	.65	.78	1.85	.87	.75	1.04			Relative P/E Ratio	<b>1.00</b>
4.9%	4.7%	4.4%	4.3%	4.5%	4.8%	4.4%	4.1%	4.0%	4.3%	4.3%	4.0%	4.3%	4.5%	5.4%	4.5%			Avg Ann'l Div'd Yield	<b>3.8%</b>

CAPITAL STRUCTURE as of 12/31/19				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
Total Debt \$15717 mill. Due in 5 Yrs \$5655.0 mill.				1553.7	2064.4	2058.6	2230.2	2971.9	2789.3	4277.0	6226.0	6524.0	6111.0	<b>6200</b>	<b>6350</b>	Revenues (\$mill)	<b>7670</b>						
LT Debt \$13679 mill. LT Interest \$740.0 mill.				38.5%	30.5%	33.5%	34.5%	35.7%	30.8%	26.8%	36.1%	35.5%	36.6%	<b>36.5%</b>	<b>37.0%</b>	Operating Margin	<b>37.0%</b>						
(Total int. coverage:1.9x)				214.9	263.2	294.4	313.6	341.5	352.2	593.0	856.0	916.0	903.0	<b>895</b>	<b>900</b>	Depreciation (\$mill)	<b>1040</b>						
(61% of Cap'l)				194.2	247.7	231.9	236.8	432.9	427.5	255.0	611.0	747.0	710.8	<b>730</b>	<b>795</b>	Net Profit (\$mill)	<b>1075</b>						
Leases, Uncapitalized Annual rentals \$18.0 mill.				--	--	--	14.5%	20.1%	17.0%	--	24.8%	8.3%	7.9%	<b>15.0%</b>	<b>16.0%</b>	Income Tax Rate	<b>20.0%</b>						
Pension Assets-12/18 \$2300.0 mill				12.5%	12.0%	11.3%	10.6%	14.6%	15.3%	6.0%	9.8%	11.5%	11.6%	<b>11.8%</b>	<b>12.5%</b>	Net Profit Margin	<b>14.0%</b>						
Oblig. \$2650.0 mill				92.2	191.6	d68.0	d368.6	312.0	514.3	d1213	d1420	d1721	d1680	<b>d2075</b>	<b>d2650</b>	Working Cap'l (\$mill)	<b>d2750</b>						
Pfd Stock \$1004.0 mill. Pfd Div'ds \$36.0 mill.				3141.9	3273.5	3201.1	3363.7	3660.3	3750.8	14268	13140	14292	13679	<b>13475</b>	<b>13275</b>	Long-Term Debt (\$mill)	<b>12680</b>						
Common Stock 242,480,000 shs.				1773.6	1599.2	2050.4	2608.2	3398.8	4200.1	6704.0	7089.0	8317.0	8601.0	<b>8650</b>	<b>8740</b>	Shr. Equity (\$mill)	<b>9385</b>						
MARKET CAP: \$13.6 billion (Large Cap)				5.7%	6.9%	6.4%	5.5%	7.4%	6.7%	2.6%	4.7%	4.9%	<b>4.5%</b>	<b>5.0%</b>	Return on Total Cap'l	<b>6.5%</b>							
CURRENT POSITION				10.9%	15.5%	11.3%	9.1%	12.7%	10.2%	3.8%	8.6%	9.0%	8.3%	<b>8.5%</b>	<b>9.0%</b>	Return on Shr. Equity	<b>11.5%</b>						
(SMILL.)				3.6%	5.8%	3.2%	1.5%	7.4%	4.5%	.1%	4.6%	5.0%	1.1%	<b>1.0%</b>	<b>1.5%</b>	Retained to Com Eq	<b>3.5%</b>						
Cash Assets				70%	66%	77%	87%	55%	63%	98%	52%	51%	84%	<b>86%</b>	<b>82%</b>	All Div'ds to Net Prof	<b>69%</b>						
Receivables																							
Inventory (Avg Cst)																							
Other																							
Current Assets																							
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**BUSINESS:** Emera Inc. is geographically diverse energy and services company. It invests in electricity generation, transmission, and distribution, as well as gas transportation and utility energy services. Also provides energy marketing, trading, and other energy-related management services. Has investments throughout North America, and in four Caribbean countries. Acquired TECO Energy 7/16. Serves approximately 2,500,000 customers in Florida (45%), New Mexico (22%), Nova Scotia (22%), Maine, and the island of Barbados. Has approximately 7,500 employees. President and CEO: Scott Balfour. Chairman: Jackie Sheppard. Inc.: Nova Scotia, Canada. Address: 1223 Lower Water St., Halifax, Canada NS B3J 3S8. Telephone: (902) 428-6112. Internet: www.emera.com.

**Emera closed out 2019 on a down note.** Fourth-quarter earnings fell short of the previous-year tally largely due to the sale of its merchant gas plants earlier in the year, and the impact of Hurricane Dorian. Adjusted earnings per share (excluding mark-to-market losses) were down 15% for the quarter (\$0.60 vs. \$0.71), and 10% for the year (\$2.59 vs. \$2.88).

**On the plus side, results from its regulated utilities remained strong.** For the year, adjusted net income at its Florida Electric Utility (its largest operating segment) increased 10%, to \$419 million. This was driven by higher contributions from solar investments and customer growth. Meanwhile, income from Canadian Electric Utilities was up 5%, to \$229 million, thanks to higher contributions from equity investments, increased nonfuel revenues, and lower income taxes. Lastly, adjusted income for the Gas Utilities and Infrastructure division jumped 35%, to \$183 million, due to favorable weather in New Mexico and customer growth.

**Earnings will likely only show a modest advance in 2020.** This will reflect the loss of earnings from its New England Gas

Generation and Bayside facility (sold in the first quarter of 2019), as well as the pending divestiture of its Emera Maine business. (The latter contributed \$27 million to net income in the last three quarters of 2019.)

**However, the bottom line should resume a growth trajectory from 2021 onwards.** Proceeds from the Emera Maine sale will go toward the company's \$7 billion multiyear capital program, which is directed at its strongest and fastest-growing businesses. Altogether, management targets increasing the base rate of its regulated utilities by 7% a year through 2022, with earnings advancing at a similar pace.

**Income seekers will want to consider these shares.** Unlike the broader market, this stock was up over the past three months. With over 95% of earnings now coming from regulated operations, the quality and predictability of profits and cash flow have improved. Although price upside potential out to 2023-2025 is relatively modest, the issue offers an attractive yield along with a lower risk profile.

Cal-endar	QUARTERLY REVENUES (\$ mill.) <sup>E</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1857	1469	1427	1473	6226
2018	1807	1423	1495	1799	6524
2019	1818	1378	1299	1616	6111
2020	<b>1750</b>	<b>1425</b>	<b>1425</b>	<b>1600</b>	<b>6200</b>
2021	<b>1575</b>	<b>1585</b>	<b>1595</b>	<b>1595</b>	<b>6350</b>

Cal-endar	EARNINGS PER SHARE <sup>A,E</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1.46	.47	.38	.41	2.72
2018	1.18	.38	.50	.98	3.04
2019	1.32	.43	.23	.79	2.77
2020	<b>.85</b>	<b>.58</b>	<b>.62</b>	<b>.75</b>	<b>2.80</b>
2021	<b>.70</b>	<b>.73</b>	<b>.80</b>	<b>.82</b>	<b>3.05</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>C,E</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.475	.475	.5225	.5225	2.00
2017	.5225	.5225	.5225	.565	2.13
2018	.565	.565	.565	.5875	2.28
2019	.5875	.5875	.5875	.613	2.38
2020	.613				

(A) Diluted earnings. Excludes nonrecurring charge: 2017: \$1.47. Next earnings report due mid-May. (B) Incl. intangibles. In 2018, \$6.3 bill., or \$26.91 per share. (C) Common div. historically paid in the middle of Feb., May, August, and Nov. (D) In millions. (E) All data in Canadian dollars.

Company's Financial Strength	B+
Stock's Price Stability	100
Price Growth Persistence	40
Earnings Predictability	50

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## Research Update:

# Emera Inc. And Subsidiaries 'BBB+' Ratings Affirmed; Outlooks Remain Negative

### Primary Credit Analyst:

Mayur Deval, Toronto (1) 416-507-3271; mayur.deval@spglobal.com

### Secondary Contacts:

Gerrit W Jepsen, CFA, New York (1) 212-438-2529; gerrit.jepsen@spglobal.com  
Evan Harris, New York + 1 (212) 438 2157; evan.harris@spglobal.com

## Table Of Contents

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Rating Action Overview

Rating Action Rationale

Outlook

Company Description

Our Base-Case Scenario

Liquidity

Environmental, Social, And Governance

Issue Ratings—Subordination Risk Analysis

Ratings Score Snapshot

Related Criteria

Ratings List

## Research Update:

# Emera Inc. And Subsidiaries 'BBB+' Ratings Affirmed; Outlooks Remain Negative

## Rating Action Overview

- Emera Inc. announced a definitive agreement to sell its Emera Maine utility for a total enterprise value of about C\$1.8 billion, including assumed debt at Emera Maine, to ENMAX Corp. The transaction is a part of Emera's previously announced three-year funding plan.
- On March 26, 2019, S&P Global Ratings affirmed its 'BBB+' issuer credit ratings on Emera Inc. and subsidiaries Nova Scotia Power Inc. (NSPI), TECO Energy Inc., Tampa Electric Co., Teco Finance Inc., and New Mexico Gas Co. Inc. The outlooks remain negative.
- The negative outlooks reflect our expectation of weaker financial measures for Emera that will persist through at least 2020 as the company executes its elevated capital spending plan funded with debt issuances within the group and proceeds from asset sales including Emera Maine. In our base-case scenario, we expect adjusted funds from operations (FFO) to debt to range from 11%-12% through 2019.

## Rating Action Rationale

Although the planned sale of the Emera Maine assets reinforces consistency in management's strategy going forward, a significant amount of execution risk associated with respect to successful closure of the sale of assets, including uncertainties around use of proceeds to either repay debt or fund elevated capital program, remains. The announced sale of assets requires regulatory approval from the Maine Public Utility Commission (MPUC) and the Federal Energy Regulatory Commission (FERC) leading to an expected close in late 2019 or early 2020.

The company intends to use the proceeds from the sale of Emera Maine's fully regulated transmission and distribution business, with a rate base of about \$700 million and 159,000 customers, to support its elevated capital investment opportunities and reduce the corporate level debt on its balance sheet in line with the expected loss from the associated cash flow.

The negative outlook continues to reflect elevated levels of debt-financed capital spending, including significant investments in solar projects and Big Bend modernization (\$850 million) for which cost recovery is expected only after 2020. Despite the company's announcement of various asset sales, including New England Gas Generation (NEGG) plants and Emera Maine in the projected period to fund elevated capital spending and partly repay existing debt, we do not expect that Emera will achieve 12% adjusted FFO to debt before

year-end 2019. The company's current financial plan has minimal equity issuances, resulting in greater reliance on operating cash flow and debt to fund operations and capital spending initiatives. We therefore expect credit measures to remain below the midpoint of the benchmark range for the financial risk profile and below the 12% level we consider appropriate for the ratings.

We base our view of Emera's business risk on the very low industry risk of its regulated utilities in jurisdictions with generally supportive regulatory environments. **Following the completion of its announced sale of Emera Maine assets, we expect regulated utility operations to contribute about 95% of consolidated EBITDA.** The company has a diverse customer base in Canada and the U.S. where it provides service to about 1.5 million electric and 900,000 natural gas distribution customers. It also provides service to roughly 130,000 electric customers in Barbados. In addition, we expect Emera to derive a growing portion of its cash flows from its Florida-based utilities, which have an expanding customer base and supportive cost recovery through the regulatory process.

Regarding the financial risk profile under our base-case scenario, we expect adjusted FFO to debt to range from 11%-12% through 2020, around the midpoint of the benchmark range. This includes loss of cash flows due to the planned sale of assets and the company's elevated capital spending plan. In line with the higher capital spending and reliance on debt leverage in our base-case scenario, debt to EBITDA averages 5.6x over the next few years. Our base-case scenario includes average capital spending approaching \$2.2 billion per year largely funded by proposed asset sales and debt issuances within the group. We expect the company will continue to recover costs through various rate mechanisms and base rates and manage regulatory risk in a credit-supportive manner. Reflecting the company's steady cash flow and mostly rate-regulated utility operations, we base our risk assessment on our medial table benchmarks. These are more relaxed benchmarks compared with those used for a typical corporate issuer.

The ratings on Emera reflect our assessment of the comparable rating analysis modifier as positive to capture our expectation of the company's improving financial measures within the financial risk profile and its lessened overall operating risk after divesting non-utility generating assets.

## **Outlook**

The negative outlook on Emera reflects increased capital spending plans and higher reliance on debt leverage that results in weakened financial measures, including adjusted FFO to debt of about 11% for 2019 and 12% for 2020.

### **Downside scenario**

We could lower the ratings on Emera by 2020 if we expect financial measures to remain weak and we do not see clear indication of near-term improvement, resulting in adjusted FFO to debt that is consistently below 12%. This could

occur for various reasons including if Emera is unable to complete the sale of Emera Maine in a timely manner or if it uses more debt leverage to fund operations and for capital spending.

### Upside scenario

We could revise the outlook to stable if the company materially improves its consolidated financial measures, with sufficient cushion such that we expect adjusted FFO to debt to exceed, and consistently remain above, 12%.

## Company Description

Emera Inc. is a geographically diverse electric and natural gas holding utility company with operations across the U.S. (Florida, Maine, and New Mexico), Canada (Nova Scotia), and the islands of Barbados and Bahamas serving about 1.6 million electric and 900,000 gas customers.

## Our Base-Case Scenario

- Gross margin growth in 2019 is primarily driven by recovery through capital spending surcharges, replacement riders, and rate cases. Additionally, gross margins are positively affected by steady customer growth in Florida and Nova Scotia, somewhat offset by the loss of cash flows from the sale of NEGG assets and Emera's Bayside gas Plant in New Brunswick.
- We expect proceeds of about \$825 million by the sale of the NEGG gas plant and Bayside gas plant in 2019 and about \$1.3 billion by the sale of Emera Maine assets in 2020.
- EBITDA decline after the sale of Emera Maine.
- Lower operating expenses after selling generation assets and Emera Maine.
- Capital spending averaging \$2.2 billion per year 2021.
- Common stock dividend payments averaging \$500 million per year over the forecast period.
- All debt maturities in the group refinanced.

## Liquidity

We assess Emera's liquidity as adequate because the company's liquidity sources are likely to cover uses by more than 1.1x over the next 12 months and could meet cash outflows even with a 10% decline in EBITDA. The assessment also reflects the company's generally prudent risk management, sound relationships with banks, and a generally satisfactory standing in credit markets.

### Principal Liquidity Sources

- Cash and liquid investment of about \$316 million;
- Estimated cash FFO of about \$1.7 billion;
- Average credit facility availability of about \$3.5 billion;
- Proceeds of NEGG and Bayside Power plant sale of about \$825 million.

### Principal Liquidity Uses

- Debt maturities, including outstanding commercial paper, of about \$2.3 billion;
- Capital spending of about \$2.25 billion; and
- Common equity dividends of about \$470 million.

## Environmental, Social, And Governance

Emera's carbon footprint is a significant longer-range environmental risk factor as most of its subsidiaries have exposure to coal-based generation. Post sale of 1,100 MW of NEGG generation assets, the company's remaining 8,300 MW of owned generation will be about 33% coal and 53% natural gas. The company's reliance on coal-fired generation exposes it to heightened risks, including the ongoing cost of operating older units in the face of disruptive technology advances and the potential for increasing environmental regulations requiring significant capital investments. That said, over the past couple of years, Emera has identified opportunities and invested in lower carbon alternatives to electricity generation, better technology, and conversion of coal-fired units to natural gas-fired units. In addition, the company is heavily investing in solar generation in Florida, has commissioned a 10MW solar facility in Barbados, and has added 600 MW of wind capacity in Nova Scotia. Through the Big Bend modernization project, Emera will reduce its coal-based generation at the plant and shift to natural gas, which has much lower emissions. Our analysis will track Emera's progress in this regard, and its ability to manage any risks that may intensify from disruptive or regulatory developments.

From a social perspective, the company is meeting customer demands to provide greener energy. Emera offsets some of its fuel price fluctuations via long-term pricing programs and fuel pricing strategies. Emera targets to install smart meters for at least 90% of customers by 2020, as it takes steps toward making its grid more reliable across all its operating states. After some safety-related incidents in Florida, Emera set up a committee at the corporate level dedicated to the safety, health, and wellness of employees and diversity of operations. Emera also works toward public safety and regularly conducts education and training sessions.

Emera's governance practices are consistent with what we see across the industry for other publicly traded utilities.

## Issue Ratings—Subordination Risk Analysis

### Capital structure

Emera's capital structure consists of about \$16.5 billion of debt of which \$13.1 billion is priority debt.

### Analytical conclusions

We rate the unsecured debt at Emera one notch below the issuer credit rating because priority debt exceeds 50% of the company's consolidated debt after which point Emera's debt is considered structurally subordinated.

We rate the junior subordinated debt two notches below the issuer credit rating to reflect the discretionary nature of the payments and the subordinated claim if a bankruptcy occurs.

## Ratings Score Snapshot

Issuer Credit Rating: BBB+/Negative/--

Business Risk: Excellent

- Country Risk: Very low
- Industry Risk: Very low
- Competitive position: Strong

Financial Risk: Aggressive

- Cash flow/Leverage: Aggressive

Anchor: bbb

Modifiers

- Diversification/Portfolio effect: Neutral (no impact)
- Capital Structure: Neutral (no impact)
- Liquidity: Adequate (no impact)
- Financial policy: Neutral (no impact)
- Management and governance: Satisfactory (no impact)
- Comparable rating analysis: Positive (+1 notch)

## Related Criteria

- Criteria - Corporates - General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018

- General Criteria: Methodology And Assumptions: Assigning Equity Content To Hybrid Capital Instruments Issued By Corporate Entities And Other Issuers Not Subject To Prudential Regulation, Jan. 16, 2018
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings , April 7, 2017
- General Criteria: Guarantee Criteria, Oct. 21, 2016
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- General Criteria: Group Rating Methodology, Nov. 19, 2013
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, Nov. 19, 2013
- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013
- Criteria - Corporates - Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012
- General Criteria: Use Of CreditWatch And Outlooks, Sept. 14, 2009
- Criteria | Insurance | General: Hybrid Capital Handbook: September 2008 Edition, Sept. 15, 2008

## Ratings List

### Ratings Affirmed

Emera Inc.

Nova Scotia Power Inc.

New Mexico Gas Company, Inc.

TECO Energy Inc.

Teco Finance Inc.

Issuer Credit Rating

BBB+/Negative/--

Tampa Electric Co.

Issuer Credit Rating

BBB+/Negative/A-2

### Issue-Level Ratings Affirmed

Emera Inc.

Emera US Finance LP

TECO Energy Inc.

Teco Finance Inc.

*Research Update: Emera Inc. And Subsidiaries 'BBB+' Ratings Affirmed; Outlooks Remain Negative*

Senior Unsecured	BBB
Emera Inc.	
Subordinated	BBB-
Preferred Stock	BBB-/P-2(Low)
Maritime Link Financing Trust	
Senior Unsecured	AAA/Stable
New Mexico Gas Company, Inc.	
Nova Scotia Power Inc.	
Tampa Electric Co.	
Senior Unsecured	BBB+
Nova Scotia Power Inc.	
Commercial Paper	A-1(LOW)
Tampa Electric Co.	
Senior Unsecured	BBB+/A-2

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# Emera Inc. And TECO Downgraded On Weak Financials, Outlook Stable; Subsidiaries Ratings Affirmed

24-Mar-2020 18:53 EDT

[View Analyst Contact Information](#)[Table of Contents](#)[Related Criteria](#)

Halifax, Nova Scotia-based utility holding company Emera Inc. has closed on the sale of its Emera Maine subsidiary to ENMAX Corp.

Although we expect the sale to improve Emera Inc.'s consolidated financial measures in the near term, the transaction does not fully mitigate other factors that weigh on the company's credit quality, including our expectation that the company's funds from operation (FFO) to debt will be consistently above 12%.

As a result, we no longer expect Emera to maintain its financial measures at the upper end of its financial risk category, removing support for our use of a positive comparable ratings analysis modifier.

Therefore, we are lowering our issuer credit rating on Emera to 'BBB' from 'BBB+'. The outlook is stable.

At the same time, we are lowering the senior unsecured debt rating to 'BBB-' from 'BBB', subordinated notes rating to 'BB+' from 'BBB-', and preferred shares rating to 'BB+' from 'BBB-' on the global scale and to 'P-3 (High)' from 'P-2 (Low)' on the Canada National Scale ratings.

We are also downgrading intermediate holding company TECO Energy Inc. (TECO) and financing company TECO Finance Inc. to 'BBB' from 'BBB+'.

We also reviewed our ratings on operating subsidiaries Nova Scotia Power Inc. (NSPI) and Tampa Electric Co. (TEC) and conclude that the cumulative value of the structural protections in place between these two operating companies and parent Emera are sufficient to insulate our issuer credit rating on both entities for up to one notch from the group credit profile of parent Emera.

As such, we are affirming our ratings on NSPI and TEC, including the 'BBB+' issuer credit ratings.

For NSPI, we are affirming the A-1 (Low) Canadian National Scale Commercial Paper Ratings.

For TEC, we are affirming the 'A-2' short-term ratings.

The stable outlook on all these entities largely reflects our expectation that Emera will maintain its financial measures, including FFO to debt at about 11% over the next two years.

TORONTO (S&P Global Ratings) March 24, 2020--S&P Global Ratings today took the rating actions listed above.

The ratings downgrade on Emera and TECO reflects the parent company's credit metrics. Although Emera showed a modest improvement in 2019 with funds from operation (FFO) to debt of about 11%, they fall short of our previous expectation and downside trigger of 12%, which no longer warrants the use of the positive CRA modifier, which was based upon Emera maintaining its financial measures at the upper end of the range for its financial risk profile category.

The stable outlooks on Emera and TECO Energy reflect our expectation that Emera will maintain its financial measures during our two-year outlook period with FFO to debt of about 11% in 2020 and 2021. The stable outlook also reflects our view that the company will continue to focus on its low-risk regulated utility operations, with no weakening of its regulatory risk management.

We could downgrade Emera over the next 12-24 months if the company's financial measures deteriorates with FFO to debt of below 10% with no prospect for improvement. This could happen if there are material adverse regulatory outcomes, a material delay in the completion of capital projects, or if the COVID-19 pandemic persists and has a material long-term impact on the company's financial measures.

We could raise ratings on Emera if its financial measures improve with FFO to debt approaching 13% on a sustained basis, indicative of the higher end of the financial risk profile category.

The stable outlook on Nova Scotia Power Inc. (NSPI) in part reflects our outlook on Emera. In addition, the outlook reflects our view that NSPI will continue to generate stable cash flow and maintain FFO to debt of about 13% during our two-year outlook period. Furthermore, the stable outlook on NSPI assumes no change to the current insulation between NSPI and Emera.

We could lower the ratings on NSPI over the next 12 to 24 months if the utility's financial measures deteriorate with FFO to debt consistently below 12%. We could also lower the rating on NSPI if we lower our ratings on Emera.

Although unlikely, we could raise our ratings on NSPI over our outlook period if we raise our rating on Emera, and at the same time, NSPI's FFO to debt is consistently above 15%.

The stable outlook on Tampa Electric Co. (TEC) in part reflects our outlook on Emera. In addition, the outlook reflects our view that TEC will continue to generate stable cash flow and maintain FFO to debt of about 20%-22% during our two-year outlook period. Furthermore, the stable outlook on TEC also assumes no change to the current insulation provisions between TEC and Emera.

We could lower our ratings on TEC over the next 12 to 24 months if we lower our ratings on Emera. Although unlikely, we could also downgrade TEC if there is a multiple notch weakening to the company's stand-alone credit profile, such that TEC's FFO to debt deteriorates and is consistently below 12%.

We could raise our ratings on TEC over our outlook period if we raise the ratings on Emera, which could happen if Emera's financial measures improves with FFO to debt approaching 13%.

Emera Inc. is a diversified electric and natural gas utility holding company that serves more than 2.5 million customers across the U.S. (Florida and New Mexico), Canada (Nova Scotia), and the islands of Barbados, Bahamas, Dominica and St. Lucia.

## Related Criteria

General Criteria: Hybrid Capital: Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceId/10985839), July 1, 2019

General Criteria: Group Rating Methodology (/en\_US/web/guest/article/-/view/sourceId/10999747), July 1, 2019

Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments (/en\_US/web/guest/article/-/view/sourceId/10906146), April 1, 2019

Criteria | Corporates | General: Reflecting Subordination Risk In Corporate Issue Ratings (/en\_US/web/guest/article/-/view/sourceId/10486915), March 28, 2018

General Criteria: Methodology For Linking Long-Term And Short-Term Ratings (/en\_US/web/guest/article/-/view/sourceId/10011703), April 7, 2017

Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers (/en\_US/web/guest/article/-/view/sourceId/8956570), Dec. 16, 2014

Criteria | Corporates | Utilities: Key Credit Factors For The Regulated Utilities Industry (/en\_US/web/guest/article/-/view/sourceId/8339577), Nov. 19, 2013

Criteria | Corporates | General: Corporate Methodology (/en\_US/web/guest/article/-/view/sourceId/8314109), Nov. 19, 2013

General Criteria: Country Risk Assessment Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceId/8313032), Nov. 19, 2013

General Criteria: Methodology: Industry Risk (/en\_US/web/guest/article/-/view/sourceId/8304862), Nov. 19, 2013

General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities (/en\_US/web/guest/article/-/view/sourceId/7629699), Nov. 13, 2012

General Criteria: Use Of CreditWatch And Outlooks (/en\_US/web/guest/article/-/view/sourceId/5612636), Sept. 14, 2009

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Primary Credit Analyst: Andrew Ng, Toronto + 1 (416) 507 2545;  
andrew.ng@spglobal.com (mailto:andrew.ng@spglobal.com)

Secondary Contact: Obioma Ugboaja, New York + 1 (212) 438 7406;  
obioma.ugboaja@spglobal.com (mailto:obioma.ugboaja@spglobal.com)

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5. Standard & Poor's
6. Morningstar
7. BARRA

Value Line is the largest and most widely circulated independent investment advisory service, and influences the expectations of a large number of institutional and individual investors. The Value Line data are commercially available on a timely basis to investors in paper format or electronically. Value Line betas are derived from a least-squares regression analysis between weekly percent changes in the price of a stock and weekly percent changes in the New York Stock Exchange Average over a period of 5 years. In the case of shorter price histories, a smaller time period is used, but 2 years is the minimum. Value Line betas are computed on a theoretically sound basis using a broadly based market index, and they are adjusted for the regression tendency of betas to converge to 1.00. This necessary adjustment to beta is discussed below.

### **Practical and Conceptual Difficulties**

**Computational Issues.** Absolute estimates of beta may vary over a wide range when different computational methods are used. The return data, the time period used, its duration, the choice of market index, and whether annual, monthly, or weekly return figures are used will influence the final result.

Ideally, the returns should be total returns, that is, dividends and capital gains. In practice, beta estimates are relatively unaffected if dividends are excluded. Theoretically, market returns should be expressed in terms of total returns on a portfolio of all risky assets. In practice, a broadly based value-weighted market index is used. For example, Merrill Lynch betas use the Standard & Poor's 500 market index, while Value Line betas use the New York Stock Exchange Composite market index. In theory, unless the market index used is the true market index, fully diversified to include all securities in their proportion outstanding, the beta estimate obtained is potentially distorted. Failure to include bonds, Treasury bills, real estate, etc., could lead to a biased beta estimate. But if beta is used as a relative risk ranking device, choice of the market index may not alter the relative rankings of security risk significantly.

To enhance statistical significance, beta should be calculated with return data going as far back as possible. But the company's risk may have changed if the historical period is too long. Weighting the data for this tendency is one possible remedy, but this procedure presupposes some knowledge of how risk changed over time. A frequent compromise is to use a 5-year period with either weekly or monthly returns. Value Line betas are computed based on weekly returns over a 5-year period, whereas Merrill Lynch betas are computed with monthly returns over a 5-year period. In an empirical study of utility

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TO A  
PUBLIC UTILITY**

**Myron J. Gordon**

**1974  
MSU Public Utilities Studies**

**Division of Research  
Graduate School of Business Administration  
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East Lansing, Michigan**

so that the current value can be widely off the mark as a measure of the expected future value.

#### 5.4 Other Measures of Growth

The measure of expected growth in the dividend established in the previous two sections, the intrinsic growth rate, is not the only possible measure of the variable. Another plausible measure is some average of the past rates of growth in the dividend. Under our model of security valuation, dividend, earnings, and price per share all are expected to grow at the same rate. Hence, the rates of growth in the dividend, earnings, and price also are candidates for estimates of the expected rate of growth in the dividend.

Let us consider first the rate of growth in earnings per share. The earnings per share during  $T$  adjusted for stock splits and stock dividends to make interperiod comparisons valid is

$$\text{AYPS}(T) = \text{AFC}(T) / .5 [\text{ANS}(T) + \text{ANS}(T - 1)], \quad (5.4.1)$$

where  $\text{ANS}(T)$  is the number of shares outstanding at the end of  $T$  adjusted for stock splits and dividends. The rate of growth in earnings per share during  $T$  is

$$\text{YGR}(T) = [\text{AYPS}(T) - \text{AYPS}(T - 1)] / \text{AYPS}(T - 1). \quad (5.4.2)$$

For reasons to be given shortly, the smoothed rate of growth in earnings is superior to the current rate as a forecast of the expected rate. The smoothed rate of earnings growth is obtained from

$$\begin{aligned} L_n[1 + \text{YGRS}(T)] &= \lambda L_n[1 + \text{YGR}(T)] \\ &+ (1 - \lambda) \bar{L}_n[1 + \text{YGRS}(T - 1)], \end{aligned} \quad (5.4.3)$$

with  $\lambda = .15$  and  $\text{YGRS}(1953) = .04$ .

The primary reason for a difference between YGR and GRTH is a change in the rate of return on the common equity. To illustrate, assume a firm that has been earning a return on common of .10 and retaining one-half of its income to finance its investment. The rate of growth under both measures will be .05. If the firm's rate

of return on common rises from .10 to .11, the retention growth rate will rise from .05 to  $(.5)(.11) = .055$ . However, the earnings growth rate will rise from .05 to .155.<sup>5</sup> Furthermore, the earnings growth rate in subsequent periods will be .055 if the return on common remains .11. This example suggests that the intrinsic growth rate is superior to the earnings growth rate as a measure of expected growth. Investors nonetheless may look to past data on earnings growth for information on expected future growth, and it is the growth investors expect that should be used to measure share yield.

A number of considerations suggest that investors may, in fact, use earnings growth as a measure of expected future growth. First, the intrinsic growth rate includes stock financing growth as well as retention growth. The former is difficult for us to measure and may be even more difficult for investors. Consequently, investors may use past earnings growth to forecast the future since it incorporates in one statistic growth from all sources. Second, we saw that inflation will result in a rise in the allowed rate of return on equity for a regulated company. If this response to inflation takes place with a lag, that is, the regulatory agency raises RRC over time, earnings growth will reflect the forecast rate of growth better than intrinsic growth. Finally, it appears that security analysts use past growth in earnings more than any other variable to forecast future growth.

Given that earnings growth is used by investors to forecast future growth, the smoothed value of the variable YGRS is superior to the current value. The previous illustration revealed that YGR overreacts to changes in the allowed rate of return and therefore is subject to large random fluctuations. The data on YGR confirm this conclusion.

The use of dividend growth as a forecast of future growth is subject to the same limitations as earnings if the firm pays a constant fraction of its earnings in dividends. That is, under this assumption the dividend growth rate in any period is the same as the earnings growth rate. Firms tend to change their dividend rate from one

<sup>5</sup>Let the book value per share at the start of  $T$  be  $\text{BVS}(T - 1) = \$50.00$ . With  $\text{RRC}(T) = .10$ ,  $\text{AYP}(T) = \$5.00$ , and with  $\text{RETR}(T) = .5$ ,  $\text{BVS}(T) = \$52.50$ . If  $\text{RRC}(T + 1) = .10$ ,  $\text{AYP}(T + 1) = \$5.25$ , and  $\text{YGR}(T + 1) = \text{RTGR}(T - 1) = .05$ . However, if  $\text{RRC}(T + 1) = .11$ ,  $\text{RTGR}(T + 1) = (.11)(.5) = .055$ , while  $\text{AYP}(T + 1) = \$5.775$ , and  $\text{YGR}(T + 1) = (\$5.775 - \$5.00) / \$50.00 = .155$ .

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The average growth rate estimate from all the analysts that follow the company measures the consensus expectation of the investment community for that company. In most cases, it is necessary to use earnings forecasts rather than dividend forecasts due to the extreme scarcity of dividend forecasts compared to the widespread availability of earnings forecasts. Given the paucity and variability of dividend forecasts, using the latter would produce unreliable DCF results. In any event, the use of the DCF model prospectively assumes constant growth in both earnings and dividends. Moreover, as discussed below, there is an abundance of empirical research that shows the validity and superiority of earnings forecasts relative to historical estimates when estimating the cost of capital.

The uniformity of growth projections is a test of whether they are typical of the market as a whole. If, for example, 10 out of 15 analysts forecast growth in the 7%–9% range, the probability is high that their analysis reflects a degree of consensus in the market as a whole. As a side note, the lack of uniformity in growth projections is a reasonable indicator of higher risk. Chapter 3 alluded to divergence of opinion amongst analysts as a valid risk indicator.

Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of  $g$ . The accuracy of these forecasts in the sense of whether they turn out to be correct is not at issue here, as long as they reflect widely held expectations. As long as the forecasts are typical and/or influential in that they are consistent with current stock price levels, they are relevant. The use of analysts' forecasts in the DCF model is sometimes denounced on the grounds that it is difficult to forecast earnings and dividends for only one year, let alone for longer time periods. This objection is unfounded, however, because it is present investor expectations that are being priced; it is the consensus forecast that is embedded in price and therefore in required return, and not the future as it will turn out to be.

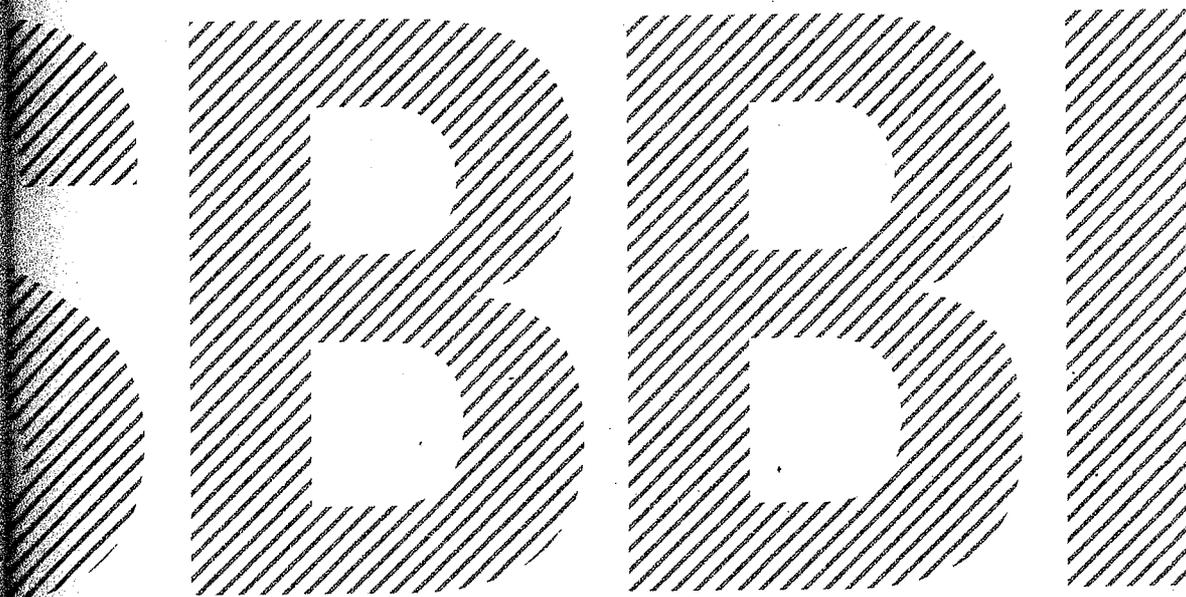
### **Empirical Literature on Earnings Forecasts**

Published studies in the academic literature demonstrate that growth forecasts made by security analysts represent an appropriate source of DCF growth rates, are reasonable indicators of investor expectations and are more accurate than forecasts based on historical growth. These studies show that investors rely on analysts' forecasts to a greater extent than on historic data only.

Academic research confirms the superiority of analysts' earnings forecasts over univariate time-series forecasts that rely on history. This latter category

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## Company Size and Return

One of the most remarkable discoveries of modern finance is the finding of a relationship between company size and return.<sup>1</sup> Historically on average, small companies have higher returns than those of large ones. Earlier chapters of this book document this phenomenon for the smallest stocks on the New York Stock Exchange, or NYSE. The relationship between company size and return cuts across the entire size spectrum; it is not restricted to the smallest stocks. This chapter examines returns across the entire range of company size.

### Construction of the Size Decile Portfolios

The portfolios used in this chapter are those created by the Center for Research in Security Prices, or CRSP, at the University of Chicago's Booth School of Business. CRSP has refined the methodology of creating size-based portfolios and has applied this methodology to the entire universe of NYSE/AMEX/NASDAQ-listed securities going back to 1926.

The NYSE universe excludes closed-end mutual funds, preferred stocks, real estate investment trusts, foreign stocks, American Depository Receipts, unit investment trusts, and Americus Trusts. All companies on the NYSE are ranked by the combined market capitalization of all their eligible equity securities. The companies are then split into 10 equally populated groups or deciles. Eligible companies traded on the NYSE, the NYSE MKT LLC (formerly known as the American Stock Exchange, or AMEX), and the NASDAQ Stock Market (formerly the NASDAQ National Market) are then assigned to the appropriate deciles according to their capitalization in relation to the NYSE breakpoints. The portfolios are rebalanced using closing prices for the last trading day of March, June, September, and December. Securities added during the quarter are assigned to the

appropriate portfolio when two consecutive month-end prices are available. If the final NYSE price of a security that becomes delisted is a month-end price, then that month's return is included in the quarterly return of the portfolio. When a month-end NYSE price is missing, the month-end value is derived from merger terms, quotations on regional exchanges, and other sources. If a month-end value is not available, the last available daily price is used.

In October 2008, NYSE Euronext acquired the American Stock Exchange and rebranded the index as NYSE Amex. Later, in May 2012, it was renamed NYSE MKT LLC. For the sake of continuity, we refer to this index as AMEX, its historical name.

Base security returns are monthly holding period returns. All distributions are added to the month-end prices. Appropriate adjustments are made to prices to account for stock splits and dividends. The return on a portfolio for one month is calculated as the value weighted average of the returns for the individual stocks in the portfolio. Annual portfolio returns are calculated by compounding the monthly portfolio returns.

### Aspects of the Company Size Effect

The company size phenomenon is remarkable in several ways. First, the greater risk of small-cap does not, in the context of the capital asset pricing model, fully account for their higher returns over the long term. In the CAPM only systematic, or beta risk, is rewarded; small-cap stock returns have exceeded those implied by their betas.

Second, the calendar annual return differences between small- and large-cap companies are serially correlated. This suggests that past annual returns may be of some value in predicting future annual returns. Such serial correlation, or autocorrelation, is practically unknown in the market for large-cap stocks and in most other equity markets but is evident in the size premium series.

**Table 7-5: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Number of Companies, Historical and Recent Market Capitalization**

Decile	Historical Average Percentage of Total Capitalization	Recent Number of Companies	Recent Decile Market Capitalization (in Thousands)	Recent Percentage of Total Capitalization
1-Largest	64.03%	185	14,808,784,274	64.25%
2	14.04	199	3,247,447,914	14.09
3	6.88	194	1,579,432,904	6.85
4	4.56	221	1,042,428,212	4.52
5	3.03	215	694,147,086	3.01
6	2.56	265	585,657,120	2.54
7	1.99	317	449,325,255	1.95
8	1.51	417	333,731,801	1.45
9	0.80	395	173,673,205	0.75
10-Smallest	0.61	948	135,401,288	0.59
Mid-Cap 3-5	14.47	630	3,316,008,202	14.39
Low-Cap 6-8	6.05	999	1,368,714,176	5.94
Micro-Cap 9-10	1.41	1,343	309,074,493	1.34

Data from 1926–2014. Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2015 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

Historical average percentage of total capitalization shows the average, over the last 89 years, of the decile market values as a percentage of the total NYSE/AMEX/NASDAQ calculated each month. Number of companies in deciles, recent market capitalization of deciles, and recent percentage of total capitalization are as of Sept. 30, 2014.

Decile	Recent Market Capitalization (in Thousands)	Company Name
1-Largest	\$591,015,721	Apple Inc
2	24,272,837	Cummins Inc
3	10,105,622	Murphy Oil Corp
4	5,844,592	Alaska Airgroup Inc
5	3,724,186	Great Plains Energy Inc
6	2,542,913	Wolverine World Wide Inc
7	1,686,860	Wesco Aircraft Holdings Inc
8	1,010,634	First Bancorp P R
9	548,839	G P Strategies Corp
10-Smallest	300,725	M V Oil Trust

Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2015 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission. Market capitalization and name of largest company in each decile are as of Sept. 30, 2014.

### Long-Term Returns in Excess of Systematic Risk

The capital asset pricing model, or CAPM, does not fully account for the higher returns of small-cap stocks. Table 7-6 shows the returns in excess of the riskless rate over the past 89 years for each decile of the NYSE/AMEX/NASDAQ.

The CAPM can be expressed as follows:

$$k_s = r_f + (\beta_s \times ERP)$$

where,

$k_s$  = the expected return for company  $s$ ;

$r_f$  = the expected return of the riskless asset;

$\beta_s$  = the beta of the stock of company  $s$ ; and,

ERP = the expected equity risk premium, or the amount by which investors expect the future return on equities to exceed that on the riskless asset.

Table 7-6 uses the CAPM to estimate the return in excess of the riskless rate and compares this estimate to historical performance. According to the CAPM, the expected return on a security should consist of the riskless rate plus an additional return to compensate for the systematic risk of the security. The return in excess of the riskless rate is estimated in the context of the CAPM by multiplying the equity risk premium by  $\beta$  (beta). The equity risk premium is the return that compensates investors for taking on risk equal to the risk of the market as a whole (systematic risk). Beta measures the extent to which a security or portfolio is exposed to systematic risk. The beta of each decile indicates the degree to which the decile's return moves with that of the overall market.

A beta greater than one indicates that the security or portfolio has greater systematic risk than the market; according to the CAPM equation, investors are compensated for taking on this additional risk. Yet, Table 7-6 illustrates that the smaller deciles have had returns that are not fully explained by their higher betas. This return in excess of that predicted by CAPM increases as one moves from the largest companies in decile 1 to the smallest in decile 10. The excess return is especially pronounced for micro-cap stocks (deciles 9-10). This size-related phenomenon has prompted a revision to the CAPM, which includes a size premium.

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The model is analogous to the standard CAPM, but with the return on a minimum risk portfolio that is unrelated to market returns,  $R_Z$ , replacing the risk-free rate,  $R_F$ . The model has been empirically tested by Black, Jensen, and Scholes (1972), who find a flatter than predicted SML, consistent with the model and other researchers' findings. An updated version of the Black-Jensen-Scholes study is available in Brealey, Myers, and Allen (2006) and reaches similar conclusions.

The zero-beta CAPM cannot be literally employed to estimate the cost of capital, since the zero-beta portfolio is a statistical construct difficult to replicate. Attempts to estimate the model are formally equivalent to estimating the constants,  $a$  and  $b$ , in Equation 6-2. A practical alternative is to employ the Empirical CAPM, to which we now turn.

### 6.3 Empirical CAPM

As discussed in the previous section, several finance scholars have developed refined and expanded versions of the standard CAPM by relaxing the constraints imposed on the CAPM, such as dividend yield, size, and skewness effects. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the CAPM prediction in keeping with the actual observed risk-return relationship. The ECAPM makes use of these empirical findings. The ECAPM estimates the cost of capital with the equation:

$$K = R_F + \alpha + \beta \times (\text{MRP} - \alpha) \quad (6-5)$$

where  $\alpha$  is the "alpha" of the risk-return line, a constant, and the other symbols are defined as before. All the potential vagaries of the CAPM are telescoped into the constant  $\alpha$ , which must be estimated econometrically from market data. Table 6-2 summarizes<sup>10</sup> the empirical evidence on the magnitude of alpha.<sup>11</sup>

<sup>10</sup> The technique is formally applied by Litzenberger, Ramaswamy, and Sosin (1980) to public utilities in order to rectify the CAPM's basic shortcomings. Not only do they summarize the criticisms of the CAPM insofar as they affect public utilities, but they also describe the econometric intricacies involved and the methods of circumventing the statistical problems. Essentially, the average monthly returns over a lengthy time period on a large cross-section of securities grouped into portfolios are related to their corresponding betas by statistical regression techniques; that is, Equation 6-5 is estimated from market data. The utility's beta value is substituted into the equation to produce the cost of equity figure. Their own results demonstrate how the standard CAPM underestimates the cost of equity capital of public utilities because of utilities' high dividend yield and return skewness.

<sup>11</sup> Adapted from Vilbert (2004).

**TABLE 6-2**  
**EMPIRICAL EVIDENCE ON THE ALPHA FACTOR**

Author	Range of alpha
Fischer (1993)	-3.6% to 3.6%
Fischer, Jensen and Scholes (1972)	-9.61% to 12.24%
Fama and McBeth (1972)	4.08% to 9.36%
Fama and French (1992)	10.08% to 13.56%
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 5.04%
Pettengill, Sundaram and Mathur (1995)	4.6%
Morin (1989)	2.0%

For an alpha in the range of 1%–2% and for reasonable values of the market risk premium and the risk-free rate, Equation 6-5 reduces to the following more pragmatic form:

$$K = R_F + 0.25 (R_M - R_F) + 0.75 \beta (R_M - R_F) \quad (6-6)$$

Over reasonable values of the risk-free rate and the market risk premium, Equation 6-6 produces results that are indistinguishable from the ECAPM of Equation 6-5.<sup>12</sup>

An alpha range of 1%–2% is somewhat lower than that estimated empirically. The use of a lower value for alpha leads to a lower estimate of the cost of capital for low-beta stocks such as regulated utilities. This is because the use of a long-term risk-free rate rather than a short-term risk-free rate already incorporates some of the desired effect of using the ECAPM. That is, the

<sup>12</sup> Typical of the empirical evidence on the validity of the CAPM is a study by Morin (1989) who found that the relationship between the expected return on a security and beta over the period 1926–1984 was given by:

$$\text{Return} = 0.0829 + 0.0520 \beta$$

Given that the risk-free rate over the estimation period was approximately 6% and that the market risk premium was 8% during the period of study, the intercept of the observed relationship between return and beta exceeds the risk-free rate by about 2%, or 1/4 of 8%, and that the slope of the relationship is close to 3/4 of 8%. Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_F + x(R_M - R_F) + (1 - x)\beta(R_M - R_F)$$

where  $x$  is a fraction to be determined empirically. The value of  $x$  that best explains the observed relationship  $\text{Return} = 0.0829 + 0.0520 \beta$  is between 0.25 and 0.30. If  $x = 0.25$ , the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\beta(R_M - R_F)$$

long-term risk-free rate version of the CAPM has a higher intercept and a flatter slope than the short-term risk-free version which has been tested. Thus, it is reasonable to apply a conservative alpha adjustment. Moreover, the lowering of the tax burden on capital gains and dividend income enacted in 2002 may have decreased the required return for taxable investors, steepening the slope of the ECAPM risk-return trade-off and bring it closer to the CAPM predicted returns.<sup>13</sup>

To illustrate the application of the ECAPM, assume a risk-free rate of 5%, a market risk premium of 7%, and a beta of 0.80. The Empirical CAPM equation (6-6) above yields a cost of equity estimate of 11.0% as follows:

$$\begin{aligned} K &= 5\% + 0.25(12\% - 5\%) + 0.75 \times 0.80(12\% - 5\%) \\ &= 5.0\% + 1.8\% + 4.2\% \\ &= 11.0\% \end{aligned}$$

As an alternative to specifying alpha, see Example 6-1.

Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary. Moreover, recall from Chapter 3 that the use of adjusted betas compensates for interest rate sensitivity of utility stocks not captured by unadjusted betas.

<sup>13</sup> The lowering of the tax burden on capital gains and dividend income has no impact as far as non-taxable institutional investors (pension funds, 401K, and mutual funds) are concerned, and such investors engage in very large amounts of trading on security markets. It is quite plausible that taxable retail investors are relatively inactive traders and that large non-taxable investors have a substantial influence on capital markets.



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Betas and Their Regression Tendencies

Author(s): Marshall E. Blume

Source: *The Journal of Finance*, Vol. 30, No. 3 (Jun., 1975), pp. 785-795

Published by: [Blackwell Publishing for the American Finance Association](#)

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## BETAS AND THEIR REGRESSION TENDENCIES

MARSHALL E. BLUME\*

### I. INTRODUCTION

A PREVIOUS STUDY [3] showed that estimated beta coefficients, at least in the context of a portfolio of a large number of securities, were relatively stationary over time. Nonetheless, there was a consistent tendency for a portfolio with either an extremely low or high estimated beta in one period to have a less extreme beta as estimated in the next period. In other words, estimated betas exhibited in that article a tendency to regress towards the grand mean of all betas, namely one. This study will examine in further detail this regression tendency.<sup>1</sup>

The next section presents evidence showing the existence of this regression tendency and reviews the conventional reasons given in explanation [1], [4], [5]. The following section develops a formal model of this regression tendency and finds that the conventional analysis of this tendency is, if not incorrect, certainly misleading. Accompanying this theoretical analysis are some new empirical results which show that a major reason for the observed regression is real non-stationarities in the underlying values of beta and that the so-called "order bias" is not of dominant importance.

### II. THE CONVENTIONAL WISDOM

If an investor were to use estimated betas to group securities into portfolios spanning a wide range of risk, he would more than likely find that the betas estimated for the very same portfolios in a subsequent period would be less extreme or closer to the market beta of one than his prior estimates. To illustrate, assume that the investor on July 1, 1933, had at his disposal an estimate of beta for each common stock which had been listed on the NYSE (New York Stock Exchange) for the prior seven years, July 1926-June 1933. Assume further that each estimate was derived by regressing the eighty-four monthly relatives covering this seven-year period upon the corresponding values for the market portfolio.<sup>2</sup>

If this investor, say, desired equally weighted portfolios of 100 securities, he might group those 100 securities with the smallest estimates of beta together to form a portfolio. Such a portfolio would of all equally

\* Professor of Finance, University of Pennsylvania. The author wishes to thank Professors John Bildersee and Harry Markowitz for their helpful comments and the Rodney L. White Center for financial support.

1. Quite apart from this regression tendency, it is reasonable to suppose that betas do change over time in systematic ways in response to certain changes in the structure of companies.

2. Such regressions were calculated only for securities with complete data. The relative for the market portfolio was measured by Fisher's Combination Link Relative [6].

weighted portfolios have the smallest possible estimated portfolio beta since an estimate of such a portfolio beta can be shown to be an average of the estimates for the individual securities [2, p. 169]. To cover a wide range of portfolio betas, this investor might then form a second portfolio consisting of the 100 securities with the next smallest estimates of beta, and so on.

Using the securities available as of June 1933, this investor could thus obtain four portfolios of 100 securities apiece with no security in common. Estimated over the same seven-year period, July 1926-June 1933, the betas for these portfolios<sup>3</sup> would have ranged from 0.50 to 1.53. Similar portfolios can be constructed for each of the next seven-year periods through 1954 and their portfolio betas calculated. Table 1 contains these estimates under the heading "Grouping Period."

The betas for these same portfolios, but reestimated using the monthly portfolio relatives adjusted for delistings from the seven years following the grouping period, illustrate the magnitude of the regression tendency.<sup>4</sup> Whereas the portfolio betas as estimated, for instance, in the grouping period 1926-33 ranged from 0.50 to 1.53, the betas as estimated for these same portfolios in the subsequent seven-year period 1933-40 ranged only from 0.61 to 1.42. The results for the other periods display a similar regression tendency.

An obvious explanation of this regression tendency is that for some unstated economic or behavioral reasons, the underlying betas do tend to regress towards the mean over time.<sup>5</sup> Yet, even if the true betas were constant over time, it has been argued that the portfolio betas as estimated in the grouping period would as a statistical artifact tend to be more extreme than those estimated in a subsequent period. This bias has sometimes been termed an order or selection bias.

The frequently given intuitive explanation of this order bias [1], [4], [5], parallels the following: Consider the portfolio formed of the 100 securities with the lowest estimates of beta. The estimated portfolio beta might be expected to understate the true beta or equivalently be expected to be measured with negative error. The reason the measurement error might

3. These portfolio betas were derived by averaging the 100 estimates for the individual securities. Alternatively, as [2] shows, the same number would be obtained by regressing the monthly portfolio relatives upon the market index where the portfolio relatives are calculated assuming an equal amount invested in each security at the beginning of each month.

4. These portfolio betas were calculated by regressing portfolio relatives upon the market relatives. The portfolio relatives were taken to be the average of the monthly relatives of the individual securities for which relatives were available. These relatives represent those which would have been realized from an equally-weighted, monthly rebalancing strategy in which a delisted security is sold at the last available price and the proceeds reinvested equally in the remaining securities. This rather complicated procedure takes into account delisted securities and therefore avoids any survivorship bias. In [3], the securities analyzed were required to be listed on the NYSE throughout both the grouping period and the subsequent period, so that there was a potential survivorship bias. Nonetheless, the results reported there are in substantive agreement with the results in Table 1.

5. If the betas are continually changing over time, an estimate of beta as provided by a simple regression must be interpreted with considerable caution. For example, if the true beta followed a linear time trend, it is easily shown that the estimated beta can be interpreted as an unbiased estimate of the beta in the middle of the sample period. A similar interpretation would not in general hold if, for instance, the true beta followed a quadratic time trend.

TABLE 1  
BETA COEFFICIENTS FOR PORTFOLIOS  
OF 100 SECURITIES

Portfolio	Grouping Period	First Subsequent Period
	7/26-6/33	7/33-6/40
1	0.50	0.61
2	0.85	0.96
3	1.15	1.24
4	1.53	1.42
	7/33-6/40	7/40-6/47
1	0.38	0.56
2	0.69	0.77
3	0.90	0.91
4	1.13	1.12
5	1.35	1.31
6	1.68	1.69
	7/40-6/47	7/47-6/54
1	0.43	0.60
2	0.61	0.76
3	0.73	0.88
4	0.86	0.99
5	1.00	1.10
6	1.21	1.21
7	1.61	1.36
	7/47-6/54	7/54-6/61
1	0.36	0.57
2	0.61	0.71
3	0.78	0.88
4	0.91	0.96
5	1.01	1.03
6	1.13	1.13
7	1.26	1.24
8	1.47	1.32
	7/54-6/61	7/61-6/68
1	0.37	0.62
2	0.56	0.68
3	0.72	0.85
4	0.86	0.85
5	0.99	0.95
6	1.11	0.98
7	1.23	1.07
8	1.43	1.25

be expected to be negative may best be explored by analyzing how a security might happen to have one of the 100 lowest estimates of beta. First, if the true beta were in the lowest hundred, the estimated beta would fall in the lowest 100 estimates only if the error in measuring the beta were not too large which roughly translates into more negative than positive errors. Second, if the true beta were not in the lowest 100, the

estimated beta might still be in the lowest 100 estimates if it were measured with a sufficiently large negative error.<sup>6</sup>

Thus, the negative errors in the 100 smallest estimates of beta might be expected to outweigh the positive errors. The same argument except in reverse would apply to the 100 largest estimates. Indeed, it would seem that any portfolio of securities stratified by estimates of beta for which the average of these estimates is not the grand mean of all betas, namely 1.0, would be subject to some order bias. It would also seem that the absolute magnitude of this order bias should be greater, the further the average estimate is from the grand mean. The next section formalizes this intuitive argument and suggests that, if it is not incorrect, it is certainly misleading as to the source of the bias.

### III. A FORMAL MODEL

The intuitive explanation of the order bias just given would seem to suggest that the way in which the portfolios are formed caused the bias. This section will argue that the bias is present in the estimated betas for the individual securities and is not induced by the way in which the portfolios are selected. Following this argument will be an analysis of the extent to which this order bias accounts for the observed regression tendency in portfolio betas over time.

A numerical example will serve to illustrate the logic of the subsequent argument and to introduce some required notation.<sup>7</sup> Assume for the moment that the possible values of beta for an individual security  $i$  in period  $t$ ,  $\beta_{it}$ , are 0.8, 1.0 and 1.2 and that each of these values is equally likely. Assume further that in estimating a beta for an individual security, there is a 0.6 probability that the estimate  $\hat{\beta}_{it}$  contains no measurement error, a 0.2 probability that it understates the true  $\beta_{it}$  by 0.2, and a 0.2 probability that it overstates the true value by 0.2. Now in a sample of ten securities whose true betas were all say 0.8, one would expect two estimates of beta to be 0.6, six to be 0.8, and two to be 1.0. These numbers have been transcribed to the first row of Table 2. The second and third rows are similarly constructed by first assuming that the ten securities all had a true value of 1.0 and then of 1.2.

The rows of Table 2 thus correspond to the distribution of the estimated beta,  $\hat{\beta}_{it}$ , conditional on the true value,  $\beta_{it}$ . It might be noted that the expectation of  $\hat{\beta}_{it}$  conditional on  $\beta_{it}$ ,  $E(\hat{\beta}_{it} | \beta_{it})$ , is  $\beta_{it}$ . However, in a sampling situation, an investigator would be faced with an estimate of beta and would want to assess the distribution of the true  $\beta_{it}$  conditional on the estimated  $\hat{\beta}_{it}$ . Such conditional distributions correspond to the columns of Table 2. It is easily verified that the expectation of  $\beta_{it}$  conditional on  $\hat{\beta}_{it}$ ,  $E(\beta_{it} | \hat{\beta}_{it})$  is generally not  $\hat{\beta}_{it}$ . For example, if  $\hat{\beta}_{it}$  were

6. It is theoretically possible that the estimated beta for a security whose true beta does not fall into the lowest 100 to be in the lowest 100 estimates with a positive measurement error if the betas for some of the improperly classified securities are measured with sufficiently large positive errors.

7. The author is indebted to Harry Markowitz for suggesting this numerical example as a way of clarifying the subsequent formal development.

TABLE 2  
NUMBER OF SECURITIES CROSS  
CLASSIFIED BY  $\beta_{it}$  AND  $\hat{\beta}_{it}$

		$\hat{\beta}_{it}$				
		.6	.8	1.0	1.2	1.4
$\beta_{it}$	.8	2	6	2		
	1.0		2	6	2	
	1.2			2	6	2

0.8,  $E(\beta_{it} | \hat{\beta}_{it} = 0.8)$  would be 0.85 since with this estimate the true beta would be 0.8 with probability 0.75 or 1.0 with probability 0.25.<sup>8</sup>

The estimate  $\hat{\beta}_{it}$ , therefore, would typically be biased, and it is biased whether or not portfolios are formed. The effect of forming large portfolios is to reduce the random component in the estimate, so that the difference between the estimated portfolio beta and the true portfolio beta can be ascribed almost completely to the magnitude of the bias.

In the spirit of this example, the paper will now develop explicit formulae for the order bias and real non-stationarities over time. Let it be assumed that the betas for individual securities in period  $t$ ,  $\beta_{it}$ , can be thought of as drawings from a normal distribution with a mean of 1.0 and variance  $\sigma^2(\beta_{it})$ . The corresponding assumption for the numerical example just discussed would be a trinomial distribution with equal probabilities for each possible value of  $\beta_{it}$ .

Let it additionally be assumed that the estimate,  $\hat{\beta}_{it}$ , measures  $\beta_{it}$  with error  $\eta_{it}$ , a mean-zero independent normal variate, so that  $\hat{\beta}_{it}$  is given by the sum of  $\beta_{it}$  and  $\eta_{it}$ . It immediately follows that  $\beta_{it}$  and  $\hat{\beta}_{it}$  are distributed by a bivariate normal distribution. It might be noted that, as formulated,  $\sigma^2(\eta_{it})$  need not equal  $\sigma^2(\eta_{jt})$ ,  $i \neq j$ . Since the empirical work will assume equality, the subsequent theoretical work will also make this assumption even though for the most part it is not necessary. The final assumption is that  $\beta_{it}$  and  $\beta_{it+1}$  are distributed as bivariate normal variates. Because  $\eta_{it}$  is independently distributed,  $\hat{\beta}_{it}$  and  $\beta_{it+1}$  will be distributed by a bivariate normal distribution.

That  $\hat{\beta}_{it}$  and  $\beta_{it+1}$  are bivariate normal random variables, each with a mean of 1.0, implies the following regression

$$E(\beta_{it+1} | \hat{\beta}_{it}) - 1 = \frac{\text{Cov}(\beta_{it+1}, \hat{\beta}_{it})}{\sigma^2(\hat{\beta}_{it})} (\hat{\beta}_{it} - 1). \tag{1}$$

This regression is similar to the procedure proposed in Blume [3] to adjust the estimated betas for the regression tendency. That procedure was to regress estimates of beta for individual securities from a later period on estimates from an earlier period and to use the coefficients from this regression to adjust future estimates.<sup>9</sup> The empirical evidence

8. For further and more detailed discussion of the distinction between  $E(\beta_{it} | \hat{\beta}_{it})$  and  $E(\hat{\beta}_{it} | \beta_{it})$ , the reader is referred to Vasicek [7].

9. That the regression of estimated betas from a later period on estimates from an earlier period is similar to (1) follows from noting that  $E(\beta_{it+1} | \hat{\beta}_{it})$  equals  $E(\beta_{it+1} | \beta_{it})$  and that  $\text{Cov}(\beta_{it+1}, \hat{\beta}_{it})$  equals  $\text{Cov}(\beta_{it+1}, \beta_{it})$ . In [3], the grand mean of all betas was estimated in each period and was not assumed equal to 1.0.

presented there indicated that this procedure did improve the accuracy of estimates of future betas, though no claim was made that there might not be better ways to adjust for the regression tendency.

The coefficient of  $(\hat{\beta}_{it} - 1)$  in (1) can be broken down into two components: one of which would correspond to the so-called order bias and the other to a true regression tendency. To achieve this result, note that the covariance of  $\beta_{it+1}$  and  $\hat{\beta}_{it}$  is given by  $\text{Cov}(\beta_{it+1}, \beta_{it} + \eta_{it})$ , which because of the assumed independence of the errors, reduces to the covariance of  $\beta_{it+1}$  and  $\beta_{it}$ . Making this substitution and replacing  $\text{Cov}(\beta_{it+1}, \beta_{it})$  by  $\rho(\beta_{it+1}, \beta_{it})\sigma(\beta_{it+1})\sigma(\beta_{it})$ , (1) becomes

$$E(\beta_{it+1} | \hat{\beta}_{it}) - 1 = \frac{\rho(\beta_{it+1}, \beta_{it})\sigma(\beta_{it+1})\sigma(\beta_{it})}{\sigma^2(\hat{\beta}_{it})} (\hat{\beta}_{it} - 1). \quad (2)$$

The ratio of  $\sigma(\beta_{it})\sigma(\beta_{it+1})$  to  $\sigma^2(\hat{\beta}_{it})$  might be identified with the order bias and the correlation of  $\beta_{it}$  and  $\beta_{it+1}$  with a true regression.

If the underlying values of beta are stationary over time, the correlation of successive values will be 1.0 and the standard deviations of  $\beta_{it}$  and  $\beta_{it+1}$  will be the same. Assuming such stationarity and noting then that  $\beta_{it+1}$  equals  $\beta_{it}$ , equation (2) can be rewritten as<sup>10</sup>

$$\begin{aligned} E(\beta_{it+1} | \hat{\beta}_{it}) - 1 &= E(\beta_{it} | \hat{\beta}_{it}) - 1 \\ &= \frac{\sigma^2(\beta_{it})}{\sigma^2(\hat{\beta}_{it})} (\hat{\beta}_{it} - 1). \end{aligned} \quad (3)$$

Since  $\sigma^2(\beta_{it})$  would be less than  $\sigma^2(\hat{\beta}_{it})$  if beta is measured with any error, the coefficient of  $(\hat{\beta}_{it} - 1)$  would be less than 1.0. This means that the true beta for a security would be expected to be closer to one than the estimated value. In other words, an estimate of beta for an individual security except for an estimate of 1.0 is biased.<sup>11</sup>

10. Equation (3) can be derived alternatively from the assumption that  $\beta_{it}$  and  $\hat{\beta}_{it}$  are bivariate normal variables and under the assumption of stationarity  $\beta_{it}$  will equal  $\beta_{it+1}$ . Vasicek [7] has developed using Bayes' Theorem, an expression for  $E(\beta_{it} | \hat{\beta}_{it})$  which can be shown to be mathematically identical to the right hand side of (3): He observed that the procedure used by Merrill Lynch, Pierce, Fenner and Smith, Inc. in their Security Risk Evaluation Service is similar to his expression if  $\sigma^2(\eta_{it})$  is assumed to be the same for all securities. Merrill Lynch's procedure, as he presented it, is to use the coefficient of the cross-sectional regression of  $(\hat{\beta}_{it+1} - 1)$  on  $(\beta_{it} - 1)$  to adjust future estimates. This adjustment mechanism is in fact the same as (1) or (2) which shows that such a cross sectional regression takes into account real changes in the underlying betas. Only if betas were stationary over time would his formula be similar to Merrill Lynch's.

11. The formula for order bias given by (3) is similar to that which measures the bias in the estimated slope coefficient in a regression on one independent variable measured with error. Explicitly, consider the regression,  $y = bx + \epsilon$ , where  $\epsilon$  is an independent mean-zero normal disturbance and both  $y$  and  $x$  are measured in deviate form. Now if  $x$  is measured with independent mean-zero error  $\eta$  and  $y$  is regressed on  $x + \eta$ , it is well known that the estimated coefficient,  $\hat{b}$ , will be biased toward zero and the probability limit of  $\hat{b}$  is  $\frac{b}{1 + \frac{\sigma^2(\eta)}{\sigma^2(x)}}$ . This expression can be

rewritten as  $\frac{\sigma^2(x)}{\sigma^2(x + \eta)}$   $b$ . Interpreting  $x$  as the true beta less 1.0, the correspondence to (3) is obvious. In this type of regression, one could either adjust the independent variables themselves for bias and thus obtain an unbiased estimate of the regression coefficient or run the regression on the unadjusted variables and then adjust the regression coefficient. The final coefficient will be the same in either case.

In light of this discussion, the paper now reexamines the empirical results of the previous section. The initial task will be to adjust the portfolio betas in the grouping periods for the order bias. After making this adjustment, it will be apparent that much of the regression tendency observed in Table 1 remains. Thus, if (2) is valid, the value of the correlation coefficient is probably not 1.0. The statistical properties of estimates of the portfolio betas in both the grouping and subsequent periods will be examined. The section ends with an additional test that gives further confirmation that much of the regression tendency stems from true non-stationarities in the underlying betas.

To adjust the estimates of beta in the grouping periods for the order bias using (3) would require estimates of the ratio of  $\sigma^2(\beta_{it})$  to  $\sigma^2(\hat{\beta}_{it})$ . The sample variance calculated from the estimated betas for all securities in a particular cross-section provides an estimate of  $\sigma^2(\hat{\beta}_{it})$ . An estimate of  $\sigma^2(\beta_{it})$  can be derived as the difference between estimates of  $\sigma^2(\hat{\beta}_{it})$  and  $\sigma^2(\eta_{it})$ . If the variance of the error in measuring an individual beta is the same for every security,  $\sigma^2(\eta_{it})$  can be estimated as the average over all securities of the squares of the standard error associated with each estimated beta.

In conformity with these procedures, estimates of the ratio of  $\sigma^2(\beta_{it})$  to  $\sigma^2(\hat{\beta}_{it})$  for the five seven-year periods from 1926 through 1961 were respectively 0.92, 0.92, 0.89, 0.82, and 0.75. In other words, an unbiased estimate of the underlying beta for an individual security should be some eight to twenty-five per cent closer to 1.0 than the original estimate. For instance, if  $\sigma^2(\beta_{it})/\sigma^2(\hat{\beta}_{it})$  were 0.9 and if  $\hat{\beta}_{it}$  were 1.3, an unbiased estimate would be 1.27.

To determine whether the order bias accounted for all of the regression, the estimated betas for the individual securities were adjusted for the order bias using (3) and the appropriate value of the ratio. For the same portfolios of 100 securities examined in the previous section, portfolio betas for the grouping period were recalculated as the average of these adjusted betas. It might be noted that these adjusted portfolio betas could alternatively be obtained by adjusting the unadjusted portfolio betas directly. These adjusted portfolio betas are given in Table 3. For the reader's convenience, the unadjusted portfolio betas and those estimated in the subsequent seven years are reproduced from Table 1.

Before comparing these estimates, let us for the moment consider the statistical properties of the portfolio betas, first in the grouping period and then in the subsequent period. Though unadjusted estimates of the portfolio betas in the grouping period may be biased, they would be expected to be highly "reliable" as that term is used in psychometrics. Thus, regardless of what these estimates measure, they measure it accurately or more precisely their values approximate those which would be expected conditional on the underlying population and how they are calculated. For equally-weighted portfolios, the larger the number of securities, the more reliable would be the estimate.

Specifically, for an equally-weighted portfolio of 100 securities, the standard deviation of the error in the portfolio beta would be one-tenth

TABLE 3  
BETA COEFFICIENTS FOR PORTFOLIOS OF 100 SECURITIES

Portfolio	Grouping Period		First Subsequent Period	Second Subsequent Period
	Unadjusted for Order Bias	Adjusted for Order Bias		
	7/26-6/33		7/33-6/40	7/40-6/47
1	0.50	.54	0.61	0.73
2	0.85	.86	0.96	0.92
3	1.15	1.14	1.24	1.21
4	1.53	1.49	1.42	1.47
	7/33-6/40		7/40-6/47	7/47-6/54
1	0.38	.43	0.56	0.53
2	0.69	.72	0.77	0.86
3	0.90	.91	0.91	0.96
4	1.13	1.12	1.12	1.11
5	1.35	1.32	1.31	1.29
6	1.68	1.63	1.69	1.40
	7/40-6/47		7/47-6/54	7/54-6/61
1	0.43	.50	0.60	0.73
2	0.61	.65	0.76	0.88
3	0.73	.76	0.88	0.93
4	0.86	.88	0.99	1.04
5	1.00	1.00	1.10	1.12
6	1.21	1.19	1.21	1.14
7	1.61	1.54	1.36	1.20
	7/47-6/54		7/54-6/61	7/61-6/68
1	0.36	.48	0.57	0.72
2	0.61	.68	0.71	0.79
3	0.78	.82	0.88	0.88
4	0.91	.93	0.96	0.92
5	1.01	1.01	1.03	1.04
6	1.13	1.10	1.13	1.02
7	1.26	1.21	1.24	1.08
8	1.47	1.39	1.32	1.15
	7/54-6/61		7/61-6/68	
1	0.37	.53	0.62	
2	0.56	.67	0.68	
3	0.72	.79	0.85	
4	0.86	.89	0.85	
5	0.99	.99	0.95	
6	1.11	1.08	0.98	
7	1.23	1.17	1.07	
8	1.43	1.32	1.25	

the standard error of the estimated betas for individual securities providing the errors in measuring these individual betas were independent of each other. During the 1926-33 period, the average standard error of betas for individual securities was 0.12 so that the standard error of the portfolio beta would be roughly 0.012. The average standard error for individual securities increased gradually to 0.20 in the period July 1954-June 1961. For the next seven-year period ending June 1968, the average declined to 0.17.

As pointed out, standard errors for portfolio betas calculated from those for individual securities assume independence of the errors in estimates. The standard error for a portfolio beta can however be calculated directly without making this assumption of independence by regressing the portfolio returns on the market index. The standard error for the portfolio of the 100 securities with the lowest estimates of beta in the July 1926-June 1933 period was for instance, 0.018, which compares to 0.012 calculated assuming independence. The average standard error of the estimated betas for the four portfolios in this period was also 0.018. The average standard errors of the betas for the portfolios of 100 securities in the four subsequent seven-year periods ending June 1961 were respectively 0.025, 0.027, 0.024, and 0.027. Although these standard errors, not assuming independence, are about 50 per cent larger than before, they are still extremely small compared to the range of possible values for portfolio betas.

For the moment, let us therefore assume that the portfolio betas as estimated in the grouping period before adjustment for order bias are extremely reliable numbers in that whatever they measure, they measure it accurately. In this case, adjusting these portfolio betas for the order bias will give extremely reliable and unbiased estimates of the underlying portfolio beta and therefore these adjusted betas can be taken as very good approximations to the underlying, but unknown, values. The greater the number of securities in the portfolio, the better the approximation will be.

The numerical example in Table 2 gives an intuitive feel for what is happening. Consider a portfolio of a large number of securities whose estimated betas were all 0.8 in a particular sample. It will be recalled that such an estimate requires that the true beta be either 0.8 or 1.0. As the number of securities with estimates of 0.8 increases, one can be more and more confident that 75 per cent of the securities have true betas of 0.8 and 25 per cent have true betas of 1.0 or equivalently that an equally-weighted portfolio of these securities has a beta of 0.85.

The heuristic argument in the prior section might lead some to believe that, contrary to the estimates in the grouping period, there are no order biases associated with the portfolio betas estimated in the subsequent seven years. This belief, however, is not correct. Formally, the portfolios formed in the grouping period are being treated as if they were securities in the subsequent period. To estimate these portfolio betas, portfolio returns were calculated and regressed upon some measure of the market. In this paper so far, these portfolio returns were calculated under an equally-weighted monthly revision strategy in which delisted securities were sold at the last available price and the proceeds reinvested equally in the remaining. Other strategies are, of course, possible.

Since these portfolios are being treated as securities, formula (3) applies, so that there is still some "order bias" present. However, in determining the rate of regression, the appropriate measure of the variance of the errors in the estimates is the variance for the portfolio betas and not for the betas of individual stocks. This fact has the important effect of making the ratio of  $\sigma^2(\beta_{it})$  to  $\sigma^2(\hat{\beta}_{it})$  much closer to one than for

individual securities. Estimating  $\sigma^2(\hat{\beta}_{it})$  and  $\sigma^2(\eta_{it})$  for the portfolios formed on the immediately prior period, the value of this ratio for each of the four seven-year periods from 1933 to 1961 was in excess of 0.99 and for the last seven-year period in excess of 0.98. Thus, for most purposes, little error is introduced by assuming that these estimated portfolio betas contain no "order bias" or equivalently that these estimates measure accurately the true portfolio beta.

A comparison of the portfolio betas in the grouping period, even after adjusting for the order bias, to the corresponding betas in the immediately subsequent period discloses a definite regression tendency. This regression tendency is statistically significant at the five per cent level for each of the last three grouping periods, 1940-47, 1947-54, 1954-61.<sup>12</sup> Thus, this evidence strongly suggests that there is a substantial tendency for the underlying values of beta to regress towards the mean over time. Yet, it could be argued that this test is suspect because the formula used in adjusting for the order bias was developed under the assumption that the distributions of beta were normal. This assumption is certainly not strictly correct and it is not clear how sensitive the adjustment is to violations of this assumption.

A more robust way to demonstrate the existence of a true regression tendency is based upon the observation that the portfolio betas estimated in the period immediately subsequent to the grouping period are measured with negligible error and bias. These estimated portfolio betas can be compared to betas for the same portfolios estimated in the second seven years subsequent to the grouping period. These betas, which have been estimated in the second subsequent period and are given in Table 3, disclose again an obvious regression tendency. This tendency is significant at the five per cent level for the last three of the four possible comparisons.<sup>13</sup>

#### IV. SUMMARY

Beginning with a review of the conventional wisdom, the paper showed that estimated beta coefficients tend to regress towards the grand mean of all betas over time. The next section presented two kinds of empirical analyses which showed that part of this observed regression tendency represented real nonstationarities in the betas of individual securities and that the so-called order bias was not of overwhelming importance.

In other words, companies of extreme risk—either high or low—tend to have less extreme risk characteristics over time. There are two logical

12. This test of significance was based upon the regression  $(\hat{\beta}_{it+1} - 1) = b(\hat{\beta}_{it} - 1) + \epsilon_{it}$  where  $\hat{\beta}_{it}$  has been adjusted for order bias. The estimated coefficients with the t-value measured from 1.0 in parentheses were for the five seven-years chronologically 0.86 (-1.14), 0.94 (-0.88), 0.71 (-3.84), 0.86 (-3.23), and 0.81 (-2.57). Note that even if  $\beta_{it}$  were measured with substantial independent error contrary to fact, the estimated  $b$  would not be biased towards zero because, as footnote 10 shows, the adjustment for the order bias has already corrected for this bias.

13. Using the same regression as in the previous footnote, the estimated coefficient  $b$  with the t-value measured from 1.0 in parentheses were for the four possible comparisons in chronological order 0.92 (-0.69), 0.74 (-2.67), 0.62 (-6.86), and 0.58 (-5.51).

explanations. First, the risk of existing projects may tend to become less extreme over time. This explanation may be plausible for high risk firms, but it would not seem applicable to low risk firms. Second, new projects taken on by firms may tend to have less extreme risk characteristics than existing projects. If this second explanation is correct, it is interesting to speculate on the reasons. For instance, is it a management decision or do limitations on the availability of profitable projects of extreme risk tend to cause the riskiness of firms to regress towards the grand mean over time? Though one could continue to speculate on the forces underlying this tendency of risk—as measured by beta coefficients—to regress towards the grand mean over time, it remains for future research to determine the explicit reasons.

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**NEW  
REGULATORY  
FINANCE**

**Roger A. Morin, PhD**

**2006  
PUBLIC UTILITIES REPORTS, INC.  
Vienna, Virginia**

Any forward-looking cost of capital calculation already embodies tax effects since investors price securities on the basis of after-tax returns. Besides, a very large proportion of trading is conducted by tax-exempt financial institutions (pension funds, mutual funds, 401K, etc.) for whom tax issues are largely immaterial.

The existence of a negative risk premium is highly unlikely, as it is at serious odds with the basic tenets of finance, economics, and law. Using proper definitions for expected rates of return of equity and debt, the preponderance of the evidence indicates that the negative risk premium does not exist. Several risk premium studies cited in this chapter have found positive risk premiums well in excess of 5% over the last decade. Risk premiums do narrow during unusually turbulent and volatile interest rate environments, but then return to normal levels. They are most unlikely to ever become negative.

## **4.7 Risk Premium Determinants**

Fundamentally, the primary determinant of expected returns is risk. To wit, the various paradigms of financial theory, including the Capital Asset Pricing Model and the Arbitrage Pricing Model covered in subsequent chapters, posit fundamental relationships between return and risk. There are also secondary influences on the relative magnitude of the risk premium, however, including the level of interest rates, default risk, and taxes.

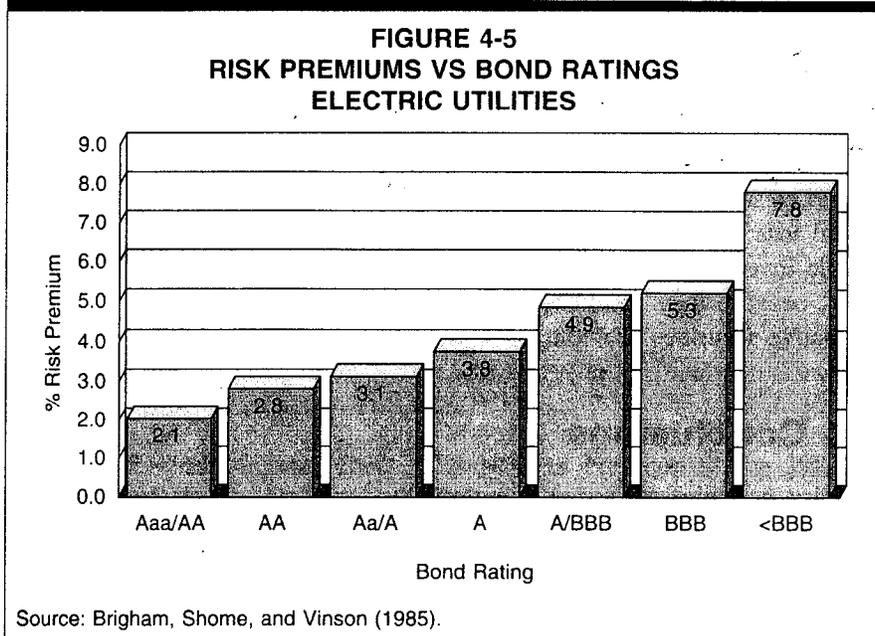
### **Interest Rates**

Published studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), Morin, (2005), and McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates—rising when rates fell and declining when interest rates rose. The reason for this relationship is that when interest rates rise, bondholders suffer a capital loss. This is referred to as interest rate risk. Stockholders, on the other hand, are more concerned with the firm's earning power. So, if bondholders' fear of interest rate risk exceeds shareholders' fear of loss of earning power, the risk differential will narrow and hence the risk premium will shrink. This is particularly true in high inflation environments. Interest rates rise as a result of accelerating inflation, and the interest rate risk of bonds intensifies more than the earnings risk of common stocks, which are partially hedged from the ravages of inflation. This phenomenon has been termed as a "lock-in" premium. Conversely in low interest rate environments, when bondholders' interest rate fears subside and shareholders' fears of loss of earning power dominate, the risk differential will widen and hence the risk premium will increase.

Harris (1986) showed that for every 100 basis point change in government bond yields, the equity risk premium for utilities changes 51 basis points in the opposite direction, for a net change in the cost of equity of 49 basis points. For example, a 100 basis point decline in government bond yields would lead to a 51 basis point increase in the equity risk premium and therefore an overall decrease in the cost of equity of 49 basis points, a result almost identical to the estimate reported in Morin (2005). As discussed earlier, similar results were uncovered by McShane (2005), who examined the statistical relationship between DCF-derived risk premiums and interest rates using a sample of natural gas distribution utilities.

The gist of the empirical research on this subject is that the cost of equity has changed only half as much as interest rates have changed in the past. The knowledge that risk premiums vary inversely to the level of interest rates can be used to adjust historical risk premiums to better reflect current market conditions. Thus, when interest rates are unusually high (low), the appropriate current risk premium is somewhat below (above) that long-run average. The empirical research cited above provides guidance as to the magnitude of the adjustment.

Risk premiums also tend to fluctuate with changes in investor risk aversion. Such changes can be tracked by observing the yield spreads between different bond rating categories over time. Brigham, Shome, and Vinson (1985) examined the relationship between risk premium and bond rating and found, unsurprisingly, that the risk premiums are higher for lower rated firms than for higher rated firms. Figure 4-5 shows the results graphically.



to the DCF method, which may be sluggish in detecting changes in return requirements, especially when based on historical data.

One advantage of risk premium over DCF is that the former is a period-by-period (time-series) study of the cost of equity over the cost of debt, in contrast to the latter which is a point-in-time cross-sectional estimate. In other words, the risk premium approach takes a broader time-series perspective rather than a snapshot point-in-time viewpoint, and is therefore less vulnerable to the vagaries of any one particular capital market environment. A prospective risk premium test relies on a succession of DCF observations over long periods, and is not as vulnerable to a given capital market environment as a spot DCF test.

Of course, the estimation of the appropriate risk premium for either the equity market as a whole or for a specific utility company, is not an exact science. Therefore, it is necessary to evaluate a broad spectrum of data and apply alternative risk premium estimation approaches in order to derive a fair and reasonable estimate of the required equity risk premium. Equal emphasis should be accorded to risk premium results based on history and those based on prospective data. Each proxy for expected risk premium brings information to the judgment process from a different light. Neither proxy is without blemish, each has advantages and shortcomings. Historical risk premiums over long periods are available and verifiable, but may no longer be applicable if structural shifts have occurred. Prospective risk premiums may be more relevant since they encompass both history and current changes, but are nevertheless imperfect proxies and are subject to measurement error and to the vagaries of the DCF input proxies.

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# Alternative Regulation for Emerging Utility Challenges: 2015 Update

Prepared by:

***Pacific Economics Group Research LLC***

Mark Newton Lowry, PhD

Matthew Makos

Gretchen Waschbusch, MBA

Prepared for:

Edison Electric Institute

**November 11, 2015**

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Printed in the United States of America.

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Published by:

Edison Electric Institute

701 Pennsylvania Avenue, N.W.

Washington, D.C. 20004-2696

Phone: 202-508-5000

Web site: [www.eei.org](http://www.eei.org)

# Contents

<b>I. Introduction.....</b>	<b>1</b>
<b>II. Cost Trackers.....</b>	<b>6</b>
<b>III. Relaxing the Link Between Revenue and System Use.....</b>	<b>17</b>
A. Lost Revenue Adjustment Mechanisms .....	17
B. Revenue Decoupling .....	17
C. Fixed/Variable Pricing .....	21
<b>IV. Forward Test Years .....</b>	<b>31</b>
<b>V. Multiyear Rate Plans .....</b>	<b>34</b>
<b>VI. Formula Rates .....</b>	<b>47</b>
<b>VII. Marketing Flexibility.....</b>	<b>52</b>
<b>VIII. Conclusions .....</b>	<b>56</b>

# I. Introduction

Investor-owned electric utilities in the United States are buffeted today by varied and rapid changes in the business conditions they face. For vertically integrated electric utilities (“VIEUs”) and utility distribution companies (“UDCs”) alike, the traditional cost of service approach to rate regulation is often not ideal for helping utilities cope with these changes. Alternative approaches to regulation (“Altreg”) can often help utilities secure better outcomes for their customers and shareholders.

The changing business climate stems primarily from three root causes. One is pressure, from policymakers and many customers, for the power industry to lighten its environmental footprint. In addition to evolving renewable portfolio standards at the state level, utilities must comply with an array of federal initiatives such as the Environmental Protection Agency’s Clean Power Plan. Demand-side management (“DSM”) programs and tightening building codes and appliance standards encourage energy efficiency. Some customers seek power from greener sources than the increasingly clean portfolios of utilities. Self generation from rooftop solar is one means to this end, and its cost is falling. Customer-sited distributed generation (“DG”) must be accommodated, and utilities must purchase power surpluses that these facilities generate at regulated rates.

A second force for change is technological progress in metering and distribution. Advanced metering infrastructure and other smart grid technologies can improve reliability and facilitate integration of intermittent renewables. Time-sensitive pricing can encourage customers to use the grid in less costly ways. New value-added optional products and services can be offered which benefit customers.

A third force for change is increased concern about the reliability and resiliency of grid service. Some facilities are approaching advanced age, and some need more protection from severe weather. Many customers seek better quality service.

These forces are having important practical effects on utilities. Growth in the demand for their traditional services has slowed, and utilities face competition from distributed energy resources (“DERs”). Nevertheless, some utilities need capital expenditures (“capex”) for cleaner generating capacity, smart grid facilities, increased resiliency, and replacement of aging assets. Many new facilities don’t automatically trigger revenue growth. Increased marketing flexibility is needed to meet competitive challenges and complex, changing customer needs.

Under traditional regulation, the base rates that compensate utilities for costs of non-energy inputs are reset only in general rate cases with historical test years. These lengthy proceedings require a detailed review of all costs and their allocation amongst the utility’s retail services. Revenue from secondary sources (e.g., off-system sales) is imputed against the revenue requirement.

Most base rate revenue is drawn from volumetric and other usage charges. Since the cost of base rate inputs is driven more by capacity than system use in the short run, a utility’s finances are sensitive between rate

## I. Introduction

cases to the gap between growth in system use and capacity. A convenient proxy for this gap is the growth in use per customer (aka “average use”). The need for rate cases increases when average use declines.

Traditional regulation is ill-suited for addressing many of today’s challenges. Growth in average use was once positive, and the resulting incremental revenues helped utilities finance rising cost without rate cases. Today, growth in the average use of residential and commercial customers is typically static and often negative. Utilities needing normal or high capital expenditures are then compelled to file rate cases more frequently. These involve high regulatory cost and are nonetheless frequently uncompensatory when they involve historical test years. Frequent rate cases also reduce utility opportunities to increase earnings from improved cost containment and marketing. Traditional regulation also does not allow for many value-added or optional rates and services. Improved utility performance is thus discouraged at a time when it is increasingly needed to respond to competitive pressures.

Increased financial attrition has been a factor in the long-term decline of average credit ratings among investor-owned electric utilities. This is illustrated in Figure 1. Higher risk raises financing costs and can discourage needed investments.

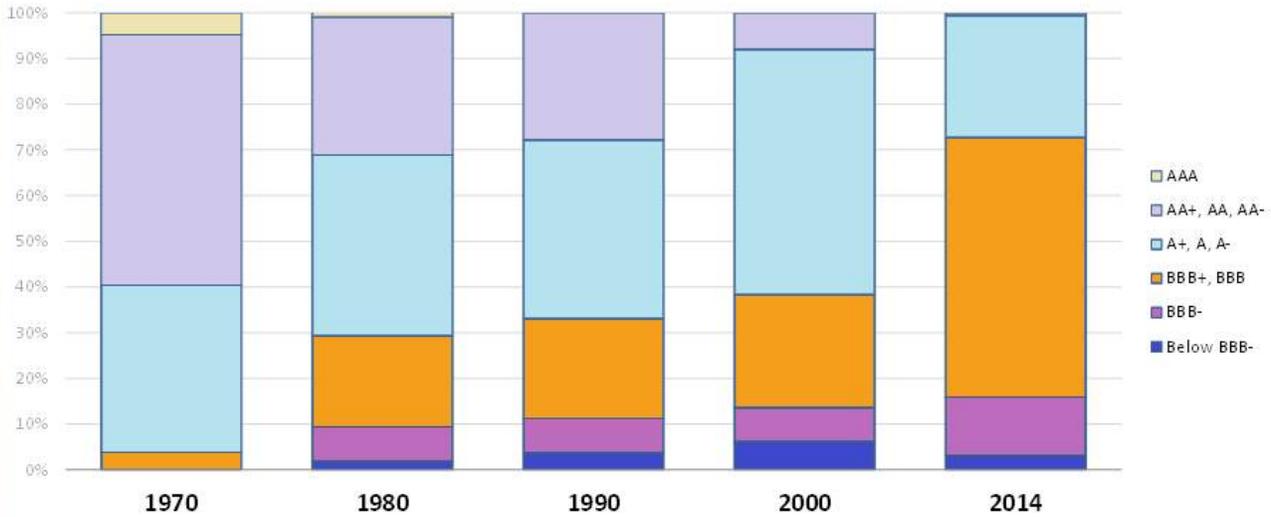
Alternative approaches to regulation have been developed which handle today’s business conditions better. Some, such as multiyear rate plans, formula rates, and fully-forecasted test years, can involve sweeping regulatory change. Others, like revenue decoupling and cost trackers, target specific challenges.

This survey, now updated to include precedents through mid-2015, explains Altreg options and details precedents in the regulation of retail electric utility rates. A summary of states that currently use these approaches is featured in Table 1. Information is also provided on precedents for gas and water distributors and for energy utilities in Australia, Canada, and Britain. This year’s survey also discusses marketing flexibility, a new Altreg area of growing interest to EEI members.

Figure 1

# U.S. Electric IOUs Rating History

1970 – 2014



The current average company rating is BBB+, improved from the BBB average rating in 2000



Source: EEI Finance Department, Standard & Poor's, Macquarie Capital, SNL Financial

Table 1

## Alternative Regulation Tools: An Overview of Current Precedents

State	Capital Cost Trackers	Measures that Relax the Use/Revenue Link			Multiyear Rate Plans <sup>1</sup>	Retail Formula Rate Plans	Forward Test Years
		Decoupling True Up Plans	Lost Revenue Adjustment Mechanisms	Fixed Variable Retail Pricing			
Alabama	Electric & Gas					Electric & Gas	Yes
Alaska							
Arizona	Electric, Gas, & Water	Gas only	Electric & Gas		Electric only		
Arkansas	Electric & Gas	Gas only	Electric & Gas				
California	Electric & Gas	Electric & Gas			Electric & Gas		Yes
Colorado	Electric & Gas				Electric only		
Connecticut	Electric, Gas, & Water	Electric & Gas	Gas only	Electric & Gas			Yes
Delaware	Electric, Gas, & Water						
District of Columbia	Electric & Gas	Electric only					
Florida	Electric & Gas			Gas only	Electric only		Yes
Georgia	Electric & Gas	Gas only		Gas only	Electric only	Gas only	Yes
Hawaii	Electric only	Electric only			Electric only		Yes
Idaho	Electric only	Electric only					
Illinois	Gas & Water	Gas only		Electric & Gas		Electric only	Yes
Indiana	Electric, Gas, & Water	Gas only	Electric only		Gas only		
Iowa	Gas only			Gas only	Electric only		
Kansas	Gas only		Electric only	Gas only			
Kentucky	Electric & Gas		Electric & Gas	Gas only			Yes
Louisiana	Electric only		Electric only		Electric only	Electric & Gas	Yes
Maine	Electric, Gas, & Water	Electric only		Gas only	Gas only		Yes
Maryland	Electric & Gas	Electric & Gas					
Massachusetts	Electric & Gas	Electric & Gas	Electric & Gas		Gas only		
Michigan	Gas only	Gas only					Yes

Table 1 continued

State	Capital Cost Trackers	Measures that Relax the Use/Revenue Link			Multiyear Rate Plans <sup>1</sup>	Retail Formula Rate Plans	Forward Test Years
		Decoupling True Up Plans	Lost Revenue Adjustment Mechanisms	Fixed Variable Retail Pricing			
Minnesota	Electric & Gas	Electric & Gas					Yes
Mississippi	Electric & Gas		Electric & Gas	Electric only		Electric & Gas	Yes
Missouri	Gas & Water			Gas only			
Montana	Electric & Gas		Gas only				
Nebraska	Gas only			Gas only			
Nevada	Gas only	Gas only	Electric only				
New Hampshire	Electric, Gas, & Water			Gas only	Electric & Gas		
New Jersey	Electric, Gas, & Water	Gas only					
New Mexico							Yes
New York	Gas & Water	Electric & Gas	Gas only	Electric & Gas	Electric & Gas		Yes
North Carolina	Gas & Water	Gas only	Electric only				
North Dakota	Electric only			Gas only	Electric only		Yes
Ohio	Electric, Gas, & Water	Electric only	Electric only	Gas only	Electric only		
Oklahoma	Electric only		Electric only	Electric & Gas		Gas only	
Oregon	Electric & Gas	Electric & Gas	Electric & Gas				Yes
Pennsylvania	Electric, Gas, & Water			Gas only			Yes
Rhode Island	Electric & Gas	Electric & Gas					Yes
South Carolina	Electric only		Electric only			Gas only	
South Dakota	Electric only						
Tennessee	Gas only	Gas only		Gas only		Gas only	Yes
Texas	Electric & Gas			Gas only		Gas only	
Utah	Gas only	Gas only					Yes
Vermont				Gas only			
Virginia	Electric & Gas	Gas only		Gas only	Electric only		
Washington	Gas only	Electric & Gas			Electric & Gas		
West Virginia	Electric only						
Wisconsin				Gas only			Yes
Wyoming	Electric only	Gas only	Electric & Gas	Electric & Gas			Yes

<sup>1</sup> This column excludes plans involving rate freezes without extensive supplemental funding from trackers.

## II. Cost Trackers

A cost tracker is a mechanism for expedited recovery of specific utility cost (e.g., outside of a rate case). Balancing accounts are typically used to track unrecovered costs. Cost recovery is often implemented using tariff sheet provisions called riders.

Trackers are used in various situations where they are more practical than rate cases for addressing particular costs. Utilities usually recover fuel and purchased power costs via trackers because the volatility and substantial size of these costs would otherwise lead to frequent rate cases and materially impact utility risk. Other volatile expenses that are sometimes addressed with trackers include those for pensions, severe storms, and uncollectible bills.

A second use of trackers is for costs incurred due to policies of government agencies. Examples here include franchise fees and certain taxes. Tracking costs like these is fair to utilities and encourages government agencies to consider the impact of their policies on customer bills.

Trackers are also used to compensate utilities for costs that are rapidly rising and don't otherwise trigger new revenue, whether or not they are volatile or mandated. This encourages needed expenditures and reduces risk and the frequency of rate cases. Examples of operation and maintenance ("O&M") expenses that are sometimes tracked due in large measure to their rapid growth include those for health care.

Trackers for some costs have multiple rationales. DSM expenses, for example, are often sizable and sometimes grow rapidly.<sup>1</sup> Utility DSM programs are often mandated. Additionally, DSM can slow growth in the average use of power and reduce the need for plant additions, important sources of earnings growth for utilities. Tracking DSM expenses helps to balance utility incentives to embrace DSM.

Capital cost trackers typically address the accumulating depreciation, return on asset value, and taxes that result from the capex.<sup>2</sup> Capital costs can qualify for tracker treatment on several grounds. Major plant additions are volatile. Capex might be necessitated by highway construction or changes in government safety, reliability, or environmental standards. Capex is sometimes large enough to cause brisk cost growth that would otherwise occasion frequent rate cases.

An early use of capital cost trackers in the electric utility industry was to address construction costs of large power plants. These plants can take years to construct. An allowance in rates for a return on funds used during construction was traditionally not permitted until assets were used and useful and a rate case was filed. Deferred recovery of the allowance strains utility cash flow, increases financing expenses, and induces more rate "shock" when the value of the plant and construction financing is finally added to the rate base.

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<sup>1</sup> This survey only documents capital cost trackers. Trackers for DSM expenses are ubiquitous so that there is less need for documentation.

<sup>2</sup> Recovery is sometimes achieved by keeping a rate case open beyond the date of a final decision for the limited purpose of adding assets to the revenue requirement.

Many commissions have addressed these problems by making a return on construction work in progress (“CWIP”) eligible for immediate recovery. Capital cost trackers have often been used in lieu of frequent rate cases to obtain CWIP recovery.

Capital costs of distribution system modernization are sometimes recovered using trackers for somewhat different reasons. The annual expenditure may not be as large as that for large generation units, and construction of specific assets usually takes less than a year. However, the capex can still be sizable and doesn’t automatically trigger new revenue when completed. A tracker for accelerated modernization costs can help a company modernize its grid and improve its services without frequent rate cases.

Capital costs of generation emissions controls are often accorded tracker treatment. These controls are occasioned by the emissions policies of state and federal agencies. Additionally, the facilities do not produce revenue and some facilities typically become used and useful each year over a series of years.

There are varied treatments of costs in approved capital trackers. Regulators often approve tracked capex budgets in advance, usually after considerable deliberation. Procedures for reviewing the need for generation plant additions are especially well established. Once a budget is set, the treatment of variances between actual and budgeted cost becomes an issue. Some trackers permit conventional prudence review treatment of cost overruns. In other cases, no adjustments are subsequently made if cost exceeds the budget. In between these extremes are mechanisms in which deviations, of prescribed magnitude, from budgeted amounts are shared formulaically (e.g., 50-50) between the utility and its customers. Utilities are also permitted sometimes to share in the benefits of capex underspends. The prudence of tracked capex is often subject to a final review when the cost is added to rate base, a step that usually occurs in the next rate case.

Recent precedents for capital cost trackers are listed in Table 2 and Figures 2 and 3. It can be seen that the precedents are numerous and continue to grow. This is the most widely used Aereg tool in the United States. For electric utilities, trackers for emissions controls, generation capacity, advanced metering infrastructure, and general system modernization have been especially common in recent years. Trackers for gas distributors typically address the cost of replacing old cast iron and bare steel mains. Trackers for water utilities, sometimes called distribution system improvement charges, are also common for accelerated modernization.

Figure 2: Recent Capital Cost Tracker Precedents by State: Energy Utilities

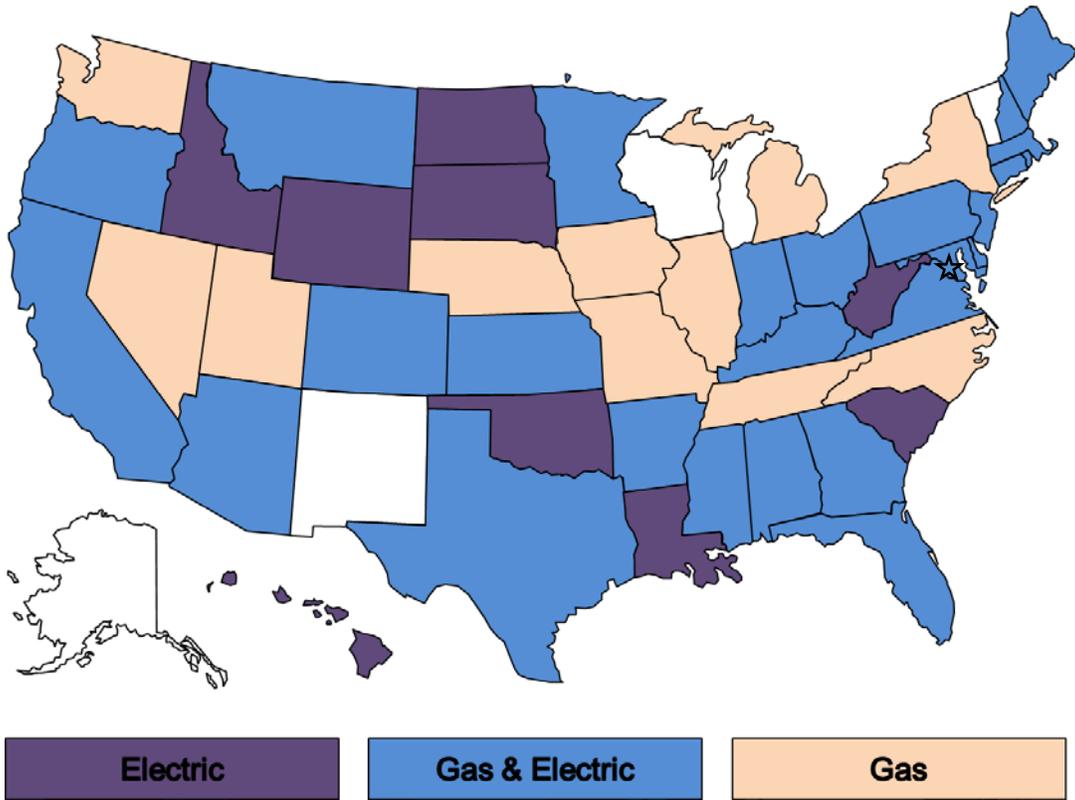


Figure 3: Recent Capital Cost Tracker Precedents by State: Water Utilities

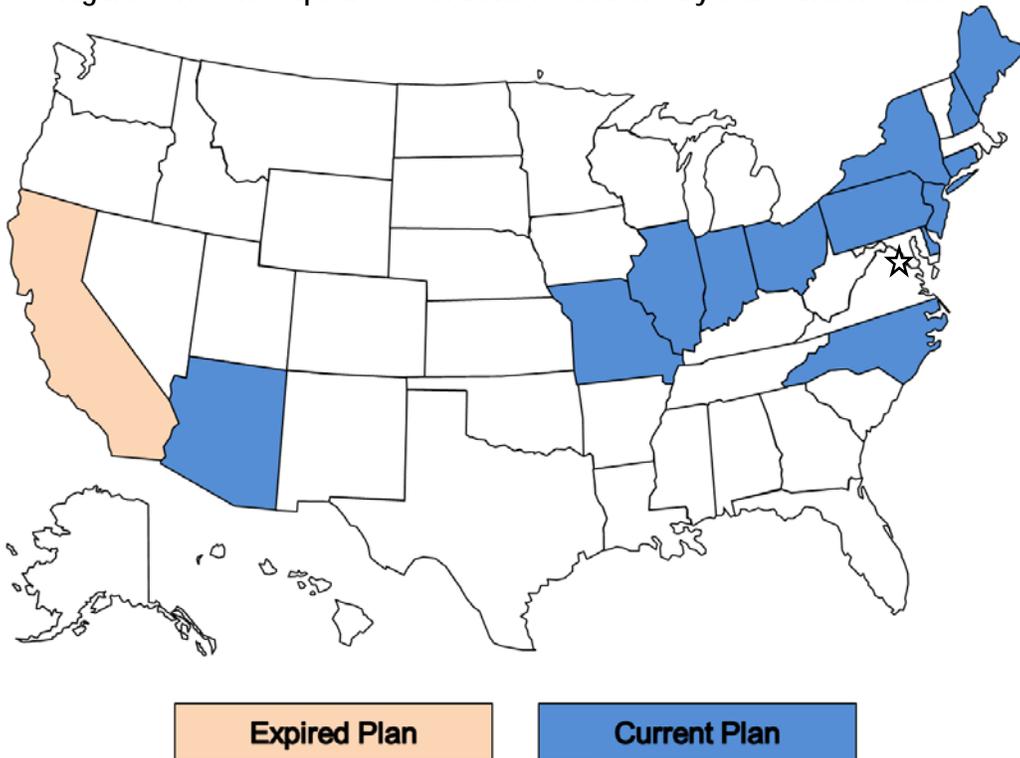


Table 2

# Recent Capital Cost Tracker Precedents

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
AL	Alabama Power	Electric	Rate Certificated New Plant	Any approved by Commission through CPCN	Dockets 18117 and 18416 (November 1982)
AL	Mobile Gas Service	Gas	Cast Iron Replacement Factor	Replacement of cast iron mains	Docket 24794 (November 1995)
AR	Arkansas Oklahoma Gas	Gas	Act 310 Surcharge	Relocations of pipelines mandated by government agencies	Docket 12-088-U (July 2013)
AR	Arkansas Oklahoma Gas	Gas	System Safety Enhancement Rider	Replacement of bare steel mains, mains on low pressure systems, mains that are subject of an advisory notice by government that company deems to be unsatisfactory	Docket 13-078-U (July 2014)
AR	CenterPoint Energy Arkla	Gas	Main Replacement Rider	Replacement of cast iron and bare steel mains and services	Docket 06-161-U (October 2007)
AR	CenterPoint Energy Arkla	Gas	Government Mandated Expenditure Surcharge Rider	Replacements resulting from highway and street rebuilding	Docket 10-108-U (March 2011)
AR	Empire District Electric	Electric	Alternative Generation Environmental Recovery Rider	Environmental	Docket 15-010-U (August 2015)
AR	Oklahoma Gas & Electric	Electric	Smart Grid Rider	Systemwide smart grid implementation	Docket 10-109-U (August 2011)
AR	SourceGas Arkansas	Gas	At-Risk Meter Relocation Program Rider	Installation of new services for meters relocated due to motor vehicle collision risk	Docket 13-079-U (July 2014)
AR	SourceGas Arkansas	Gas	Main Replacement Program Rider	Replacement of bare steel and coated steel mains, mains that are subject of an advisory notice by government that company deems to be unsatisfactory, and associated services	Docket 13-079-U (July 2014)
AR	SourceGas Arkansas	Gas	Act 310 Surcharge	Bare steel and cast iron pipeline replacement, in-line inspection project, emissions controlling catalysts for compressor station engines, greenhouse gas monitoring of some regulator stations, highway relocation projects	Docket 13-072-U (April 2014)
AR	SWEPSCO	Electric	Alternative Generation Recovery Rider	New generation	Docket 09-008-U (November 2009)
AR	SWEPSCO	Electric	Rider Environmental Compliance Surcharge	Environmental	Docket 15-021-U (October 2015)
AZ	Arizona Public Service	Electric	Renewable Energy Standard Adjustment Schedule	Renewables not recovered in base rates	Docket E-01345A-08-0172
AZ	Arizona Public Service	Electric	Environmental Improvement Surcharge	Environmental improvement projects	Docket E-01345A-11-0224 (May 2012)
AZ	Arizona Public Service	Electric	Four Corners Rate Rider Surcharge	Generation	Docket E-01345A-11-0224 (December 2014)
AZ	Arizona Water Company	Water	Arsenic Cost Recovery Mechanism	Investments to reduce arsenic in water supply	Various (operating regions have separate decisions approving ACRMs)
AZ	Arizona Water Company - Eastern Group	Water	System Improvement Benefits Mechanism	Replacement of leak prone mains and related services, meters, and hydrants, replace meters that do not have lead free brass, other replacements for mains, services, meters, and hydrants that are at the end of their useful life	Decision 73938 (June 2013)
AZ	Southwest Gas	Gas	Customer Owned Yard Line Cost Recovery Mechanism	Replacement and ownership of customer-owned yard lines that have been shown to be leaking	Docket G-01551A-10-0458 (January 2012)
AZ	Tucson Electric Power	Electric	Environmental Compliance Adjustor	Miscellaneous environmental projects	Decision 73912 (June 2013)
CA	Pacific Gas & Electric	Electric	Smart Grid Memorandum Account	Smart grid projects that received DOE matching funds	Decision 09-09-029 (September 2009)
CA	Pacific Gas & Electric	Gas Transmission	Pipeline Safety Implementation Plan	Pipeline replacement, automated valve installation, and upgrades to pipeline	Decision 12-12-030 (December 2012)
CA	Pacific Gas & Electric	Electric	Smart Grid Pilot Deployment Project Balancing Account	Pilot programs for smart grid line sensors, volt/VAR optimization, detection and location of distribution line outages and faulted circuits, and information technology investments to improve short term demand forecasting for power procurement	Decision 13-03-032 (March 2013)
CA	San Diego Gas & Electric	Electric & Gas	Advanced Metering Infrastructure Balancing Account	AMI	Decision 07-04-043 (April 2007)
CA	San Diego Gas & Electric	Electric	Energy Storage Balancing Account	Projects to store solar energy	Decision 13-05-010 (May 2013)
CA	San Diego Gas & Electric	Gas	Post-2011 Distribution Integrity Management Program Balancing Account	DIMP related costs	Decision 13-05-010 (May 2013)
CA	San Diego Gas & Electric	Gas	Transmission Integrity Management Program Balancing Account	TIMP related costs	Decision 13-05-010 (May 2013)
CA	San Diego Gas & Electric	Gas Transmission	Safety Enhancement Capital Cost Balancing Account	Replacement of mains that fail pressure tests or that cannot be pressure tested	Decision 14-06-007 (June 2014)
CA	Southern California Edison	Electric	SmartConnect Balancing Account	Advanced metering infrastructure project	Decision 08-09-039 (September 2008)
CA	Southern California Edison	Electric	Solar PV Balancing Account	Solar generation	Decision 09-06-049 (June 2009)
CA	Southern California Gas	Gas	Advanced Metering Infrastructure Balancing Account	AMI	Decision 10-04-027 (April 2010)
CA	Southern California Gas	Gas	Post-2011 Distribution Integrity Management Program Balancing Account	DIMP related costs	Decision 13-05-010 (May 2013)
CA	Southern California Gas	Gas	Transmission Integrity Management Program Balancing Account	TIMP related costs	Decision 13-05-010 (May 2013)
CA	Southern California Gas	Gas Transmission	Safety Enhancement Capital Cost Balancing Account	Replacement of mains that fail pressure tests or that cannot be pressure tested	Decision 14-06-007 (June 2014)
CO	Black Hills Colorado Electric	Electric	Transmission Cost Adjustment Rider	Transmission projects	Docket 09-014E, Decision C09-0271 (March 2009)
CO	Black Hills Colorado Electric	Electric	Clean Air Clean Jobs Act Rider	Gas-fired generation	Docket 14AL-0393E, Decision C14-1504 (December 2014)
CO	Public Service Company of Colorado	Electric	Transmission Cost Adjustment	Transmission projects	Docket 07A-339E, Decision C07-1085 (December 2007)
CO	Public Service Company of Colorado	Gas	Pipeline Safety Integrity Adjustment	Gas distribution and transmission integrity management programs, main replacement, partial recovery of two large pipeline replacements	Docket 10-AL-963G (August 2011)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
CO	Public Service Company of Colorado	Electric	Clean Air Clean Jobs Act Rider	Miscellaneous environmental projects including gas-fired generation, scrubbers	Proceeding 14A-680E, Decision C15-0292 (March 2015)
CO	Rocky Mountain Gas	Gas Transmission	System Safety and Integrity Rider	TIMP, DIMP, and other safety regulatory compliance projects	Docket 13AL-0046G, Decision R14-0114 (February 2014)
CT	Aquarion Water Company of Connecticut	Water	Water Infrastructure and Conservation Adjustment	Replacement of infrastructure including mains, valves, services, meters, and hydrants that have reached the end of their useful life or are no longer able to function as intended	Docket 08-06-21W101 (December 2008)
CT	Connecticut Light & Power	Electric	System Resiliency Plan	Structural hardening	Docket 12-07-06 (January 2013)
CT	Connecticut Natural Gas	Gas	System Expansion Reconciliation Mechanism	System expansion	Docket 13-06-02 (November 2013)
CT	Connecticut Natural Gas	Gas	DIMP True-Up Mechanism	Cast iron and bare steel main replacement	Docket 13-06-08; (January 2014)
CT	Connecticut Water	Water	Water Infrastructure and Conservation Adjustment	Replacement of infrastructure including mains, valves, services, meters, and hydrants that have reached the end of their useful life or are no longer able to function as intended	Docket 08-10-15W101 (March 2009)
CT	Southern Connecticut Gas	Gas	System Expansion Reconciliation Mechanism	System expansion	Docket 13-06-02 (November 2013)
CT	Torrington Water	Water	Water Infrastructure and Conservation Adjustment	Replacement of infrastructure including mains, valves, services, meters, and hydrants that have reached the end of their useful life or are no longer able to function as intended	Docket 09-06-17W101 (December 2009)
CT	United Water Connecticut	Water	Water Infrastructure and Conservation Adjustment	Replacement of infrastructure including mains, valves, services, meters, and hydrants that have reached the end of their useful life or are no longer able to function as intended	Docket 09-06-17W101 (December 2009)
CT	Yankee Gas Services	Gas	System Expansion Reconciliation Mechanism	System expansion	Docket 13-06-02 (November 2013)
DC	Potomac Electric Power	Electric	Underground Project Charge	Undergrounding of specific feeders	Formal Case 1116 (November 2014)
DC	Washington Gas Light	Gas	Plant Recovery Adjustment	Remediation/replacement of mechanical couplings	Formal Case 1027 (December 2009)
DC	Washington Gas Light	Gas	Accelerated Pipe Replacement Plan Adjustment	Replacement of cast iron mains, bare steel mains and services and "black plastic" services	Formal Case 1115 (January 2015)
DE	Artesian Water	Water	Distribution System Improvement Charge	Replacement of infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 01-474 (December 2001)
DE	Delmarva Power & Light	Gas	Utility Facility Relocation Charge	Replacements due to mandated relocations that are not otherwise reimbursed	Docket 12-546 (October 2013)
DE	Delmarva Power & Light	Electric	Utility Facility Relocation Charge	Replacements due to mandated relocations that are not otherwise reimbursed	Docket 13-115 (August 2014)
DE	Sussex Shores Water	Water	Distribution System Improvement Charge	Replacement of infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 01-470 (December 2001)
DE	Tidewater Utilities	Water	Distribution System Improvement Charge	Replacement of infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 03-210 (May 2003)
DE	United Water Delaware	Water	Distribution System Improvement Charge	Replacement of infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 01-481 (December 2001)
FL	Chesapeake Utilities	Gas	Gas Reliability Infrastructure Program Tariff	Replacement of bare steel mains and services	Docket 120036-GU (September 2012)
FL	Florida City Gas	Gas	Safety and Access Verification Expedited Program	Replacement of unprotected steel mains, relocation of certain gas mains in rear lot easements	Docket 150116-GU (September 2015)
FL	Florida Power and Light	Electric	Environmental Cost Recovery Clause	Miscellaneous environmental projects	Docket 080281-EI (August 2008)
FL	Florida Power and Light	Electric	Capacity Cost Recovery Clause	Nuclear power	Docket 090009-EI (November 2009)
FL	Florida Power and Light	Electric	Generation Base Rate Adjustment	Generation	Docket 120015-EI (December 2012)
FL	Florida Public Utilities	Gas	Gas Reliability Infrastructure Program Tariff	Replacement of bare steel mains and services	Docket 120036-GU (September 2012)
FL	Gulf Power	Electric	Environmental Cost Recovery Clause	Miscellaneous environmental projects	Docket 930613-EI (January 1994)
FL	Peoples Gas System	Gas	Cast Iron/Bare Steel Replacement Rider	Replacement of bare steel and cast iron pipes	Docket 110320-GU (September 2012)
FL	Progress Energy Florida	Electric	Environmental Cost Recovery Clause	Miscellaneous environmental projects	Docket 050078-EI (September 2005)
FL	Progress Energy Florida	Electric	Capacity Cost Recovery Clause	Nuclear power	Docket 090009-EI (November 2009)
FL	Progress Energy Florida	Electric	Generation Base Rate Adjustment	Generation	Docket 130208 (November 2013)
FL	Tampa Electric	Electric	Environmental Cost Recovery Clause	Miscellaneous environmental projects	Docket 960688-EI (August 1996)
GA	Atlanta Gas Light	Gas	Pipeline Replacement Program Cost Recovery Rider	Replacement of cast iron and bare steel pipe	Docket 29950 as STRIDE tracker in 2009
GA	Atlanta Gas Light	Gas	Strategic Infrastructure Development and Enhancement Surcharge	Pre-1985 plastic mains and services replacement, planned customer expansions, and infrastructure improvements that sustain reliability and operational flexibility	Docket 8516-U and 29950 (October 2009 and August 2013)
GA	Atmos Energy (now Liberty Utilities)	Gas	Pipe Replacement Surcharge	Replace cast iron and bare steel pipe	Docket 12509-U (December 2000)
GA	Georgia Power Company	Electric	Environmental Compliance Cost Recovery	Miscellaneous environmental projects	Docket 25060-U (December 2007)
GA	Georgia Power Company	Electric	Nuclear Construction Cost Recovery	Nuclear generation	Docket 27800, Senate Bill 31
HI	Hawaii Electric Light	Electric	Renewable Energy Infrastructure Program Surcharge	Renewable energy infrastructure	Docket 2007-0416 (December 2009)
HI	Hawaiian Electric Company	Electric	Renewable Energy Infrastructure Program Surcharge	Renewable energy infrastructure	Docket 2007-0416 (December 2009)
HI	Maui Electric	Electric	Renewable Energy Infrastructure Program Surcharge	Renewable energy infrastructure	Docket 2007-0416 (December 2009)
IA	Black Hills Energy	Gas	System Safety Maintenance Adjustment	Replacement of steel and pvc pipe, relocations mandated by local governments	Docket RPU-2012-0004 (March 2013)
ID	PacifiCorp	Electric	Energy Cost Adjustment Mechanism	Lake Side II generation facility	Case PAC-E-13-04 (October 2013)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
IL	Ameren Illinois	Gas	Rider Qualifying Infrastructure Plant	Replacement of prone to leak distribution and transmission pipe, installation of AMI and communications infrastructure, replacing or installing transmission or distribution facilities to establish over-pressure protection, replacement of difficult to locate mains and services, replacement of high pressure transmission pipelines without a recorded maximum allowable operating pressure, replacements to facilitate an upgrade from a low pressure system to a high pressure system	Docket 14-0573 (January 2015)
IL	Consumers Illinois Water Company (Kankakee, Vermilion, Woodhaven Districts)	Water	Qualifying Infrastructure Plant Surcharge Rider	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 01-0561 (December 2001)
IL	Illinois-American Water (Chicago Metro Division)	Water	Qualifying Infrastructure Plant Surcharge Rider	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 09-0251 (March 2010)
IL	Illinois-American Water (Single Tariff Pricing Zone)	Water	Qualifying Infrastructure Plant Surcharge Rider	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 04-0336 (December 2004)
IL	Northern Illinois Gas	Gas	Rider Qualifying Infrastructure Plant	Replacement of cast iron pipe, non-cast iron pipe, and copper services; relocation of meters from inside customers' premises; upgrading of system from low pressure to medium pressure; replacement or installation of regulator stations, regulators, valves and associated facilities to establish over-pressure protection	Docket 14-0292 (July 2014)
IL	Peoples Gas Light & Coke	Gas	Rider Qualifying Infrastructure Plant	Replacement of cast and ductile iron, relocation of meters from inside customers' premises, upgrading of system from low pressure to medium pressure, replacement of high pressure transmission pipelines at higher risk of failure or lacking records, installation of regulator stations to establish over-pressure protection	Docket 13-0534 (January 2014)
IN	Duke Energy Indiana	Electric	Qualified Pollution Control Property	Miscellaneous environmental projects	Cause 41744 (February 2001)
IN	Duke Energy Indiana	Electric	Integrated Coal Gasification Combined Cycle Generating Facility Revenue Recovery Adjustment	Integrated gasification combined cycle generating plant	Docket 43114 (November 2007)
IN	Indiana Michigan Power	Electric	Clean Coal Technology Rider	Miscellaneous environmental projects	Cause 43636 (June 2009)
IN	Indiana Water Service	Water	Distribution System Improvement Charge	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Cause 42743 DSIC-1 (December 2004)
IN	Indiana-American Water	Water	Distribution System Improvement Charge	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Cause 42351 DSIC-1 (February 2003)
IN	Indianapolis Power & Light	Electric	Environmental Compliance Cost Recovery	Miscellaneous environmental projects	Cause 42170 (November 2002)
IN	Northern Indiana Public Service	Electric	Environmental Cost Recovery Mechanism	Miscellaneous environmental projects	Cause 42150 (November 2002)
IN	Northern Indiana Public Service	Electric	Transmission, Distribution & Storage System Improvement Charge	Investments to maintain the capacity deliverability of system and replacement of aging infrastructure, economic development	Cause 44370 and 44371 (February 2014)
IN	Northern Indiana Public Service	Gas	Distribution System Improvement Charge	Gas system deliverability and system integrity projects, rural main extensions	Cause 44403 TDSIC 1 (January 2015)
IN	Utility Center Inc.	Water	Distribution System Improvement Charge	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 42416 DSIC-1 (June 2003)
IN	Vectren Energy Delivery (Indiana Gas and Southern Indiana Gas & Electric)	Gas	Compliance and System Improvement Adjustment	System and pressure improvements, storage operations, instrumentation and communications equipment, public improvement projects, service replacements, and economic development	Cause 44429 (August 2014)
KS	Atmos Energy	Gas	Gas System Reliability Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket 10-ATMG-133-TAR (December 2009)
KS	Black Hills Energy (Aquila)	Gas	Gas System Reliability Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket 08-AQLG-852-TAR (July 2008)
KS	Kansas Gas Service	Gas	Gas System Reliability Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket 10-KGSG-155-TAR (December 2009)
KS	Midwest Energy	Gas	Gas System Reliability Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket 09-MDWE-722-TAR (May 2009)
KY	Atmos Energy	Gas	Pipe Replacement Program Rider	Replacement of bare steel service lines, curb valves, meter loops, and mandated relocations	Docket 2009-00354 (May 2010)
KY	Columbia Gas	Gas	Advanced Main Replacement Rider	Replacement of cast iron and bare steel mains and services	Docket 2009-00141 (September 2009)
KY	Delta Natural Gas	Gas	Pipe Replacement Program Surcharge	Replacement of bare steel pipe, service lines, curb valves, meter loops, and mandated pipe relocations	Case 2010-00116 (October 2010)
KY	Kentucky Power	Electric	Environmental Cost Recovery Surcharge	Miscellaneous environmental projects	Docket 2002-00169 (March 2003)
KY	Kentucky Utilities	Electric	Environmental Cost Recovery Surcharge	Miscellaneous environmental projects	Case 93-465 (July 1994)
KY	Louisville Gas & Electric	Electric	Environmental Cost Recovery Surcharge	Miscellaneous environmental projects	Case 94-332 (April 1995)
KY	Louisville Gas & Electric	Gas	Gas Line Tracker	Replacement and transfer of ownership of customer owned service risers	Case 2012-00222 (December 2012)
LA	Cleco Power	Electric	Infrastructure and Incremental Costs Recovery	Projects to be determined in subsequent filings to Commission	Docket U-30689 and U-32779 (October 2010 and June 2014)
LA	Entergy Gulf States Louisiana	Electric	Formula Rate Plan-3	Acquisition of generating facility, new generating facility or refurbishment of existing generating facility if the revenue requirement related to the project exceeds \$10 million	Docket U-32707 (December 2013)
LA	Entergy Louisiana	Electric	Formula Rate Plan 7	Cost of Ninemile 6 natural gas generating facility; New generating facility, acquisition of a generating facility, or refurbishment of existing generating facility if the revenue requirement related to the project exceeds \$10 million	Docket U-32708 and 31971 (January 2014 and April 2012)
MA	Bay State Gas	Gas	Targeted Infrastructure Recovery Factor	Replacement of bare steel mains and services	DPU 09-30
MA	Bay State Gas	Gas	Gas System Enhancement Adjustment Factor	Replacement of non-cathodically protected steel, cast iron, and wrought iron mains and associated services, service tie-ins, encroached pipe, and meters	DPU 14-134
MA	Berkshire Gas	Gas	Gas System Enhancement Adjustment Factor	Replacement of non-cathodically protected steel, cast iron mains and associated services, encroached pipe, and meter sets composed of non-cathodically protected steel, cast iron or copper	DPU 14-131
MA	Fitchburg Gas & Electric Light	Gas	Gas System Enhancement Adjustment Factor	Replacement of cast main and unprotected steel mains and services and encroached pipe	DPU 14-130

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
MA	Massachusetts Electric	Electric	Net CapEx Factor	Potentially all distribution investments	DPU 09-39
MA	Massachusetts Electric	Electric	Solar Cost Adjustment Provision	Solar generation	DPU 09-38
MA	Massachusetts Electric	Electric	Smart Grid Adjustment Provision	Pilot smart grid investments including AMI, high speed communications network, in-home energy management devices, distribution automation, advanced capacitor control, advanced grid monitoring, remote fault indicators	DPU 11-129
MA	Nantucket Electric	Electric	Solar Cost Adjustment Provision	Solar generation	DPU 09-38
MA	Nantucket Electric	Electric	Smart Grid Adjustment Provision	Pilot smart grid investments including AMI, high speed communications network, in-home energy management devices, distribution automation, advanced capacitor control, advanced grid monitoring, remote fault indicators	DPU 11-129
MA	National Grid (Boston-Essex Gas and Colonial Gas)	Gas	Targeted Infrastructure Recovery Factor	Replacement of bare steel, cast iron, and wrought iron mains, services, meters, meter installations, and house regulators	DPU 10-55
MA	National Grid (Boston-Essex Gas and Colonial Gas)	Gas	Gas System Enhancement Adjustment Factor	Replacement of non-cathodically protected steel, cast iron, and wrought iron mains and associated services, inside services, service tie-ins, encroached pipe, and meters	DPU 14-132
MA	New England Gas	Gas	Targeted Infrastructure Recovery Factor	Replacement of non-cathodically protected steel mains and services and small diameter cast-iron and wrought iron	DPU 10-114
MA	New England Gas	Gas	Gas System Enhancement Adjustment Factor	Replacement of non-cathodically protected steel, cast iron, and wrought iron mains and associated services, inside services, service tie-ins, encroached pipe, and meters	DPU 14-133
MA	NSTAR Electric	Electric	Capital Projects Scheduling List	Stray voltage inspection survey and remediation program; double pole inspections, replacements, and restorations; and manhole inspection, repair, and upgrade	DTE 05-85 and DPU 10-70-B
MA	NSTAR Electric	Electric	Smart Grid Adjustment Factor	Smart grid pilot	DPU-09-33
MA	Western Massachusetts Electric	Electric	Solar Program Cost Adjustment	Solar generation	DPU 09-05
MD	Baltimore Gas & Electric	Electric	Electric Reliability Investment Surcharge	Upgrades to improve poorest performing feeders, selective undergrounding, expanded recloser development on 13kV and 34 kV lines, diverse routing of 34 kV supply circuits	Case 9326 (December 2013)
MD	Baltimore Gas & Electric	Gas	Strategic Infrastructure Development and Enhancement Program	Replacement of bare steel mains and services, cast iron mains, copper services, and pre-1982 plastic "Ski Bar" risers	Case 9331 (January 2014)
MD	Columbia Gas of Maryland	Gas	Strategic Infrastructure Development and Enhancement Program	Replacement of bare steel and cast iron mains and bare steel services	Case 9332 (August 2014)
MD	Delmarva Power & Light	Electric	Grid Resiliency Charge	Feeder hardening	Case 9317 (September 2013)
MD	Potomac Electric Power	Electric	Grid Resiliency Charge	Feeder hardening	Case 9311 (July 2013)
MD	Washington Gas Light	Gas	Strategic Infrastructure Development and Enhancement Program Rider	Replacement of bare and unprotected steel mains and services, targeted copper and pre-1975 plastic services, mechanically coupled pipe main and services, and cast iron mains	Case 9335 (May 2014)
ME	Central Maine Power	Electric	Customer Relationship Management & Billing Rate Adjustment	Customer relationship management & billing system replacement	Docket 2015-00040 (October 2015)
ME	Maine Water Company	Water	Water Infrastructure Charge	Replacement of stationary physical plant assets needed to operate a water system	Various orders separately issued for operating divisions
ME	Northern Utilities	Gas	Targeted Infrastructure Recovery Adjustment	Cast iron, bare steel, and unprotected coated steel mains and services replacements, replacement of farm tap regulators	Docket 2013-00133 (December 2013)
MI	Consumers Energy	Gas	Enhanced Infrastructure Replacement Program	Cast iron replacements	Case U-17643 (January 2015)
MI	Michigan Consolidated Gas (now DTE Gas)	Gas	Infrastructure Recovery Mechanism	Replacement of cast iron mains, replacement of indoor meters with outdoor meters, pipeline integrity projects designed to comply with federal and state safety standards	Case U-16999 (April 2013)
MI	SEMCO Gas	Gas	Main Replacement Rider	Replacement of cast iron and unprotected steel mains and service lines	Case U-16169 and U-17824 (January 2011 and June 2015)
MN	Interstate Power & Light	Electric	Renewable Energy Recovery Adjustment	Renewable generation	Docket M-10-312 (December 2013)
MN	Minnesota Power	Electric	Arrowhead Regional Emission Abatement Rider	Miscellaneous environmental projects	Docket M-05-1678 (June 2006)
MN	Minnesota Power	Electric	Transmission Cost Recovery Rider	Incremental transmission investment	Docket M-07-965 (December 2007)
MN	Minnesota Power	Electric	Renewable Resource Rider	Renewable generation	Docket M-10-273 (July 2010)
MN	Minnesota Power	Electric	Rider for Boswell Unit 4 Emission Reduction	Miscellaneous environmental projects	Docket M-12-920 (November 2013)
MN	Northern States Power (Xcel Energy)	Electric	Metropolitan Emissions Reduction Project (later called Environmental Improvement Rider)	Miscellaneous environmental projects	Docket M-02-633 (March 2004)
MN	Northern States Power (Xcel Energy)	Electric	Transmission Cost Recovery Rider	Incremental transmission investment	Docket M-06-1103 (November 2006)
MN	Northern States Power (Xcel Energy)	Electric	Renewable Energy Standard Cost Recovery Rider	Renewable generation	M-07-872 (March 2008)
MN	Northern States Power (Xcel Energy)	Gas	State Energy Policy Rider	Cast iron replacements	Docket M-08-261 (November 2008)
MN	Northern States Power (Xcel Energy)	Electric	Mercury Cost Recovery Rider	Miscellaneous environmental projects	Docket M-09-847 (November 2009)
MN	Otter Tail Power	Electric	Renewable Resource Cost Recovery Rider	Renewable generation	Docket M-08-119 (August 2008)
MN	Otter Tail Power	Electric	Transmission Cost Recovery Rider	Incremental transmission investment	Docket M-09-881 (January 2010)
MO	AmerenUE	Gas	Infrastructure System Replacement Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Case GT-2008-0184 (February 2008)
MO	Atmos Energy	Gas	Infrastructure System Replacement Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket GO-2009-0046 (October 2008)
MO	Laclede Gas	Gas	Infrastructure System Replacement Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket GR-2007-0208 (July 2007)
MO	Missouri American Water	Water	Infrastructure System Replacement Surcharge	Replacement of mains, associated valves and hydrants, main cleaning and refining projects	Case WO-2004-0116 (December 2003)
MO	Missouri Gas Energy	Gas	Infrastructure System Replacement Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket GR-2009-0355 (February 2010)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
MS	Atmos Energy	Gas	Supplemental Growth Rider	Extraordinary service expansions to new industrial customers for economic development	Docket 2013-UN-23 (July 2013)
MS	Centerpoint Energy	Gas	Supplemental Growth Rider	Extraordinary service expansions to new commercial and industrial customers for economic development	Docket 13-UN-214 (October 2013)
MS	Mississippi Power	Electric	Environmental Compliance Overview Plan Rate	Miscellaneous environmental projects	Docket 92-UA-0058 and 92-UN-0059 (July 1992)
MT	Northwestern Energy	Electric	NA - Amounts recovered through electric supply service rates	Generation	Docket D.2008.6.69 (November 2008)
MT	Northwestern Energy	Gas	Natural Gas Supply Tracker	Battle Creek natural gas production resources	Docket D2012.3.25 (November 2012)
NC	Aqua North Carolina	Water	Water System Improvement Charge	Replacement of distribution system mains, valves, services, meters, and hydrants, main extensions, projects to comply with primary drinking water standards, unreimbursed facility relocation costs due to highways	Docket W-218, Sub 363 (May 2014)
NC	Aqua North Carolina	Water	Sewer System Improvement Charge	Replacement of pumps, motors, blowers, and other mechanical equipment, collection main extensions designed to implement solutions to wastewater problems, improvements necessary to reduce inflow and infiltration to the collection systems as required by state and federal law and regulations, unreimbursed costs of highway relocations	Docket W-218, Sub 363 (May 2014)
NC	Carolina Water Service	Water	Water System Improvement Charge	Replacement of distribution system mains, valves, services, meters, and hydrants, main extensions, projects to comply with primary drinking water standards, unreimbursed facility relocation costs due to highways	Docket W-354, Sub 336 (March 2014)
NC	Carolina Water Service	Water	Sewer System Improvement Charge	Replacement of pumps, motors, blowers, and other mechanical equipment, collection main extensions designed to implement solutions to wastewater problems, improvements necessary to reduce inflow and infiltration to the collection systems as required by state and federal law and regulations, unreimbursed costs of highway relocations	Docket W-354, Sub 336 (March 2014)
NC	Piedmont Natural Gas	Gas	Integrity Management Rider	Investments driven by federal pipeline safety and integrity requirements	Docket G-9, Sub 631 (December 2013)
ND	Montana-Dakota Utilities	Electric	Environmental Cost Recovery Tariff	Miscellaneous environmental projects	Case PU-13-85 (December 2013)
ND	Montana-Dakota Utilities	Electric	Generation Resource Recovery Rider Tariff	New Generation	Case PU-14-108 (August 2014)
ND	Northern States Power- MN	Electric	Transmission Cost Rider	Transmission projects	Case PU-12-813 (February 2014)
ND	Northern States Power- MN	Electric	Renewable Energy Rider	North Dakota based renewable generation	Case PU-12-813 (February 2014)
ND	Otter Tail Power	Electric	Renewable Resource Rider	Renewables	Case PU-06-466 (May 2008)
ND	Otter Tail Power	Electric	Transmission Facility Cost Recovery Tariff	Transmission investments required to serve retail customers	Case PU-11-682 (April 2012)
ND	Otter Tail Power	Electric	Environmental Cost Recovery Tariff	Miscellaneous environmental projects	Case PU-13-84 (December 2013)
NE	Black Hills Nebraska Gas Utility	Gas	Infrastructure System Replacement Recovery Charge	Non-revenue increasing projects to replace existing assets	Application NG-0074
NE	SourceGas Distribution	Gas	Pipeline Replacement Charge	Projects entering service before May 2014 that are installed to comply with safety requirements as replacements for existing facilities, projects that will extend the useful life of existing assets or enhance pipeline integrity, facility relocations	Application NG-0072 (June 2013)
NE	SourceGas Distribution	Gas	System Safety and Integrity Rider	Projects entering service after April 2014 that comply with federal regulations including transmission and distribution integrity management plans or are facility relocations costing \$20,000 or more	Application NG-0078 (October 2014)
NH	Aquarion Water of New Hampshire	Water	Water Infrastructure and Conservation Adjustment Charge	Projects to upgrade or replace non-revenue producing assets including main, valve, and hydrant replacement, main cleaning and relining, and non-reimbursable relocations	Docket DW 08-098 (September 2009)
NH	Energy North	Gas	Cast Iron/Bare Steel Replacement Program	Replacement of cast iron and bare steel pipe	Docket DG-107 (June 2007)
NH	Granite State Electric	Electric	Reliability Enhancement Plan Capital Investment Allowance	Feeder hardening and asset replacement	Docket DG-107 (June 2007)
NH	Public Service Company of New Hampshire	Electric	Energy Service	Miscellaneous environmental projects	DE 11-250 (April 2012)
NH	Public Service Company of New Hampshire	Electric	Reliability Enhancement Plan	Reliability improvements	DE 09-035, DE 11-250, and DE 14-238 (June 2015)
NJ	Elizabethtown Gas	Gas	Elizabethtown Natural Gas Distribution Utility Reinforcement Effort	System hardening	Docket GO13090826 (July 2014)
NJ	New Jersey American Water	Water	Distribution System Improvement Charge	Incremental non-revenue water main replacement, rehabilitation, or mandated relocation projects, service line replacements, valve and hydrant replacement	Docket WR12070669 (October 2012)
NJ	New Jersey Natural Gas	Gas	New Jersey Reinvestment in System Enhancement	Storm hardening projects	Docket GR13090828 (July 2014)
NJ	Public Service Electric and Gas	Electric	Solar Generation Investment Program	Solar generation	Docket EO09020125 (August 2009)
NJ	Public Service Electric and Gas	Electric & Gas	Capital Infrastructure Investment Program	Electric: reliability upgrades & feeder replacement, Gas: replacement of cast iron & bare steel mains and services	Dockets GO09010050, EO11020088, GO10110862 (April 2009 and July 2011)
NJ	Public Service Electric and Gas	Electric & Gas	Energy Strong Adjustment Mechanism	Electric: substation flood mitigation, grid reconfiguration strategies, and smart grid; Gas: Metering and regulating station flood mitigation, replacement of utilization pressure cast iron in flood prone areas	Docket EO13020155, GO13020156 (May 2014)
NJ	South Jersey Gas	Gas	Storm Hardening and Reliability Program	Replacement of low pressure mains and services with high pressure mains and services, removal of regulator stations, installation of excess flow valves in coastal areas	Docket GO13090814 (August 2014)
NJ	United Water New Jersey	Water	Distribution System Improvement Charge	Repair, replace, and/or clean mains, replace valves, hydrants, and service lines	Docket WR12080724 (October 2012)
NV	Southwest Gas	Gas	Gas Infrastructure Replacement Mechanism	Early vintage pipe replacements, conversion of master metered customers to individual meters	Docket 14-10002 (December 2014)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
NY	Corning Natural Gas	Gas	Safety and Reliability Charge	Replacement of leak prone pipe and ancillary costs to maintain a safe and reliable system	Case 11-G-0280 (October 2015)
NY	Keyspan Energy Long Island	Gas	Leak Prone Pipe Surcharge	Accelerated leak prone pipe removal program	Case 12-G-0214 (December 2014 and March 2015)
NY	Long Island American Water	Water	System Improvement Charge	Iron removal, storage tank rehabilitation, suction well rehabilitation at selected plants, customer information system	Case 11-W-0200 (March 2012)
NY	United Water New Rochelle	Water	Long Term Main Renewal Project	Cleaning and relining of mains	Case 99-W-0948 (August 2000)
NY	United Water New York	Water	Underground Infrastructure Renewal Program	Replacement of infrastructure including mains, valves, services, meters, and hydrants	Case 06-W-0131 (December 2006)
NY	United Water New York	Water	New Water Supply Source Surcharge	Projects to provide new sources of water in the short and long term	Case 06-W-0131 (December 2006)
OH	Aqua Ohio	Water	System Infrastructure Improvement Surcharge	Replacement of service lines, mains, hydrants, valves, main extensions to resolve documented water supply problems	Case 04-1824-WW-SIC (March 2005)
OH	Cleveland Electric Illuminating	Electric	Rider AMI	Ohio Site Deployment	Cases 09-1820-EL-ATA and 12-1230-EL-SSO
OH	Cleveland Electric Illuminating	Electric	Delivery Capital Recovery Rider	Distribution, subtransmission, general, and intangible plant not included in most recent rate case	Case 10-388-EL-SSO (August 2010)
OH	Columbia Gas	Gas	Infrastructure Replacement Program Rider	Replacement of cast iron and bare steel mains & services, AMI	Cases 08-0072-GA-AIR, 08-0073-GA-ALT, 08-0074-GA-AAM, and 08-0075-GA-AAM (December 2008); Case 09-1036-GA-RDR (April 2010)
OH	Duke Energy Ohio	Gas	Accelerated Main Replacement Program Rider	Replacement of bare steel and cast iron mains and services and faulty risers	1478-GA-ALT, and 01-1539-GA-AAM (May 2002); 07-0589-GA-AIR 07-0590-GA-ALT 07-0591-GA-AAM (May 2008)
OH	Duke Energy Ohio	Gas	Advanced Utility Rider	Gas AMI	Cases 07-0589-GA-AIR, 07-0590-GA-ALT, and 07-0591-GA-AAM (May 2008)
OH	Duke Energy Ohio	Electric	Infrastructure Modernization Distribution Rider	Electric AMI	Cases 08-920-EL-SSO and 08-921-EL-AAM and 08-922-EL-UNC and 08-923-EL-ATA (December 2008)
OH	Duke Energy Ohio	Electric	Distribution Capital Investment Rider	Distribution capital investments not recovered through other trackers	Case 14-841-EL-SSO (April 2015)
OH	East Ohio Gas d/b/a Dominion East Ohio	Gas	Pipeline Infrastructure Replacement Rider	Bare steel and cast iron pipelines & faulty riser replacements	Case 08-169-GA-ALT (October 2008)
OH	East Ohio Gas d/b/a Dominion East Ohio	Gas	Automated Meter Reading Charge	AMR	Cases 07-0829-GA-AIR and 06-1453-GA-UNC (October 2008); Case 09-38-GA-UNC (May 2009); Case 09-1875-GA-RDR (May 2010)
OH	Ohio American Water	Water	System Improvement Charge	Non-revenue producing service lines, hydrants, mains, valves, main extensions that improve supply problems, main cleaning	Case 05-577-WW-SIC (August 2005)
OH	Ohio Edison	Electric	Rider AMI	Ohio Site Deployment	Cases 09-1820-EL-ATA and 12-1230-EL-SSO
OH	Ohio Edison	Electric	Delivery Capital Recovery Rider	Distribution, subtransmission, general, and intangible plant not included in most recent rate case (filed in 2007)	Case 10-388-EL-SSO (August 2010)
OH	Ohio Power	Electric	Distribution Investment Rider	Net distribution capital additions since the date certain of most recent rate case not recovered through other riders	Case 11-346-EL-SSO
OH	Ohio Power	Electric	GridSMART Rider (Phase I)	Smart grid	Case 08-917-EL-SSO and 08-918-EL-SSO (March 2009)
OH	Toledo Edison	Electric	Rider AMI	Ohio Site Deployment	Cases 09-1820-EL-ATA and 12-1230-EL-SSO
OH	Toledo Edison	Electric	Delivery Capital Recovery Rider	Power distribution, subtransmission, general, and intangible plant not included in most recent rate case (filed in 2007)	Case 10-388-EL-SSO (August 2010)
OH	Vectren Energy Delivery	Gas	Distribution Replacement Rider	Replacement of cast iron and bare steel mains and services	Cases 07-1081-GA-ALT, 07-1080-GA-AIR and 08-0632-GA-AAM (January 2009)
OK	Oklahoma Gas & Electric	Electric	System Hardening Recovery Rider	Undergrounding and other circuit hardening	Cause PUD 20080387, Order 567670 (May 2009)
OK	Oklahoma Gas & Electric	Electric	Smart Grid Rider	Smart grid	Cause PUD 201000029 (July 2010)
OK	Oklahoma Gas & Electric	Electric	Crossroads Rider	Crossroads Wind Farm	Cause PUD 201000037 (July 2010)
OK	Public Service Company of Oklahoma	Electric	System Reliability Rider	Grid resiliency projects	Cause PUD 201300202 (January 2014)
OK	Public Service Company of Oklahoma	Electric	Advanced Metering Infrastructure Tariff	Advanced metering infrastructure deployment	Cause PUD 201300217 (April 2015)
OR	Northwest Natural Gas	Gas	System Integrity Program	Bare steel replacement, transmission integrity management program, distribution integrity management program	Docket UM 1406, Order 09-067 (March 2009)
OR	PacifiCorp	Electric	Renewable Adjustment Clause	Renewable generation	Docket UM 1330 (December 2007)
OR	PacifiCorp	Electric	Lake Side 2 Tariff Rider	Generation	Docket UE 263, Order 13-474 (December 2013)
OR	PacifiCorp	Electric	M2O Transmission Rider	Mona to Oquirrh transmission line only if line is placed into service within 6 months of May 31, 2013	Docket UE 246, Orders 12-493 and 13-195 (December 2012 and May 2013)
OR	Portland General Electric	Electric	Renewable Adjustment Clause	Renewable generation	Docket UM 1330 (December 2007)
PA	Columbia Gas	Gas	Distribution System Improvement Charge	Replacement of cast iron, bare steel, and first generation plastic mains and services, install excess flow valves, install or relocate automated meters, and replace risers, meter bars, and service regulators	P-2012-2338282 (March 2013)
PA	Columbia Water Company	Water	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-00021979
PA	Duquesne Light	Electric	Smart Meter Charge Rider	AMI	Docket M-2009-2123948 (April 2010)
PA	Equitable Gas	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2342745 (July 2013)
PA	Metropolitan Edison	Electric	Smart Meters Technologies Charge	AMI	Docket M-2009-2123950 (April 2010)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
PA	PECO	Electric	Smart Meter Cost Recovery Rider	AMI	Docket M-2009-2123944 (April 2010)
PA	PECO	Electric	Distribution System Improvement Charge	Storm hardening and resiliency measures, underground cable replacement, substation retirements, and facility relocations	Docket P-2015-2471423 (October 2015)
PA	PECO	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2347340 (September 2015)
PA	Pennsylvania Electric	Electric	Smart Meters Technologies Charge	AMI	Docket M-2009-2123950 (April 2010)
PA	Pennsylvania Power	Electric	Smart Meters Technologies Charge	AMI	Docket M-2009-2123950 (April 2010)
PA	Pennsylvania-American Water	Water	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-000961031 (August 1996)
PA	Peoples Natural Gas	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2344596 (May 2013)
PA	Peoples TWP	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2344595 (May 2013)
PA	Philadelphia Gas Works	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2012-2337737 (April 2013)
PA	Philadelphia Suburban Water	Water	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-00961035 (August 1996)
PA	PPL Electric Utilities	Electric	Act 129 Compliance Rider	AMI	Docket M-2009-2123945 (January 2010)
PA	PPL Electric Utilities	Electric	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., poles, wires)	Docket P-2012-2325034 (May 2013)
PA	UGI Central Penn Gas	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2398835 (September 2014)
PA	UGI Penn Natural Gas	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2397056 (September 2014)
PA	West Penn Power	Electric	Smart Meter Surcharge	AMI	Docket M-2009-2123951 (June 2011)
RI	Narragansett Electric (electric operations)	Electric	Electric Infrastructure, Safety, and Reliability Plan Factor	Replacements and load growth	Docket 4218 (December 2011)
RI	Narragansett Electric (gas operations)	Gas	Gas Infrastructure, Safety, and Reliability Plan Factor	Previous accelerated capital replacement program investments plus main and service replacements and reliability investments	Docket 4219 (September 2011)
SC	South Carolina Electric & Gas	Electric	NA	Nuclear generation	Docket 2008-196-E (March 2009)
SD	Black Hills Power	Electric	Environmental Improvement Adjustment tariff	Miscellaneous environmental projects	Docket EL11-001
SD	Black Hills Power	Electric	Phase in plan rate	Gas-fired generation	Docket EL12-062 (September 2013)
SD	Northern States Power- MN	Electric	Environmental Cost Recovery Tariff	Miscellaneous environmental projects	Docket EL07-026 (January 2009)
SD	Northern States Power- MN	Electric	Transmission Cost Recovery Tariff	Transmission	Docket EL07-007 (January 2009)
SD	Northern States Power- MN	Electric	Infrastructure Rider	Generation	Docket EL 12-046 (April 2013)
SD	Otter Tail Power	Electric	Transmission Cost Recovery Tariff	Retail sales portion of specific transmission projects	Docket EL 10-015 (November 2011)
SD	Otter Tail Power	Electric	Environmental Quality Cost Recovery Tariff	Miscellaneous environmental projects	Docket EL 14-082 (December 2014)
TN	Piedmont Natural Gas	Gas	Integrity Management Rider	Distribution and transmission integrity management planning as required by the US Department of Transportation	Docket 13-00118 (May 2014)
TX	AEP Texas Central	Electric	Advanced Metering System Surcharge	AMI	Docket 36928
TX	AEP Texas North	Electric	Advanced Metering System Surcharge	AMI	Docket 36928
TX	Atmos Energy Mid Tex	Gas	Gas Reliability Infrastructure Program	Incremental investment in new and replacement pipe, pipeline integrity including mains replacement	Texas Utilities Code 104.301 and Gas Utilities Docket 9615
TX	Atmos Energy Pipelines	Gas	Gas Reliability Infrastructure Program	Incremental investment in new and replacement pipe, pipeline integrity including mains replacement	Gas Utilities Dockets 9615 and 10640
TX	Atmos Energy West Texas Division	Gas	Gas Reliability Infrastructure Program	Incremental investment in new and replacement pipe, pipeline integrity including mains replacement	Texas Utilities Code 104.301 and Gas Utilities Docket 9608
TX	Centerpoint Energy Entex - Houston Division	Gas	Gas Reliability Infrastructure Program	Incremental investment in new and replacement pipe, pipeline integrity including mains replacement	Texas Utilities Code 104.301 and Gas Utilities Docket 10067
TX	Centerpoint Energy Houston Electric	Electric	Advanced Metering System Surcharge	AMI	Docket 35620 (August 2008)
TX	Centerpoint Energy Houston Electric	Electric	Distribution Cost Recovery Factor	Change in net distribution rate base since last rate case	Docket 44572 (August 2015)
TX	Oncor Electric Delivery	Electric	Advanced Metering System Surcharge	AMI	Docket 35718 (August 2008)
TX	Texas-New Mexico Power	Electric	Advanced Metering System Surcharge	AMI	Docket 38306 (July 2011)
UT	Questar Gas	Gas	Infrastructure Rate Adjustment Tracker	Replacement of aging high-pressure feeder lines	Docket 09-057-16 (June 2010)
VA	Appalachian Power	Electric	Environmental & Reliability Cost Recovery Surcharge	Miscellaneous environmental & reliability projects	Docket PUE-2007-00069 (December 2007)
VA	Appalachian Power	Electric	Environmental Rate Adjustment Clause	Miscellaneous environmental projects	Case PUE-2011-00035 (November 2011)
VA	Appalachian Power	Electric	Generation Rate Adjustment Clause	Dresden plant	Docket PUE-2011-00036 (January 2012)
VA	Atmos Energy	Gas	Infrastructure Reliability and Replacement Adjustment	Replacement of first generation plastic pipe and service lines and bare steel mains and services	Case PUE-2012-00049 (August 2012)
VA	Columbia Gas of Virginia	Gas	SAVE Rider	Replacement of bare steel and cast iron mains, some early plastic pipe, isolated bare steel services, and risers prone to failure	Case PUE-2011-00049 (November 2011)
VA	Roanoke Gas Company	Gas	SAVE Rider	Replacement of cast iron mains, bare steel mains and services and pre-1973 plastic pipe	Case PUE-2012-00030 (August 2012)
VA	Virginia Electric Power	Electric	Rider S	Virginia City Hybrid Energy Center	Case PUE-2007-00066 (March 2008)
VA	Virginia Electric Power	Electric	Rider R	Bear Garden Generating Station	Case PUE-2009-00017 (March 2010)
VA	Virginia Electric Power	Electric	Rider W	Warren County Power Station	Case PUE-2011-00042 (February 2012)
VA	Virginia Electric Power	Electric	Rider B	Biomass conversions	Case PUE-2011-00073 (March 2012)
VA	Virginia Electric Power	Electric	Rider BW	Brunswick County Power Station (natural gas combined cycle generating station)	Case PUE-2012-00128 (August 2013)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
VA	Virginia Natural Gas	Gas	SAVE Rider	Replacement of first generation plastic mains, cast and wrought iron mains, bare and ineffectively coated steel mains, and service lines installed prior to 1971	Case PUE-2012-00012 (June 2012)
VA	Washington Gas Light	Gas	SAVE Rider	Replacement of bare and unprotected steel services and mains, mechanically coupled pipe, copper services, cast iron main, and pre-1975 plastic services	Cases PUE-2010-00087 and PUE-2012-00096 (April 2011 and November 2012)
WA	Cascade Natural Gas	Gas	Pipeline Replacement Program Cost Recovery Mechanism	Replacement of bare steel and poorly coated pipelines and distribution systems	Docket PG-131838 (October 2013)
WV	Appalachian Power	Electric	Construction/765kW Surcharge	Generation, environmental	Case 11-0274-E-GI (June 2011)
WV	Monongahela Power	Electric	Vegetation Management Surcharge	Capitalized distribution vegetation management expenses	Case 14-0702-E-42T (February 2015)
WV	Potomac Edison	Electric	Vegetation Management Surcharge	Capitalized distribution vegetation management expenses	Case 14-0702-E-42T (February 2015)
WV	Wheeling Power	Electric	Construction/765kW Surcharge	Generation, environmental	Case 11-0274-E-GI (June 2011)
WY	Black Hills Power	Electric	Cheyenne Prairie Generating Station rate rider tariff	Construction of Cheyenne Prairie Generating Station	Docket 20002-84-ET-12 (November 2012)
WY	Cheyenne Light, Fuel, & Power	Electric	Cheyenne Prairie Generating Station rate rider tariff	Construction of Cheyenne Prairie Generating Station	Docket 20003-123-ET-12 (November 2012)

### III. Relaxing the Link Between Revenue and System Use

Policymakers are increasingly interested in relaxing the link between the revenues utilities realize, and the kWh and kW of system use by customers. This reduces the financial attrition that results from slowing growth in system use (given legacy rate designs) more efficiently than frequent rate cases. In addition, utilities have more incentive to embrace DSM. Three approaches to relaxing the revenue/usage link are well established: lost revenue adjustment mechanisms (“LRAMs”), revenue decoupling, and fixed/variable pricing.

#### A. Lost Revenue Adjustment Mechanisms

LRAMs keep utilities whole for short-term losses in base rate revenues that are due to their DSM programs (and potentially also DG). Recovery usually is effected through a special rate rider. Estimates of load losses are needed.

LRAMs encourage utilities to embrace DSM that is eligible for LRAM treatment. They do not provide recovery for the revenue impact of external forces, like DSM programs managed by independent agencies, which slow load growth. Estimates of load savings from utility DSM can be complex and are sometimes controversial. The scope of DSM initiatives addressed by LRAMs is therefore frequently limited to those for which load impacts are easier to measure. When usage charges are high, the utility remains at risk for revenue fluctuations in volumes and peak load due to weather, local economic activity, and other volatile demand drivers.

Precedents for LRAMs are detailed in Table 3 and Figure 4 below.<sup>3</sup> LRAMs are currently the most popular means of relaxing the link between revenue and system use in the US electric utility industry. Since our 2013 survey, LRAMs have been adopted for electric utilities in Arizona, Louisiana, and Mississippi. A few utilities have LRAMs that address DG. LRAMs are less popular for gas distributors since the declining average use they have typically experienced for many years is due chiefly to external forces that LRAMs don’t address. Some utilities have LRAMs for some services and revenue decoupling for others. In New York, for example, some natural gas distributors have decoupling for residential and commercial customers and LRAMs for some large load customers.

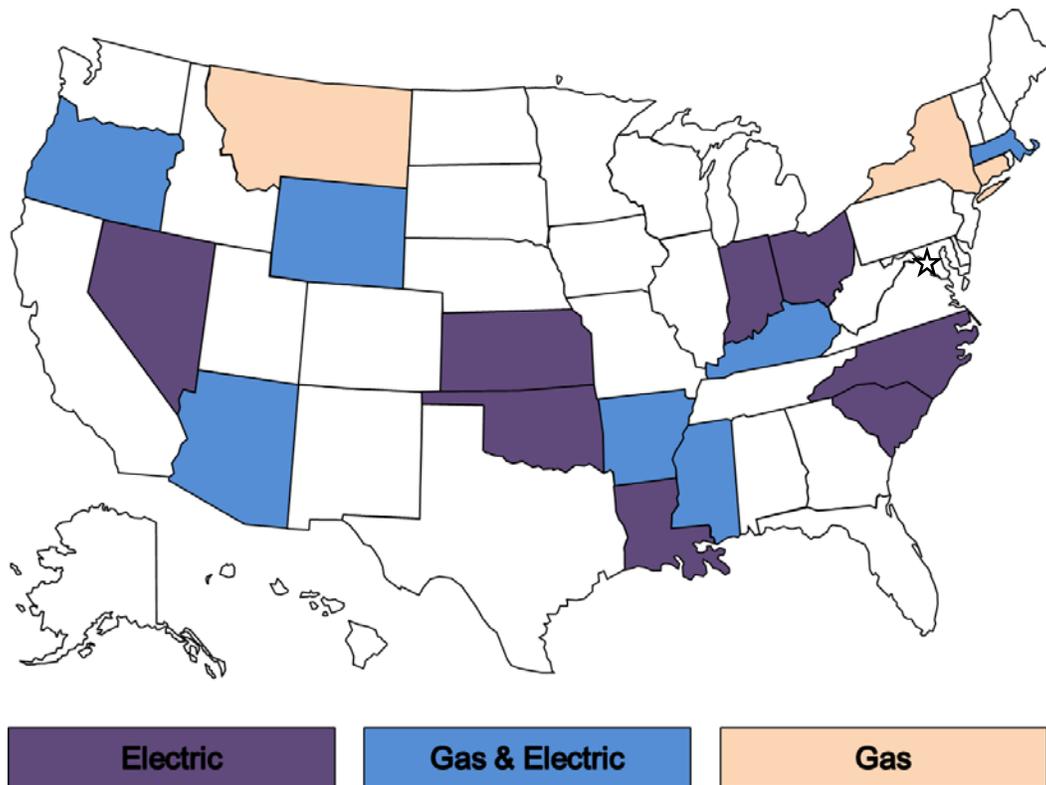
#### B. Revenue Decoupling

Revenue decoupling adjusts a utility’s rates periodically to help its actual revenue track its allowed revenue more closely. Most decoupling systems have two basic components: a revenue decoupling mechanism (“RDM”) and a revenue adjustment mechanism (“RAM”). The RDM tracks variances between actual and allowed revenue and adjusts rates to reduce them. The RAM escalates allowed revenue to provide relief for growing cost pressures.

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<sup>3</sup> Some mechanisms similar to LRAMs are excluded from this survey.

Figure 4: Current LRAMs by State



RDMs can make true ups annually or more frequently. More frequent adjustments cause actual revenue to track allowed revenue more closely so that rate adjustments are smaller. The size of the rate adjustment that is permitted in a given year is sometimes capped. A “soft” cap permits utilities to defer for later recovery account balances that cannot be drawn down immediately. A “hard” cap does not.

RDMs vary in the scope of services to which they apply. Quite commonly, only revenues from residential and commercial business customers are decoupled. These customers account for a high share of a distributor’s base rate revenue and are often the primary focus of DSM programs. RDMs also vary in terms of the services for which revenues are pooled for true up purposes. In some plans all services are placed in the same “basket.” Other plans have multiple baskets, and these insulate customers of services in each basket from changes in revenue for services in other baskets.

Some RDMs are “partial” in the sense that they exclude from decoupling the revenue impact of certain kinds of demand fluctuations. For example, true ups are sometimes allowed only for the difference between allowed revenue and weather normalized actuals. An RDM that instead accounts for *all* sources of demand variance is called a “full” decoupling mechanism.

Table 3

## Current LRAM Precedents<sup>1</sup>

State	Company	Services	Approval Date	Case Reference
AR	Arkansas Oklahoma Gas	Gas	June 2011	Docket 07-077-TF, Order Number 30
AR	Centerpoint Energy Arkla	Gas	June 2011	Docket 07-081-TF, Order Number 31
AR	Entergy Arkansas	Electric	June 2011	Docket 07-085-TF, Order Number 40
AR	Oklahoma Gas & Electric	Electric	June 2011	Docket 07-075-TF, Order 26
AR	SourceGas Arkansas	Gas	June 2011	Docket 07-078-TF, Order 26
AR	Southwestern Electric Power	Electric	June 2011	Docket 07-082-TF, Orders 35 and 36
AZ	Arizona Public Service	Electric	May 2012	Docket E-01345A-11-0224, Decision 73183
AZ	Tucson Electric Power	Electric	June 2013	Docket E-01933A-12-0291; Decision 73912
AZ	UNS Electric	Electric	September 2013	Docket E-04204A-12-0504; Decision 74235
AZ	UNS Gas	Gas	May 2012	Docket G-04204A-11-0158 Decision 73142
CT	Southern Connecticut Gas	Gas	August 1995	Docket 93-03-09
CT	Yankee Gas Service	Gas	January 2012	Docket 11-10-03
IN	Duke Energy Indiana (PSI)	Electric	February 2010	Cause 43374
IN	Indiana-Michigan Power	Electric	September 2010	Cause 43827
IN	Northern Indiana Public Service	Electric	May 2011	Cause 43618
IN	Southern Indiana Gas & Electric	Electric	August 2011 (large commercial and industrials), June 2012 (residential and small commercial)	Causes 43938 and 43405 DSMA 9 S1
KS	Kansas Gas & Electric	Electric	January 2011	Docket 10-WSEE-775-TAR
KS	Westar Energy	Electric	January 2011	Docket 10-WSEE-775-TAR
KY	Atmos Energy	Gas	September 2009	Case 2008-00499
KY	Columbia Gas of Kentucky	Gas	October 2009	Case 2009-00141
KY	Delta Natural Gas	Gas	July 2008	Docket 2008-00062
KY	Duke Energy Kentucky	Electric	December 1995 and February 2005	Cases 95-321 and 2004-00389
KY	Duke Energy Kentucky	Gas	February 2005	Case 2004-00389
KY	Kentucky Power	Electric	December 1995	Case 95-427
KY	Kentucky Utilities	Electric	May 2001	Case 2000-0459
KY	Louisville Gas & Electric	Electric & Gas	November 1993	Case 93-150
LA	Cleco Power	Electric	October 2014	Docket R-31106
LA	Entergy Gulf States Louisiana	Electric	October 2014	Docket R-31106
LA	Entergy Louisiana	Electric	October 2014	Docket R-31106
LA	Southwestern Electric Power	Electric	October 2014	Docket R-31106
MA	All Electric distributors	Electric	July 2012	D.P.U. 12-01A
MA	Berkshire Gas	Gas	October 1992	D.P.U. 91-154
MA	Commonwealth Gas d/b/a NSTAR Gas	Gas	November 1994	D.P.U. 94-128

Table 3 (cont'd)

State	Company	Services	Approval Date	Case Reference
MA	NSTAR Electric	Electric	April 1992, June 1994, and June 2010	D.P.U. 90-335, D.P.U. 94-2/3-CC, and D.P.U. 10-06
MS	Atmos Energy	Gas	August 2014	Docket 2014-UA-017
MS	Centerpoint Energy	Gas	August 2014	Docket 2014-UA-007
MS	Entergy Mississippi	Electric	September 2014	Docket 2009-UN-064
MS	Mississippi Power	Electric	March 2015	Docket 2014-UN-10
MT	Montana-Dakota Utilities	Gas	October 2006	Docket D2005.10.156; Order 6697c
NC	Duke Energy Carolinas	Electric	February 2010	Docket E-7, Sub 831
NC	Progress Energy Carolinas (Carolina Power & Light)	Electric	November 2009	Docket E-2, Sub 931
NC	Virginia Electric Power	Electric	October 2011	Docket E-22, Sub 464
NV	Nevada Energy	Electric	May 2011	Docket 10-10024
NV	Sierra Pacific Power	Electric	May 2011	Docket 10-10025
NY	Keyspan Long Island	Gas	December 2009	Case 06-G-1186; Currently effective for all customers not in RDM
NY	Keyspan New York	Gas	December 2009	Case 06-G-1185; Currently effective for all customers not in RDM
OH	American Electric Power (Ohio Power, Columbus Southern Power)	Electric	May 2010	Docket 09-1089-EL-POR; Effective for classes not included in RDM
OH	Dayton Power & Light	Electric	June 2009	Docket 08-1094-EL-SSO
OH	Duke Energy Ohio (Cincinnati Gas & Electric)	Electric	July 2007 and August 2012	Dockets 06-0091-EL-UNC and 11-4393-EL-RDR; Effective for classes not included in RDM
OH	First Energy Ohio (Cleveland Electric Illuminating, Toledo Edison, Ohio Edison)	Electric	March 2009	Docket 08-935-EL-SSO
OK	Empire District Electric	Electric	November 2009	Cause 200900146 Order 571326
OK	Oklahoma Gas & Electric	Electric	July 2008	Cause 200800059 Order 556179
OK	Public Service of Oklahoma	Electric	January 2010	Cause PUD 200900196; Order 572836
OR	Cascade Natural Gas	Gas	April 2006	Order 06-191; UG 167 Effective for classes not included in RDM
OR	Portland General Electric	Electric	September 2001	Order 01-836; UE 79 Effective for classes not included in RDM
OR	Avista Utilities	Gas	December 1993	Order 93-1881
SC	Duke Energy Carolinas	Electric	January 2010	Docket 2009-226-E Order 2010-79
SC	Progress Energy Carolinas	Electric	June 2009	Docket 2008-251-E Order 2009-373
SC	South Carolina Electric & Gas	Electric	July 2010	Docket 2009-261-E, Order 2010-472
WY	Cheyenne Light, Fuel, and Power	Electric & Gas	September 2011	Dockets 20003-108-EA-10 and 30005-140-GA-10
WY	Montana-Dakota Utilities	Electric	January 2007	Docket 20004-65-ET-06

<sup>1</sup> LRAMs listed here include only those mechanisms that compensate utilities for actual revenues lost due to DSM and DG.

The great majority of decoupling systems have a RAM since, if allowed revenue is static, the utility will experience financial attrition as its costs inevitably rise. Utilities that do not have RAMs in their decoupling systems often file frequent rate cases or are allowed to use capital cost trackers to address attrition. The more important issue in a proceeding to consider decoupling is therefore the design of the RAM rather than the need for one.

Most RAMs escalate allowed revenue only for customer growth. Escalation for customer growth is sensible because it is an important driver of cost and also highly correlated with other drivers such as peak demand. The need for rate cases is thereby reduced but is rarely eliminated since cost has other drivers such as input price inflation. When RAMs are escalated only for customer growth, utilities usually retain the freedom to file rate cases to address other cost factors and often do. Some RAMs are “broad-based” in the sense that they provide enough revenue growth to compensate the utility for several kinds of cost pressures. This can materially reduce the need for rate cases and provide a foundation for a multiyear rate plan.

Revenue decoupling compensates utilities for declining average use even if it is driven in part by external forces such as independently administered DSM programs. The lost revenue disincentive is removed for a wide array of utility initiatives to encourage DSM without requiring load impact calculations or rate designs that discourage DSM. To the extent that recovery of allowed revenue is ensured, utilities can use rate designs with usage charges more aggressively to foster DSM. This makes environmental intervenors strong supporters of decoupling. Controversy over billing determinants in rate cases with future test years is reduced.

Revenue decoupling is a popular means of relaxing the link between a utility’s revenue and customers’ kWh consumption. States that have tried gas and electric revenue decoupling are indicated on the maps below in Figures 5a and 5b, respectively. Revenue decoupling precedents in the United States and Canada are detailed in Table 4. In the electric utility industry, decoupling has been favored in states that strongly support DSM. Since our 2013 survey, decoupling has been adopted for electric utilities in Connecticut, Maine, Minnesota, and Washington state. Decoupling is the most widespread means of relaxing the revenue/usage link for gas distributors. This reflects the fact that gas distributors often experience declining average use and that this has been driven chiefly by external forces. Table 4 indicates the kinds of RAMs chosen in approved decoupling systems. Note that RAMs for electric utilities are frequently broad-based.

### **C. Fixed/Variable Pricing**

Fixed/variable pricing is an approach to rate design that uses fixed charges (charges that do not vary with the actual sales volume or peak demand) to compensate utilities for fixed costs of service. For residential and small commercial services, customer charges (a flat monthly fee per customer) are the most common fixed charge used. Base revenue thus tends to grow at the gradual pace of customer growth. A *straight* fixed/variable (“SFV”) rate design recovers *all* base revenue through fixed charges. A rate design that recovers a substantial but smaller share of fixed costs through fixed charges is sometimes called *modified* fixed/variable pricing.

Figure 5a: Electric Revenue Decoupling by State

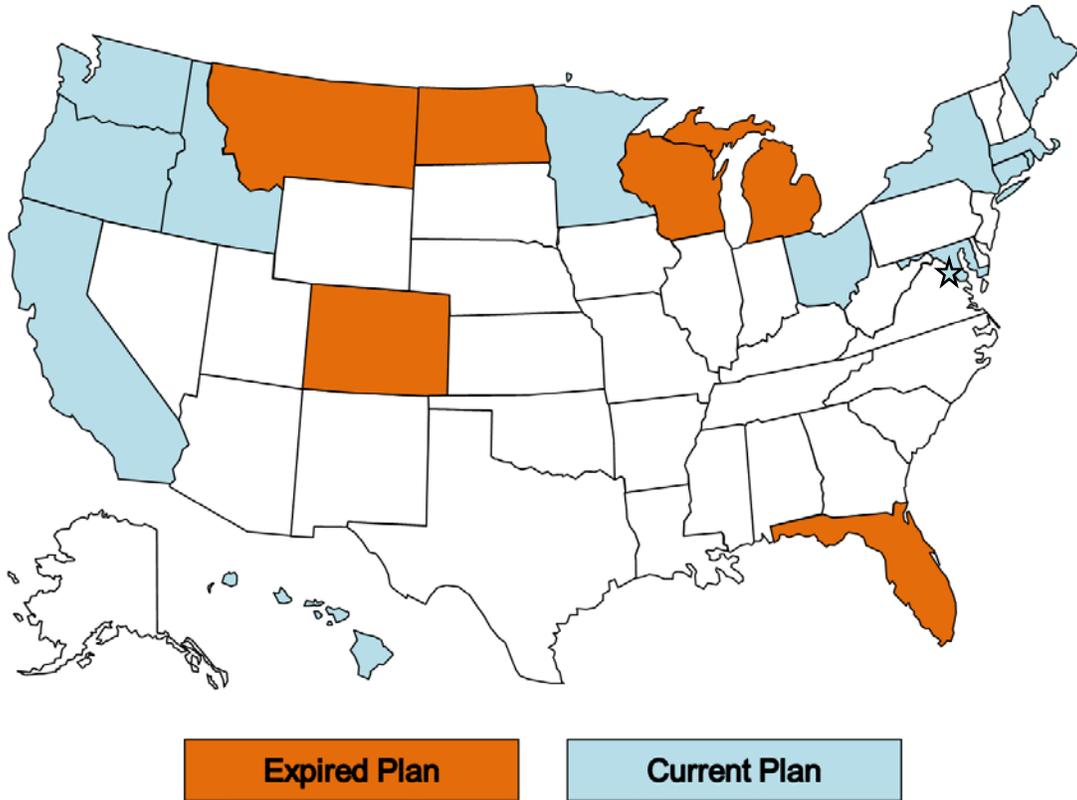


Figure 5b: Gas Revenue Decoupling by State

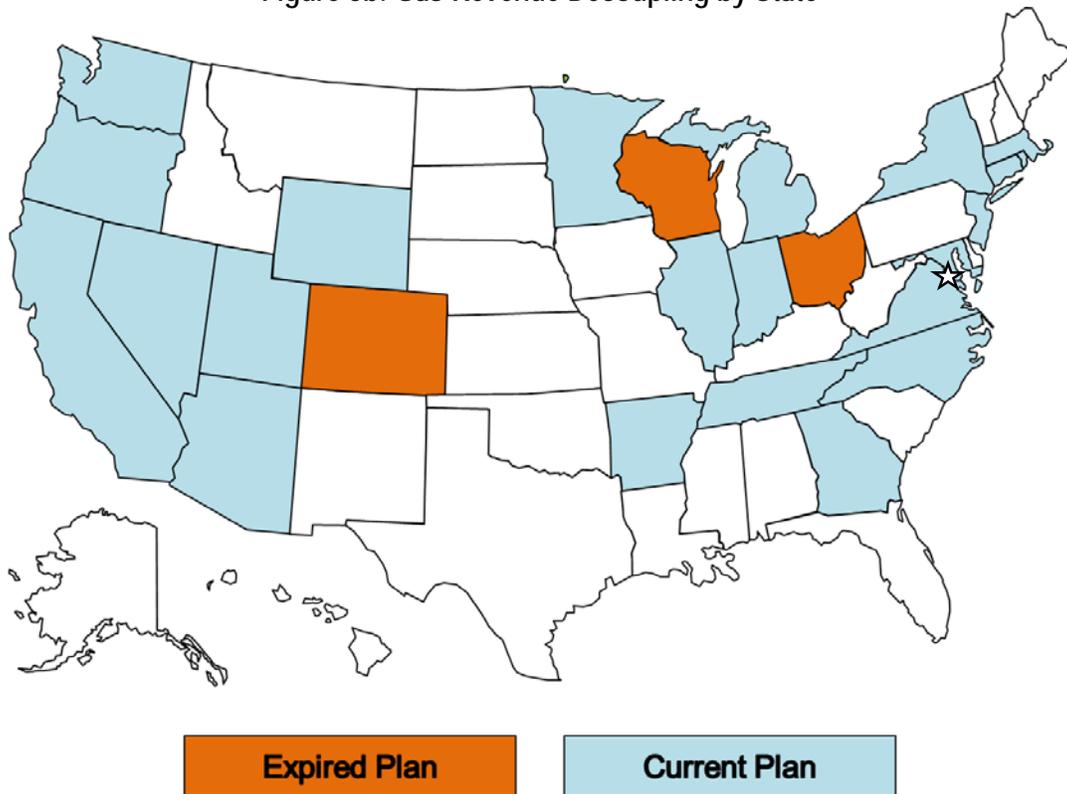


Table 4

# Revenue Decoupling Precedents

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Current</b>					
<b>United States</b>					
AR	Arkansas Oklahoma Gas	Gas	2014-open	No RAM but multiple capital cost trackers	Docket 13-078-U
AR	CenterPoint Energy	Gas	2008-2016	No RAM but multiple capital cost trackers	Dockets 06-161-U, 11-088-U, 12-057-TF, and 13-114-TF
AR	SourceGas Arkansas (Arkansas Western)	Gas	2014-open	No RAM but multiple capital cost trackers	Docket 13-079-U
AZ	Southwest Gas	Gas	2012-open	Customers	Docket G-01551A-10-0458
CA	Bear Valley Electric Service	Electric	2013-2016	Stairstep	Decision 14-11-002
CA	California Pacific Electric	Electric	2013-2015	Indexing	Decision 12-11-030
CA	Pacific Gas & Electric	Gas & Electric	2014-2016	Stairstep	Decision 14-08-032
CA	San Diego Gas & Electric	Gas & Electric	2012-2015	Stairstep	Decision 13-05-010
CA	Southern California Edison	Electric	2012-2014	Hybrid	Decision 12-11-051
CA	Southern California Gas	Gas	2012-2015	Stairstep	Decision 13-05-010
CA	Southwest Gas	Gas	2014-2018	Stairstep	Decision 14-06-028
CT	Connecticut Light & Power	Electric	2014-open	No RAM	Docket 14-05-06
CT	Connecticut Natural Gas	Gas	2014-open	No RAM	Docket 13-06-08
CT	United Illuminating	Electric	2013-open	Stairstep until July 2015, No RAM thereafter	Docket 13-01-19
DC	Potomac Electric Power	Electric	2010-open	Customers	Order 15556
GA	Atmos Energy	Gas	2012-open	No RAM but FRP type mechanism also in effect	Docket 34734
HI	Hawaiian Electric Company	Electric	2011-open	Hybrid	Dockets 2008-0274, 2008-0083, 2013-0141
HI	Hawaiian Electric Light Company	Electric	2012-open	Hybrid	Dockets 2008-0274, 2009-0164, 2013-0141
HI	Maui Electric	Electric	2012-open	Hybrid	Dockets 2008-0274, 2009-0163, 2013-0141
ID	Idaho Power	Electric	2012-open	Customers	Cases IPC-E-11-19, IPC-E-14-17
IL	North Shore Gas	Gas	2012-open	No RAM	Case 11-0280
IL	Peoples Gas Light & Coke	Gas	2012-open	No RAM but broad-based capital cost tracker	Case 11-0281
IN	Citizens Gas	Gas	2007-open	Customers	Cause 42767
IN	Indiana Gas	Gas	2011-2015	Customers	Cause 44019
IN	Indiana Gas	Gas	2016-2019	Customers	Cause 44598
IN	Indiana Natural Gas	Gas	2014-open	Customers	Cause 44453
IN	Vectren Southern Indiana	Gas	2011-2015	Customers	Cause 44019
IN	Vectren Southern Indiana	Gas	2016-2019	Customers	Cause 44598
MA	Bay State Gas	Gas	2015-2018	Revenue per Customer Stairstep	DPU 15-50
MA	Boston-Essex Gas	Gas	2010-open	Customers	DPU 10-55
MA	Colonial Gas	Gas	2010-open	Customers	DPU 10-55
MA	Fitchburg Gas & Electric	Gas	2011-open	Customers	DPU 11-02
MA	Fitchburg Gas & Electric	Electric	2011-open	No RAM	DPU 11-01
MA	Massachusetts Electric	Electric	2010-open	No RAM but broad-based capital cost tracker	DPU 09-39
MA	New England Gas	Gas	2011-open	Customers	DPU 10-114
MA	Western Massachusetts Electric	Electric	2011-open	No RAM	DPU 10-70
MD	Baltimore Gas & Electric	Electric	2008-open	Customers	Letter Orders ML 108069, 108061
MD	Baltimore Gas & Electric	Gas	1998-open	Customers	Case 8780
MD	Chesapeake Utilities	Gas	2006-open	Customers	Order 81054
MD	Columbia Gas of Maryland	Gas	2013-open	Customers	Order 85858
MD	Delmarva Power & Light	Electric	2007-open	Customers	Order 81518
MD	Potomac Electric Power	Electric	2007-open	Customers	Order 81517
MD	Washington Gas Light	Gas	2005-open	Customers	Order 80130
ME	Central Maine Power	Electric	2014-open	Customers	Docket 2013-00168

Table 4 (cont'd)

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Current (cont'd)</b>					
<b>United States (cont'd)</b>					
MI	Consumers Energy	Gas	2015-open	No RAM	Case U-17643
MI	Michigan Consolidated Gas	Gas	2013-open	No RAM	Case U-16999
MI	Michigan Gas Utilities	Gas	2015-open	No RAM	Case U-17273
MN	CenterPoint Energy	Gas	2015-2018	Customers	GR-13-316
MN	Minnesota Energy Resources	Gas	2013-2016	Customers	GR-10-977
MN	Northern States Power - MN	Electric	2016-2018	Customers	GR-13-868
NC	Piedmont Natural Gas	Gas	2008-open	Customers	Docket G-9, Sub 550
NC	Public Service Co of NC	Gas	2008-open	Customers	Docket G-5, Sub 495
NJ	New Jersey Natural Gas	Gas	2014-open	Customers	Docket GR13030185
NJ	South Jersey Gas	Gas	2014-open	Customers	Docket GR13030185
NV	Southwest Gas	Gas	2009-open	Customers	D-09-04003
NY	Central Hudson G&E	Gas & Electric	2015-2018	Revenue per Customer Stairstep for Gas, Stairstep for Electric	Cases 14-E-0318, 14-G-0319
NY	Consolidated Edison	Gas	2014-2016	Revenue per Customer Stairstep	Case 13-G-0031
NY	Consolidated Edison	Electric	2014-2016	Stairstep	Case 13-E-0030
NY	Corning Natural Gas	Gas	2015-2017	Customers	Case 11-G-0280
NY	Keyspan Energy Delivery - Long Island	Gas	2010-open	Revenue per Customer Stairstep through 2012, Customers After 2012	Case 06-G-1186
NY	Keyspan Energy Delivery New York	Gas	2013-2014	Revenue per Customer Stairstep through 2014, Customers After 2014	Case 12-G-0544
NY	National Fuel Gas	Gas	2013-2015	Customers	Case 13-G-0136
NY	New York State Electric & Gas	Gas	2010-2013	Revenue per Customer Stairstep through 2013, Customers thereafter	Case 09-E-0715
NY	New York State Electric & Gas	Electric	2010-2013	Stairstep through 2013, No RAM thereafter	Case 09-G-0716
NY	Niagara Mohawk	Gas	2013-2016	Optional Revenue per Customer Stairstep	Case 12-G-0202
NY	Niagara Mohawk	Electric	2013-2016	Optional Stairstep	Case 12-E-0201
NY	Orange & Rockland Utilities	Gas	2015-2018	Revenue per Customer Stairstep	Case 14-G-0494
NY	Orange & Rockland Utilities	Electric	2015-2017	Stairstep	Case 14-E-0493
NY	Rochester Gas & Electric	Gas	2010-2013	Revenue per Customer Stairstep through 2013, Customers thereafter	Case 09-E-0717
NY	Rochester Gas & Electric	Electric	2010-2013	Stairstep through 2013, No RAM thereafter	Case 09-G-0718
NY	St. Lawrence Gas	Gas	2010-open	Revenue per Customer Stairstep through 2012, Customers thereafter	Case 08-G-1392
OH	AEP Ohio	Electric	2012-2018	Customers	Cases 11-351-EL-AIR, 13-2385-EL-SSO
OH	Duke Energy Ohio	Electric	2015-open	Customers	Case 14-841-EL-SSO
OR	Cascade Natural Gas	Gas	2013-2015	Customers	Order 13-079
OR	Northwest Natural Gas	Gas	2012-open	Customers	Order 12-408
OR	Portland General Electric	Electric	2014-2016	Customers	Order 13-459
RI	Narragansett Electric	Electric	2012-open	No RAM but broad-based capital cost tracker	Docket 4206
RI	Narragansett Electric	Gas	2012-open	Customers	Docket 4206
TN	Chattanooga Gas	Gas	2013-open	Customers	Docket 09-0183
UT	Questar Gas	Gas	2010-open	Customers	Docket 09-057-16
VA	Columbia Gas of Virginia	Gas	2013-2015	Customers	Case PUE-2012-00013
VA	Virginia Natural Gas	Gas	2013-2016	Customers	Case PUE-2012-00118
VA	Washington Gas Light	Gas	2013-2016	Customers	Case PUE-2012-00138
WA	Avista	Gas & Electric	2015-2019	Customers	Dockets UE-140188 and UG-140189
WA	Puget Sound Energy	Gas & Electric	2013-2016	Revenue per Customer Stairstep	Dockets UE-121697 and UG-121705
WY	Questar Gas	Gas	2012-open	Customers	Docket 30010-113-GR-11
WY	SourceGas Distribution	Gas	2011-open	Customers	Docket 30022-148-GR-10

Table 4 (cont'd)

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Current (cont'd)</b>					
<b>Canada</b>					
BC	BC Hydro	Electric	2015-2016	Stairstep	Order G-48-14
BC	FortisBC	Electric	2014-2019	Indexing	Order G-139-14
BC	FortisBC Energy	Gas	2014-2019	Indexing	Order G-138-14
BC	Pacific Northern Gas	Gas	2003-open	Customers	N/A
ON	Enbridge Gas Distribution	Gas	2014-2018	Stairstep	EB-2012-0459
ON	Union Gas	Gas	2014-2018	Indexing	EB-2013-0202
<b>Historic</b>					
<b>United States</b>					
AR	Arkansas Oklahoma Gas	Gas	2007-2013	No RAM	Dockets 07-026-U, 07-077-TF
AR	Arkansas Western	Gas	2008-2013	No RAM	Docket 07-078-TF
CA	Bear Valley Electric Service	Electric	2009-2012	Stairstep	Decision 09-10-028
CA	Pacific Gas & Electric	Gas & Electric	1982-1983	Hybrid	Decision 93887
CA	Pacific Gas & Electric	Electric	1984-1985	Hybrid	Decision 83-12-068
CA	Pacific Gas & Electric	Electric	1986-1989	Hybrid	Decision 85-12-076
CA	Pacific Gas & Electric	Electric	1990-1992	Hybrid	Decision 89-12-057
CA	Pacific Gas & Electric	Gas & Electric	1993-1995	Hybrid	Decision 92-12-057
CA	Pacific Gas & Electric	Gas & Electric	2004-2006	Indexing	Decision 04-05-055
CA	Pacific Gas & Electric	Gas & Electric	2007-2010	Stairstep	Decision 07-03-044
CA	Pacific Gas & Electric	Gas & Electric	2011-2013	Stairstep	Decision 11-05-018
CA	Pacific Gas & Electric	Gas	1978-1981	No RAM	Decisions 89316, 91107
CA	PacifiCorp	Electric	1984-1985	Stairstep	Decision 89-09-034
CA	San Diego Gas & Electric	Gas & Electric	1982-1983	Hybrid	Decision 93892
CA	San Diego Gas & Electric	Gas & Electric	1986-1988	Hybrid	Decision 85-12-108
CA	San Diego Gas & Electric	Electric	1989-1993	Hybrid	Decision 89-11-068
CA	San Diego Gas & Electric	Gas & Electric	1994-1999	Hybrid	Decision 94-08-023
CA	San Diego Gas & Electric	Gas & Electric	2005-2007	Indexing	Decision 05-03-025
CA	San Diego Gas & Electric	Gas & Electric	2008-2011	Stairstep	Decision 08-07-046
CA	Southern California Edison	Electric	1983-1984	Hybrid	Decision 82-12-055
CA	Southern California Edison	Electric	1986-1991	Hybrid	Decision 85-12-076
CA	Southern California Edison	Electric	2001-2003	Indexing	Decision 02-04-055
CA	Southern California Edison	Electric	2004-2006	Hybrid	Decision 04-07-022
CA	Southern California Edison	Electric	2006-2008	Hybrid	Decision 06-05-016
CA	Southern California Edison	Electric	2009-2011	Stairstep	Decision 09-03-025
CA	Southern California Gas	Gas	1979-1980	No RAM	Decision 89710
CA	Southern California Gas	Gas	1981-1982	Stairstep	Decision 92497
CA	Southern California Gas	Gas	1983-1984	Hybrid	Decision dated December 8, 1982
CA	Southern California Gas	Gas	1986-1989	Hybrid	Decision 85-12-076
CA	Southern California Gas	Gas	1990-1993	Hybrid	Decision 90-01-016
CA	Southern California Gas	Gas	1998-2002	Indexing	Decision 97-07-054
CA	Southern California Gas	Gas	2005-2007	Indexing	Decision 05-03-025
CA	Southern California Gas	Gas	2008-2011	Stairstep	Decision 08-07-046
CA	Southwest Gas	Gas	2009-2013	Stairstep	Decision 08-11-048
CO	Public Service Company of Colorado	Gas	2008-2011	Customers	Decision C07-0568
CO	Public Service Company of Colorado	Electric	2012-2014	Stairstep	Decision C12-0494
CT	United Illuminating	Electric	2009-2013	Stairstep until 2011/No RAM for 2011 onwards	Docket 08-07-04
FL	Florida Power Corporation	Electric	1995-1997	Customers	Docket 930444
ID	Idaho Power	Electric	2007-2009	Customers	Case IPC-E-04-15
ID	Idaho Power	Electric	2010-2012	Customers	Case IPC-E-09-28
IL	North Shore Gas	Gas	2008-2012	Customers	Case 07-0241
IL	Peoples Gas Light & Coke	Gas	2008-2012	Customers	Case 07-0242
IN	Citizens Gas	Gas	2007-2011	Customers	Cause 42767
IN	Vectren Energy	Gas	2007-2011	Customers	Cause 43046
IN	Vectren Southern Indiana	Gas	2007-2011	Customers	Cause 43046
MA	Bay State Gas	Gas	2009-open	Customers	DPU 09-30
ME	Central Maine Power	Electric	1991-1993	Customers	Docket 90-085
MI	Consumers Energy	Electric	2009-2011	Customers	Case U-15645
MI	Consumers Energy	Gas	2010-2012	Customers	Case U-15986
MI	Detroit Edison	Electric	2010-2011	Customers	Case U-15768
MI	Michigan Consolidated Gas	Gas	2010-2012	Customers	Case U-15985
MI	Michigan Gas Utilities	Gas	2010-2013	Customers	Case U-15990
MI	Upper Peninsula Power	Electric	2010-2011	Customers	Case U-15988
MN	CenterPoint Energy	Gas	2010-2013	Customers	Docket GR-08-1075
MT	Montana Power Company	Electric	1994-1998	Customers	Docket 93.6.24

Table 4 (cont'd)

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Historic (cont'd)</b>					
<b>United States (cont'd)</b>					
NC	Piedmont Natural Gas	Gas	2005-2008	Customers	Docket G-44 Sub 15
ND	Northern States Power - MN	Electric	2012	Not Applicable, plan only 1 year in duration	Case PU-11-55
NJ	New Jersey Natural Gas	Gas	2007-2010	Customers	Docket GR05121020
NJ	New Jersey Natural Gas	Gas	2010-2013	Customers	Docket GR05121020
NJ	South Jersey Gas	Gas	2007-2010	Customers	Docket GR05121019
NJ	South Jersey Gas	Gas	2010-2013	Customers	Docket GR05121019
NY	Central Hudson G&E	Gas	2009-open	Customers	Case 08-E-0888
NY	Central Hudson G&E	Electric	2009	No RAM	Case 08-E-0887
NY	Central Hudson G&E	Gas & Electric	2010-2013	Revenue per Customer Stairstep for Gas, Stairstep for Electric	Case 09-E-0588
NY	Central Hudson G&E	Gas & Electric	2013-open	Customers for Gas, No RAM for Electric	Case 12-M-0192
NY	Consolidated Edison	Electric	1992-1995	Stairstep	Opinion 92-8
NY	Consolidated Edison	Gas	2007-2010	Stairstep	Case 06-G-1332
NY	Consolidated Edison	Electric	2008-open	No RAM	Case 07-E-0523
NY	Consolidated Edison	Gas	2010-2013	Revenue per Customer Stairstep	Case 09-G-0795
NY	Consolidated Edison	Electric	2010-2013	Stairstep	Case 09-E-0428
NY	Corning Natural Gas	Gas	2012-2015	Revenue per Customer Stairstep	Case 11-G-0280
NY	Keyspan Energy Delivery - New York	Gas	2010-open	Revenue per Customer Stairstep	Case 06-G-1185
NY	Long Island Lighting Company	Electric	1992-1994	Stairstep	Opinion 92-8
NY	National Fuel Gas	Gas	2008-open	Customers	Case 07-G-0141
NY	New York State Electric & Gas	Electric	1993-1995	Stairstep	Opinion 93-22
NY	Niagara Mohawk	Electric	1990-1992	Stairstep	Case 94-E-0098
NY	Niagara Mohawk	Gas	2009-open	Customers	Case 08-G-0609
NY	Niagara Mohawk	Electric	2011-open	No RAM	Case 10-E-0050
NY	Orange & Rockland Utilities	Electric	2012-2015	Stairstep	Case 11-E-0408
NY	Orange & Rockland Utilities	Electric	2011-2012	No RAM	Case 10-E-0362
NY	Orange & Rockland Utilities	Electric	2008-2011	Stairstep	Case 07-E-0949
NY	Orange & Rockland Utilities	Electric	1991-1993	Stairstep	Case 89-E-175
NY	Orange & Rockland Utilities	Gas	2012-2015	Customers	Case 08-G-1398
NY	Orange & Rockland Utilities	Gas	2009-2012	Revenue per Customer Stairstep	Case 08-G-1398
NY	Rochester Gas & Electric	Electric	1993-1996	Stairstep	Opinion 93-19
OH	Duke Energy Ohio	Electric	2012-2014	Customers	Case 11-5905-EL-RDR
OH	Vectren Energy	Gas	2007-2009	Customers	Case 05-1444-GA-UNC
OR	Cascade Natural Gas	Gas	2007-2012	Customers	Order 06-191
OR	Northwest Natural Gas	Gas	2002-2005	Customers	Order 02-634
OR	Northwest Natural Gas	Gas	2005-2009	Customers	Order 05-934
OR	Northwest Natural Gas	Gas	2009-2012	Customers	Order 07-426
OR	PacifiCorp	Electric	1998-2001	Indexing	Order 98-191
OR	Portland General Electric	Electric	1995-1996	Stairstep	Order 95-0322
OR	Portland General Electric	Electric	2009-2010	Customers	Order 09-020
OR	Portland General Electric	Electric	2011-2013	Customers	Order 10-478
TN	Chattanooga Gas	Gas	2010-2013	Customers	Docket 09-0183
UT	Questar Gas	Gas	2006-2010	Customers	Docket 05-057-T01
VA	Virginia Natural Gas	Gas	2009-2012	Customers	Case PUE-2008-00060
VA	Washington Gas Light	Gas	2010-2013	Customers	Case PUE-2009-00064
WA	Avista	Gas	2007-2009	Customers	Docket UG-060518
WA	Avista	Gas	2009-2012	Customers	Docket UG-060518
WA	Avista	Gas	2013-2014	Revenue per Customer Stairstep	Docket UG-120437
WA	Cascade Natural Gas	Gas	2005-2010	Customers	Docket UG-060256
WA	Puget Sound & Power	Electric	1991-1995	Customers	Docket UE-901184-P
WI	Wisconsin Public Service	Gas & Electric	2009-2012	Customers	D-6690-UR-119
WI	Wisconsin Public Service	Gas & Electric	2013	Not Applicable, plan only 1 year in duration	Docket 6690-UR-121
WY	Questar Gas	Gas	2009-2012	Customers	Docket 30010-94-GR-08

Table 4 (cont'd)

<b>Jurisdiction</b>	<b>Company Name</b>	<b>Services</b>	<b>Plan Years</b>	<b>Revenue Adjustment Mechanism</b>	<b>Case Reference</b>
<b>Historic (cont'd)</b>					
<b>Canada</b>					
<b>BC</b>	BC Gas	Gas	1994-1995	Hybrid	Order G-59-94
<b>BC</b>	BC Gas	Gas	1996-1997	Hybrid	N/A
<b>BC</b>	BC Gas	Gas	1998-2000	Hybrid	Order G-85-97
<b>BC</b>	BC Gas	Gas	2000-2001	Hybrid	Order G-48-00
<b>BC</b>	BC Hydro	Electric	2009-2010	Hybrid	Order G-16-09
<b>BC</b>	BC Hydro	Electric	2011	Not Applicable, plan only 1 year in duration	Order G-180-10
<b>BC</b>	BC Hydro	Electric	2012-2014	Stairstep	Order G-77-12A
<b>BC</b>	FortisBC	Electric	2012-2013	Stairstep	Order G 110-12
<b>BC</b>	Terasen Gas	Gas	2008-2009	Hybrid	Order G-33-07
<b>BC</b>	Terasen Gas	Gas	2004-2007	Hybrid	Order G-51-03
<b>BC</b>	Terasen Gas	Gas	2010-2011	Hybrid	Order G-141-09
<b>BC</b>	Terasen Gas	Gas	2012-2013	Stairstep	Order G-44-12
<b>ON</b>	Enbridge Gas Distribution	Gas	2008-2012	Revenue per Customer Indexing	Docket EB-2007-0615
<b>ON</b>	Union Gas	Gas	2008-2012	Indexing	Docket EB-2007-0606

### III. Relaxing the Link Between Revenue and System Use

Fixed/variable pricing relaxes the revenue/usage link with low administrative cost since it requires neither decoupling true ups nor load impact calculations. When average use is declining, base revenue will grow more rapidly with fixed/variable pricing so that rate cases tend to be less frequent even if the decline is largely driven by external forces. Base revenue grows more slowly than under conventional rate designs if average use is rising. The short term disincentive is removed to embrace various DSM initiatives. However, fixed/variable pricing reduces a utility's ability to use usage charges as a tool for promoting DSM. For example, it does not encourage customers with electric vehicles to charge these vehicles at night. Note also that the principle of rate design gradualism often discourages regulators from immediately adopting SFV pricing.

SFV pricing has been used on a large scale by interstate gas transmission companies since the early 1990s. Precedents for fixed/variable pricing in retail ratemaking are listed below on Table 5 and Figure 6. It can be seen that fixed/variable pricing has to date been considerably more common for gas distributors than electric utilities. This again reflects the greater problem of declining average use that gas distributors have faced, and the fact that the decline has been driven largely by external forces. Since our 2013 survey, fixed/variable pricing has been implemented for an electric utility in Oklahoma.

In addition to the precedents listed here, utilities in Wisconsin and several other states have in recent years made sizable steps in the direction of fixed/variable pricing by redesigning rates for small volume customers to raise customer charges and lower volumetric charges substantially. Investor-owned utilities in Canada are typically permitted to raise a much higher portion of their revenue through fixed charges than are utilities in the United States. Most fixed/variable rate designs feature uniform fixed charges within service classes, but gas utilities in Florida, Georgia, and Oklahoma have fixed charges that vary in some fashion with long term consumption patterns.

Figure 6: Fixed/Variable Pricing Precedents by State

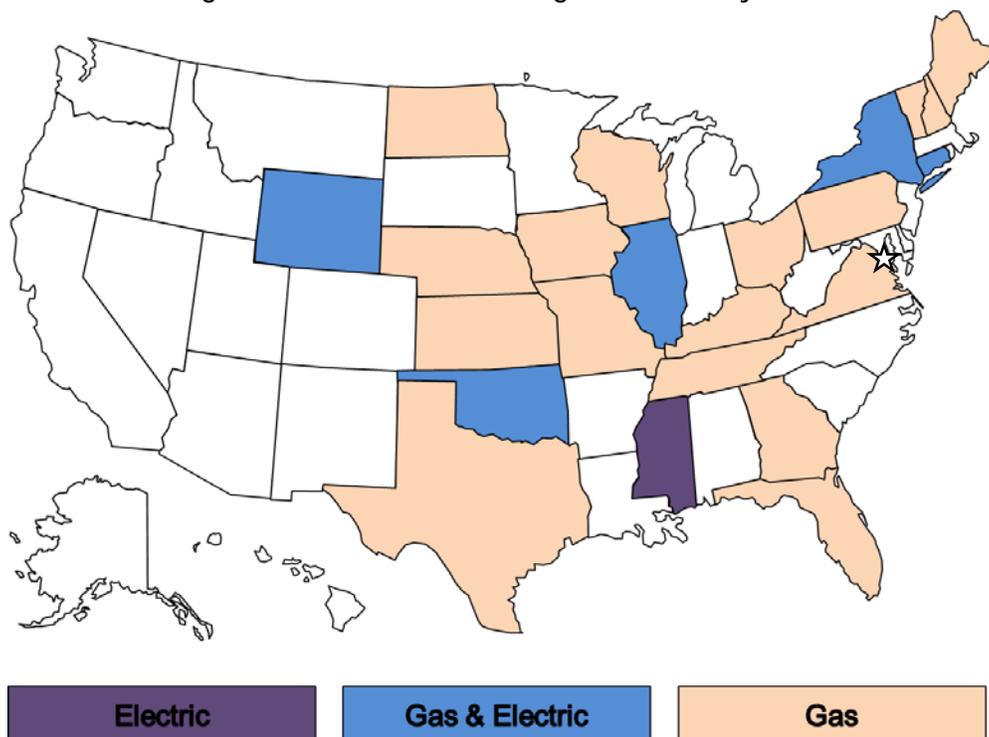


Table 5

# Fixed Variable Residential Pricing Precedents<sup>1</sup>

Jurisdiction	Company Name	Services	Years in Place	Case Reference
CT	Connecticut Light & Power	Electric	2007-open	Docket 07-07-01
CT	Connecticut Natural Gas	Gas	2014-open	Docket 13-06-08
CT	United Illuminating	Electric	Occurred over period of years	No specific case
CT	Yankee Gas System	Gas	2011-open	Docket 10-12-02
FL	Peoples Gas System	Gas	2009-open	Docket 080318-GU
GA	Liberty Utilities	Gas	2015-open	Docket 34734
IA	Black Hills Energy	Gas	2009-open	Docket RPU-08-3
IL	Ameren CILCO	Gas	2008-2012	Case 07-0588
IL	Ameren CIPS	Gas	2008-2012	Case 07-0589
IL	Ameren IP	Gas	2008-2012	Case 07-0590
IL	Ameren Illinois	Gas	2012-open	Case 11-0282
IL	Ameren Illinois	Electric	Occurred over period of years	No specific case
IL	Commonwealth Edison	Electric	2011-2013	Case 10-0467
IL	Mt. Carmel Public Utilities	Gas	2013-open	Case 13-0079
IL	North Shore Gas	Gas	2008-open	Case 07-0241
IL	Peoples Gas Light & Coke	Gas	2008-open	Case 07-0242
KS	Atmos Energy	Gas	2010-open	Docket 10-ATMG-495-RTS
KS	Black Hills Energy (formerly Aquila)	Gas	2007-open	Docket 07-AQLG-431-RTS
KS	Kansas Gas Service	Gas	2012-open	Docket 12-KGSG-835-RTS
KY	Atmos Energy	Gas	2014-open	Case 2013-00148
KY	Columbia Gas	Gas	2013-open	Case 2013-00167
KY	Delta Natural Gas	Gas	2007-open	Case 2007-00089
KY	Duke Energy Kentucky	Gas	2010-open	Case 2009-00202
ME	Maine Natural Gas	Gas	Occurred over period of years	Docket 2009-00067
ME	Northern Utilities	Gas	2014-open	Docket 2013-00133
MO	AmerenUE	Gas	2007-open	Case GR-2007-0003
MO	Atmos Energy	Gas	2007-2010	Case GR-2006-0387
MO	Atmos Energy	Gas	2010-open	Case GR-2010-0192
MO	Empire District Gas	Gas	2010-open	Case GR-2009-0434
MO	Laclede Gas	Gas	2002-open	Case GR-2002-356
MO	Missouri Gas Energy	Gas	2007-open	Case GR-2006-0422
MS	Mississippi Power	Electric	Occurred over period of years	No specific case
ND	Xcel Energy	Gas	2005-open	Case PU-04-578
NE	SourceGas Distribution	Gas	2012-open	Docket NG-0067
NH	Liberty Utilities (EnergyNorth Natural Gas)	Gas	Occurred over period of years	No specific case
NH	Northern Utilities	Gas	2014-open	DG 13-086
NY	Central Hudson Gas & Electric	Electric & Gas	Occurred over period of years	No specific case
NY	Consolidated Edison	Electric & Gas	Occurred over period of years	No specific case
NY	Corning Gas	Gas	Occurred over period of years	No specific case
NY	Keyspan Energy Delivery - Long Island	Gas	Occurred over period of years	No specific case
NY	Keyspan Energy Delivery - New York	Gas	Occurred over period of years	No specific case
NY	National Fuel Gas	Gas	Occurred over period of years	No specific case

Table 5 (cont'd)

Jurisdiction	Company Name	Services	Years in Place	Case Reference
NY	New York State Electric & Gas	Electric	Occurred over period of years	No specific case
NY	Niagara Mohawk	Electric & Gas	Occurred over period of years	No specific case
NY	Orange & Rockland	Electric & Gas	Occurred over period of years	No specific case
NY	Rochester Gas & Electric	Electric & Gas	Occurred over period of years	No specific case
OH	Columbia Gas	Gas	2008-open	Case 08-0072-GA-AIR
OH	Dominion East Ohio	Gas	2008-2010	Case 07-830-GA-ALT
OH	Duke Energy Ohio (CG&E)	Gas	2008-open	Case 07-590-GA-ALT
OH	Vectren Energy Delivery of Ohio	Gas	2009-open	Case 07-1080-GA-AIR
OK	Arkansas Oklahoma Gas	Gas	2013-open	Cause PUD 201200236
OK	Centerpoint Energy	Gas	2010-open	Cause PUD 201000030
OK	Oklahoma Natural Gas	Gas	2004-open	Causes PUD 200400610, PUD 201000048, PUD 200900110
OK	Public Service Company of Oklahoma	Electric	2015-open	Cause PUD 201300217
PA	Columbia Gas	Gas	2013-open	Docket R-2012-2321748
TN	Atmos Energy	Gas	2012-open	Docket 12-00064
TN	Piedmont Natural Gas	Gas	2012-open	Docket 11-00144
TX	Atmos Energy - Mid-Tex Division	Gas	Occurred over period of years	No specific case
TX	Atmos Energy - West Texas Division	Gas	Occurred over period of years	No specific case
TX	Centerpoint Energy Houston Division	Gas	Occurred over period of years	No specific case
TX	Centerpoint Energy Beaumont/East Texas Division	Gas	Occurred over period of years	No specific case
VA	Columbia Gas of Virginia	Gas	Occurred over period of years	No specific case
VT	Vermont Gas Systems	Gas	Occurred over period of years	No specific case
WI	Madison Gas & Electric	Gas	2015-open	Docket 3270-UR-120
WI	Wisconsin Public Service	Gas	2015-open	Docket 6690-UR-123
WY	SourceGas Distribution	Gas	2011-open	Docket 30022-148-GR-10
WY	PacifiCorp (d/b/a Rocky Mountain Power)	Electric	2009-open	Docket 20000-333-ER-08

<sup>1</sup> Fixed variable pricing precedents include power and gas distributors that have a customer charge equal to or in excess of \$15 (or \$20 for vertically integrated electric utilities).

## IV. Forward Test Years

General rate cases involve “test years” in which revenue requirements and billing determinants (e.g., the residential delivery volume) are jointly considered in ratesetting. A historical test year ends before the rate case is filed. A forward (a/k/a “fully forecasted”) test year (“FTY”) begins after the rate case is filed. An FTY typically begins about the time the rate case is expected to end and new rates take effect. Two-year forecasts may be required in this event which span both the year of the rate case and the rate effective year.<sup>4</sup> In between forward and historical test years is the option of a “partially forecasted” test year in which some months of historical data on utility operations are combined with some months of forecasted data. Under this approach, actual data for all months usually become available during the course of the rate case.

Historical test years tend to be uncompensatory when cost is growing faster than billing determinants. Annual rate cases with historical test years can alleviate but not eliminate underearning under these conditions. The effect on credit metrics can be material.<sup>5</sup> Where historical test years are used, there are thus added advantages to implementing other Altreg innovations discussed in this survey.

Forward test years can fully compensate utilities when cost growth exceeds growth in billing determinants. If this imbalance is chronic, however, FTYs do not eliminate the problem of frequent rate cases. It is therefore not unusual for regulators to combine FTYs with other Altreg remedies, such as cost trackers or multiyear rate plans.

Many approaches are used to forecast costs in FTY rate cases. Some companies rely on their budgeting process to make cost projections. Others normalize data for an historical reference period, adjusted for known and measurable changes, and then use indexing and other statistical methods to extend projections. A mixture of forecasting methods is common. For example, index-based forecasting may be used only for O&M expenses.

FTYs were adopted in many jurisdictions during the 1970s and 1980s, when rapid inflation and major plant additions coincided with oil shock-induced slowdowns in the growth of average use. Several additional states have recently moved in the direction of FTYs. Some of these states are in the West, where comparatively rapid economic growth has required more rapid buildout of utility infrastructure.

Current state policies concerning test years are summarized below in Figure 7 and Table 6. In many jurisdictions the use of partially or fully-forecasted test years is not standardized. For example, in some jurisdictions, including Illinois and North Dakota, utilities are allowed to select their type of rate case test year. Test year selection may also be made part of the rate case (e.g., Utah). A few jurisdictions allow forward test years to be used in rate cases or formula rate plans, but not both (e.g., Illinois and Arkansas).

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<sup>4</sup> A forward test year can in principle be the rate case year, and thereby not require two-year forecasts. Proposed rates can be established on an interim basis shortly after the filing.

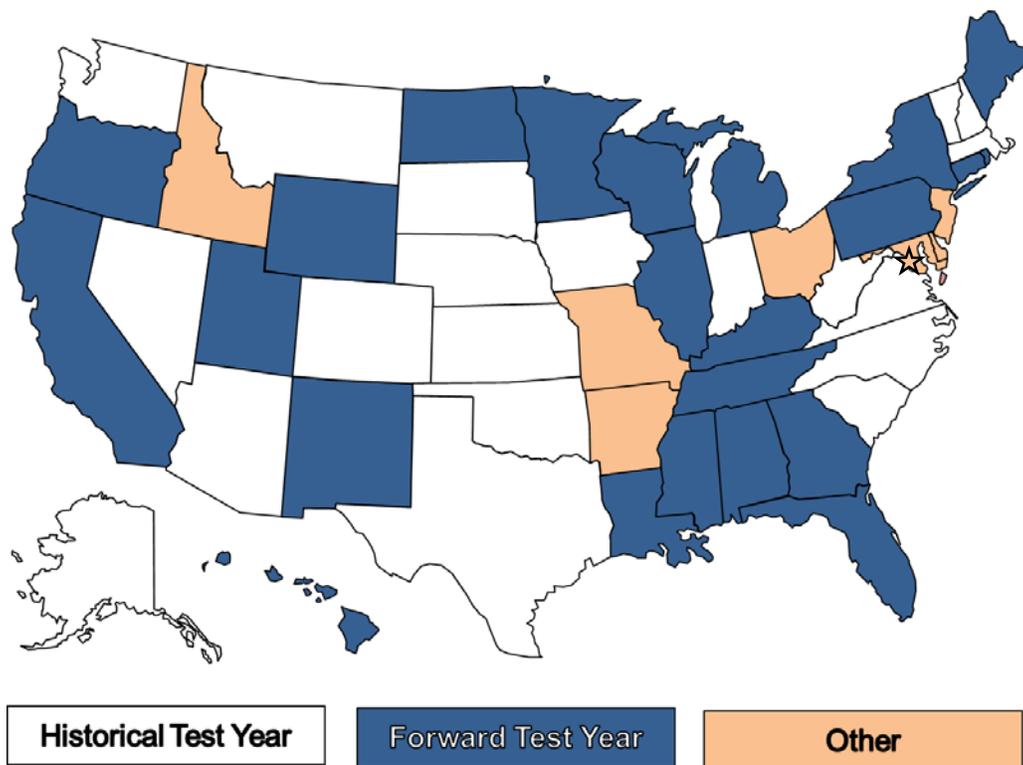
<sup>5</sup> For evidence see “Forward Test Years for US Electric Utilities” by Mark Newton Lowry, David Hovde, Lullit Getachew, and Matt Makos, Edison Electric Institute, 2010.

#### IV. Forward Test Years

Because of these complications, we have separated Table 6 into separate sections, specifying where FTYs are commonly used or occasionally used. Figure 7 shows jurisdictions where FTYs are commonly or occasionally used. Jurisdictions where partially-forecasted test years are commonly or occasionally used are in the category titled Other, with the remaining jurisdictions counted as historical test years.

The ranks of US jurisdictions that allow the use of forward test years have swollen and now encompass about half of the total. Since our 2013 survey, electric utilities in Pennsylvania have successfully used FTYs and utilities in Arkansas and Indiana have received legislative authorization for their use.<sup>67</sup> Forward test years are the norm in Canadian regulation.

Figure 7: Test Year Policy by State



<sup>6</sup> In addition, another electric utility in Mississippi was recently permitted to use a forward-looking formula rate plan.

<sup>7</sup> FTYs in Arkansas can only be used in formula rate plans.

Table 6

# Test Year Approaches of US Jurisdictions

Jurisdiction	Notes
<b>Fully-Forecasted Test Years Commonly Used (15)</b>	
Alabama	Utilities operate under forward-looking formula rate plans
California	
Connecticut	
FERC	Rate cases use forward test years but some formula rate plans use historical test years
Florida	
Georgia	
Hawaii	
Maine	
Michigan	
Minnesota	
New York	
Oregon	
Rhode Island	
Tennessee	
Wisconsin	
<b>Fully-Forecasted Test Years Occasionally Used (9)</b>	
Illinois	Utilities use various test years including forward test years ("FTYs")
Kentucky	Utilities use various test years including FTYs
Louisiana	Utilities use various test years including FTYs
Mississippi	Both electric utilities operate under forward-looking formula rate plans. Gas formula rate plans rely on historical test years ("HTYs").
New Mexico	A recently passed law allows for use of FTYs, and at least one rate increase based on FTY evidence has been approved
North Dakota	Utilities use various test years including FTYs
Pennsylvania	Partially-forecasted test years have traditionally been the norm. However, a law allowing fully-forecasted test years passed in 2012 and several electric utility rate increases based on FTY evidence have been approved.
Utah	Test year selection is part of the rate case and can be contested. Several recent rate cases have used FTYs.
Wyoming	Rocky Mountain Power has recently used FTYs
<b>Partially-Forecasted Test Years Commonly or Occasionally Used (8)</b>	
Arkansas	Utilities have typically used partially forecasted test years in rate cases. However, a recent bill authorized the use of formula rates with either historical or forecasted test periods.
Delaware	Before restructuring FTY filings were common, but companies have used a mix of HTYs and partially-forecasted test years in recent filings
District of Columbia	PEPCO has filed rate cases using both hybrid and historical test years recently
Idaho	
Maryland	Utilities use various test years excluding FTYs
Missouri	Utilities have the option to file partially-forecasted test years
New Jersey	
Ohio	
<b>Historical Test Years Commonly Used (20)</b>	
Alaska	
Arizona	
Colorado	Utilities have filed FTY evidence. However, no FTY rates have yet been approved but a recent case made extraordinary HTY adjustments.
Indiana	A recently passed law allows for use of FTYs, but no rate increase based on FTY evidence has been approved for an energy utility to date
Iowa	
Kansas	
Massachusetts	
Montana	
Nebraska	Nebraska has no electric IOUs. Gas companies are legally authorized to use FTYs but commonly use HTYs.
Nevada	
New Hampshire	
North Carolina	
Oklahoma	
South Carolina	
South Dakota	
Texas	
Vermont	
Virginia	
Washington	
West Virginia	

## V. Multiyear Rate Plans

Multiyear rate plans (“MRPs”) are designed to reduce regulatory cost, while increasing the utility incentive for efficient operation. Rate cases are held infrequently, most often at three to five year intervals. Between rate cases, rate escalations are based on a combination of automatic attrition relief mechanisms (“ARMs”) and cost trackers. The rate adjustments provided by ARMs are largely “external” in the sense that they give a utility an *allowance* for cost growth rather than reimbursement for its *actual* growth.

The “externalization” of ratemaking that ARMs and rate case moratoria achieve gives utilities more opportunity to profit from improved performance. Benefits of better performance can be shared between the utility and its customers. Performance incentives are strengthened despite streamlined regulation. Lower regulatory cost has special appeal in jurisdictions where numerous utilities must be regulated.

ARMs can cap growth in rates (e.g., customer charges and cents per kWh) or allowed revenue. Rate caps are favored when and where utilities are encouraged to bolster customer use of the grid. Revenue caps are usually combined with revenue decoupling mechanisms, and are often favored where utilities must cope with declining average use and/or policymakers strongly encourage DSM.

Several approaches to ARM design are well-established. These include multiyear cost forecasts, indexing, and hybrids. Indexing escalates rates (or revenue) automatically for inflation and sometimes also for growth in other cost drivers like the number of customers served. A hybrid approach to ARM design was developed in the US that involves indexing of revenue for O&M expenses and forecasts for capital cost revenue.

The indexing approach to ARM design has been more common for UDCs because their cost growth is relatively gradual and predictable. Hybrid and forecasted ARMs have historically been more common for vertically integrated electric utilities because occasional major plant additions have given their cost trajectories more of a “stairstep” pattern. However, this pattern is becoming less common in an era when demand growth is slower and fewer large power plants are under construction. Some VIEUs operating under MRPs have separate ARMs for generation and distribution.

Cost trackers are often used in MRPs to address changes in business conditions that are difficult to address using ARMs. A tracker that recovers a large portion of a utility’s capex cost can sometimes permit the company to operate under a multiyear freeze on rates for other non-energy costs. MRPs with “tracker/freeze” provisions for vertically integrated utilities often accord tracker treatment to costs of new or refurbished generating plants.<sup>8</sup> Trackers also address *force majeure* events like severe storms and changes in tax rates that affect costs.

Many MRPs feature earnings sharing mechanisms (“ESMs”) that automatically share earnings surpluses and/or deficits that result when the rate of return on equity (“ROE”) deviates from its regulated target. Some MRPs feature “off-ramps” that permit plan suspension when earnings are unusually high or low.

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<sup>8</sup> A good example is the Generation Base Rate Adjustment in the current MRP of Florida Power & Light.

Plans often feature performance incentive mechanisms that are linked to the utility's service quality. With stronger cost containment incentives, there is a greater need for a link between revenue and service quality. Many MRPs combine revenue decoupling, the tracking of DSM expenses, and performance incentives for DSM. The stronger incentive to contain cost that MRPs provide then becomes a "fourth leg" for the DSM stool.

MRPs have long been used to regulate utilities where market-responsive rates and services are a priority. Infrequent rate cases reduce the regulatory cost of allocating the revenue requirement between a complex and changing mix of market offerings and lessen concerns about cross-subsidization. These benefits of MRPs can be enhanced by designing other plan provisions in ways that insulate core customers from potentially adverse consequences of marketing flexibility.

For example, in the early 1990s, Maine's electric utilities were still vertically integrated and needed flexibility in marketing power to paper and pulp customers, some of whom had cogeneration options. The commission, under the chairmanship of Thomas Welch (a former telecom industry lawyer) approved a succession of price cap plans for Central Maine Power which facilitated marketing flexibility. As a result, the company had more freedom to enter into special contracts. The stronger incentives the company had to offer the right discounts to customers at risk of bypass was acknowledged by the commission when costs were allocated in later rate cases.

MRPs were first widely used in the United States to regulate railroad, oil pipeline, and telecommunications companies. A major attraction was the ability of MRPs to afford utilities flexibility in serving markets with diverse competitive pressures and complex, changing customer needs. US and Canadian precedents for MRPs in the electricity and gas utility industries are indicated in Table 7 and Figures 8a and 8b.<sup>9</sup> In the US, MRPs have traditionally been most common in California and the Northeast. MRPs have been adopted by well-known VIEUs in Florida, North Dakota, and Virginia since our 2012 survey. A number of states have, additionally, experimented with "mini-MRPs" with terms of only two years. The forecast and tracker/freeze approaches to ARM design are most common currently in the US. The Federal Energy Regulatory Commission ("FERC") uses MRPs with index-based ARMs to regulate oil pipelines.

Canada is moving towards MRPs with index-based ARMs for gas and electric power distribution in all four populous provinces. In advanced economies overseas, MRPs are more the rule than the exception for utility regulation. Australia, Britain, and New Zealand are long time practitioners.

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<sup>9</sup> Rate freezes without extensive supplemental funding from capital cost trackers are excluded from Table 7 and Figures 8a and 8b.

Figure 8a: Recent US Multiyear Rate Plan Precedents by State

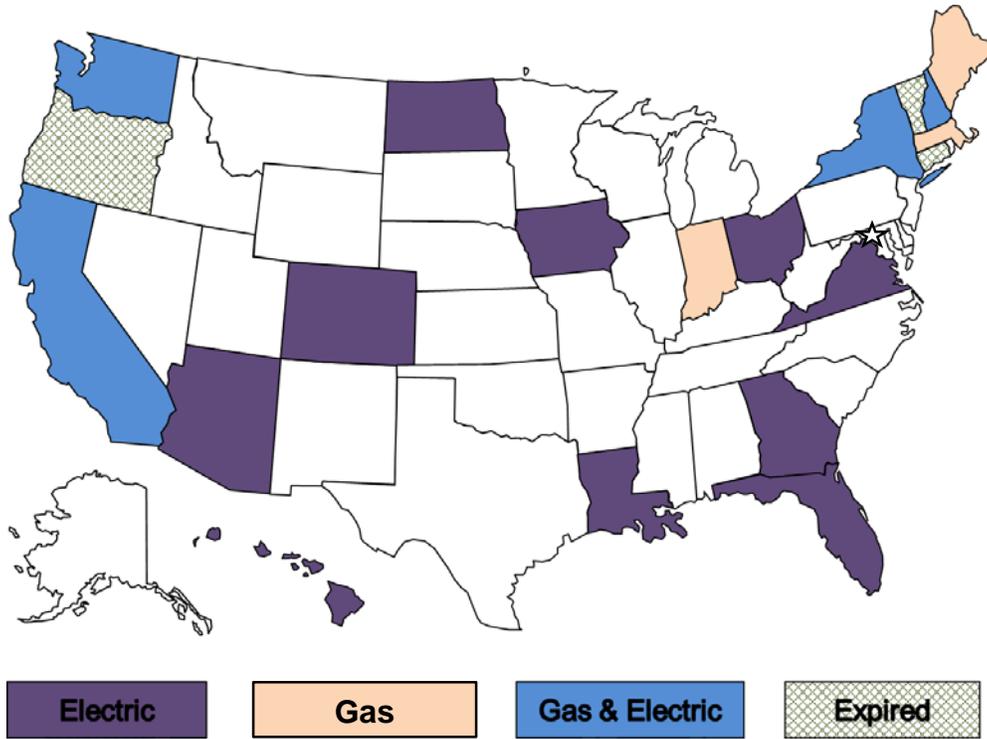


Figure 8b: Recent Canadian Multiyear Rate Plan Precedents by Province

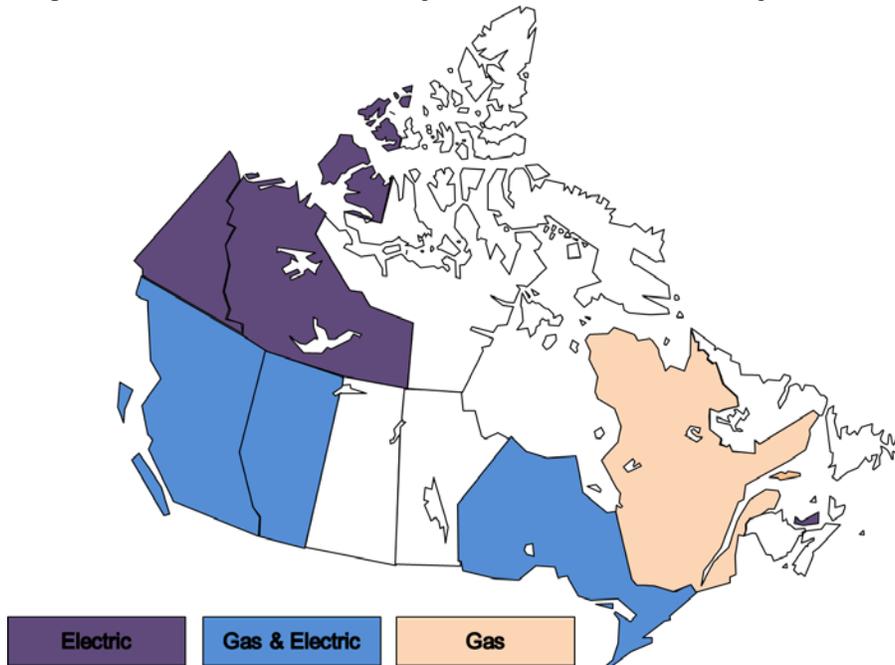


Table 7

# Multiyear Rate Plan Precedents <sup>1</sup>

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Current</b>						
<b>United States</b>						
AZ	Arizona Public Service	2012-2016	Bundled power service	Rate Freeze with an adjustment to account for purchase of SCE's share of Four Corners generating facility, additional capital and other cost trackers, LRAM	None	Decision 73183; May 2012
CA	Bear Valley Electric Service	2013-2016	Power distribution	Revenue Cap Stairstep	None	Decision 14-11-002; November 2014
CA	California Pacific Electric	2013-2015	Power distribution	Revenue Cap Index	None	Decision 12-11-030; November 2012
CA	Pacific Gas & Electric	2014-2016	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 14-08-032; August 2014
CA	PacifiCorp	2011-2013, extended through 2016	Bundled power service	Price Cap Index: Rates escalated by Global Insight forecast of CPI, less 0.5% productivity factor; supplemental funding for major plant additions can be requested in annual filings	None	Decision 10-09-010; September 2010
CA	San Diego Gas & Electric	2012-2015	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 13-05-010; May 2013
CA	Southern California Gas	2012-2015	Gas	Revenue Cap Stairstep	None	Decision 13-05-010; May 2013
CA	Southwest Gas	2014-2018	Gas	Revenue Cap Stairstep	None	Decision 14-06-028; June 2014
CO	Public Service of Colorado	2015-2017	Bundled power service	Rate Freeze with multiple capital cost trackers	Sharing of overearnings only up to earnings cap	Decision C15-0292; March 2014
FL	Florida Power & Light	2013-2016	Bundled power service	Rate Freeze with multiple capital and other cost trackers	None	Docket 120015-EI; December 2012
FL	Gulf Power	2014-June 2017	Bundled power service	Price Cap Stairstep through 2015, Rate Freeze beyond	None	Docket 130140-EI; December 2013
FL	Duke Energy Florida (formerly Progress Energy Florida)	2012-2016, extended through 2018	Bundled power service	Rate Freeze with one step plus capital and other cost trackers	None	Dockets 120022-EI and 130208-EI; 2012 and November 2013
FL	Tampa Electric	2013-2017	Bundled power service	Revenue Cap Stairstep	None	Docket 130040-EI
GA	Georgia Power	2014-2016	Bundled power service	Revenue Cap Stairstep	Sharing of overearnings only with deadband	Docket 36989; December 2013
HI	Hawaiian Electric Company	2012-open	Bundled power service	Revenue Cap Hybrid	Sharing of overearnings only without deadband, multiple sharing levels	Dockets 2008-0274 & 2008-0083
HI	Hawaiian Electric Light Company	2013-open	Bundled power service	Revenue Cap Hybrid	Sharing of overearnings only without deadband, multiple sharing levels	Dockets 2008-0274 & 2009-0164
HI	Maui Electric	2013-open	Bundled power service	Revenue Cap Hybrid	Sharing of overearnings only without deadband, multiple sharing levels	Dockets 2008-0274 & 2009-0163
IA	MidAmerican Energy	2014-2017	Bundled power service	Revenue Cap Stairstep for 2014-2016, Rate Freeze for 2017	Sharing of overearnings only with deadband up to earnings cap	RPU-2013-0004
IN	Northern Indiana Public Service Company	2015-2020	Gas	Rate Freeze with capital and other cost trackers, possible reopening in 2017	Earnings cap implemented if company overearns since last rate case or prior 59 months, whichever is less	Cause 43894 and 44403 TDSIC 1 (August 2013 and January 2015)
LA	Cleco Power	2014-2017	Bundled power service	Rate Freeze with capital and other cost trackers	Sharing of overearnings only with deadband up to earnings cap	Docket U-32779; June 2014
MA	Bay State Gas	2015-2018	Gas	Revenue Cap Stairstep for 2015, 2016, Revenue Freeze through October 2018	None	DPU 15-150; October 2015
ME	Summit Natural Gas of Maine	2013-2022	Gas	Price Cap Indexing: 75% of change in GDPPi	None until company has 1,000 or more customers, then sharing of under/overearnings evenly with deadband	Docket 2012-258; January 2013
NH	Northern Utilities	May 2014 - April 2017	Gas	Revenue Cap Stairstep for 2014-2015, Rate Freeze in 2016	Sharing of overearnings only with deadband up to earning cap	DG 13-086; April 2014
NH	Public Service Company of New Hampshire	2010-2015	Power distribution (generation regulated separately)	Revenue Cap Stairstep: Rate increases allowed to account for distribution capital additions in 2010-2013	Sharing of overearnings only with deadband	DE 09-035
NH	Unitil Energy Systems	2011-2016	Power distribution	Revenue Cap Stairstep: Rate increases allowed to account for distribution capital additions in 2011-2013	Sharing of overearnings only with deadband	DE 10-055

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Current (cont'd)</b>						
<b>United States (cont'd)</b>						
NY	Central Hudson Gas & Electric	2015-2018	Gas & power distribution	Revenue Cap Stairstep	Sharing of overearnings with deadband and multiple sharing bands	Cases 14-E-0318, 14-G-0319
NY	Consolidated Edison	2014-2016	Gas	Revenue Cap Stairstep	Sharing of overearnings only with deadband and multiple bands	Case 13-G-0031
NY	Corning Natural Gas	2012-2015	Gas	Revenue Cap Stairstep	Sharing of overearnings only with deadband and multiple bands	Case 11-G-0280
NY	Orange & Rockland Utilities	November 2015-October 2018	Gas	Revenue Cap Stairstep	Sharing of overearnings only with deadband and multiple sharing bands	Case 14-G-0494
ND	Northern States Power - Minnesota	2013-2016	Bundled power service	Revenue Cap Stairstep for 2013-2015, Rate Freeze in 2016	Sharing of overearnings only without deadband, earnings adjusted for effects of weather	Case PU-12-813
OH	First Energy Ohio	2011-2014, later extended to 2016	Power distribution	Rate Freeze supplemented by capital and other cost trackers	Company subject to Significantly Excessive Earnings Test conducted annually	Cases 11-388-EL-SSO, 12-1230-EL-SSO
US	All	2011-2016	Oil pipelines	Price Cap Index: PPI-Finished Goods + 2.65%	None	Docket RM10-25-000; December 2010
VA	Appalachian Power	2014-2017	Bundled power service	Rate Freeze supplemented by capital and other cost trackers	None	Senate Bill 1349
VA	Virginia Electric Power	2015-2019	Bundled power service	Rate Freeze supplemented by capital and other cost trackers	None	Senate Bill 1349
WA	Puget Sound Energy	2013-2016	Gas & bundled power service	Revenue Cap Stairstep	Sharing of overearnings only without deadband, equal sharing between company and customers	Dockets UE-121697 and UG-121705
<b>Canada</b>						
Alberta	Altgas Utilities and ATCO Gas	2013-2017	Gas	Revenue per Customer Indexing: Input price index - 1.16%, + capital cost trackers	None	Decision 2012-237
Alberta	ATCO Electric, EPCOR, Fortis Alberta	2013-2017	Power distribution	Price Cap Index: Input Price Index - 1.16%, + capital cost trackers	None	Decision 2012-237
British Columbia	FortisBC	2014-2018	Bundled power service	Revenue Cap Index: I-Factor - 1.03%, + capital cost tracker for CPCN projects	Symmetric without deadband	Project #3698719, Decision; September 2014
British Columbia	FortisBC Energy	2014-2018	Gas	Revenue Cap Index: I-Factor - 1.1%, + capital cost tracker for CPCN projects	Symmetric without deadband	Project #3698715, Decision; September 2014
Ontario	All unless company opts out	2014-2018	Power distribution	Price Cap Index: Input price index - (0%+stretch); stretch factor reassigned annually, + capital cost tracker option available	None	EB-2010-0379 Report of the Board; November 2013
Ontario	Horizon Utilities	2015-2019	Power distribution	Revenue Cap Stairstep	Sharing of overearnings only without deadband	EB-2014-0002; December 2014
Ontario	Hydro One Networks	2015-2017	Power distribution	Revenue Cap Stairstep	None	EB-2014-0247; March 2015
Ontario	Enbridge Gas Distribution	2014-2018	Gas	Revenue Cap Stairstep	Sharing of overearnings only without deadband	EB-2012-0459, Decision with Reasons; July 2014
Ontario	Union Gas Limited	2014-2018	Gas	Revenue Cap Index: 40% of growth in GDP-IPI	Sharing of overearnings only with deadband, multiple sharing ranges	EB 2013-0202 Decision; October 2013
Prince Edward Island	Maritime Electric	2013-2016	Bundled power service	Price Cap Stairstep: Bill defines rates for each year.	Earnings cap set at allowed ROE, no floor	Bill 26 (2012) Electric Power (Energy Accord Continuation) Amendment Act
Quebec	Gazifere	2011-2015	Gas distribution	Price Cap Index	Sharing of overearnings only without deadband and multiple sharing bands up to earnings cap	D-2010-112; August 2010
Yukon Territory	Yukon Electrical Company, Limited	2013-2015	Bundled power service	Revenue Cap Stairstep	None	Board Order 2014-06; April 2014

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Current (cont'd)</b>						
<b>Great Britain</b>						
Great Britain	All	2013-2021	Gas and power transmission	British-Style Hybrid	Not reviewed	RIIO-T1 Final Proposals, April and December 2012
Great Britain	All	2013-2021	Gas distribution	British-Style Hybrid	Not reviewed	RIIO-GD1 Final Proposals, December 2013
Great Britain	All	2015-2023	Power distribution	British-Style Hybrid	Variations of cost from budgets shared through Information Quality Incentive Mechanism	RIIO-ED1 Final Proposals, December 2014
<b>Australia/New Zealand</b>						
Australia	ActewAGL	2015-2019	Power transmission & distribution	Australian-Style Hybrid	Not reviewed	Final Decision ActewAGL distribution determination 2015-16 to 2018-19; April 2015
Australia	Ausgrid	2015-2019	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Ausgrid distribution determination 2015-16 to 2018-19; April 2015
Australia	Directlink	2015-2020	Power transmission	Australian-Style Hybrid	Not reviewed	Final Decision Directlink transmission determination 2015-16 to 2019-20; April 2015
Australia	Endeavour Energy	2015-2019	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Endeavour Energy distribution determination 2015-16 to 2018-19; April 2015
Australia	Energex	2015-2020	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Energex determination 2015-16 to 2019-20
Australia	Ergon Energy	2015-2020	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Ergon Energy determination 2015-16 to 2019-20
Australia	Essential Energy	2015-2019	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Essential Energy distribution determination 2015-16 to 2018-19; April 2015
Australia	Jemena Gas Networks	2015-2020	Gas distribution	Australian-Style Hybrid	Not reviewed	Final Decision Jemena Gas Networks (NSW) Ltd Access Arrangement 2015-20; June 2015
Australia	SA Power Networks	2015-2020	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision SA Power Networks determination 2015-16 to 2019-20
Australia	TasNetworks	2015-2019	Power transmission	Australian-Style Hybrid	Not reviewed	Final Decision TasNetworks transmission determination 2015-16 to 2018-19; April 2015
Australia	TransGrid	2015-2018	Power transmission	Australian-Style Hybrid	Not reviewed	Final Decision TransGrid transmission determination 2015-16 to 2017-18; July 2015
Australia	Power & Water	2014-2019	Power transmission & distribution	Australian-Style Hybrid	Not reviewed	2014 Networks Price Determination Final Determination Part-A Statement of Reasons; April 2014
Australia	All Queensland Distributors	2011-2016	Gas distribution	Australian-Style Hybrid	Not reviewed	Access Arrangement Proposal for Qld Gas Network, Final Decision; June 2011
Australia	Energex and Ergon Energy	2010-2015	Power distribution	Australian-Style Hybrid	Not reviewed	Queensland Distribution Determination 2011-11 to 2014-15 (Final Decision)
Australia	Envestra	2011-2016	Gas distribution	Australian-Style Hybrid	Not reviewed	Access Arrangement Proposal for the SA Gas Network, Final Decision; June 2011
Australia	All Victorian Distributors	2013-2017	Gas distribution	Australian-Style Hybrid	Not reviewed	Access Arrangement Final Decision; March 2013

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Current (cont'd)</b>						
<b>Australia/New Zealand (cont'd)</b>						
Australia	CitiPower	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	CitiPower Pty Distribution Determination 2011-2015; September 2012
Australia	Powercor	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	Powercor Australia Ltd Distribution Determination 2011-2015; October 2012
Australia	Jemena Electricity Networks	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	Jemena Electricity Networks (Victoria) Ltd Distribution Determination 2011-2015; September 2012
Australia	SP AusNet	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	SPI Electricity Pty Ltd Distribution Determination 2011-2015; August 2013
Australia	United Energy Distribution	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	United Energy Distribution Distribution Determination 2011-2015; September 2012
New Zealand	All but Orion Electric	2015-2020	Power distribution	Revenue Cap Index: CPI-0% for most companies	None	Project no. 14.07/14118; November 2014
New Zealand	All	2013-2017	Gas distribution	New Zealand-Style Hybrid	Not reviewed	Project no. 15.01/13199
New Zealand	All	2013-2017	Gas transmission	New Zealand-Style Hybrid	Not reviewed	Project no. 15.01/13199
<b>Historic</b>						
<b>United States</b>						
CA	Bear Valley Electric Service	2009-2012	Power distribution	Revenue Cap Stairstep	None	Decision 09-10-028; October 2009
CA	Pacific Gas & Electric	2011-2013	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 11-05-018; May 2011
CA	Pacific Gas & Electric	2007-2010	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 07-03-044; March 2007
CA	Pacific Gas & Electric	2004-2006	Gas & bundled power service	Revenue Cap Index	None	Decision 04-05-055; May 2004
CA	Pacific Gas & Electric	1993-1995	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 92-12-057; December 1992
CA	Pacific Gas & Electric	1990-1992	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 89-12-057; December 1989
CA	Pacific Gas & Electric	1987-1989	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 86-12-092; December 1986
CA	Pacific Gas & Electric	1984-1986	Gas & bundled power service	Revenue Cap Hybrid	None	Decisions 83-12-068; December 1983 and 85-12-076; December 1985
CA	PacifiCorp	2007-2009, extended to 2010	Bundled power service	Price Cap Index	None	Decisions 06-12-011; December 2006 and 09-04-017; April 2009
CA	PacifiCorp	1994-1996	Bundled power service	Price Cap Index	None	Decision 93-12-106; December 1993
CA	PacifiCorp	1984-1987	Bundled power service	Revenue Cap Hybrid	None	Decisions 84-07-150; July 1984 and 85-12-076; December 1985
CA	San Diego Gas & Electric	2008-2011	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 08-07-046; July 2008
CA	San Diego Gas & Electric	2005-2007	Gas & bundled power service	Revenue Cap Index	Sharing of overearnings only with deadband and multiple sharing bands	Decision 05-03-025; March 2005
CA	San Diego Gas and Electric	1999-2002	Gas & power distribution	Price Cap Index	Sharing of overearnings only above deadband with multiple sharing bands	Decision 99-05-030; May 1999

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>United States (cont'd)</b>						
CA	San Diego Gas & Electric	1994-1999	Gas & bundled power service	Revenue Cap Hybrid	Sharing of overearnings only with deadband and multiple sharing bands up to an earnings cap	Decision 94-08-023; August 1984
CA	San Diego Gas & Electric	1989-1993	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 88-12-085; December 1988
CA	San Diego Gas & Electric	1986-1988	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 85-12-108; December 1985
CA	Sierra Pacific Power	2009-2011, extended to 2012	Bundled power service	Price Cap Index	None	Decision 09-10-041; October 2009
CA	Sierra Pacific Power	1990-1992	Bundled power service	Revenue Cap Hybrid	None	Decision 90-07-060; July 1990
CA	Southern California Edison	2012-2014	Bundled power service	Revenue Cap Hybrid	None	Decision 12-11-051; November 2012
CA	Southern California Edison	2009-2011	Bundled power service	Revenue Cap Stairstep	None	Decision 09-03-025; March 2009
CA	Southern California Edison	2006-2008	Bundled power service	Revenue Cap Hybrid	None	Decision 06-05-016; May 2006
CA	Southern California Edison	2004-2006	Bundled power service	Revenue Cap Hybrid	None	Decision 04-07-022; July 2004
CA	Southern California Edison	1997-2001	Power distribution	Price Cap Index	Sharing of over/underearnings outside deadband with multiple sharing bands	Decision 96-09-092; September 1996
CA	Southern California Edison	1986-1991	Bundled power service	Revenue Cap Hybrid	None	Decision 85-12-076; December 1985
CA	Southern California Gas	2008-2011	Gas	Revenue Cap Stairstep	None	Decision 08-07-046; July 2008
CA	Southern California Gas	2005-2007	Gas	Revenue Cap Index	Sharing of overearnings only with deadband and multiple sharing bands	Decision 05-03-025; March 2005
CA	Southern California Gas	1998-2003	Gas	Revenue Cap Index	Sharing of over/underearnings outside deadband with multiple sharing bands	Decision 97-07-054; July 1997
CA	Southern California Gas	1990-1993	Gas	Revenue Cap Hybrid	None	Decision 90-01-016; January 1990
CA	Southern California Gas	1985-1989	Gas	Revenue Cap Hybrid	None	1984, 85-12-076; December 1985, and 87-05-027; May 1987
CA	Southwest Gas	2009-2013	Gas	Revenue Cap Stairstep	None	Decision 08-11-048; November 2008
CO	Public Service Company of Colorado	2012-2014	Bundled power service	Revenue Cap Stairstep	Sharing of overearnings only without deadband, multiple sharing bands up to earnings cap	Decision C12-0494
CT	Connecticut Light & Power	2004-2007	Power distribution	Revenue Cap Stairstep	Even sharing of overearning without deadband	Docket 03-07-02
CT	United Illuminating	2006-2008	Power distribution	Revenue Cap Stairstep	Even sharing of overearning without deadband	Docket 05-06-04
FL	Florida Power & Light	2006-2009	Bundled power service	Rate Freeze with exception for new generating facilities after they are in service and multiple capital and other cost trackers	None	Docket 050045-EI
FL	Progress Energy Florida	2006-2009	Bundled power service	Rate Freeze with 1 step to reflect generation brought in-service and multiple capital and other cost trackers	None	Docket 050078-EI
GA	Georgia Power	2011-2013	Bundled power service	Revenue Cap Stairstep; Rate increases permitted for DSM and major generation plant additions	Sharing of overearnings only with deadband	Docket 31958
IA	MidAmerican Energy	2001-2005, extended to 2013	Bundled power service	Rate Freeze with nuclear capital and other cost trackers	Sharing of overearnings only in multiple sharing bands, deadband not applicable due to no allowed ROE	Dockets RPU-01-3 and RPU-2012-0001
LA	Cleco Power	2009-2014	Bundled power service	Rate Freeze with capital cost tracker	Sharing of overearnings only with deadband up to earnings cap	Order U-30689
MA	Bay State Gas	2006-2015, terminated in 2009	Gas distribution	Price Cap Index	75-25 shareholders-ratepayers sharing around deadband	Docket DTE 05-27
MA	Berkshire Gas	February 2002-January 2012	Gas distribution	No adjustment until September 2004, then Price Cap Index	None	Docket D.T.E. 01-56

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Attrition Relief Mechanism	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>United States (cont'd)</b>						
MA	Boston Gas (I)	1997-2001	Gas distribution	Price Cap Index	75-25 shareholders-ratepayers sharing around deadband	Docket D.P.U. 96-50-C (Phase I); May 1997
MA	Boston Gas (II)	2004-2013, Terminated in 2010	Gas distribution	Price Cap Index	75-25 shareholders-ratepayers sharing around deadband	Docket DTE 03-40
MA	Blackstone Gas	November 1, 2004 - October 31, 2009	Gas distribution	Price Cap Index	Even sharing of earnings above/below deadband	Docket D.T.E. 04-79
MA	Nstar	2006-2012	Power distribution	Price Cap Index	Deadband with 50-50 sharing of over and underearnings	Docket D.T.E. 05-85
ME	Bangor Gas	2000-2009, extended to 2012	Gas distribution	Price Cap Index	Even sharing of overearnings only. No allowed ROE established for company and no determination of a deadband.	Docket 970795; June 1998
ME	Bangor Hydro Electric (I)	1998-2000	Power distribution	Price Cap Index	50/50 sharing around deadband	Docket 97-116; March 1998
ME	Central Maine Power (I)	1995-1999	Bundled power service	Price Cap Index	Even sharing of earnings above/below deadband	Docket 92-345 Phase II; January 1995
ME	Central Maine Power (II)	2001-2007	Power distribution	Price Cap Index	50-50 sharing below deadband	Docket 99-666; November 2000
ME	Central Maine Power (III)	2009-2013	Power distribution	Price Cap Index: GDPPI - 1%, separate capital cost tracker for AMI	50-50 sharing above 11% ROE	Docket 2007-215
ME	Maine Natural Gas	2010-2012	Gas	Revenue Cap Stairstep with steps conditioned on company earnings	None	Docket 2009-67
NY	Brooklyn Union Gas	October 1, 1991 - September 30, 1994	Gas	Revenue Cap Stairstep	Sharing of overearnings only without deadband	Case 90-G-0981, Opinion 91-21; October 1991
NY	Brooklyn Union Gas	October 1, 1994 - September 30, 1997	Gas	Revenue Cap Stairstep	Sharing of overearnings only without deadband and multiple sharing bands	Case 93-G-0941, Opinion 94-22; October 1994
NY	Central Hudson Gas & Electric	2010-2013	Gas & power distribution	Revenue Cap Stairstep	Sharing of overearnings with deadband and multiple sharing bands	Case 09-E-0588
NY	Central Hudson Gas & Electric	July 1, 2006 - June 30, 2009	Gas & power distribution	Price Cap Stairstep	Sharing of overearnings only with deadband, multiple sharing bands up to earnings cap	Case 05-E-0934 & Case 05-G-0935; July 2006
NY	Consolidated Edison	2010-2013	Gas	Revenue Cap Stairstep	Sharing of overearnings only with deadband that varies annually and multiple sharing bands	Case 09-G-0795
NY	Consolidated Edison	2007-2010	Gas	Revenue Cap Stairstep	Even sharing of overearnings only above deadband, sharing threshold adjustable depending on work with DSM program administrator for first year only	Case 06-G-1332
NY	Consolidated Edison	October 1, 1994 - September 30, 1997	Gas	Revenue Cap Stairstep	Even sharing of overearnings only above deadband	Case 93-G-0996, Opinion 94-2; October 1994
NY	Consolidated Edison	2010-2013	Power distribution	Revenue Cap Stairstep	Sharing of overearnings only above deadband with multiple sharing bands	Case 09-E-0428
NY	Consolidated Edison	April 1, 2005 - March 31, 2008	Power distribution	Price Cap Stairstep	Sharing of overearnings only with multiple bands. No allowed ROE approved.	Case 04-E-0572; March 2005
NY	Consolidated Edison	1992-1995	Bundled power service	Revenue Cap Stairstep	Even sharing of overearnings with varying allowed ROE and no deadband	Opinion 92-8
NY	Keyspan Energy Delivery - Long Island	2010-2012	Gas	Revenue Cap Stairstep	Sharing of overearnings only above deadband with multiple sharing bands, sharing threshold adjustable for good DSM performance	Case 06-G-1185
NY	Keyspan Energy Delivery - New York	2010-2012	Gas	Revenue Cap Stairstep	Sharing of overearnings only above deadband with multiple sharing bands, sharing threshold adjustable for good DSM performance	Case 06-G-1186
NY	Long Island Lighting Company	December 1, 1993 - November 30, 1996	Gas	Revenue Cap Stairstep	Even sharing of overearnings only with deadband	Case 93-G-002, Opinion 93-23; December 1993
NY	Long Island Lighting Company	1992-1994	Bundled power service	Revenue Cap Stairstep	Even sharing of overearnings only without deadband	Opinion 92-8

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Attrition Relief Mechanism	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>United States (cont'd)</b>						
NY	New York State Electric & Gas	2010-2013	Gas & power distribution	Revenue Cap Stairstep	Sharing of overearnings only with deadband that varies annually and multiple sharing bands	Case 09-E-0715
NY	New York State Electric & Gas	August 1, 1995 - July 31, 1998, Years 2 and 3 not implemented due to restructuring	Bundled power service	Revenue Cap Stairstep	Sharing of overearnings only with annually varying deadbands	Case 94-M-0349, Opinion 95-27; September 1995
NY	New York State Electric & Gas	December 1, 1993 - August 31, 1995	Gas & bundled power service	Revenue Cap Stairstep	Even sharing of overearnings only above deadband	Case 92-G-1086, Opinion 93-22; November 1993
NY	Niagara Mohawk	July 1, 1990 - December 31, 1992	Gas & bundled power service	Revenue Cap Stairstep	Sharing of overearnings only without deadband up to earnings cap	Case 29327, Opinion 89-37; June 1991
NY	Orange & Rockland Utilities	2009-2012	Gas	Revenue Cap Stairstep	Sharing of overearnings only beyond deadband and multiple sharing bands	Case 08-G-1398
NY	Orange & Rockland Utilities	November 1, 2006 - October 31, 2009	Gas	Price Cap Stairstep	Sharing of overearnings only beyond deadband and multiple sharing bands	Case 05-G-1494; October 2006
NY	Orange & Rockland Utilities	November 1, 2003 - October 31, 2006	Gas	Price Cap Stairstep	Even sharing of overearnings only without deadband	Case 02-G-1553; October 2003
NY	Orange & Rockland Utilities	2012-2015	Power distribution	Revenue Cap Stairstep	Sharing of overearnings only with deadband and multiple bands	Case 11-E-0408
NY	Orange & Rockland Utilities	2008-2011	Power distribution	Revenue Cap Stairstep	Sharing of overearnings only above deadband with multiple sharing bands	Case 07-E-0949
NY	Orange & Rockland Utilities	1991-1993	Bundled power service	Revenue Cap Stairstep	Even sharing of overearnings above deadband	Case 89-E-175
NY	Rochester Gas & Electric	2010-2013	Gas & power distribution	Revenue Cap Stairstep	Sharing of overearnings only with deadband that varies annually and multiple sharing bands	Case 09-E-0717
NY	Rochester Gas & Electric	July 1, 1993 - June 30, 1996	Gas & bundled power service	Revenue Cap Stairstep	Earnings cap only	Case 92-G-0741, Opinion No. 93-19; August 1993
OH	AEP-Ohio	2012-2015	Power distribution	Rate Freeze supplemented by capital and other cost trackers	Company subject to Significantly Excessive Earnings Test conducted annually	Case No. 11-346-EL-SSO; August 2012
OH	Cincinnati Gas & Electric	2009-2011	Power generation	Price Cap Stairstep	Company subject to Significantly Excessive Earnings Test conducted annually	Case 08-920-EL-SSO
OR	PacifiCorp	1998-2001	Power distribution	Revenue Cap Index	Sharing of over/underearning outside deadband in multiple sharing bands	Order No. 98-191
US	All	2006-2011	Oil pipelines	Price Cap Index: PPI-Finished Goods + 1.3%	None	RM05-22-000
US	All	2001-2006	Oil pipelines	Price Cap Index: PPI-Finished Goods + 0%	None	RM00-11-000
US	All	1995-2001	Oil pipelines	Price Cap Index: PPI-Finished Goods - 1%	None	RM93-11-000
VT	Green Mountain Power	2007-2010	Bundled power service	Revenue Cap Stairstep	Earnings cap for overearnings above deadband; Multiple sharing bands for earnings apply if actual ROE below deadband (earnings floor of the deadband also applies)	Docket No. 7176
WA	Puget Sound Energy	1997-2001	Bundled power service	Price Cap Stairstep	None	Docket UE-960195
<b>Australia/New Zealand</b>						
Australia	Jemena Gas Networks	2010-2015	Gas distribution	Australia-Style Hybrid	Not reviewed	Access Arrangement Proposal for NSW Gas Networks, Final Decision; June 2010
Australia	All New South Wales distributors	2009-2014	Power distribution	Australia-Style Hybrid	Not reviewed	New South Wales Distribution Determination 2009-10 to 2013-14 Final Decision
Australia	ElectraNet	2008-2013	Power transmission	Australia-Style Hybrid	Not reviewed	Final Decision; April 2008
Australia	ElectraNet	2003-2008	Power transmission	Australia-Style Hybrid	Not reviewed	File No: C2001/1094
Australia	Powerlink	2007-2012	Power transmission	Australia-Style Hybrid	Not reviewed	Final Decision; June 2007

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>Australia/New Zealand (cont'd)</b>						
Australia	Powerlink	2002-2007	Power transmission	Australia-Style Hybrid	Not reviewed	File No: 2000/659
Australia	Snowy Mountains	1999-2004 (terminated in 2002 due to merger with Transgrid)	Electric transmission	Australia-Style Hybrid	Not reviewed	File No: C1999/62
Australia	SPI PowerNet	2003-2008	Power transmission	Australia-Style Hybrid	Not reviewed	File No: C2001/1093
Australia	Transend	2009-2014	Power transmission	Australia-Style Hybrid	Not reviewed	Transend Transmission Determination 2009/10-2013/14 (Final Decision)
Australia	Transend	2004-2009	Power transmission	Australia-Style Hybrid	Not reviewed	File No: C2001/1100
Australia	Transgrid	2009-2014	Electric transmission	Australia-Style Hybrid	Not reviewed	Transgrid Transmission Determination 2009/10-2013/14 (Final Decision)
Australia	Transgrid	2004-2009	Power transmission	Australia-Style Hybrid	Not reviewed	File No. M2003/287
Australia	Transgrid	1999-2004	Power transmission	Australia-Style Hybrid	Not reviewed	File No: CG98/118
Australia - New South Wales	Country Energy Gas	2006-2010	Gas distribution	Australia-Style Hybrid	Not reviewed	Revised Access Arrangement for Country Energy Gas Network, Final Decision; November 2005
Australia - New South Wales	AGL Gas Networks	1999-2004	Gas transmission & distribution	Australia-Style Hybrid	Not reviewed	Access Arrangement for AGL Gas Networks Limited, Final Decision; July 2000
Australia - New South Wales	All	2004-2009	Power distribution	Australia-Style Hybrid	Not reviewed	File No: S2004/138
Australia - New South Wales	All	1999-2004	Power distribution	Australia-Style Hybrid	Not reviewed	NEC Determination 99-1
Australia - Northern Territory	Power & Water	2000-2003	Power transmission & distribution	Australia-Style Hybrid	Not reviewed	Revenue Determinations document; June 2000
Australia - Northern Territory	Power & Water	2009-2014	Power transmission & distribution	Price Cap Index: CPI + 0.85%	Not reviewed	Final Determination Networks Pricing: 2009 Regulatory Reset; March 2009
Australia - Northern Territory	Power & Water	2004-2009	Power transmission & distribution	Price Cap Index: CPI - 2%	Not reviewed	Final Determination Networks Pricing: 2004 Regulatory Reset; February 2004
Australia - Victoria	All	2008-2012	Gas distribution	Australia-Style Hybrid	Not reviewed	Gas Access Arrangement Review 2008, 2012, Final Decision; March 2008
Australia - Victoria	All	2003-2007	Gas distribution	Australia-Style Hybrid	Not reviewed	Review of Gas Access Arrangements, Final Decision; October 2002
Australia - Victoria	All	2006-2010	Power distribution	Australia-Style Hybrid	Not reviewed	Electricity Distribution Price Review 2006-2010 (Final Decision Volume 1)
Australia - Victoria	All	2001-2005	Power distribution	Australia-Style Hybrid	Not reviewed	Electricity Distribution Price Determination 2001-2005 (Final Decision Volume 1)
New Zealand	All	2010-2015	Power distribution	Revenue Cap Index: CPI - 0%	None	Commerce Commission Initial Reset of the Default Price-Quality Path for Electricity Distribution Businesses Decisions Paper; November 2009

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>Australia/New Zealand (cont'd)</b>						
New Zealand	All	2004-2009	Power distribution	Revenue Cap Index: CPI - 0.86% (Average across firms)	None	Commerce Commission Regulation of Electricity Lines Businesses, Targeted Control Regime, Threshold Decisions; December 2003
<b>Canada</b>						
Alberta	Enmax	2007-2013	Power distribution	Price Cap Index: Input Price Index -1.2%	50-50 for excess earnings above deadband	Decision 2009-035
Alberta	Northwestern Utilities	1999-2002, reopened for 2001-2002	Gas distribution	Revenue Cap Stairstep; at reopener replaced with rate freeze	Sharing of earnings above/below deadband with multiple bands for overearnings; at reopener simplified to 50/50 sharing of overearnings with deadband	Decision U98060; March 1998 and Decision 2000-85; December 2000
Alberta	EPCOR	2002-2005, Terminated 12/31/2003	Power distribution	Price Cap Index	None	City of Edmonton Distribution Tariff Bylaw 12367; August 2000
Northwest Territory	Northland Utilities	2011-2013	Bundled power service	Revenue Cap Stairstep	None	Decision 17-2011; November 2011
Northwest Territory	Northland Utilities (Yellowknife)	2011-2013	Bundled power service	Revenue Cap Stairstep	None	Decision 13-2011; August 2011
Ontario	All Ontario Distributors	2010-2013	Power distribution	Price Cap Index: GDP IPI for Final Domestic Demand - (0.92% to 1.32% depending on company's annual performance in benchmarking studies)	None	EB-2007-0673; July 2008, September 2008, and January 2009
Ontario	All Ontario Distributors	2006-2009	Power distribution	Price Cap Index	None	EB-2006-0089; December 2006
Ontario	All Ontario Distributors	2000-2003	Power distribution	Price Cap Index	50-50 sharing of excess earnings without deadband	RP-1999-0034; January 2000
Ontario	Enbridge Gas Distribution	2008-2012	Gas distribution	Revenue Cap Index: GDP-IPI * 53%	50-50 sharing of excess earnings above deadband	EB-2007-0615; February 2008
Ontario	Union Gas	2008-2012	Gas distribution	Revenue Cap Index: GDP-IPI -1.82%	Sharing of overearnings only with deadband and multiple sharing bands	EB-2007-0606; January 2008
Ontario	Union Gas	2001-2003	Gas distribution	Price Cap Index	50-50 sharing around deadband	RP-1999-0017; July 2001
<b>Great Britain</b>						
Great Britain	All	2008-2013	Gas distribution	British-Style Hybrid	Not reviewed	Review- Final Proposals; Published December 2007
Great Britain	All	2002-2007, extended to 2008	Gas distribution	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
Great Britain	All	2007-2012	Gas transmission	British-Style Hybrid	Not reviewed	Transmission Price Control Review; Published December 2006
Great Britain	All	2002-2007	Gas transmission	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
Great Britain	All	1998-2002	Gas transmission & distribution	British-Style Hybrid	Not reviewed	Energy Law Journal Volume 23 No. 2 p.444
Great Britain	All	1994-1997	Gas transmission & distribution	British-Style Hybrid	Not reviewed	Energy Law Journal Volume 23 No. 2 p.444
Great Britain	All	1992-1994	Gas transmission & distribution	British-Style Hybrid	Not reviewed	Energy Law Journal Volume 23 No. 2 p.444
England & Wales	All	1995-2000	Power distribution	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
Great Britain	All	2010-2015	Power distribution	British-Style Hybrid	Variances of cost from budgets shared through Information Quality Incentive Mechanism	Ofgem Distribution Price Control Review 5
Great Britain	All	2005-2010	Power distribution	British-Style Hybrid	Not reviewed	Ofgem Distribution Price Control Review 4

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>Great Britain (cont'd)</b>						
Great Britain	All	2000-2005	Power distribution	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
England & Wales	National Grid	2001-2006, extended to 2007	Power transmission	British-Style Hybrid	Not reviewed	OECD Reviews of Regulatory Reform
England & Wales	National Grid	1997-2001	Power transmission	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
England & Wales	National Grid	1993-1997	Power transmission	British-Style Hybrid	Not reviewed	Energy Law Journal Volume 23 No. 2 p.452
Great Britain	All	2007-2012	Power transmission	British-Style Hybrid	Not reviewed	Transmission Price Control Review; Published December 2006
Scotland	All	2000-2005, extended to 2007	Power transmission	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
Scotland	All	1995-2000	Power transmission	British-Style Hybrid	Not reviewed	1995 Report by Monopolies and Mergers Commission

<sup>1</sup> Rate freezes without extensive supplemental funding from capital cost trackers are excluded from this table.

## VI. Formula Rates

A cost of service formula rate plan (“FRP”) is essentially a wide-scope cost tracker designed to help a utility’s revenue track its cost of service. Earnings surpluses or deficits occur when revenue and cost are not balanced. FRPs have earnings true up mechanisms that adjust rates so that earnings variances are reduced or eliminated. Regulatory cost is contained by limiting review of costs and revenues.

The earnings true up mechanism plays a key role in an FRP. Some mechanisms compare the earned ROE to the target ROE and then calculate the rate adjustment needed to reduce the ROE variance. Others adjust rates for the difference between revenue and a pro forma cost of service calculated using a rate of return target. Both approaches can keep the utility whole for the time value of money.

Earnings true up mechanisms often include a deadband in which variances don’t trigger a rate adjustment. Once the variance exceeds the deadband, however, earnings true up mechanisms in FRPs commonly move the ROE all, or almost all, of the way to its regulated target without sharing earnings variances. This is an important distinction between the earnings true up mechanism of an FRP and the earnings *sharing* mechanisms found in some multiyear rate plans.

Formula rates do not always address major plant additions. In state-regulated FRPs for retail electric services, for instance, major investment programs are generally approved separately through such means as hearings on certificates of public convenience and necessity. The resultant cost is often recovered through a separate tracker.

Mechanisms are sometimes added to an FRP to encourage better operating performance. For example, escalation of revenue that compensates the utility for its O&M expenses may be limited by a formula tied to an inflation index. FRPs in several states that include Illinois and Mississippi contain a number of targeted performance incentive mechanisms.

Formula rates have been used at the FERC and its predecessor agency to regulate interstate services of energy utilities for decades. Use of FRPs by the FERC was encouraged in the 1970s and early 1980s by rapid price inflation. Despite slower inflation in recent years, the FERC has made extensive use of formula rates for power transmission in an effort to simplify its daunting regulatory task and facilitate urgently needed investments.

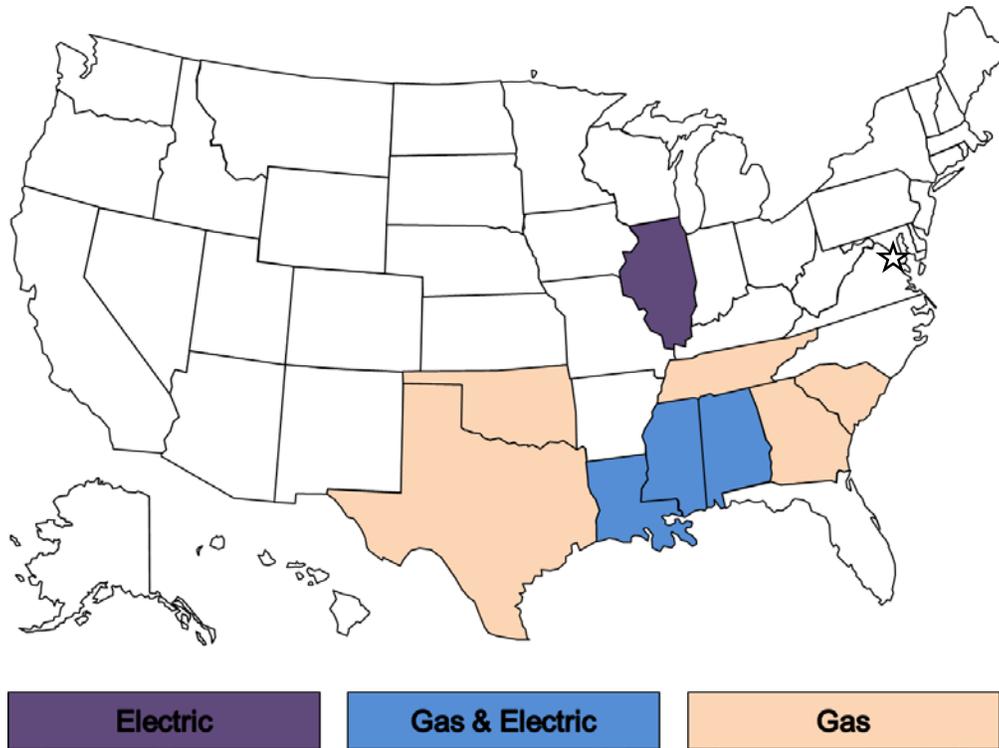
Precedents for retail formula rates, which recover costs of generation and/or distribution, are listed in Table 8 and Figure 9.<sup>10</sup> It can be seen that FRPs for retail utility services are most common in the Southeast and South Central states. Alabama was an early innovator, approving “Rate Stabilization and Equalization”

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<sup>10</sup> Some plans labeled as formula rates do not qualify for inclusion in this table and figure based on our definition. These usually take the form of ESMs that may or may not protect the utility from underearning.

plans for Alabama Power and Alabama Gas in the early 1980s.<sup>11</sup> Formula rates are now used to regulate electric utilities in Illinois, some gas and electric utilities in Louisiana and Mississippi, and some gas utilities in Georgia, Oklahoma, South Carolina, Tennessee, and Texas. Most of the recent approvals of formula rates have been for gas distribution, as this is one means to avoid the frequent rate cases that declining average use can trigger. However, formula rates were recently authorized legislatively for electric utilities in Arkansas.

Figure 9: Current Retail Formula Rate Precedents by State



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<sup>11</sup> For further discussion of the Alabama FRP experience see Edison Electric Institute, *Case Study of Alabama Rate Stabilization and Equalization Mechanism*, June 2011.

Table 8

# Retail Formula Rate Plan Precedents<sup>1</sup>

Jurisdiction	Company Name	Services	Plan Name	Plan Term	Case Reference
<b>Current</b>					
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	2013-open	Dockets 18117 and 18416 (August 2013)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2014-2018	Dockets 18406 and 18328 (December 2013)
AL	Mobile Gas Service	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2013-2017	Docket 28101 (August 2013)
GA	Atmos Energy	Gas	Georgia Rate Adjustment Mechanism (GRAM)	2012-open	Docket 34764 (December 2011)
IL	Ameren Illinois	Power Distribution	Rate Modernization Action Plan - Pricing (Rate MAP-P)	2011-2017, extended through 2019	Case 12-0001 (September 2012) and Public Act 098-1175
IL	Commonwealth Edison	Power Distribution	Rate Delivery Service Pricing and Performance (Rate DSPP)	2011-2017, extended through 2019	Case 11-0721 (May 2012) and Public Act 098-1175
LA	Atmos Energy - Louisiana Gas Service	Gas	Rate Stabilization Clause	2014-open	Docket U-32987 (June 2014)
LA	Atmos Energy - Trans Louisiana Gas	Gas	Rate Stabilization Clause	2014-open	Docket U-32987 (June 2014)
LA	Southwestern Electric Power	Electric	Formula Rate Plan	2013-2016	Docket U-32220 (July 2014)
MS	Atmos Energy Corp	Gas	Stable/Rate Rider	2011-present	Docket 05-UN-0503 (April 2011)
MS	Centerpoint Energy	Gas	Rate Regulation Adjustment Rider	2014-open	Docket 2014-UN-060 (May 2014)
MS	Entergy Mississippi	Bundled Power Service	Formula Rate Plan 6 (FRP-6)	2015-open	Docket 2014-UN-132 (December 2014)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 5 (PEP-5)	2010-open	Docket 2003-UN-0898 (November 2009)
OK	Centerpoint Energy Arkla	Gas	Performance Based Rate of Change Plan	2010-open	Cause PUD 201000030 (July 2010)
OK	Arkansas Oklahoma Gas	Gas	Performance Based Rate of Change Plan	2013-open	Cause PUD 201200236 (July 2013)
SC	Piedmont Gas	Gas	NA	2005-open	Docket 2005-125-G (September 2005)
SC	South Carolina Electric and Gas	Gas	NA	2005-open	Docket 2005-113-G (October 2005)
TN	Atmos Energy	Gas	Annual Review Mechanism	2015-open	Docket 14-00146 (May 2015)
TX	Centerpoint Energy-Texas Coast Division	Gas	Cost of Service Adjustment Clause	2008-open	Gas Utility Docket 9791 (October 2008)
TX	Atmos Energy-Mid Texas Division	Gas	Rate Review Mechanism	2013-2017	Various Resolutions/Ordinances across cities in service territory, including City of Fort Worth Ordinance 17989-02-2007
TX	Atmos Energy West Texas Division	Gas	Rate Review Mechanism	2014-open	Various Resolutions/Ordinances across cities in service territory including City of Tulia Ordinance 2014-03
TX	Texas Gas Service - Rio Grande Service Area	Gas	Cost of Service Adjustment	2012-open	Various Resolutions/Ordinances across cities in service territory
TX	Texas Gas Service - North Service Area	Gas	Cost of Service Adjustment Tariff	2009-open	Various Resolutions/Ordinances in service territory and Gas Utility Docket 9839 (April 2009)

Table 8 (cont'd)

Jurisdiction	Company Name	Services	Plan Name	Plan Term	Case Reference
<b>Historic</b>					
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	2006-2013	Dockets 18117 and 18416 (October 2005)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	2002-2006	Dockets 18117 and 18416 (March 2002)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	1998-2002	Dockets 18117 and 18416 (March 1998)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	1990-1998	Dockets 18117 and 18416 (March 1990)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	1985-1990	Dockets 18117 and 18416 (June 1985)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	1982-1985	Dockets 18117 and 18416 (November 1982)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2008-2014, later changed to 2013	Dockets 18406 and 18328 (December 2007)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2002-2007	Dockets 18046 and 18328 (June 2002)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1996-2001	Dockets 18046 and 18328 (October 1996)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1991-1995	Dockets 18046 and 18328 (December 1990)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1987-1990	Dockets 18046 and 18328 (September 1987)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1985-1987	Dockets 18046 and 18328 (May 1985)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1983-1985	Dockets 18046 and 18328 (January 1983)
AL	Mobile Gas Service	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2009-2013	Docket 28101 (December 2009)
AL	Mobile Gas Service	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2005-2009	Docket 28101 (June 2005)
AL	Mobile Gas Service	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2001-2005	Docket 28101 (June 2002)
LA	Atmos Energy - Louisiana Gas Service	Gas	Rate Stabilization Plan	2006-2014	Docket U-21484 (May 2006)
LA	Atmos Energy - Louisiana Gas Service	Gas	Rate Stabilization Plan	2001-2003	Docket U-21484 (January 2001)
LA	Atmos Energy - Trans Louisiana Gas	Gas	Rate Stabilization Plan	2006-2014	Dockets U-28814 and U-28588 and U-28587 (May 2006)
LA	Entergy New Orleans	Electric and Gas	Formula Rate Plan	2010-2012	Docket UD-08-03 (April 2009)
LA	Entergy New Orleans	Electric only	Formula Rate Plan	2004-2006	Docket UD-01-04 (May 2003)
MS	Atmos Energy Corp	Gas	Stable/Rate Rider	2009-2011	Docket 05-UN-0503 (December 2009)
MS	Atmos Energy Corp	Gas	Stable/Rate Rider	2006-2009	Docket 05-UN-0503 (October 2005)
MS	Atmos Energy Corp	Gas	Stable/Rate Rider	1992-2006	Docket 92-UA-0230 (September 1992)
MS	Centerpoint Energy	Gas	Rate Regulation Adjustment Rider	2012-2014	Docket 12-UN-139 (May 2012)

Table 8 (cont'd)

Jurisdiction	Company Name	Services	Plan Name	Plan Term	Case Reference
<b>Historic (cont'd)</b>					
MS	Centerpoint Energy Entex	Gas	Rate Regulation Adjustment Rider	2008-2012	Docket 07-UN-548 (December 2007)
MS	Centerpoint Energy Entex	Gas	Rate Regulation Adjustment Rider	1996-2007	Docket 96-UN-0202 (September 1996)
MS	Entergy Mississippi	Bundled Power Service	Formula Rate Plan 5 (FRP-5)	2010-2014	Docket 2009-UN-388 (March 2010)
MS	Entergy Mississippi	Bundled Power Service	Formula Rate Plan 1 (FRP-1)	1995	Docket 93-UA-0301 (March 1994)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 4A (PEP- 4A)	2009	Docket 06-UN-0511 (January 2009)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 4 (PEP-4)	2004-2009	Docket 03-UN-0898 (May 2004)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 3 (PEP-3)	2002-2004	Docket 01-UN-0826 (October 2002)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 2A (PEP-2A)	2001-2002	Docket 01-UN-0548 (December 2001)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 1A (PEP-1A)	1992-1993	Docket 92-UN-0059 (July 1992)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 1 (PEP-1)	1991-1992	Docket 90-UN-0287 (December 1990)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan	1986-1990	Cause PUD U-4761 (August 1986)
OK	Centerpoint Energy Arkla	Gas	Performance Based Rate of Change Plan	2008-2010	Cause PUD 200800062 (July 2008)
OK	Centerpoint Energy Arkla	Gas	Performance Based Rate of Change Plan	2004-2008	Cause PUD 200400187 (November 2004)
OK	Oklahoma Natural Gas	Gas	Performance Based Rate of Change Plan	2010-2014	Docket 200800348 (April 2009)
TX	Atmos Energy-Mid Texas Division	Gas	Rate Review Mechanism	2008 - varying end dates	Various Resolutions/Ordinances across cities in service territory, including City of Fort Worth Ordinance 17989-02-2008
TX	Atmos Energy West Texas Division	Gas	Rate Review Mechanism	2009 - conclusion of rate case to be filed on or before June 1, 2013	Various Resolutions/Ordinances across cities in service territory
TX	Centerpoint Energy - Beaumont East Texas Gas Division	Gas	Cost of Service Adjustment	2009-2011	Various Resolutions/Ordinances across cities in service territory
TX	Texas Gas Service - Rio Grande Service Area	Gas	Cost of Service Adjustment	2009-2011	Various Resolutions/Ordinances across cities in service territory

<sup>1</sup> Table excludes some mechanisms that do not conform to our FRP definition. Some of these are called formula rate plans.

## VII. Marketing Flexibility

This is a new section, added since the last survey. We've added it because we (and EEI) believe that marketing flexibility is a growing, strategic issue for EEI members. Several trends in business conditions are driving the need for more flexibility. The growth of distributed energy resources, for example, is a competitive challenge but also brings new service opportunities related to the development of distributed energy assets (e.g., designing, financing, procuring, building, fueling, and maintaining). Grid modernization is providing new functional capabilities to the grid which also create new service opportunities.<sup>12</sup> Examples include new reliability, network management, and transaction management services. Residential and commercial customers also have a growing interest in plug-in electric vehicles, and all retail customers have shown an interest in green power packages that can be supplied from grid-accessed resources.

New services will tend to be optional services that all customers will not want. Customers must be able to decline them; and if they do, not to incur associated costs. Competitive alternatives will be available for many of these services, and customers may have special needs that are difficult to address with standard tariffs. Thus, utilities will need to be able to respond quickly to the market. They will often be price "takers," as opposed to price "makers."

To date, regulatory precedent allowing investor-owned electric utilities to offer many of these services has been limited. This chapter is, in effect, a place holder for expected future electricity precedent.

### Why Electric Utilities Need Marketing Flexibility

Of course, electric utilities have always needed flexibility in some of the markets they serve:

- Utility assets have uses in markets other than those for retail electric services. Most notably, surplus generating capacity of VIEUs can be used for sales in bulk power markets. These markets are competitive and price-volatile. Land in transmission corridors can be well-suited for nurseries. Prices utilities charge in competitive markets like these are largely decontrolled. Margins earned in these markets are shared with customers of retail electric services.
- The demand of large-load retail customers is often sensitive to the rates and other terms of service utilities offer because these customers have power-intensive technologies and/or options to cost-competitively cogenerate or operate at alternative locations, or are economically marginal. Customers of this kind are especially important to vertically integrated utilities. Discounts or special contracts for such customers are traditionally allowed but often require specific approval. Commission reviews of special contracts can take months.

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<sup>12</sup> For an overview of modernization, see: EPRI, *The Integrated Grid: Realizing the Full Value of Central and Distributed Energy Resources*, 2014.

## Marketing Flexibility Remedies

Marketing flexibility runs the gamut from greater commission effort to approve new rates and services by traditional means to “light handed” regulation and outright decontrol. Light handed regulation typically takes the form of expedited approval of market offerings. These offerings may be subject to further scrutiny at a later date (e.g., in the next rate case).

Flexibility is most commonly granted for rates and services with certain characteristics. Light handed regulation of optional rates and services, for example, is based on the grounds that customers are protected by their freedom not to take the service, their continued access to service under standard tariffs, and the availability of alternatives in unregulated markets. Optional offerings include tariffs open to all qualifying customers, special contracts, and discretionary value-added services. Decontrol is typically permitted only for offerings to markets where vigorous competition reigns.

### Marketing Flexibility Examples: Electric Utilities

Marketing flexibility is not extensive in the electric utility industry today but there are nonetheless notable examples such as the following.

- Four Florida electric utilities have “Commercial/Industrial Service Rider” (“CISR”) tariffs that allow them to negotiate contract service agreements (“CSAs”) that outline discounts on the base energy and/or demand charges for large load customers who can show that they have viable alternatives to utility-provided electric service.<sup>13</sup> The discounted rate must cover the incremental cost of service provision and provide a contribution to fixed costs. CSAs do not need commission approval but the commission has the option to conduct a prudence review of any signed contract.
- Duke Energy offers large North Carolina customers an optional Green Source Rider service. The program allows customers that have added at least 1 MW of new load since June 2012 to apply for an annual amount of renewable energy (and the associated renewable energy certificates) over a specific term (between 3-15 years). Customers may request a particular renewable resource in their application. Duke would then negotiate a purchased power agreement on behalf of the customer or attempt to source the energy from its own assets.

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<sup>13</sup> Florida Public Service Commission (2014), Order Approving Commercial/Industrial Service Rider Tariff, Order No. PSC-14-0110-TRF-EI.

## Marketing Flexibility in Other Regulated Industries

Regulators and electric utilities considering new forms of marketing flexibility can learn from other utility industries that have experienced technological change, increased competition, and/or complex and changing customer needs. We provide here brief overviews of experience in the telecommunications, gas distribution, gas transmission, and railroad industries.

### Telecommunications

Local telephone companies (aka incumbent local exchange carriers or "ILECs") control the traditional distribution networks connecting residences and businesses. The "last mile" services they provide include the interconnection needed for long-distance, data, security, paging, and mobile telephone services as well as local telephone calling. ILECs have in the last 30 years confronted extensive competition, rapid technological change, and new marketing opportunities. Challenges they have faced have many parallels to those emerging for electric utilities.

The Federal Communications Commission ("FCC") regulates interstate access services of ILECs. Other ILEC services are regulated by state commissions. In the 1980s, ILECs were still regulated using cost-of-service regulation with complex reporting and compensation schemes. This was succeeded by multiyear rate plans, often called "price cap" plans since they capped rate escalation but permitted some discounts to encourage greater system use. Price caps were often escalated using inflation – X formulas where the X factor reflected an estimate of the telecommunication industry productivity trend. Prices were separately capped for several baskets of services. This insulated customers in each service basket from discounts offered to other baskets. Insulation was heightened by the infrequency (or elimination) of rate cases and the common lack of earnings sharing. The FCC instituted price caps for interstate access services of ILECs in the early 1990s. Price caps also became commonplace in state ILEC regulation.

Marketing flexibility for ILECs has been most relevant in the following two areas.

Competition in Traditional Service Markets Some services ILECs offered became subject to mounting competitive pressure that varied with the location where service was offered. For example, by the late 1990s, competitive access providers like MFS were constructing high-speed fiber optic networks connecting office buildings in metropolitan areas. These networks allowed businesses and long-distance carriers to connect to customers while bypassing ILEC data facilities. They could also be used to transmit voice traffic, avoiding ILEC voice access charges. High regulated prices were uncompetitive in high-traffic locations where facilities-based competitors entered the market. For services subject to competitive challenges, price cap plans in many states permitted discounts to standard tariffs within certain bands (e.g., rates could rise by 5% less than the price cap index) and/or subject to pricing floors that discouraged predation and cross-subsidization. In markets where pronounced competition could be demonstrated, ILEC rates were sometimes effectively decontrolled.

Innovative Services Technological change gave rise to innovative new services [e.g., Voicemail, Centrex and high-speed data (e.g., digital subscriber loop or "DSL")] which utilize essential network assets of ILECs

and cannot not practically be performed by affiliates.<sup>14</sup> Many of these services were deemed “information” services and were regulated by the FCC. Regulators ultimately permitted ILECs to provide a host of these services and allowed considerable pricing flexibility.

### Gas Distribution

Natural gas distributors also need flexibility to address some markets that they serve. Like VIEUs, many large-load customers of gas distributors have price sensitive demands and special needs. Distributors have frequently obtained light handed regulation to respond to these challenges. Nicor Gas, for example, offers a contract service for customers taking delivery near interstate gas pipelines. Contracts are submitted to state regulators for informational purposes and are treated on a proprietary basis. Nicor has similar flexibility to enter into custom contracts with electric power generators. The Company must document to the regulator that revenues from such service exceed the incremental cost of service, thereby ensuring a positive contribution to fixed cost recovery.

### Interstate Gas Transmission

Interstate pipeline companies need marketing flexibility for many reasons. Demand for a pipeline’s services can be sensitive to the terms it offers due to competition from other pipelines, dual-fuel capabilities of large volume customers, the extreme variability of need for service, and other special needs. It is difficult to design standard tariffs that meet the needs of all customers. Pipelines also have their own needs, such as an interest in signing anchor shippers to long-term contracts before constructing new facilities. Since 1996, the FERC has engaged in light handed regulation of negotiated pipeline rates to individual customers who have recourse to service under a standard tariff. The FERC gives a quick turnaround to most requests for negotiated contracts. A sizable share of pipeline service is conducted under negotiated rates. A remarkable variety of rate designs have been employed.<sup>15</sup>

### Railroads

In the railroad industry, MRPs were permitted under the terms of the Staggers Railroad Act of 1980. Railroads were given a freer hand to respond to competition from truckers, waterborne carriers, and other railroads. The railroads also used marketing flexibility to offer discounts to customers that reduced their cost by assembling their own unit trains and not requesting pickups or deliveries in remote locations.

MRPs are less common today in the railroad and telecom industries. However, marketing flexibility continues under new regulatory systems that share with MRPs the attribute of protecting core customers without linking a carrier’s rates closely to its own cost. Railroads have recently used this flexibility to compete for traffic from new oil field developments.

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<sup>14</sup> Centrex service, which provided businesses features like call-waiting, auto attendant, voicemail, 4-digit extension dialing and conference calling, could also be sourced by purchasing or leasing a private branch exchange ("PBX"), a private network platform that enabled these features.

<sup>15</sup> See, for example, Comments of the Interstate Natural Gas Association of America in FERC Docket PLO2-6-000, September 2002.

## VIII. Conclusions

Regulation of North American energy utilities is evolving to better meet the needs of utilities and their customers in a rapidly changing world. Innovation continues, while some older forms of Altreg such as multiyear rate plans are having a renaissance.

The variety of Altreg approaches that have been established reflects the varied circumstances of utilities. Some are vertically integrated, while others are more specialized wire companies. Capex needs and trends in average use vary greatly. Regulatory traditions also vary across the US and other advanced industrial countries.

No single Altreg approach is right for every situation. The availability of multiple remedies for the underlying challenges increases the chance that an approach has already been tried that would work well, with some adjustments, in new situations. Numerous precedents for an approach should raise confidence that it makes good sense under fairly common circumstances.

Taken together, the many innovations described in this survey can encourage utilities to achieve compensatory rates of return while making needed investments, improving efficiency, and developing more market-responsive rates and services. Regulation can be streamlined, and utilities can be encouraged to embrace cost-effective DERs. Regulators and stakeholders to regulation across the US should give priority attention to these options and consider which kinds of Altreg might work best in their situation.

# State Performance-Based Regulation Using Multiyear Rate Plans for U.S. Electric Utilities

**July 2017**

MN Lowry  
M Makos

J Deason  
L Schwartz, Project Manager and Technical Editor



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# State Performance-Based Regulation Using Multiyear Rate Plans for U.S. Electric Utilities

MN Lowry<sup>1</sup>  
M Makos<sup>1</sup>

J Deason<sup>2</sup>  
L Schwartz,<sup>2</sup> Project Manager and Technical Editor

July 2017

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1 Pacific Economics Group Research LLC

2 Lawrence Berkeley National Laboratory



# Executive Summary

Berkeley Lab published a report in 2016 that discussed two approaches to performance-based regulation (PBR) of electric utilities: multiyear rate plans (MRPs) and performance incentive mechanisms (PIMs).<sup>1</sup> The authors described these approaches at a high level and in the context of growing levels of demand-side management (DSM), distributed generation and other distributed energy resources (DERs).

This report presents a more in-depth analysis of the multiyear rate plan approach to PBR for electric utilities, applicable to both vertically integrated and restructured states. The report is aimed primarily at state utility regulators and stakeholders in the state regulatory process. The approach also provides ideas on how to streamline oversight of public power utilities and rural electric cooperatives by their governing boards.

We discuss the rationale for MRPs and their usefulness under modern business conditions. We then explain critical plan design issues and challenges and present results from numerical research that considers the extra incentive power achieved by MRPs with different plan provisions. Next, the report presents several case studies of utilities that have operated under formal MRPs or, for various reasons, have stayed out of rate cases for more than a decade. In these studies we consider the effect of MRPs and rate case frequency on utility cost, reliability and other performance dimensions. Appendices present further information on MRP plan design and some details of the technical work.

## What Are MRPs?

MRPs are a comprehensive approach to PBR designed to strengthen general incentives for good utility performance. Two key provisions of MRPs strengthen cost containment incentives and streamline regulation:

1. A rate case moratorium reduces the frequency of rate cases, typically to once every four or five years.
2. An attrition relief mechanism (ARM) escalates rates or revenue between rate cases to address cost pressures such as inflation and growth in number of customers independently of the utility's own cost.

Loosening the link between its own cost and revenue gives a utility an operating environment more like that which competitive markets experience.

Most MRPs feature a performance metric system that includes some PIMs. These PIMs provide awards or penalties, or both, for performance in targeted areas. PIMs are most commonly used in MRPs to strengthen incentives for utilities to maintain or improve reliability and customer service quality. Some plans also include earnings sharing mechanisms, efficiency carryover mechanisms and marketing flexibility.

Provisions are often added to plans to strengthen utility incentives for DSM. For example, utility expenditures on DSM programs are usually tracked, and PIMs can be added to reward utilities for successful DSM programs. Revenue decoupling can mitigate a utility's incentive to boost retail sales and reduce risks of revenue losses from rate designs that encourage DSM.

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<sup>1</sup> Lowry and Woolf (2016).

## **How Prevalent Is This Approach?**

MRPs were first widely used in the United States in the 1980s to regulate railroads and telecommunications carriers, industries beset by rising competition. Early adopters of MRPs in the U.S. electric utility industry included California and several northeastern states. Use of MRPs has recently grown among vertically integrated electric utilities in diverse states that include Arizona, Georgia and Washington. Greater use of MRPs for power distributors has been slowed by their requests for accelerated system modernization, which complicate plan design. MRPs are much more common for electric utilities in Canada and countries overseas. The impetus for adopting MRPs in these countries has often come from policymakers rather than utilities.

## **What Is the Rationale for These Plans?**

America's investor-owned electric utility industry was largely built under cost of service regulation (COSR). This regulatory system traditionally adjusted rates that compensate utilities for costs of capital, labor and materials only in general rate cases. The scope of costs eligible for tracker treatment, which expedites cost recovery, has gradually enlarged and sometimes includes capital costs as well as energy expenditures.

The efficacy of COSR varies with external business conditions. When conditions favor utilities (e.g., are conducive to realizing at least the target rate of return), rate cases are infrequent. Performance incentives are then strong and the cost of regulation is quite reasonable. When conditions are less favorable, rate cases are more frequent and more costs are tracked. Performance incentives can then be weak and regulatory cost can be high. These attributes of COSR are worrisome because business conditions today are often less favorable to utilities than in the past.

MRPs are a different approach to regulation that is especially appealing when the alternative is frequent rate cases or expansive cost trackers. The regulatory process is streamlined and better utility performance can be encouraged due to stronger performance incentives and increased operating flexibility. Benefits of better performance can be shared with customers. Recent advances in MRPs such as efficiency carryover mechanisms and statistical benchmarking can "turbocharge" their incentive power and ensure benefits for customers.

## **What Are Some Disadvantages of MRPs?**

MRPs are complex, and their adoption can involve extensive change to the regulatory system. It can be challenging to design plans that strengthen incentives without undue risk and share benefits fairly between utilities and their customers. Some kinds of business conditions (e.g., brisk inflation and declining average use) have proven easier to address using MRPs than others (e.g., capital spending surges). MRPs can invite strategic behavior and controversies over plan design.

## **Case Studies**

This report discusses six case studies of utilities operating under MRPs:

1. Central Maine Power operated under a sequence of MRPs from 1996 to 2013. The plans afforded the company unusual marketing flexibility which it used to develop special contracts with large-volume customers. These contracts helped the company retain their contributions to fixed costs of the system, for the benefit of all customers.

2. California has the nation's longest history with MRPs for retail services of electric utilities. The Public Utilities Commission has limited rate case frequency and staggered plan terms to avoid simultaneous rate cases. Plan provisions have provided strong incentives for utilities to embrace DSM.
3. New York has regulated electric utilities using MRPs since the 1990s. The state's Reforming the Energy Vision proceeding has considered how rate plans should evolve to regulate the "utility of the future."
4. MidAmerican Energy operated under a rate freeze in Iowa from 1997 to 2013. This freeze extended to charges for energy procured as well as for capital, labor and materials.
5. Ontario, Canada, has used MRPs to regulate the dozens of power distributors since the late 1990s. Capital spending surges have posed special plan design challenges. Innovations in Ontario regulation also include incentive-compatible menus and extensive use of benchmarking.
6. Great Britain also has a long history with MRP regulation. The current "RIIO" approach to regulation of energy utilities there has attracted the attention of many North American regulators.

## **Impact on Cost Performance**

This report also addresses the impact of MRPs (and, more generally, rate case frequency) on utility cost performance using two analytical tools: incentive power analysis and empirical research on utility productivity trends. An Incentive Power Model uses numerical analysis to assess the incentive impact of alternative stylized regulatory systems. For North American case studies, we compared productivity trends of utilities operating under MRPs to U.S. norms. We also considered productivity trends of utilities that operated under unusually frequent and infrequent rate cases.

Both lines of research suggest that the frequency of rate cases can materially affect utility cost performance. For example, the multifactor productivity (MFP) growth of the electric, gas and sanitary sector of the U.S. economy was materially slower than that of the economy as a whole from 1974 to 1985, when rate cases were frequent due in part to adverse business conditions, than in the early postwar period, when favorable business conditions encouraged less frequent rate cases. We also found that the MFP growth of utilities that operated for many years without rate cases, due to MRPs or other circumstances, was significantly more rapid than the full sample norm. Cumulative cost savings of 3 percent to 10 percent after 10 years appear achievable under MRPs.

## **Conclusions**

The case studies and incentive power and productivity research presented in this report have important implications. First, utility performance and regulatory cost should be on the radar screen of U.S. regulators, consumer groups and utility managers. Our research shows that key business conditions facing utilities today are less favorable than in the decades before 1973 when COSR worked well and was becoming a tradition. Today's conditions encourage more frequent rate cases and more expansive cost trackers. MRPs can produce material improvements in utility performance which can slow growth in customer bills and bolster utility earnings.

Notwithstanding the potential benefits of MRPs, they are still not used in most American states. COSR is well established and there are many accomplished practitioners. It can be difficult to design MRPs that generate strong utility performance incentives without undue risk, and that share benefits of better performance fairly with customers. MRPs invite strategic behavior and controversies over plan design. Continuing innovation of COSR will occur, and this will slow diffusion of MRPs.

However, MRPs are also evolving and remedies to problems encountered in early plans have been developed. MRPs are well suited for addressing conditions expected in coming years, such as rising input price inflation and DER penetration and increased need for marketing flexibility. For these and other reasons, we foresee expanded use of MRPs in U.S. electric utility regulation in coming years.

## Acknowledgments

The work described in this study was funded by the U.S. Department of Energy’s Office of Electricity Delivery and Energy Reliability, Transmission Permitting and Technical Assistance Division, and the Office of Energy Efficiency and Renewable Energy, Solar Energy Technologies Office, under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231, DOE Grid Modernization Initiative Task 1.4.29 – Future Electric Utility Regulation.

We thank Larry Mansueti, Guohui Yuan and Elaine Ulrich (DOE) for their support of this work. For reviewing drafts of this report and providing comments, we thank Sonia Aggarwal (Energy Innovation), Peter Cappers (Berkeley Lab), Steven Corneli, Asa Hopkins (Synapse Energy Economics), Ronald Lehr, Larry Mansueti (DOE), Andy Satchwell (Berkeley Lab) and Jay Shepherd (Energy Law).

## About the Authors

**Mark Newton Lowry** is President of Pacific Economics Group (PEG) Research LLC. He has been active in the field of performance-based regulation since the 1990s, doing research, consultation and expert witness testimony on multiyear rate plans, productivity, benchmarking and revenue decoupling. A former Pennsylvania State University energy economics professor, he holds a Ph.D. in applied economics from the University of Wisconsin.

**Matt Makos** is a Consultant II at PEG Research LLC. Over the past 10 years he has played a leading role in the gathering, appraisal and documentation of precedents for performance-based regulation and other alternatives to traditional utility regulation. He holds a bachelor's degree in business administration from the University of Wisconsin.

**Jeff Deason** is a Program Manager in the Electricity Markets and Policy Group at Lawrence Berkeley National Laboratory (Berkeley Lab). He focuses on energy efficiency research and technical assistance projects in the areas of policy, program design, implementation and evaluation. He is in the final stages of a Ph.D. program in public policy at University of California, Berkeley, where he completed degrees in resource economics and behavioral economics.



## Glossary of Terms

Attrition Relief Mechanism (ARM): An essential provision of multiyear rate plans that automatically adjusts allowed rates or revenues to address cost pressures without closely tracking the utility's own cost. Methods used to design ARMs include forecasts and indexation to quantifiable business conditions such as inflation and growth in the number of customers served.

Base Rates: The components of a utility's rates that address the costs of non-energy inputs such as labor, materials and capital. Base rates sometimes also include charges for costs of energy inputs like fuel and purchased power, but trackers usually adjust rates so these costs are recovered more exactly.

Capex: Capital expenditures

Cost Tracker: A mechanism providing expedited recovery of targeted costs. An account typically tracks costs that are eligible for recovery. These costs are then typically recovered via rate riders. Tracker treatment was traditionally limited to costs that are large, volatile and largely beyond the control of the utility. The scope of costs eligible for tracking has widened over time. In multiyear rate plans, trackers have been used for costs that are difficult for the ARM to address.

Earnings Sharing Mechanism (ESM): An ESM shares surplus or deficit earnings, or both, between utilities and customers, which result when the rate of return on equity deviates from its commission-approved target. ESMs often have dead bands in which earnings variances are not shared.

Efficiency Carryover Mechanism: A mechanism that allows for a share of lasting performance gains (or losses) to be kept by the utility for a set period of time when a multiyear rate plan expires.

Formula Rate Plan: An approach to ratemaking that uses cost of service formulas to cause a utility's revenue to track its own cost of service closely. This is sometimes accomplished with an earnings true-up mechanism that adjusts rates automatically to eliminate variances between a company's actual and target rate of return on equity. Review of the cost of service may be streamlined.

Lost Revenue Adjustment Mechanism (LRAM): A ratemaking mechanism that compensates utilities for base rate revenue lost from specific causes such as demand-side management programs and distributed generation. Requires estimates of load impacts.

Marketing/Pricing Flexibility: Flexibility afforded to utilities to fashion rates and other terms of service in selected markets. Marketing flexibility is typically accomplished via light-handed regulation of rates and services with certain attributes. Services often eligible for flexibility include optional tariffs for standard services, optional value-added (discretionary) services, and services to competitive markets. Price floors are often established to discourage predation and cross-subsidization.

Multiyear Rate Plan (MRP): A common approach to performance-based regulation that typically features a rate case moratorium for several years, an ARM, and performance incentive mechanisms for service quality.

Off-ramp Mechanism: An MRP option that permits reconsideration of a multiyear rate plan under prespecified conditions such as an extremely high or low rate of return on equity.

Performance-Based Regulation (PBR): An approach to regulation designed to strengthen utility performance incentives.

Performance Incentive Mechanism (PIM): A popular form of performance-based regulation that links utility revenue or earnings to performance in targeted areas. Most PIMs involve metrics, targets (sometimes called *outcomes*) and financial incentives (rewards and penalties). Service quality and demand-side management are common focuses.

Productivity: The efficiency with which a utility converts inputs to outputs, commonly measured by productivity indexes. Labor, operation and maintenance, capital and multifactor productivity are commonly measured. Industry productivity trends are often used in the design of ARMs.

Rate Base: A utility's total "used and useful" plant in service, at original cost, minus accumulated depreciation and deferred income taxes. Rate base includes "working capital" — cash the utility must have available to meet the current cost of operations given the lag between customers receiving electric service and when they pay their electric bills. Regulators may allow other adjustments.

Rate Rider: An explicit mechanism outlined on tariff sheets to allow a utility to receive supplemental revenue adjustments.

Revenue Decoupling Mechanism: A mechanism that periodically adjusts rates to ensure that actual revenue closely tracks allowed revenue. Decoupling can reduce or eliminate the "throughput incentive" that can cause utilities to resist demand-side management.

RIIO: The British approach to PBR. The acronym stands for Revenues = Incentives + Innovation + Outputs. RIIO involves MRPs that include relatively long rate case moratoria (e.g., eight years), a forecast-based ARM, and an extensive set of performance incentive mechanisms.

Statistical Benchmarking: The use of statistics on the operations of utilities to appraise utility performance. Methods commonly used in statistical cost benchmarking include unit cost and productivity indexes and econometric models.

X Factor (Productivity Factor): A term in a rate or revenue cap index that reflects the impact of productivity growth on cost growth. It may also incorporate stretch factors and adjustments for other considerations such as the inaccuracy of the inflation measure.

Z Factor: A term in a rate or revenue cap index that permits rate adjustments for the financial impact of miscellaneous events (e.g., severe storms) that are beyond the utility's control.

# Contents

Executive Summary .....	iii
Acknowledgments.....	vii
Glossary of Terms.....	ix
1.0 Introduction .....	1.1
2.0 Multiyear Rate Plans .....	2.1
2.1 The Basic Idea.....	2.1
2.2 MRP Precedents.....	2.2
3.0 Rationale for Considering MRPs.....	3.1
3.1 Traditional Cost of Service Regulation.....	3.1
Regulatory Lag.....	3.2
The Utility Productivity Slowdown of 1973–1986.....	3.3
The MRP Alternative .....	3.7
3.2 How MRPs Can Help Address Contemporary Challenges.....	3.9
Need for Rate Cases and Expansive Cost Trackers.....	3.9
Technological Change.....	3.10
Number of Utilities.....	3.10
Marketing Flexibility.....	3.10
Instability Concerns.....	3.10
Competing Needs for Regulatory Resources .....	3.11
Difficulty of MRP Implementation .....	3.11
Conclusions .....	3.11
4.0 MRP Design Issues.....	4.1
4.1 Attrition Relief Mechanisms .....	4.1
Rate Caps vs. Revenue Caps .....	4.1
Methods for ARM Escalation .....	4.1
4.2 Cost Trackers .....	4.3
Basic Idea .....	4.3
Capital Cost Trackers .....	4.3
Decoupling Under an MRP.....	4.6
4.3 Performance Metric Systems .....	4.6
Service Quality PIMs .....	4.6
Demand-Side Management PIMs .....	4.7
4.4 Efficiency Carryover Mechanisms.....	4.8
Efficiency Carryover Mechanisms: An Example From New England .....	4.10
4.5 Menus of MRP Provisions .....	4.11
5.0 Incentive Power Research .....	5.1

6.0	Case Studies.....	6.1
6.1	Central Maine Power.....	6.1
	Plan Designs.....	6.2
	Outcomes.....	6.3
6.2	California.....	6.6
	Plan Design.....	6.7
	Outcomes.....	6.11
6.3	New York.....	6.15
	Plan Designs.....	6.16
	Outcomes.....	6.20
6.4	MidAmerican Energy.....	6.23
	Plan Designs.....	6.23
	Outcomes.....	6.24
6.5	Other U.S. Electric Utilities With Extended Rate Stayouts .....	6.27
6.6	Statistical Tests of Productivity Impacts.....	6.29
6.7	PBR for Ontario Electric Utilities .....	6.29
	Plan Design.....	6.30
	Outcomes.....	6.33
6.8	Power Distribution MRPs in Great Britain .....	6.37
	Plan Design.....	6.38
7.0	Conclusions .....	7.1
8.0	References .....	8.1
Appendix A	. Further Discussion of Multiyear Rate Plan Designs .....	A.1
	Need for Flexibility .....	A.2
	Flexibility Measures.....	A.3
	Why MRPs Facilitate Marketing Flexibility.....	A.3
	Marketing Flexibility Precedents .....	A.4
Appendix B	. Details of the Technical Work.....	B.1
	Overview of Research.....	B.1
	Research Results .....	B.3
	Productivity Indexes.....	B.9
	Revenue Cap Indexes.....	B.10
	Productivity Trends of U.S. Power Distributors .....	B.11
	Econometric Benchmarking.....	B.20

# Figures

Figure 1. Multiyear Rate Plans in the United States .....	2.3
Figure 2. Multiyear Rate Plans in Canada .....	2.3
Figure 3. Multifactor Productivity Trend of U.S. Electric, Gas and Sanitary Utilities (1948–1998) .....	3.7
Figure 4. Rate Escalation Requirements for UDCs .....	3.12
Figure 5. Rate Escalation Requirements for VIEUs .....	3.12
Figure 6. Comparison of Multifactor Productivity Trends of Central Maine Power and the U.S. Sample During Multiyear Rate Plan Periods .....	6.5
Figure 7. Comparison of Multifactor Productivity Trends of California Distributors and the U.S. Sample during Multiyear Rate Plan Periods .....	6.13
Figure 8. Comparison of Multifactor Productivity Trends of New York Distributors and the U.S. Sample During Multiyear Rate Plan Periods .....	6.22
Figure 9. Comparison of Multifactor Productivity Trends of MidAmerican Energy and the U.S. Sample During Multiyear Rate Plan Periods .....	6.27
Figure 10. Sample Ontario Performance Metrics Scorecard .....	6.34
Figure 11. Comparison of Multifactor Productivity Trends of Ontario Distributors and the U.S. Sample During Multiyear Rate Plan Periods .....	6.36
Figure 12. Distribution Business Capital Expenditures (1997/98 Prices).....	6.40
Figure A-1. IQI Matrix for Ofgem's 5th Distribution Price Control Review.....	A.6

## Tables

Table 1. Indicators of Energy Utility Financial Attrition in the United States (1927–2014).....	3.4
Table 2. U.S. Electric Utility Rate Cases: 1948–1977.....	3.5
Table 3. Multifactor Productivity Growth of Electric, Gas, and Sanitary Utilities and the U.S. Private Business Sector: 1949–1998.....	3.6
Table 4. How Productivity Growth of Central Maine Power Compared to That of Other U.S. Electric Utilities: 1980–2014* .....	6.4
Table 5. How the Power Distributor Productivity Growth of Larger California Utilities Compared to That of Other U.S. Electric Utilities: 1980–2014*.....	6.12
Table 6. How the Power Distributor MFP Growth of New York Utilities Compared to That of Other U.S. Electric Utilities: 1980–2014* .....	6.21
Table 7. How the Power Distributor MFP Growth of MidAmerican Energy Compared to That of Other U.S. Electric Utilities: 1980–2014* .....	6.26
Table 8. Difference Between Company and U.S. Power Distributor MFP Trends During Extended Stayout Periods .....	6.28
Table 9. Productivity Trends of Ontario Power Distributors: 2003–2011 .....	6.35
Table B-1 Results From the Incentive Power Model: 30% Initial Inefficiency.....	B.5
Table B-2 Results From the Incentive Power Model: 10% Initial Inefficiency.....	B.6
Table B-3. Results From the Incentive Power Model: 50% Initial Inefficiency.....	B.7
Table B-4. Companies Included in Our Power Distributor Productivity Research .....	B.13
Table B-5. U.S. Power Distribution Productivity Trends .....	B.15
Table B-6. Power Distributor MFP Trends of Individual U.S. Electric Utilities.....	B.17
Table B-7. Econometric Cost Model for Ontario.....	B.22

# 1.0 Introduction

The electric utility industry has made significant contributions to the success of the U.S. economy over the years. Rates and service quality of electric utilities affect both household welfare and the competitiveness of business and industry. The large role played by many U.S. utilities in power generation magnifies their importance.

Utilities today must contain cost growth at a time when many need to modernize aging systems. Major changes are occurring in technologies, customer preferences, load growth, competitive challenges, and federal and state policies and regulations. Most electric utility facilities in the United States are investor-owned and subject to rate and service regulation by state public utility commissions. Regulatory systems under which these utilities operate affect their performance and ability to meet challenges.

Multiyear rate plans have some advantages over traditional rate regulation in today's business environment. This is a form of performance-based regulation (PBR) that suspends general rate cases for several years. Revenue growth between rate cases is to some degree predetermined and independent of a utility's own cost. Better utility performance can sometimes be achieved under MRPs while achieving lower regulatory costs.<sup>2</sup> Benefits can be shared between utilities and their customers. However, plans are complex and their adoption can involve sizable changes in the regulatory system. Designing plans that stimulate performance without undue risk and share benefits fairly can be challenging.

Berkeley Lab prepared a report on PBR in 1995, when it was just beginning.<sup>3</sup> The study appraised some approved PBR plans using an "incentive power index." Thoughtful commentary on PBR included prescient discussion of revenue decoupling, which is now widely used in utility regulation. In 2016, Berkeley Lab published a report comparing MRPs to another popular approach to PBR — targeted performance incentive mechanisms — in the context of growing levels of distributed energy resources.<sup>4</sup> The report focused on advantages and disadvantages from utility shareholders' and customers' perspectives.<sup>5</sup>

This report takes a closer look at MRPs for electric utilities:

- how and where they have been applied to electric utilities in the United States and other countries;
- key plan design and implementation issues;
- metrics used to evaluate and incentivize utility performance; and
- successes, failures and lessons learned.

The focus is on retail services, such as power supply, distribution and customer care, which are regulated by states.

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<sup>2</sup> The impact of PBR on the performance of cooperative and publicly owned utilities is not well understood. However, PBR provides ideas on how to streamline regulation of these utilities. Numerous publicly owned utilities in other countries have operated under PBR.

<sup>3</sup> Comnes et al. (1995).

<sup>4</sup> The report explained that energy efficiency, demand response, and distributed generation and storage can help contain costs of meeting America's energy needs, but can reduce utility earnings.

<sup>5</sup> Lowry and Woolf (2016).

While the authors of the 1995 Berkeley Lab study anticipated restructuring of retail U.S. power markets, vertically integrated electric utilities (VIEUs) still serve retail customers in many states. This report thus considers the situations of VIEUs as well as those of the utility distribution companies (UDCs) that serve regions with restructured retail power markets. The report also provides results from an incentive power model and research on trends in the productivity with which utilities provide their services.

Section 2 of this report provides an introduction to MRPs. Section 3 considers rationales for MRPs and their suitability for electric utilities today. Section 4 drills down into important issues in MRP design. Section 5 discusses results of our research on the incentive power of alternative regulatory systems. Section 6 presents several case studies, and Section 7 discusses lessons learned. Two appendices discuss some topics in greater detail.

## 2.0 Multiyear Rate Plans

### 2.1 The Basic Idea

PBR is an approach to utility regulation designed to encourage good performance using strong performance incentives. Multiyear rate plans are a common form of PBR around the world. Berkeley Lab's 2016 report discussed basic features of these plans.<sup>6</sup> General rate cases are typically held every four or five years. Between rate cases, an attrition relief mechanism (ARM) permits revenue (or rates) to grow in the face of cost pressures, without linking relief to a utility's *specific* costs.<sup>7</sup> Some costs may be addressed separately using cost trackers and associated rate riders.

Following is a generic formula for revenue escalation in a multiyear rate plan:

$$\text{growth Revenue} = \text{growth ARM} + Y + Z. \quad [1]$$

The "Y factor" indicates the revenue adjustment for costs, such as fuel and purchased power expenses, which are chosen in advance for tracking treatment. The "Z factor" indicates the revenue adjustment for miscellaneous changes in cost which may occasionally be accorded tracker treatment. The Z factor may address cost changes due to miscellaneous factors outside utility control, such as government mandates (e.g., facility undergrounding requirements) and force majeure events such as severe storms.<sup>8</sup>

MRPs also typically feature performance metric systems. Some metrics provide the basis for targeted performance incentive mechanisms (PIMs) that aid measurement of performance in areas of special concern to customers and the public. Most commonly, PIMs are used to strengthen incentives for utilities to maintain or improve reliability and customer service quality. A broader range of metrics has recently been considered by regulators in several jurisdictions, including Great Britain and New York.<sup>9</sup>

Demand-side management (DSM) can lower the cost of meeting customer energy needs. MRPs often contain provisions that strengthen utility incentives to facilitate DSM. Utility expenditures on DSM programs are usually tracked.<sup>10</sup> Performance incentive mechanisms can reward utilities for successful DSM programs. Revenue decoupling is often added to sever short-term links between a utility's revenue and electricity sales.<sup>11</sup> This shifts the risk of fluctuations in system use to customers but reduces utility incentives to boost throughput between rate cases. Decoupling also reduces the risks of rate designs that encourage DSM and efficient customer-side distributed generation and storage.

Some MRPs feature earnings sharing mechanisms (ESMs) that share surplus or deficit earnings, or both, between utilities and their customers, which result when the rate of return on equity (ROE) deviates from its public utility commission-approved target.<sup>12</sup> Off-ramp mechanisms may permit review of a plan under prespecified outcomes such as extreme ROEs.

Some MRPs have marketing flexibility provisions. These typically involve light-handed regulation of optional rates and services. Utilities also may be permitted (or required) to gradually redesign rates for

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<sup>6</sup> Lowry and Woolf (2016).

<sup>7</sup> To simplify the discussion, this report will provide illustrations only for revenue cap escalators.

<sup>8</sup> Z factors are discussed further in Appendix A2.

<sup>9</sup> Ofgem (2014) and New York Public Service Commission (2016a).

<sup>10</sup> Institute for Electric Innovation (2014).

<sup>11</sup> Lazar et al. (2016).

<sup>12</sup> Earnings sharing mechanisms are discussed further in Appendix A1.

standard services in fulfillment of commission-approved goals. Marketing flexibility is discussed further in Appendix A.

Plan review and termination provisions are also important in MRPs. Some plans provide for a midterm review of the MRP toward the end of the plan period. These reviews sometimes result in a plan extension without a general rate case. To bolster incentives to achieve lasting efficiency gains, the true-up of a utility's revenue requirement to its cost is sometimes limited if the plan ends with a rate case. For example, the utility may be permitted to keep a share of the difference between its cost and a cost benchmark. Provisions of the latter kind are sometimes called *efficiency carryover mechanisms*.

## 2.2 MRP Precedents

MRPs have been used in U.S. rate regulation since the 1980s. They were first used on a large scale for railroads and telecommunication carriers.<sup>13</sup> These companies faced significant competitive challenges that complicated regulation. MRPs streamlined regulation and afforded utilities more marketing flexibility and a chance to earn a superior return for superior performance. Some states still use MRPs to regulate services of telecommunication carriers in less competitive markets.<sup>14</sup> The Federal Energy Regulation Commission (FERC) uses MRPs to regulate oil pipelines.<sup>15</sup>

MRPs have been used in several states to regulate retail services of natural gas and electric utilities.<sup>16</sup> In addition to formal rate plans, several states established extended rate freezes for electric utilities during the transition to retail competition. Rate freezes also have been part of the ratemaking treatment for many mergers and acquisitions. Utilities have occasionally and for various other reasons managed to stay out of rate cases for periods exceeding a decade.

Figure 1 shows states that currently use MRPs to regulate retail services of U.S. electric and gas utilities. The figure shows that MRPs are more common for U.S. electric utilities than for gas distributors. Growth in the use of MRPs to regulate electric power distributors has been slowed by grid modernization challenges that complicate plan design. On the other hand, use of MRPs has recently spread to vertically integrated electric utilities in diverse states that include Arizona, Colorado, Georgia, Virginia and Washington. This reflects in part the slowdown and increased predictability of VIEU cost growth in an era when there is less need for large generation plant additions. Many states also have recently experimented with “mini” MRPs involving only two plan years.

Figure 2 shows that MRPs are widely used to regulate retail energy services of Canadian utilities. Overseas, MRPs are the norm in Australia, Ireland, New Zealand and the United Kingdom. Countries that use MRPs in continental Europe include Austria, Germany, Hungary, Lithuania, the Netherlands, Norway, Romania and Sweden. MRPs are also common in Latin America.

The impetus for adopting MRPs outside the United States has often come from policymakers rather than utilities. For example, provincial law in Quebec requires the Régie de l'Énergie to use an approach to regulation which streamlines regulation, encourages continual performance gains and shares benefits

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<sup>13</sup> A discussion of early railroad and telecommunication MRPs can be found in Lowry and Kaufmann (2002).

<sup>14</sup> See, for example, California Public Utilities Commission (2015a), and Vermont Public Service Board (2016).

<sup>15</sup> Federal Energy Regulatory Commission (2015).

<sup>16</sup> MRP precedents for gas and electric utilities have been monitored by the Edison Electric Institute in a series of surveys. The latest is Lowry et al. (2015).

fairly with customers.<sup>17</sup> The Régie recently ordered Hydro-Quebec to operate its power distributor services prospectively under an MRP that the company had opposed.<sup>18</sup>

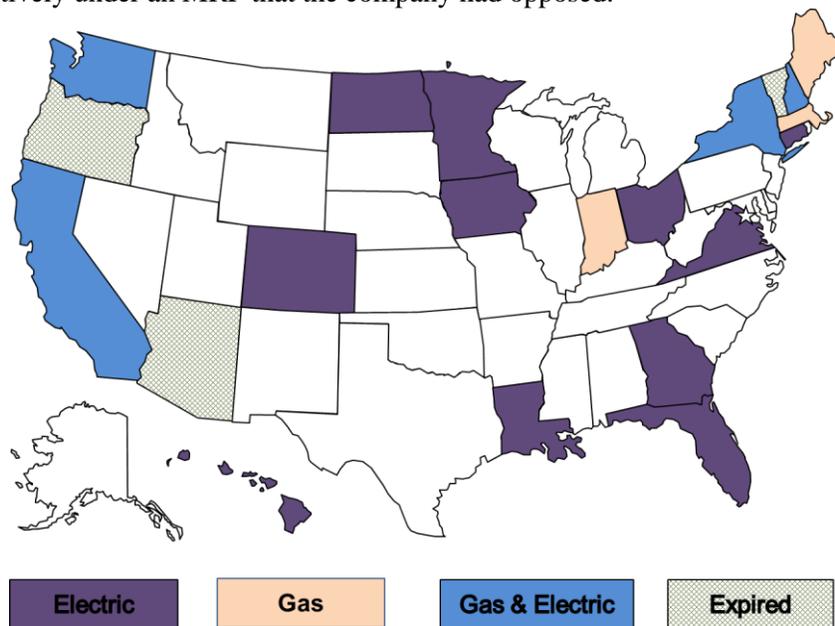


Figure 1. Multiyear Rate Plans in the United States. MRPs are used in many states today to regulate utilities.

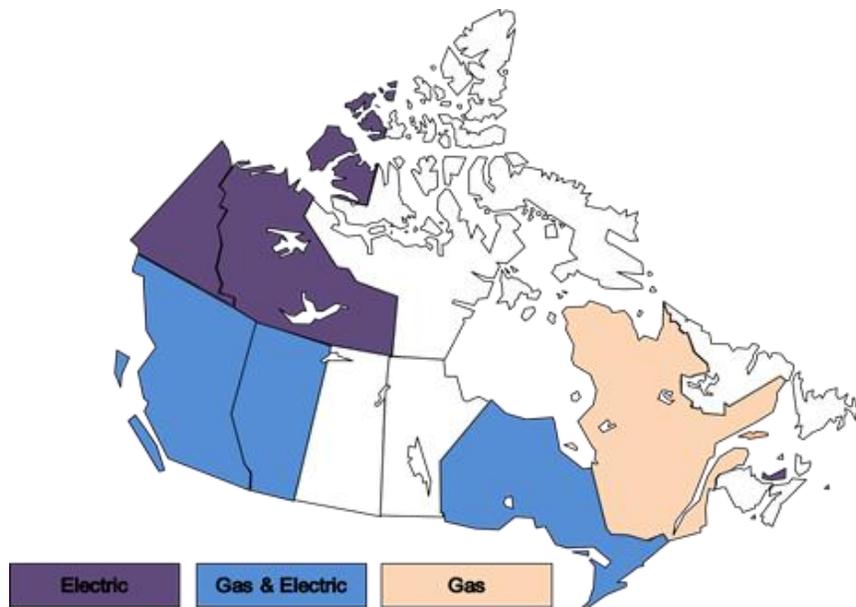


Figure 2. Multiyear Rate Plans in Canada. MRPs have in recent years been used to regulate energy utilities in the most populous Canadian provinces.

<sup>17</sup> Quebec National Assembly (2013, Chapter 16): An Act respecting mainly the implementation of certain provisions of the Budget Speech of 20 November 2012, Chapter 1, Division 1 as passed 14 June, 2013.

<sup>18</sup> Régie de l'Énergie, D-2017-043, R-3897-2014 Phase 1, April 7, 2017.



## 3.0 Rationale for Considering MRPs

To explain rationales for considering MRPs we first consider basic features of traditional cost of service regulation (COSR) approaches which are widely used in the United States and then discuss reasons that some jurisdictions have adopted MRPs. We conclude with a discussion of circumstances under which PBR may make sense for some electric utilities under today's business conditions.

### 3.1 Traditional Cost of Service Regulation

Under COSR,<sup>19</sup> base rates that address costs of capital, labor and materials are reset periodically in rate cases to more effectively recover the utility's cost of service. Rate cases usually occur at irregular intervals and are typically initiated by utilities when the cost of their base rate inputs is growing faster than the corresponding revenue. Between rate cases, growth in base rate revenue depends chiefly on growth in billing determinants such as delivery volumes and numbers of customers served. Most base rate revenue is drawn from usage charges — e.g., charges per kilowatt-hour (kWh) or kilowatts (kW) of system use. The need for rate cases thus depends on a “horse race” between costs and system use.

In the short and medium terms, costs of base rate inputs are driven more by growth in system capacity (e.g., the capacity to serve peak load and to deliver to multiple locations) than by growth in system use. The number of customers served is highly correlated with peak load and an important cost driver in its own right.<sup>20,21</sup> A convenient proxy for the gap between the growth rates of system use and capacity is thus the growth in volume per customer (average use). Earnings are especially sensitive to trends in average use by residential and commercial customers.

Under legacy rate designs, growth in average use bolsters earnings and reduces the need for rate cases, while a decline has the reverse effect. Rate case frequency also depends on input price inflation and the balance between the declining value of older assets due to depreciation and capital expenditures to replace aging infrastructure.

The regulatory cost of COSR is high (for utilities, public utility commissions and stakeholders) when rate cases are frequent or unusually difficult. Rate cases are frequent to the extent that the jurisdiction regulates numerous utilities or the operating conditions facing utilities are continuously unfavorable. Individual rate cases are more difficult to the extent that utilities are large and rate cases involve complex issues.

Regulators understandably take measures to contain regulation's costs. Some of these measures may have adverse consequences. For example, expanded use of cost trackers and a reduced scope for prudence reviews weaken utility incentives to cut costs.<sup>22</sup> Because frequent rate cases and expansive cost trackers are more likely when business conditions are unfavorable, utility performance under traditional regulation tends to deteriorate just when better performance is most needed to keep customer bills reasonable.

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<sup>19</sup> Bonbright et al. (1988) is an authoritative treatise on COSR. Lowry and Woolf (2016) provides a more extensive discussion of COSR than provided here, emphasizing incentive problems.

<sup>20</sup> This is because the total number of customers is dominated by the number of residential and small commercial customers, and these customers tend to have more peaked loads.

<sup>21</sup> DSM programs can alter this relationship but to date have had more effect on delivery volumes than they have on the peak demand that drives capacity growth.

<sup>22</sup> Cost trackers have the merit of reducing the need for general rate cases.

## Regulatory Lag

Regulatory economists acknowledge the incentive problems with traditional regulation that arise when rate cases are frequent or cost trackers are expansive. In the literature, “regulatory lag” is commonly defined as the time period between the moment when a utility’s cost changes and the moment when there is a commensurate change in its rates.<sup>23</sup> James Bonbright, for example, states in a classic treatise that:

There is the so-called “regulatory lag” — the quite usual delay between the time when reported rates of profit are above or below standard and the time when an offsetting rate decrease or rate increase may be put into effect by commission order or otherwise.<sup>24</sup>

The ability of regulatory lag to strengthen a utility’s incentive to contain costs has been discussed in the literature. For example, Bonbright states that:

Quite aside from the recognized undesirability of too frequent rate revisions, commissions recognize the regulatory lag as a practical means of reducing the tendency of a fixed-profit standard to discourage efficient management.<sup>25</sup>

Another noted regulatory economist, Alfred Kahn, suggested that:

Public utility commissions ought not to even *try* continuously and instantaneously to adjust rate levels in such a way as to hold companies continually to some fixed rate of return; and they probably ought not to try either to hold the rate of return down to the bare cost of capital. The *regulatory lag* — the inevitable delay that regulation imposes in the downward adjustment of rate levels that produce excessive rates of return and in the upward adjustments ordinarily called for if profits are too low — is thus to be regarded not as a deplorable imperfection of regulation but as a positive advantage. Freezing rates for the period of the lag imposes penalties for inefficiency, excessive conservatism, and wrong guesses, and offers rewards for their opposites: companies can for a time keep the higher profits they reap from a superior performance and have to suffer the losses from a poor one.<sup>26</sup> [emphasis in original]

Under traditional regulation, regulatory lag also delays when rates are changed in response to increasing *external* cost pressures such as input price inflation. For this reason, utility executives and consumer advocates have both emphasized regulatory lag in their rate case evidence despite goals that are often in opposition.

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<sup>23</sup>Alternative definitions of “regulatory lag” have been used. One is the period of time between the filing of a request for a rate increase and the increase in rates.

<sup>24</sup> Bonbright et al. (1988).

<sup>25</sup> Ibid., p. 198.

<sup>26</sup> Kahn (1988), p. 48 II.

## The Utility Productivity Slowdown of 1973–1986

The productivity growth of a utility is the difference between growth in its operating scale and growth in quantities of inputs that it uses. It is typically measured using an index. Productivity growth reflects changes in diverse business conditions that affect cost, including technological change and realization of scale economies. A multifactor productivity (MFP) index typically considers productivity in use of capital, labor and materials. Appendix B.2 discusses productivity more extensively.

One way to gauge the importance of regulatory lag is to compare utility productivity growth in years when business conditions for utilities were favorable to the growth in years when conditions were unfavorable. Since rate cases tend to be more frequent and cost trackers more expansive when business conditions are unfavorable, productivity growth should be slower. The federal government calculated an index of the MFP of the electric, gas and sanitary sector of the U.S. economy over the 50-year period from 1948 to 1998.<sup>27</sup> We can consider the growth rate of this index during periods of favorable and unfavorable business conditions.

Table 1 presents evidence on two of the most important sources of potential financial attrition for electric and natural gas utilities:

- Trends in the average use of energy by residential and commercial customers
- Price inflation, measured here by the gross domestic product price index (GDPPI)<sup>28</sup>

Average use directly affected MFP growth as measured by the government, but inflation did not.

We constructed summary indicators of potential attrition facing gas and electric utilities. The indicator in each case is the difference between inflation and the average of the growth in average use of energy (gas or electricity) by residential and commercial customers. We report trends over several subperiods between 1927 and 2014.

Results for electric utilities, where data are available for more years, show that these business conditions were quite favorable on balance from the late 1920s until the early 1970s. Except in the 1940s, inflation was generally slow until the late 1960s.<sup>29</sup> Average use of electricity grew rapidly.

These business conditions grew dramatically more adverse for electric utilities in the 1970s and remained so well into the 1980s. Spurred by two oil price shocks, general price inflation was much higher in these years. Inflation in prices of energy commodities such as coal and gas was especially rapid. Combined with slower economic growth, this caused growth in the average use of power by residential and commercial electric customers to slow markedly.

Rate cases were much more frequent.<sup>30</sup> Table 2 reproduces some results of a survey of electric utility rate cases from 1948 through 1977.<sup>31</sup> The table shows that the number of rate cases increased markedly after the mid-1960s and rarely featured a request for rate decreases.

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<sup>27</sup> Computation of this index ended in 1998. For a discussion of this research, see Glaser (1993), pp. 34–49.

<sup>28</sup> The GDPPI is the federal government's featured index of inflation in the prices of the economy's final goods and services. It is calculated by the Bureau of Economic Analysis of the U.S. Department of Commerce.

<sup>29</sup> Rapid inflation during the Korean War was offset by slower inflation in later years of the 1950s.

<sup>30</sup> See Joskow and MacAvoy (1975).

<sup>31</sup> Braeutigam and Quirk (1984), p. 47.

Table 1. Indicators of Energy Utility Financial Attrition in the United States (1927–2014)

	Average Annual Electricity Use					Average Annual Natural Gas Use					GDPI Inflation <sup>4</sup>		Summary Attrition Indicators	
	Residential <sup>1</sup>		Commercial <sup>1</sup>		Average Growth Rate [A]	Residential <sup>2</sup>		Commercial <sup>3</sup>		Average Growth Rate [B]	Level	Growth Rate [C]	Electric [C]-[A]	Natural Gas [C]-[B]
	Level	Growth Rate	Level	Growth Rate		Level	Growth Rate	Level	Growth Rate					
<b>Multiyear Averages</b>														
<b>1927-1930</b>	478	7.06%	3,659	6.67%	6.86%	NA	NA	NA	NA	NA	9.71	-3.92% <sup>5</sup>	-10.79%	NA
<b>1931-1940</b>	723	5.45%	4,048	2.00%	3.73%	NA	NA	NA	NA	NA	7.99	-1.59%	-5.31%	NA
<b>1941-1950</b>	1,304	6.48%	6,485	5.08%	5.78%	NA	NA	NA	NA	NA	11.37	5.26%	-0.52%	NA
<b>1951-1960</b>	2,836	7.53%	12,062	6.29%	6.91%	NA	NA	NA	NA	NA	16.04	2.42%	-4.49%	NA
<b>1961-1972</b>	5,603	5.79%	31,230	8.79%	7.29%	125	1.78% <sup>6</sup>	726	3.97% <sup>6</sup>	2.88% <sup>6</sup>	20.35	2.98%	-4.32%	0.10% <sup>7</sup>
<b>1973-1980<sup>8</sup></b>	8,394	2.03%	50,576	2.53%	2.28%	117	-2.22%	764	-0.63%	-1.42%	34.74	7.18%	4.90%	8.61%
<b>1981-1986<sup>8</sup></b>	8,820	0.12%	54,144	0.81%	0.46%	98	-2.67%	651	-3.84%	-3.26%	54.22	4.57%	4.11%	7.82%
<b>1987-1990</b>	9,424	1.39%	60,211	2.29%	1.84%	93	-1.25%	631	1.33%	0.04%	63.32	3.33%	1.49%	3.29%
<b>1991-2000</b>	10,061	1.15%	67,006	1.68%	1.41%	88	-0.37%	639	0.30%	-0.04%	75.70	2.03%	0.62%	2.07%
<b>2001-2007</b>	10,941	0.73%	74,224	0.64%	0.68%	77	-2.12%	594	-1.55%	-1.83%	89.83	2.47%	1.79%	4.30%
<b>2008-2014</b>	11,059	-0.38%	75,311	-0.22%	-0.30%	72	0.58%	597	1.75%	1.17%	103.53	1.60%	1.90%	0.43%

<sup>1</sup> U.S. Department of Energy, Energy Information Administration, Form EIA-861, "Annual Electric Utility Report," and Form EIA-826, "Monthly Electric Utility Sales and Revenues Report with State Distributions," and EIA-0035, "Monthly Energy Review."

<sup>2</sup> Energy Information Administration, Historical Natural Gas Annual 1930 Through 1999 (Table 38. Average Consumption and Annual Cost of Natural Gas per Consumer by State, 1967-1989) (1967-1986); Energy Information Administration series N3010US2, "U.S. Natural Gas Residential Consumption (MMcf)" and Energy Information Administration series NA1501\_NUS\_8, "U.S. Natural Gas Number of Residential Consumers (Count)" (1987-2014).

<sup>3</sup> Includes vehicle fuel. Sources: Energy Information Administration series NA1531\_NUS\_10, "U.S. Natural Gas Average Annual Consumption per Commercial Consumer (Mcf)" (1967-1986); Energy Information Administration series N3020US2, "Natural Gas Deliveries to Commercial Consumers (Including Vehicle Fuel through 1996) in the U.S. (MMcf)" (1987-2014), Energy Information Administration series N3025US2, "U.S. Natural Gas Vehicle Fuel Consumption (MMcf)" (1997-2014), Energy Information Administration series NA1531\_NUS\_8, "U.S. Natural Gas Number of Commercial Consumers (Count)" (1987-2014).

<sup>4</sup> Bureau of Economic Analysis, Table 1.4.4. Price Indexes for Gross Domestic Product, Gross Domestic Purchases, and Final Sales to Domestic Purchasers, Revised October 28, 2016.

<sup>5</sup> Growth rate is for 1930 only. Levels are for 1929 and 1930. Data are not available before 1929.

<sup>6</sup> Levels are for 1967-1972 and growth rates are for 1968-1972. Data are not available before 1967.

<sup>7</sup> Note that the growth rates used to compute this value cover different periods.

<sup>8</sup> Shaded years had unusually unfavorable business conditions.

Table 2. U.S. Electric Utility Rate Cases: 1948–1977<sup>32</sup>

Period	Number of Rate Cases	Company Initiated Rate Cases			PUC Initiated Rate Cases
		Number	Rate Increases	Rate Decreases	
1948-1952	46	45	42	3	1
1953-1957	34	31	28	3	3
1958-1962	43	39	38	1	4
1963-1967	17	16	12	4	1
1968-1972	104	100	96	4	4
1973-1977	119	119	119	0	0

After 1986, inflation slowed to a pace more typical of the 1950s and 1960s. However, sluggish growth in average use continued. Thus, business conditions improved on balance, but were less favorable than those in the decades preceding the first oil price shock.<sup>33</sup>

Table 3 and Figure 3 show the trend in the federal government’s index of the MFP of the electric, gas and sanitary sector of the U.S. economy over the 50 years from 1948 to 1998. The MFP growth of the sector was remarkably brisk until the early 1970s, averaging 3.9 percent annually compared to the 2.1 percent trend in the MFP of the entire private business sector of the economy.

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<sup>32</sup> Most rate cases are initiated by utilities. However, state regulatory commissions may initiate general rate cases to investigate potential excessive utility earnings.

<sup>33</sup> Average use data for a comparably long period were not found for natural gas distributors. However, average use of natural gas fell briskly during the 1973 to 1986 period, whereas it had risen briskly from 1968 to 1972. Inflation and average use trends were thus extremely unfavorable for gas distributors from 1973 to 1986. While inflation slowed after 1986, declining average use continued so that, on balance, business conditions improved for gas distributors but were less favorable than in the 1960s.

Table 3. Multifactor Productivity Growth of Electric, Gas, and Sanitary Utilities and the U.S. Private Business Sector: 1949–1998

Year	Electric, Gas, and Sanitary Utilities <sup>1</sup>		U.S. Private Business Sector <sup>2</sup>		MFP Growth Differential
	Level	Growth Rate	Level	Growth Rate	[A - B]
		[A]		[B]	
1948	34.67		50.34		
1949	35.23	1.60%	50.93	1.16%	0.45%
1950	37.85	7.16%	54.63	7.03%	0.14%
1951	41.50	9.19%	55.90	2.29%	6.90%
1952	43.27	4.19%	56.39	0.87%	3.32%
1953	44.95	3.81%	57.66	2.22%	1.59%
1954	46.73	3.87%	57.76	0.17%	3.71%
1955	50.37	7.51%	60.49	4.62%	2.89%
1956	52.90	4.89%	60.20	-0.49%	5.37%
1957	54.86	3.64%	61.07	1.45%	2.19%
1958	56.36	2.69%	61.37	0.48%	2.21%
1959	59.91	6.11%	63.51	3.44%	2.67%
1960	61.68	2.92%	63.90	0.61%	2.31%
1961	63.18	2.40%	65.27	2.11%	0.28%
1962	66.26	4.77%	67.61	3.52%	1.24%
1963	67.57	1.96%	69.66	2.99%	-1.03%
1964	71.12	5.12%	72.39	3.85%	1.28%
1965	74.02	3.99%	74.73	3.18%	0.81%
1966	77.01	3.96%	76.98	2.96%	1.00%
1967	79.44	3.11%	77.07	0.13%	2.98%
1968	82.99	4.37%	79.12	2.62%	1.75%
1969	85.23	2.67%	78.63	-0.62%	3.29%
1970	86.64	1.63%	78.54	-0.12%	1.76%
1971	87.66	1.18%	80.98	3.06%	-1.88%
1972	89.16	1.69%	83.41	2.97%	-1.28%
1973	90.84	1.87%	85.66	2.65%	-0.79%
1974	87.85	-3.35%	82.54	-3.71%	0.37%
1975	88.04	0.21%	83.32	0.94%	-0.73%
1976	89.16	1.27%	86.44	3.68%	-2.41%
1977	88.97	-0.21%	87.80	1.57%	-1.78%
1978	88.88	-0.11%	88.98	1.32%	-1.43%
1979	87.85	-1.16%	88.59	-0.44%	-0.72%
1980	87.38	-0.53%	86.63	-2.23%	1.69%
1981	87.38	0.00%	86.73	0.11%	-0.11%
1982	86.54	-0.97%	84.10	-3.08%	2.12%
1983	85.42	-1.30%	86.44	2.75%	-4.05%
1984	88.32	3.34%	89.27	3.22%	0.11%
1985	88.22	-0.11%	90.15	0.98%	-1.08%
1986	88.50	0.32%	91.61	1.61%	-1.29%
1987	88.60	0.11%	91.90	0.32%	-0.21%
1988	92.06	3.83%	92.49	0.63%	3.19%
1989	92.43	0.41%	92.98	0.53%	-0.12%
1990	93.83	1.51%	93.17	0.21%	1.30%
1991	93.64	-0.20%	92.20	-1.05%	0.85%
1992	93.46	-0.20%	94.34	2.30%	-2.50%
1993	95.89	2.57%	94.73	0.41%	2.15%
1994	96.45	0.58%	95.80	1.13%	-0.54%
1995	98.69	2.30%	96.00	0.20%	2.10%
1996	99.91	1.22%	97.56	1.61%	-0.39%
1997	99.91	0.00%	98.73	1.19%	-1.19%
1998	100.00	0.09%	100.00	1.28%	-1.18%
<b>Annual Averages</b>					
1949-1972		3.94%		2.10%	1.83%
1973-1986		-0.05%		0.67%	-0.72%
1987-1998		1.02%		0.73%	0.29%

<sup>1</sup> Bureau of Labor Statistics, Multifactor Productivity, Electric, Gas and Sanitary Utilities (SIC 49).

<sup>2</sup> Bureau of Labor Statistics, Multifactor Productivity, Private Business Sector.

Note: Shaded years had unusually unfavorable business conditions.



Figure 3. Multifactor Productivity Trend of U.S. Electric, Gas and Sanitary Utilities (1948–1998). MFP growth of U.S. utilities slowed during the period 1973 to 1986 under unfavorable business conditions.

The MFP growth of electric, gas and sanitary utilities fell to zero on average during the following years of markedly unfavorable business conditions, when rate cases were much more frequent. Both capital and labor productivity growth of this utility sector slowed markedly. MFP

growth of the U.S. private business sector exceeded that of electric, gas and sanitary utilities by around 72 basis points annually on average during these years.<sup>34</sup>

The generation sector of the utility industry was a notable problem area during this period. Overbuilding generation capacity and cost overruns and delays on generation plant additions were widespread. Resultant overcapacity boosted sales in wholesale markets and widened the gap between wholesale and retail power prices. This gap was one of the factors that ultimately led to restructuring of retail power markets in many states.

MFP growth of utilities resumed at a slower 1.02 percent average annual pace from 1987 to 1998, a period during which the frequency of rate cases slowed. Utility MFP trends exceeded private business sector MFP trends by a modest 29 basis points on average.

## The MRP Alternative

### Advantages

A core advantage of MRPs is their potential to strengthen cost containment incentives.<sup>35</sup> The attrition relief mechanism can provide timely, predictable rate escalation that permits an extension of the period

<sup>34</sup> A basis point is one-hundredth of 1 percent.

<sup>35</sup> For further discussions of the rationale for MRPs see Lowry and Kaufmann (2002), Lowry and Woolf (2016), Comnes et al. (1995), and Kaufmann and Lowry (1995).

between rate cases. Escalation is based on cost forecasts, industry cost trends or both, rather than the utility's *specific* costs. Regulatory lag is thus achieved without sacrificing the timeliness of rate relief, increasing opportunities for a utility to bolster earnings from efforts to contain costs addressed by the ARM (i.e., costs that are not tracked). A well-designed efficiency carryover mechanism can magnify the incentive “power” of the MRP.<sup>36</sup> Loosening the link between a utility's cost and its revenue gives it an operating environment more like that which producers in competitive markets experience.

MRPs can also encourage more operating flexibility in areas where the need for flexibility is recognized. Reduced rate case frequency means that the prudence of management strategies must be considered less frequently. Utilities are more at risk from bad outcomes (e.g., needlessly high capex) and can gain more from good outcomes (e.g., low capex). This potential advantage of MRPs in facilitating operating flexibility has been most thoroughly developed in the area of marketing flexibility (see Appendix A for further discussion).

PIMs play a special role in multiyear rate plans. The plans can strengthen incentives to contain costs.<sup>37</sup> These include costs incurred to maintain or improve service quality and worker safety. In competitive markets, a producer's revenue can fall abruptly if the quality of its offerings falls. PIMs can keep utilities on the right path by strengthening their incentives to maintain or improve service quality and safety.<sup>38</sup>

Advantages of MRPs in encouraging utilities to consider cost-effective DSM and other distributed energy resources (DERs) are not widely recognized. MRPs can strengthen incentives to use DERs to contain load-related costs that are reflected in retail rates. The combination of an MRP, revenue decoupling, PIMs to encourage efficient DSM, and the tracking of DER-related costs can provide four “legs” for the DER “stool.”<sup>39</sup> MRPs can reduce the need for complicated measurement of load and cost savings from DERs.

With stronger performance incentives and greater operating flexibility, MRPs can encourage better utility performance. Benefits of better performance can be shared with customers via earnings sharing mechanisms, plan termination provisions and careful ARM design. Customers can also benefit from more market-responsive rates and services. The strengthened performance incentives and reduced preoccupation with rate cases which MRPs provide can create a more performance-oriented corporate culture at utilities. This may increase the likelihood of success in mergers, acquisitions and unregulated market ventures in which utility companies engage.

MRPs also can increase the efficiency of regulation. Rate cases can be less frequent and better planned and executed. MRPs also facilitate scheduling rate cases so that proceedings overlap less. Streamlining ratemaking processes can reduce cost burdens on ratepayers and free up resources in the regulatory community to more effectively address other important issues, such as rules of prospective application. Senior utility managers have more time to attend to their basic business of providing quality service cost-effectively. Streamlined regulation has special appeal in situations where costs of regulation are especially high due to numerous utilities, large utilities or especially difficult regulatory issues. It is not surprising, then, that several commissions with unusually large regulatory burdens (e.g., Ontario and Germany) have been MRP leaders.

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<sup>36</sup> See Sections 4 and 5 and Appendix A1 for further discussion of efficiency carryover mechanisms.

<sup>37</sup> See, for example, Comnes et al. (1995).

<sup>38</sup> Alberta Utilities Commission (2012), p. 186.

<sup>39</sup> A three-legged stool for DSM consisting of revenue decoupling, performance incentive mechanisms, and DSM cost trackers is discussed in York and Kushler (2011).

## Disadvantages

MRPs are complex regulatory systems. The transition to these plans can be challenging in some jurisdictions. As we discuss at some length in Section 4, it can be difficult to design plans that incentivize better performance without undue risk and share benefits fairly between utilities and their customers. Controversies can arise in plan design, as they do in COSR. Poorly designed plans can create opportunities for strategic behavior that reduces plan benefits for customers. For these and other reasons, most American jurisdictions have not yet adopted MRPs for gas and electric utilities. The concluding section of this report provides a more extensive discussion of reasons for the continued popularity of COSR.

## **3.2 How MRPs Can Help Address Contemporary Challenges**

Benefits of MRPs tend to be greatest where traditional regulation is especially disadvantageous. These include situations where rate cases are especially frequent, a large number of utilities are regulated, marketing flexibility is especially desirable, and regulators have numerous other issues to attend to. We discuss here the extent to which these conditions are present today.

### **Need for Rate Cases and Expansive Cost Trackers**

Table 1 shows that key business conditions that cause utility attrition are considerably less favorable today on balance than they were in the decades before 1973. Since the start of the Great Recession, sluggish economic growth and energy efficiency gains have caused unusually slow growth in average use of electricity by residential and commercial customers.<sup>40</sup> The financial stress on utilities of this development has been partly offset to date by unusually slow input price inflation.<sup>41</sup> However, inflation may be higher in the future due, for example, to rising bond yields. Increased penetration of DERs could further slow growth in average use.

The need for frequent rate cases varies among electric utilities. Variation in capex requirements is a major reason. In a period of sustained high capex, utilities need brisk escalation in rates, especially when the capex does not automatically produce new revenue. Some utilities need high capex today to replace aging distribution assets. This kind of capex does not, like distribution system extensions, typically produce new revenue without a rate case or cost tracker. Technological change has created opportunities for “smart grid” capex that improves utility performance but may not trigger much new revenue.<sup>42</sup>

Distribution capex induces less growth in the total cost of a VIEU than it does in the cost of a UDC. Furthermore, slow demand growth and interest by some state regulatory commissions for VIEUs to rely on power purchase agreements rather than build and own more power plants is reducing the need for new VIEU generation capacity. On the other hand, some VIEUs are refurbishing or replacing old power plants.

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<sup>40</sup> Demand growth in some states has also been affected by distributed generation and deindustrialization.

<sup>41</sup> Reduction in utility revenue due to declines in average electricity use can, in any event, be addressed by targeted remedies such as revenue decoupling.

<sup>42</sup> Some of these expenditures do, however, produce offsetting operation and maintenance cost savings.

## Technological Change

Technological change is creating new ways to meet the energy needs of customers. Well-designed MRPs can, by strengthening performance incentives and increasing operating flexibility, drive utilities to embrace these technologies where they are cost effective. However, when new technologies involve sizable up-front capex with little automatic revenue growth they can complicate MRP design.

## Number of Utilities

The number of utilities that a state public utility commission regulates rarely grows, but sometimes falls due to mergers and acquisitions. Several states (e.g., California, New York, Pennsylvania and Texas) still regulate five or more electric utilities, and states must typically also regulate natural gas, telecommunications and water utilities.<sup>43</sup> Mergers and acquisitions have caused the number of utilities owned by some companies to rise over the years. Multi-utility companies have more incentive to adopt MRPs and other economical approaches to regulation.<sup>44</sup>

## Marketing Flexibility

Marketing flexibility is increasingly useful to utilities in order to fashion time-sensitive rates, green power services, and miscellaneous new services enabled by new technologies. VIEUs may have greater need for marketing flexibility than UDCs. One reason is that the large-load customers whose demand has traditionally been most sensitive to the terms of service make a much larger contribution to a VIEU's base rate revenue. Another reason is that VIEUs may benefit more from renewable energy and electric vehicle options than UDCs since VIEUs may provide the power from company-owned generation. In addition, time-sensitive pricing can contain generation costs as well as transmission and distribution capacity needs.

## Instability Concerns

We noted above that traditional regulation provides weaker incentives for cost management when business conditions are especially adverse. This idiosyncrasy of traditional regulation raises questions about its ability to cope with increased penetration of customer-side distributed generation and storage. Penetration slows growth in average electricity use. To the extent that this leads to more frequent rate cases and more expansive cost trackers, utility performance deteriorates. Utilities may, for example, choose such a time for high replacement capex. The end result can be higher rates that further discourage use of grid services.<sup>45</sup> This is a source of potential instability in the utility industry. The contrast to competitive markets is striking. In a period of weak demand, prices fall in competitive markets and firms scramble to cut their costs.

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<sup>43</sup> In contrast, regulation outside the United States is often conducted at the national level.

<sup>44</sup> Minneapolis-based Xcel Energy is an example of a multi-utility company that has publicly embraced MRPs. See Xcel Energy's "Strategic Plan for Growth," May 2015, <http://investors.xcelenergy.com/Cache/1500071832.PDF?O=PDF&T=&Y=&D=&FID=1500071832&iid=4025308>, and Xcel Energy's SEC Schedule 14A filed April 2015, <http://investors.xcelenergy.com/Cache/28758163.PDF?O=PDF&T=&Y=&D=&FID=28758163&iid=4025308>.

<sup>45</sup> For further discussion of the potential for a utility "death spiral," see Graffy and Kihm (2014).

## Competing Needs for Regulatory Resources

Regulatory resources that are currently devoted to rate cases have many alternative uses in this era of rapid change. Among the areas where thoughtful review is currently needed are rate design, distribution system planning, and the terms of compensation for customer-side DER services.

## Difficulty of MRP Implementation

The difficulty of implementing MRPs changes over time and varies considerably among utilities. One key challenge is the identification of a reasonable ARM. Implementation of index-based ARMs has traditionally been easier for UDCs than for vertically integrated utilities. The cost of UDC base rate inputs tends to grow gradually and predictably as the economies UDCs serve gradually expand. In contrast, VIEUs have in the past had “stair step” cost trajectories with large rate increases when large power plants came into service alternating with periods of slow cost growth as new units depreciated. Another complication for VIEUs was that the exact timing of major plant additions was often uncertain, due in part to construction delays.

However, many UDCs have in recent years proposed accelerated grid modernization programs involving several years of high capex. The need for these programs is often difficult for regulators to judge in an era of rapid technological change and shifting demand. VIEUs, meanwhile, are experiencing *more gradual* cost growth because fewer generation capacity additions are needed and capacity that is built tends to be more modular natural gas-fired or wind-powered units. Depreciation of older generation plant meanwhile slows rate base growth.<sup>46</sup> Figures 4 and 5 illustrate the changing needs for rate escalation for UDCs and VIEUs.

Consider also that jurisdictions vary in their regulatory traditions and human capital (the experience and the expertise of regulatory practitioners). Generally speaking, adoption of MRPs is easier for jurisdictions that have experience with the use of forward test years in rate cases. Accumulation of experience with MRPs in the United States and improvements in MRP design will facilitate broader implementation.

## Conclusions

Our analysis suggests that unusually slow inflation since the Great Recession of 2008 has thus far offset declining residential and commercial average use to contain the need for electric utilities to file frequent rate cases. However, these business conditions are still less favorable on balance than they were before 1972 when COSR worked well and became a tradition. Resumption of normal inflation and accelerated penetration of customer-side DERs may well occur and would spark more interest in MRPs. MRPs can also address the need for marketing flexibility.

Whereas the need for multiyear rate plans may be greater for UDCs with high capex, the ease of implementing these plans is often greater for VIEUs today. VIEUs also may have stronger interest in marketing flexibility. This helps to explain why use of MRPs is growing most rapidly in the United States for VIEUs.

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<sup>46</sup> However, some utilities are building new, cleaner generating facilities (including emissions control equipment) or modernizing older generation plants. Aging generating capacity (especially nuclear capacity) can have rising operating costs.

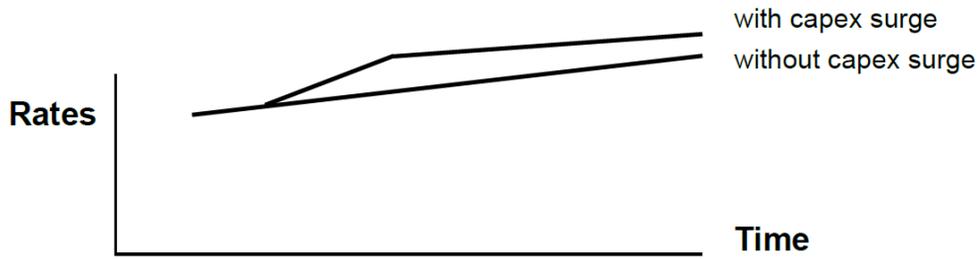


Figure 4. Rate Escalation Requirements for UDCs. Capex surges can accelerate the normally gradual escalation of UDC rates.

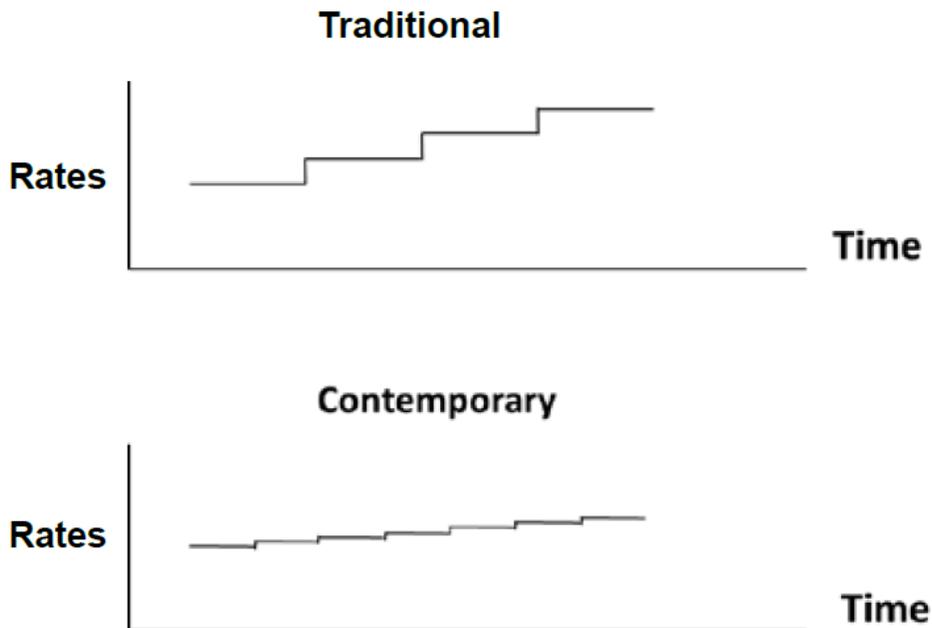


Figure 5. Rate Escalation Requirements for VIEUs. Rate escalation requirements of VIEUs are becoming more gradual.

Growing familiarity with best practices in the design of plans for UDCs may encourage greater use in this utility sector. Use of MRPs for UDCs may also increase as they complete accelerated grid modernization programs that complicate plan design and return to gradual cost growth. Companies and commissions with unusually large regulatory burdens gain special advantages from streamlined regulation. Some of these companies and commissions are likely to be MRP leaders.

## 4.0 MRP Design Issues

This section takes a deeper look at important issues in MRP design. We first consider how attrition relief mechanisms (ARMs) can cap rate and revenue growth and then discuss major approaches to ARM design. Following are discussions of cost trackers, decoupling, performance metric systems and efficiency carryover mechanisms.

### 4.1 Attrition Relief Mechanisms

#### Rate Caps vs. Revenue Caps

ARMs can escalate allowed rates or revenue. Limits on rate growth are sometimes called *price caps*.<sup>47</sup> In price cap plans, allowed rate escalation is often applied separately to multiple service “baskets.” For example, there might be separate baskets for small-load (e.g., residential and general service) and large-load customers. The utility can typically raise rates for services in each basket by a common percentage that is determined by the ARM, cost trackers and any earnings sharing adjustments.<sup>48</sup> Customers in each basket are insulated from the discounts and demand shifts going on with services in other baskets, except as these developments influence shared earnings or cost trackers.

Price caps have been widely used to regulate utilities, such as telecommunications carriers, which are encouraged to promote use of their systems. In the electric utility industry, legacy rate designs feature usage charges that are well above the utility’s short-run marginal cost of service provision.<sup>49</sup> With less frequent rate cases, price caps can therefore make utility earnings more sensitive to the kWh and kW of system use, strengthening utility incentives to encourage greater use.

Under revenue caps, the focus is on limiting growth in allowed revenue (the revenue requirement).<sup>50</sup> Services may still be grouped in baskets. Revenue caps are often paired with a revenue decoupling mechanism that relaxes the link between revenue and system use.

#### Methods for ARM Escalation

Several well-established approaches to ARM design can, with sensible modifications, be used to escalate rate or revenue caps. We use revenue cap examples in the following discussion.

##### Indexing

An indexed ARM is developed using index and other statistical research on utility cost trends. For example, a revenue cap index for a power distributor might take the following form:

$$\text{growth Revenue} = \text{Inflation} - X + \text{growth Customers} + Y + Z \quad [2]$$

The inflation measure in such a formula is often a macroeconomic price index such as the Gross Domestic Product Price Index. However, custom indexes of utility input price inflation are sometimes

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<sup>47</sup> A notable early discussion of price caps for electric utilities is Lowry and Kaufmann (1994).

<sup>48</sup> In some plans, slower growth in rates for some services in a basket can, within limits, permit more rapid rate growth for other services in the same basket.

<sup>49</sup> Marginal cost is the additional cost incurred to provide a small increment of service.

<sup>50</sup> The allowed revenue yielded by a revenue cap escalator must be converted into rates, requiring assumptions for billing determinants.

used in ARM design. X, the productivity or “X” factor, usually reflects the average historical trend in the multifactor productivity of a group of peer distributors. A stretch factor (sometimes called *consumer dividend*) is often added to X to guarantee customers a share of the benefit of the stronger performance incentives that are expected under the plan.

Index-based ARMs compensate utilities automatically for important external cost drivers such as inflation and customer growth. This provides timely rate relief that reduces attrition and operating risk without weakening performance incentives. Between rate cases, customers can be guaranteed benefits of productivity growth which equals (or, with a stretch factor exceeds) industry norms. Controversies over cost forecasts can be avoided.

On the other hand, index-based ARMs are typically based on long-run cost trends. They may therefore undercompensate utilities when capex is surging and overcompensate them on other occasions, such as the years following a surge. Capex surges can be addressed by cost trackers, but trackers involve their own complications, as we discuss further below. Design of indexed ARMs applicable to capital cost sometimes involve statistical cost research that is complex and sometimes controversial.<sup>51</sup> Consultants will seek entry to the field by advocating unusual values for X which serve the interests of their clients. However, base productivity trends chosen by North American regulators for X factor calibration have tended to lie in a fairly narrow range to date (e.g., zero to 1 percent).

### Forecasts

A forecasted ARM is based on multiyear cost forecasts. An ARM based solely on forecasts increases revenue by predetermined percentages in each plan year (e.g., 4 percent in 2018, 5 percent in 2019 and 3 percent in 2020). The outcome is much like that of a rate case with multiple forward test years.

Familiar accounting methods can be used to forecast growth in capital cost. The trend in the cost of older capital is relatively straightforward to forecast since it depends chiefly on mechanistic depreciation.<sup>52</sup> The more controversial issue is the value of plant additions during the plan.

Shortcuts are sometimes taken in preparing forecasts for ARM design. For example, forecasted plant additions may be set for each plan year at the utility’s average value in recent years<sup>53</sup> or at its value for the test year of the most recent rate case. Operation and maintenance (O&M) expenses are sometimes forecasted using index-based formulas similar to equation [2].

One important advantage of forecasted ARMs is their ability to be tailored to unusual cost trajectories. For example, a forecasted ARM can provide timely funding for an expected capex surge. Some forecasted ARMs make no adjustment to rates during the plan if the actual cost incurred differs from the forecast. This approach to ARM design can generate fairly strong cost containment incentives despite the use of company-specific forecasts.

On the downside, forecasted ARMs do not protect utilities from unforeseen changes in inflation and operating scale.<sup>54</sup> The biggest problem with forecasted ARMs, however, is that it can be difficult to establish just and reasonable multiyear cost forecasts. It is often difficult to ascertain the value to

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<sup>51</sup> For example, productivity studies filed in proceedings to establish an MRP often use mathematically stylized representations of capital costs which differ from those used in traditional ratemaking. Witnesses have disagreed on the appropriate capital cost treatment and sample period for a productivity study.

<sup>52</sup> Note, however, that salvage value and decommissioning costs are sometimes controversial.

<sup>53</sup> The practice of basing a utility’s plant addition budgets on its historical plant additions may weaken its capex containment incentives if used repeatedly.

<sup>54</sup> Operating scale risk can be reduced by forecasting unit costs (e.g., cost per customer) and then truing up for actual scale growth.

customers in a given cost forecast. Resources that the regulatory community may expend on benchmarking and engineering studies to develop competent independent views of needed utility cost growth can be sizable.

## Hybrids

“Hybrid” approaches to ARM design use a mix of indexing and other escalation methodologies.<sup>55</sup> The most popular hybrid approach in the United States involves separate treatment of revenues (or rates) that compensate utilities for their O&M expenses and capital costs. Indexes address O&M expenses while forecasts address capital costs.

Indexation of O&M revenue provides protection from hyperinflationary episodes and limits the scope of forecasting evidence. Good data on O&M input price trends of electric (and gas) utilities are available in the United States. The forecast approach to capital costs, meanwhile, accommodates diverse capital cost trajectories. The complicated issue of designing index-based ARMs for capital revenue is sidestepped. On the other hand, capex forecasts are required and can be controversial.

## Rate Freezes

Some MRPs feature a rate freeze in which the ARM provides no rate escalation during the plan. Revenue growth then depends entirely on growth in billing determinants and tracked costs. Freezes usually apply only to base rates but have occasionally applied to rates for energy procurement. An analogous concept for a plan with revenue decoupling is the revenue/customer freeze, which permits revenue to grow at the (typically gradual) pace of customer growth.

## **4.2 Cost Trackers**

### **Basic Idea**

A cost tracker is a mechanism for expedited recovery of specific utility costs. Balancing accounts are typically used to track unrecovered costs that regulators deem prudent. Costs are then recovered by tariff sheet provisions called *riders*.

A cost tracker helps a utility’s revenue track its own costs more closely. While this is contrary to the spirit of PBR — which focuses on strengthening incentives — it can make it easier for a utility to operate under an MRP, which has an ARM for other costs of base rate inputs. Where cost containment incentives generated by trackers are a concern, methods are available to address them. For example, tracked costs can be subject to especially intensive prudence review.<sup>56</sup> Tracker mechanisms can be incentivized, as we discuss further below.

### **Capital Cost Trackers**

Capital cost trackers compensate utilities for annual costs (e.g., depreciation, return on asset value, and taxes) that capex (or plant additions) give rise to. Such trackers are sometimes used in MRPs to address capex surges that are difficult to address with an ARM. Capex surges are sometimes needed — for

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<sup>55</sup> A “hybrid” designation can in principle be applied to a number of ARM design methods, including the design used in Great Britain. However, it would not apply to regulatory systems, such as those used in Vermont, which index O&M revenue but use cost of service regulation for capital cost.

<sup>56</sup> The reduction in rate cases that MRPs make possible frees up resources to review these costs.

example, when VIEUs make large additions to generating capacity, replace large components of existing generating plants, or add extensive emission control systems. VIEUs and UDCs alike may need high capex for rapid build-out of AMI or other smart grid technologies, to meet increased safety and reliability standards, and to replace facilities built in earlier periods of rapid system growth.

Forecasted and hybrid ARMs can address expected capex surges better than index-based ARMs. Thus, capital cost trackers are more commonly combined with index-based ARMs. However, MRPs with forecasted or hybrid ARMs sometimes permit utilities to request supplemental revenue for unforeseen capex, or for capex with uncertain completion dates.<sup>57</sup>

### Ratemaking Treatments of Tracked Costs

Supplemental revenue that capital cost trackers produce is often based on capex forecasts. Treatment of variances from approved budgets then becomes an issue. Some capital cost trackers return all capex underspends to ratepayers promptly. As for overspends, some trackers permit conventional prudence review treatment. In other cases, no adjustments are subsequently made between rate cases if capex exceeds budgets. Mechanisms also have been approved in which deviations from budgeted amounts that are in prescribed ranges are shared formulaically (e.g., 50-50) between the utility and its customers.

### Appraising the Need for Trackers

A key question in approvals of capital cost trackers is the need for tracking. This question involves two issues: the need for high capex and the need for tracking the capex. It can be challenging to ascertain the need for high capex. For example, trackers for energy distributors sometimes address costs of accelerated system modernization. The need for a particular plan of modernization can be more challenging to appraise than the need for other kinds of capex surges, such as those for new generation capacity or emissions control facilities.<sup>58</sup> Accelerated distribution modernization plans involve many decisions about emerging technology and consumer expectations, as well as timing and scale issues, and regulators in some jurisdictions may not have much expertise in evaluating them.

Determining the need for a capital cost tracker is complicated for a utility operating under an ARM that provides some compensation for capex. An indexed ARM, for example, escalates revenue associated with an older plant between rate cases even though the cost of that plant tends to decline due to depreciation. Furthermore, the X factor in the escalator reflects productivity growth by peer group utilities which has been slowed by capex.<sup>59</sup> If the utility is given dollar-for-dollar compensation for substandard productivity growth when normal kinds of capex surge, but the X factor in the revenue cap formula reflects only the industry productivity trend when capex does not surge, customers are not ensured the benefit of the industry productivity trend in the long run, even if it is achievable.

### Ratemaking Treatment of Other Costs

Another issue that arises when considering a capital cost tracker is the ratemaking treatment of costs not included in the tracker. Separate recovery of certain capex costs means that the cost of residual capital —

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<sup>57</sup> For example, trackers have been used in conjunction with hybrid or forecasted ARMs to address costs of new generating facilities, major generator refurbishments and AMI.

<sup>58</sup> Generation plant additions also require discretion, but regulators of VIEUs have years of experience considering both the need for new capacity and the types of generation technology. Many states require integrated resource planning or a certificate of public convenience and necessity, or both, before additions to generation capacity can proceed. In addition, there are often competitive alternatives to a utility's proposal to increase capacity. Proponents of these alternatives press their cases in these hearings.

<sup>59</sup> Capex often slows growth in multifactor productivity, even while accelerating O&M productivity.

consisting mainly of gradually depreciating older plant — tends to rise more slowly and predictably. If *all* capex cost flows through trackers, the residual capital cost is that of older plants and may *decline* due to depreciation. Additionally, productivity growth of electric O&M inputs may be brisk. For these reasons, expansive capex trackers often coincide with freezes on rates addressing costs of other inputs.<sup>60</sup> This “tracker/freeze” approach to MRP design has recently been used by VIEUs in Arizona, Colorado, Florida, Louisiana and Virginia.<sup>61</sup>

### Capital Cost Tracker Precedents

There are numerous precedents for capital cost trackers in the regulation of retail rates for U.S. gas, electric and water utilities.<sup>62</sup> The popularity of such trackers reflects in part the generally traditional approach to regulation in U.S. jurisdictions. Most capital cost trackers in the United States are not embedded in MRPs with ARMs that provide automatic rate escalation for cost pressures. The alternative to these trackers for regulators is thus more frequent rate cases that require review of costs of *all* base rate inputs and weaken utilities’ incentives to contain them. Note also that many trackers are approved in jurisdictions that do not have fully forecasted test years.

Capital cost trackers have been components of a number of MRPs. Plans in California and Maine, for example, have had trackers for costs of AMI.<sup>63</sup> Plans in Alberta and Ontario have permitted cost trackers for a broader range of distributor capex.<sup>64</sup>

Capital cost trackers are occasionally incentivized. In California, for example, the AMI cost trackers of Southern California Edison and San Diego Gas & Electric have involved preapproved multiyear cost forecasts. Each company has been permitted to recover 100 percent of its forecasted cost up to a cap without further prudence review. Above the cap, each company can recover 90 percent of incremental overspends in a certain range without a prudence review. Beyond this range, recovery of incremental overspends requires a prudence review. San Diego Gas & Electric was permitted to keep 10 percent of its underspends.

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<sup>60</sup> In an MRP with a revenue cap, the analogous ratemaking treatment is a revenue per customer freeze.

<sup>61</sup> See, for example, Arizona Corporation Commission (2012), Colorado Public Utilities Commission (2015), Florida Public Service Commission (2013), Louisiana Public Service Commission (2014), and Virginia Acts of Assembly (2015).

<sup>62</sup> Lowry et al. (2015).

<sup>63</sup> California Public Utilities Commission (2007a), California Public Utilities Commission (2008b), and Maine Public Utilities Commission (2008).

<sup>64</sup> See Alberta Utilities Commission (2012), for a discussion of capital cost trackers in Alberta distribution regulation and Section 6.7 of this report for a discussion of capital cost trackers in Ontario power distribution regulation.

## Decoupling Under an MRP

Revenue decoupling can improve utility incentives to adopt a wide array of initiatives to encourage cost-effective DSM and other DERs.<sup>65</sup> In addition to eliminating the utility's short-term incentive to increase retail sales, decoupling can reduce the utility's risk in using retail rate designs that encourage efficient DERs. For example, decoupling reduces risks of revenue loss when customers are offered time-sensitive usage charges that shift loads away from peak demand periods.

When average use is declining for any reason, decoupling reduces the needed frequency of rate cases. Decoupling also reduces controversy over billing determinants in rate cases with future test years because prices will adjust — up or down — based on actual utility sales.

A recent power industry survey found revenue decoupling in use in 14 jurisdictions.<sup>66</sup> DSM is aggressively encouraged by policymakers in many of these jurisdictions. Decoupling is used in tandem with MRPs in California, Minnesota and New York.

Decoupling is much more widely used by gas distributors. This reflects the fact that gas distributors have often experienced declining average use, due chiefly to external forces such as the improved efficiency of furnace technologies. Some utilities have decoupling for some services and lost revenue adjustment mechanisms (LRAMs) for others.<sup>67</sup>

## 4.3 Performance Metric Systems

Metrics (sometimes called *outputs*) quantify utility activities that matter to customers and the public.<sup>68</sup> These metrics can alert utility managers to key concerns, target areas of poor (or poorly incentivized) performance, and reduce costs of oversight. Target (“benchmark”) values are usually established for some metrics. Performance can then be measured by comparing a utility's values for these metrics to the targets. A performance incentive mechanism links utility revenue to the outcome of one or more performance appraisals. “Scorecards” summarizing performance metric results are sometimes tabulated. These may be posted on a publicly available website or included in customer mailings.

### Service Quality PIMs

Service quality PIMs are used in multiyear rate plans to improve the incentive balance between cost and quality. This can simulate connections between revenue and product quality that firms in competitive markets experience. Service quality PIMs for electric utilities have addressed both reliability and customer service.<sup>69</sup>

Reliability metrics have addressed systemwide reliability, reliability in subregions, and the success of restoration efforts after major storms. System reliability metrics are most likely to provide the basis for PIMs. The most common system reliability metrics are the system average interruption duration index

<sup>65</sup> For further discussion of revenue decoupling, see Lazar et al. (2016).

<sup>66</sup> Lowry, Makos and Waschbusch (2015).

<sup>67</sup> Electric utilities with decoupling for most customers and LRAMs for some large-volume customers include Portland General Electric, Duke Energy Ohio and AEP Ohio.

<sup>68</sup> Whited et al. (2015).

<sup>69</sup> For a survey of reliability PIMs, see Kaufmann et al. (2010). For a survey of customer service PIMs, see Kaufmann (2007).

(SAIDI) and system average interruption frequency index (SAIFI).<sup>70</sup> Customer service PIMs have addressed customer satisfaction, customer complaints to the regulator, telephone response times, billing accuracy, timeliness of bill adjustments, and the ability of the utility to keep its appointments.

Performance on service quality metrics is usually assessed through a comparison of a company's current year performance to its recent historical performance. Because of limited availability and lack of standardization of service quality data, benchmarking a company's performance on service quality using data from other utilities is difficult.

## Demand-Side Management PIMs

Demand-side management PIMs link utility revenue to reward (or penalize) utilities for their performance on DSM initiatives. Metrics on load savings are often used in these PIMs. Compensation for load savings can take several forms:

- *Shared savings.* This approach grants the utility a share of the estimated net benefits that result from DSM. It can therefore encourage utilities to choose more cost-effective programs and manage them more efficiently. However, estimation of net benefits can be complex and controversial. *Ex post* and *ex ante* appraisals of net benefits (or a mix of the two) may be used in net benefit calculations.
- *Management fees.* This alternative grants the utility an incentive equal to a share of program expenditures. The incentive calculation depends on costs incurred (specifically, expenditures by the utility) but not on benefits achieved. Thus, the utility is rewarded for spending money, which is not necessarily well correlated to desired policy outcomes. However, the simplicity of management fees makes them an attractive option in some contexts. This approach is commonly used when net benefits are difficult to measure but are believed to be positive (e.g., public education programs), and its ease of administration has encouraged its use for other DSM programs as well.
- *Amortization.* DSM expenditures can be amortized so that the utility earns a return on them like capital expenditures. Premiums are sometimes added to the rate of return on equity (ROE) for these expenditures, and these premiums may be contingent on achieving certain DSM performance goals.

Most DSM PIMs require estimates of load savings. These savings can be estimated using engineering models, typical savings documented in technical reference manuals (deemed savings), or statistical analyses of customer billing data. Even with high-quality data, reliably estimating savings can be challenging. The complications include free riders (customers who would have implemented the efficiency measure without the program, or would have taken alternative measures), spillovers (additional savings due to the program that are not measured), and rebound effects (behavioral changes that counteract the direct effects of the program, such as using more lighting in the home because light bulbs are more efficient and thus less costly to operate).

DSM initiatives vary with respect to the difficulty of measuring load savings and the scale of expenditures that can produce material management fees and amortization. Some DSM PIMs encourage utilities to design programs with more measurable impacts or larger expenditure requirements. Other DSM initiatives that are equally or more cost-effective may be neglected. Such initiatives may include changes

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<sup>70</sup> Other reliability metrics include the customer average interruption duration index (CAIDI) and the momentary average interruption duration index (MAIFI).

in default retail rate designs, cooperation with third-party vendors of energy services and products, support for upgraded state appliance efficiency standards and building codes, and other efforts to transform energy service markets.

### Pros and Cons of Demand-Side Management PIMs

Demand-side management PIMs can be a useful addition to multiyear rate plans. Under these plans, utilities may still lack sufficiently strong incentives to encourage DSM. For example, most MRPs accord tracker treatment to fuel and purchased power expenses. Transmission costs may also be tracked. MRPs may provide some incentive to contain load-related capex, but not to levels found in unregulated markets.

Performance incentive mechanisms for DSM can strengthen utility incentives to use DSM as a cost management tool. Such PIMs also can address the utility's short-term throughput incentive in an MRP that does not include revenue decoupling or an LRAM. Well-designed demand-side management PIMs can encourage more cost-effective DSM programs.

Still, demand-side management PIMs have drawbacks. For example, they can involve complex calculations that may complicate regulatory proceedings. Shared savings PIMs are particularly complex. By motivating utilities to improve their performance in relation to specific programs, PIMs may lead to a deterioration in other aspects of DSM performance that are not measured.<sup>71</sup> In addition, utility rewards for load savings can sometimes become sizable over the years.

### Precedents for Demand-Side Management PIMs

A 2014 survey by the Edison Foundation Institute for Electric Innovation found that DSM PIMs are quite common in the United States.<sup>72</sup> In all, 29 states had some form of DSM PIM. Among them, all but five had also adopted decoupling or LRAMs. Demand-side management PIMs were included in more than half of the U.S. electric MRPs identified. Among DSM PIMs, those focused on conservation and energy efficiency programs were the most common, and some states have decades of experience with them. PIMs also may address peak load management.

Despite their relative complexity, shared savings mechanisms have been the most popular PIM compensation approach for many years. However, management fees are also widely used. In some cases, regulators have approved more than one compensation approach (e.g., shared savings for programs with quantifiable benefits; management fees for education and marketing programs).

Most DSM PIMs approved to date have pertained to programs serving customers across broad areas of a utility's service territory. However, PIMs can also be targeted to specific geographic areas, such as those where substantial transmission and distribution capex will be needed in the near future to replace aging assets or accommodate growing load. We discuss some examples of these programs in Section 6.

## **4.4 Efficiency Carryover Mechanisms**

Efficiency carryover mechanisms limit true-ups of a utility's revenue to its cost when an MRP concludes. These mechanisms encourage utilities to achieve long-term performance gains that can benefit customers after a plan's conclusion. They can also counteract some adverse incentives that can result under MRPs from periodic rate cases that set a utility's revenue requirement equal to its cost. Due to compression of

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<sup>71</sup> New York and other jurisdictions are for this reason considering less program-specific DSM performance metrics like normalized volume per customer.

<sup>72</sup> Institute for Electric Innovation (2014).

the period during which benefits of long-term performance gains improve their bottom line, utilities may have less incentive in later years of a plan to limit upfront costs needed to achieve such gains. In addition, rate cases provide disincentives to contain costs that influence the revenue requirement in the first year of the next plan. For example, there may be less incentive to strike hard bargains with vendors. Given the different incentives to contain cost in early and later plan years, utilities may also be incentivized to defer certain expenditures in the early years of the plan so that these expenses show higher totals in the MRP test year. Customers may then “pay twice” for some costs that are funded by the ARM.

To counteract such incentives, efficiency carryover mechanisms can be designed that reward utilities for offering customers good value in later plans. Such mechanisms can also penalize utilities for offering customers poor value. One kind of efficiency carryover mechanism involves a comparison of revenue requirements in the test year of the next rate case to a benchmark. The mechanism may take the form of a targeted PIM. The revenue requirement in a forward test year could, for example, correspond to the following formula:

$$RR_{t+1} = Cost_{t+1} + \alpha ( Benchmark_{j,t+1} - Cost_{j,t+1} )$$

where  $\alpha$  is a share of the value implied by benchmarking and takes a value between 0 and 1.<sup>73</sup> Variance between benchmark and actual costs can, alternatively, be used to adjust the X factor in the next plan if it has an index-based ARM.

Choice of a benchmark is an important consideration in design of this kind of efficiency carryover mechanism. One approach is to use as the benchmark the revenue requirement established by the expiring MRP (extended by one year in the case of a forward test year). Cost (or the proposed revenue requirement) may, alternatively, be compared to a benchmark based on statistical cost research which is completely independent of the utility’s cost.

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<sup>73</sup> Note that the formula allows for the possibility that only a subset (j) of the total cost is benchmarked. This could be the subset that is easier to benchmark.

## Efficiency Carryover Mechanisms: An Example From New England

National Grid, a company with utilities that have long operated under MRPs in Britain, incorporated efficiency carryover mechanisms in plans for several power distributors in the northeast United States. For example, in Massachusetts, New England Electric System and Eastern Utilities Associates were in the process of merging when they were acquired by National Grid. In 2000 the Massachusetts Department of Telecommunications and Energy approved a settlement which, among other things, detailed an MRP under which the surviving power distributors of the merging companies (Massachusetts Electric and Nantucket Electric) would operate for 10 years.<sup>74</sup>

The settlement did not require rates to be reset in a rate case at the conclusion of the rate plan. However, the settlement limited over a 10-year “Earned Savings Period” the extent to which rates established in future rate cases could reflect the benefits of cost savings achieved during the plan. These “earned savings” were to conform to the following formula:

Earned Savings = Distribution revenue under rates applicable in March 2009

- *pro forma cost of service (COS)*

The focus on 2009 reflects the fact that Massachusetts has historical test years, so this was expected to be the first year in which cost could provide the basis for post-plan rates. During the Earned Savings Period, Massachusetts Electric was permitted to add to its cost of service during any rate case the lesser of \$66 million and 100 percent of earned savings achieved in 2009 up to \$43 million, plus 50 percent of any earned savings above \$43 million. Thus, if there were no earned savings there would be no revenue requirement adjustment. Any earned savings would be capped at \$66 million.

At the end of the plan period, National Grid requested a large revenue requirement increase. This was explained in part by the need to replace aging infrastructure. The utility did not include an allowance for earned savings in its 2009 rate request.

Regulators in Australia, Britain and Ontario routinely take an approach to cost benchmarking which uses econometric methods in rate setting. In the United States, econometric benchmarking studies have occasionally been filed by U.S. utilities. Public Service of Colorado, for example, has filed econometric benchmarking studies of its forward test year revenue requirement proposals for the cost of its gas and electric operations.<sup>75</sup> We discuss econometric benchmarking further in Appendix B.3.

Experience around the world with efficiency carryover mechanisms has been less extensive than experience with some other MRP provisions. Australia has been a leader, using these mechanisms in both power transmission and distribution regulation. The Alberta Utilities Commission uses efficiency carryover mechanisms in MRPs for provincial energy distributors.

<sup>74</sup> See Settling Parties in Massachusetts (1999).

<sup>75</sup> Lowry, Hovde, Kalfayan, Fourakis, and Makos (2014).

Lowry, Hovde, Getachew, and Makos (2010).

Lowry, Hovde, Getachew, and Makos (2009).

## 4.5 Menus of MRP Provisions

Some MRPs contain menus of provisions from which utilities can choose. Menus typically include a key ARM provision and another plan provision affecting utility finances. In a plan with an indexed ARM, a utility might, for example, have a choice between (1) a low X factor and an earnings sharing mechanism and (2) a higher X factor and no earnings sharing.

An “incentive compatible” menu incentivizes a utility to reveal, by its choice between menu options, its potential for containing cost growth. This approach to MRP design has been discussed in the academic regulatory economics literature since the 1980s. Major theoretical contributions have been made by Michael Crew, Paul Kleindorfer and Nobel prize-winning economist Jean Tirole.<sup>76</sup>

The Federal Communications Commission used a menu approach to MRP design in a 1990 price cap plan for interstate access services of large local telecommunications exchange carriers.<sup>77</sup> The menu embedded in the Information Quality Incentive of British regulators is explained in Appendix A.4.

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<sup>76</sup> Laffont and Tirole (1993), Crew and Kleindorfer (1987), Crew and Kleindorfer (1992), and Crew and Kleindorfer (1996).

<sup>77</sup> Federal Communications Commission (1990).



## 5.0 Incentive Power Research

Pacific Economics Group has developed an Incentive Power model to explore the incentive impact of alternative regulatory systems such as multiyear rate plans. The model addresses the situation of a hypothetical energy distributor that has several kinds of initiatives available to improve its cost performance. Using numerical analysis, the model can predict the cost savings that will occur under various regulatory systems. The regulatory systems considered are stylized but resemble real-world options in use today. Appendix B.1 provides details of the research.

Key results of our incentive power research include the following:

- *Cost containment incentives depend on the frequency of rate cases.* Today, utilities in the United States typically hold rate cases every three years.<sup>78</sup> For a utility with normal operating efficiency, our model finds that long-run cost performance on average improves 0.51 percent more rapidly each year in an MRP with a five-year term and no earnings sharing than it does under traditional regulation when rate cases occur every three years. This means that cost will be about 5 percent lower after 10 years under the MRP. For a utility with an annual revenue requirement of \$1 billion, this would be an annual cost saving of \$50 million in real terms.
- *If rate cases under traditional regulation occur more frequently, the incremental incentive impact of an MRP is higher.* For example, the long-run impact of MRPs with five-year terms is 0.75 percent additional annual cost containment if rate cases would otherwise be held every two (rather than three) years. This kind of comparison is more relevant to regulators when the alternative to an MRP is frequent rate cases or extensive use of cost trackers.
- *Earnings sharing mechanisms weaken incentives produced by an MRP.* For example, MRPs with a five-year term and 75/25 sharing of all earnings variances between utilities and their customers produce only 0.27 (rather than 0.51) percent annual performance gains compared to a three-year rate case cycle.
- *Performance gains from more incentivized regulatory systems are greater (smaller) for companies with a low (high) initial level of operating efficiency.*
- *Incentives generated by an MRP can be materially strengthened by a well-designed efficiency carryover mechanism or system of menu options.* Suppose, for example, that when rates are rebased the utility absorbs 10 percent of the variance between its own cost and a statistical benchmark of cost. Our model finds that annual performance gains increase by 90 basis points in a plan with a five-year term relative to those from traditional regulation with a three-year rate case cycle. This means a 9 percent lower cost after 10 years.

Our incentive power research has a number of implications. It shows that a utility's performance incentives and performance can be materially affected by the regulatory system under which it operates. This means that more incentivized regulatory systems such as well-designed MRPs can provide material cost savings that can be shared between utilities and their customers. New MRP design provisions such as efficiency carryover mechanisms and menu options can materially increase incentive power.

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<sup>78</sup> Lowry and Hovde (2016), p. 44.

Utility performance is materially affected by the frequency of rate cases, and the frequency of rate cases is affected by the adversity of business conditions. Our incentive power research thus supports the notion that performance of utilities under COSR tends to decline under adverse business conditions. When business conditions are adverse, regulators should be especially vigilant about utility operating prudence and consider how to strengthen performance incentives. That can be particularly important given that utilities typically advocate for expedited recovery of their costs when business conditions are adverse, and often are successful.

## 6.0 Case Studies

This section presents case studies of multiyear rate plans. Each case study discusses the nature of MRPs enacted, identifying important provisions and controversies and rationales for utility regulators to choose PBR. We also consider effects of PBR on cost performance using power distributor productivity indexes. These indexes consider productivity in the provision of customer services such as billing and distribution services. We compare productivity trends of utilities operating under rate plans, or less formal rate case stayouts, to contemporaneous utility norms. Appendix B.2 provides details of our utility productivity research.

### 6.1 Central Maine Power

The Maine Public Utilities Commission was for many years a leader in energy utility PBR.<sup>79</sup> Central Maine Power (CMP) is Maine's largest electric utility. From 1995 to 2013, it operated under a succession of three MRPs called *alternative rate plans*. Full rate cases did not occur between plans. The first plan took place while the company was still vertically integrated, while later plans applied to CMP's distributor services after restructuring. All three plans were outcomes of settlements between CMP and other parties.

In a 1993 rate case decision, the Commission encouraged CMP to operate under an alternative rate plan. This decision took into consideration CMP's recent history of rapid rate escalation and losses of margins from large-volume customers. The Commission expressed concern that CMP's management had spent "greater attention on a reactive strategy of deflecting blame than on proactively cutting costs."<sup>80</sup> The Commission also noted in its decision general problems with continued use of traditional regulation for CMP. These problems included:

- 1) the weak incentive provided to CMP for efficient operation and investments;
- 2) the high administrative costs for the Commission and intervening parties from the continuous filing of requests for rate changes;
- 3) CMP's ability to pass through to its customers the risks associated with a weak economy and questionable management decisions and actions;
- 4) limited pricing flexibility on a case-by-case basis, making it difficult for CMP to prevent sales losses to competing electricity and energy suppliers; and
- 5) the general incompatibility of traditional [COSR] with growing competition in the electric power industry.<sup>81</sup>

The Commission outlined its views of potential costs and benefits of MRPs (presumed to feature price caps) in its decision:

Based on the evidence presented in this proceeding, the Commission finds that multi-year price-cap plans is [sic] likely to provide a number of potential benefits: (1) electricity prices continue to be regulated in a comprehensible and predictable way; (2) rate predictability and stability are more likely; (3) regulatory "administration" costs can be reduced, thereby allowing for the conduct of other important regulatory activities and for CMP to expend more time and resources in managing its operations; (4) Risks can be shifted to shareholders and away from ratepayers (in a way that is manageable from the utility's financial

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<sup>79</sup> Thomas Welch, a former telecommunications lawyer, chaired the Commission during these years.

<sup>80</sup> Maine Public Utilities Commission (1993), pp. 14–15.

<sup>81</sup> Maine Public Utilities Commission (1993), p. 126.

perspective); and (5) because exceptional cost management can lead to enhanced profitability for shareholders, stronger incentives for cost minimization are created.<sup>82</sup>

The decision discussed the marketing flexibility benefits of MRPs at some length:

Price caps coupled with pricing flexibility allow a regulated firm to compete on a more equal basis with other suppliers that threaten its markets: a firm is given wide pricing discretion and the opportunity to offer new services in the absence of case-by-case regulatory approval.

An important benefit of price caps lies with protecting the so-called “core customers” from competition encountered in other markets. For example, if separate price caps are placed on each class of customer, whatever revenues the utility earns in the more competitive industrial markets would not directly affect the price it can charge (say) residential customers... In contrast, under [COSR] a firm is generally given the opportunity to receive revenues corresponding to its revenue requirement. This implies that whenever the firm receives fewer revenues from one group of customers, it would have the right to petition for increased revenues from others by proposing to raise their prices....<sup>83</sup>

## **Plan Designs**

### Attrition Relief Mechanism

All three of CMP’s plans featured price caps with index-based escalators. The caps applied to both base and energy rates for vertically integrated service in the first plan, and to base rates for distributor services in later plans. Evidence on input price and productivity trends of Northeastern U.S. electric utilities was presented and debated in each proceeding to inform the choice of an X factor.<sup>84</sup> Macroeconomic price indexes were used as inflation measures. The accuracy of such measures as proxies for utility input price inflation was a prominent issue in one proceeding.

### Marketing Flexibility

When CMP was vertically integrated, it had a special need for flexibility in its marketing to pulp and paper customers, some of whom had cogeneration options or were economically marginal, or both. Maine’s legislature passed a law allowing the Commission to authorize pricing flexibility plans which permit utilities to discount their rates with limited or no Commission approval. The Commission also encouraged utilities to develop special contracts with customers.

The Commission noted the following in approving the first alternative rate plan for CMP:

Because CMP will have substantial exposure to revenue losses due to discounting, the Company will have a strong incentive to avoid giving unnecessary discounts, and it will have a strong incentive to find cost savings to offset any such losses. Pricing flexibility gives CMP the opportunity to use price to compete to retain customers.<sup>85</sup>

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<sup>82</sup> Maine Public Utilities Commission (1993), p. 130.

<sup>83</sup> Maine Public Utilities Commission (1993), p. 130.

<sup>84</sup> X factors in Maine were commonly referred to as “productivity offsets.”

<sup>85</sup> Maine Public Utilities Commission (1995), p. 19.

Marketing flexibility provisions in this plan included these features:

- For core customers, CMP was free to set rates between the rate cap and a rate floor based on an estimate of long-term marginal cost.
- CMP could receive expedited approval of new targeted services.
- CMP could also receive expedited approval of special rate contracts with individual customers. Different provisions applied for short-term and long-term contracts.
- Revenue lost during a plan as a result of discounts was recoverable from other customers only through the earnings sharing mechanism (ESM). In the first plan, a cap of 15 percent was placed on overall lost revenues that could be recovered through the ESM.

Subsequent plans did not make substantial changes to these pricing flexibility provisions.

### Other Plan Provisions

Earnings sharing mechanisms and penalty-only service quality PIMs were included in all three plans. Service quality benchmarks for these PIMs became more demanding over time.

The first-generation plan also featured a tracker for DSM costs and a DSM PIM. These latter features were subsequently removed with restructuring and establishment of a third-party DSM program administrator in Maine.

## **Outcomes**

### Cost Performance

Table 4 and Figure 6 compare the trends in O&M, capital and multifactor productivity of the company's power distributor services to the average for U.S. electric utilities in our sample from 1980 to 2014. The table shows that from 1980 to 1995, before MRP regulation, the company's MFP growth was a little slower than that of the full sample on average. Over the 1996 to 2013 period during which CMP operated under alternative rate plans, it averaged 0.92 percent annual MFP growth, while the full sample of U.S. electric utilities averaged 0.42 percent annual MFP growth. The MFP growth differential thus averaged 50 basis points. Table 4 also shows that CMP accomplished this through much more rapid *capital* productivity growth. This is notable given the interest of many regulators today with capex containment. O&M productivity trends of CMP and the sample were more similar.

### Nuclear Problems

At the start of PBR, when CMP was still vertically integrated, it owned 38 percent of Maine Yankee Atomic Power Co., owner and operator of a nuclear generating station. CMP relied on this station for a sizable share of its power supply. The station experienced an extended outage during the plan. The plan did not fully compensate CMP for the increased costs for repairs, decommissioning and purchased power expenses that resulted from the Maine Yankee outage. This resulted in lower earnings for CMP, which in 1998 triggered the lower bound of the ESM.

Table 4. How Productivity Growth of Central Maine Power Compared to That of Other U.S. Electric Utilities: 1980–2014\*

Year	CMP			U.S. Average		
	MFP	PFP O&M	PFP Capital	MFP	PFP O&M	PFP Capital
1980	-0.17%	-2.17%	1.08%	-0.49%	-4.19%	1.24%
1981	0.45%	-3.00%	1.47%	0.17%	-2.42%	1.25%
1982	0.08%	-1.43%	1.84%	0.87%	-1.20%	1.53%
1983	0.42%	-2.22%	1.82%	0.51%	-0.38%	0.98%
1984	1.63%	1.28%	1.80%	1.27%	-0.22%	1.79%
1985	0.75%	-1.94%	1.94%	0.95%	-0.21%	1.37%
1986	2.08%	0.89%	2.57%	0.91%	0.88%	0.97%
1987	0.59%	-1.10%	1.28%	0.44%	-0.12%	0.68%
1988	-0.49%	-1.43%	-0.03%	0.57%	1.55%	0.24%
1989	-0.83%	-0.12%	-1.25%	0.26%	0.00%	0.23%
1990	-0.97%	0.24%	-1.79%	0.18%	0.64%	-0.05%
1991	-0.43%	1.04%	-1.39%	-0.03%	0.58%	-0.32%
1992	1.32%	2.51%	0.64%	0.48%	1.61%	0.10%
1993	-0.24%	-2.55%	1.04%	0.45%	1.19%	0.12%
1994	2.10%	2.87%	1.66%	0.94%	2.44%	0.29%
1995	1.80%	0.98%	2.30%	0.94%	3.58%	-0.04%
1996	1.67%	1.75%	1.62%	0.11%	0.67%	-0.13%
1997	1.08%	-0.40%	2.00%	1.53%	4.68%	0.39%
1998	0.17%	-2.94%	2.14%	0.67%	0.73%	0.71%
1999	2.03%	1.98%	2.05%	1.08%	2.24%	0.52%
2000	0.97%	-2.17%	2.18%	0.89%	0.86%	0.73%
2001	0.83%	-0.69%	1.80%	1.20%	2.73%	0.61%
2002	1.23%	1.28%	1.19%	0.79%	2.73%	0.33%
2003	1.35%	-0.49%	2.83%	-0.03%	-1.50%	0.43%
2004	-0.35%	-3.96%	2.56%	0.41%	0.76%	0.22%
2005	1.85%	1.27%	2.32%	-0.07%	-0.25%	0.09%
2006	1.02%	-0.48%	2.62%	-0.52%	-1.07%	-0.21%
2007	1.16%	-0.21%	3.12%	-0.12%	0.00%	-0.02%
2008	-1.51%	-2.67%	1.27%	-0.99%	-2.06%	-0.09%
2009	2.23%	2.57%	1.34%	1.01%	2.73%	-0.46%
2010	-0.51%	-1.65%	1.00%	-0.27%	-0.47%	0.05%
2011	3.54%	6.17%	0.85%	0.50%	0.05%	0.50%
2012	0.56%	1.86%	-0.63%	1.29%	2.90%	0.58%
2013	-0.73%	-2.31%	0.76%	0.03%	0.40%	-0.05%
2014	-1.61%	-4.74%	1.47%	-0.03%	-1.41%	0.56%
<b>Average Annual Growth Rates</b>						
<b>1980-2014</b>	<b>0.66%</b>	<b>-0.34%</b>	<b>1.36%</b>	<b>0.45%</b>	<b>0.53%</b>	<b>0.43%</b>
<b>1980-1995</b>	<b>0.51%</b>	<b>-0.39%</b>	<b>0.94%</b>	<b>0.53%</b>	<b>0.23%</b>	<b>0.65%</b>
<b>1996-2013</b>	<b>0.92%</b>	<b>-0.06%</b>	<b>1.72%</b>	<b>0.42%</b>	<b>0.90%</b>	<b>0.23%</b>
<b>2008-2014</b>	<b>0.28%</b>	<b>-0.11%</b>	<b>0.86%</b>	<b>0.22%</b>	<b>0.30%</b>	<b>0.15%</b>

\*CMP operated under multiyear rate plans in the years for which results are shaded.

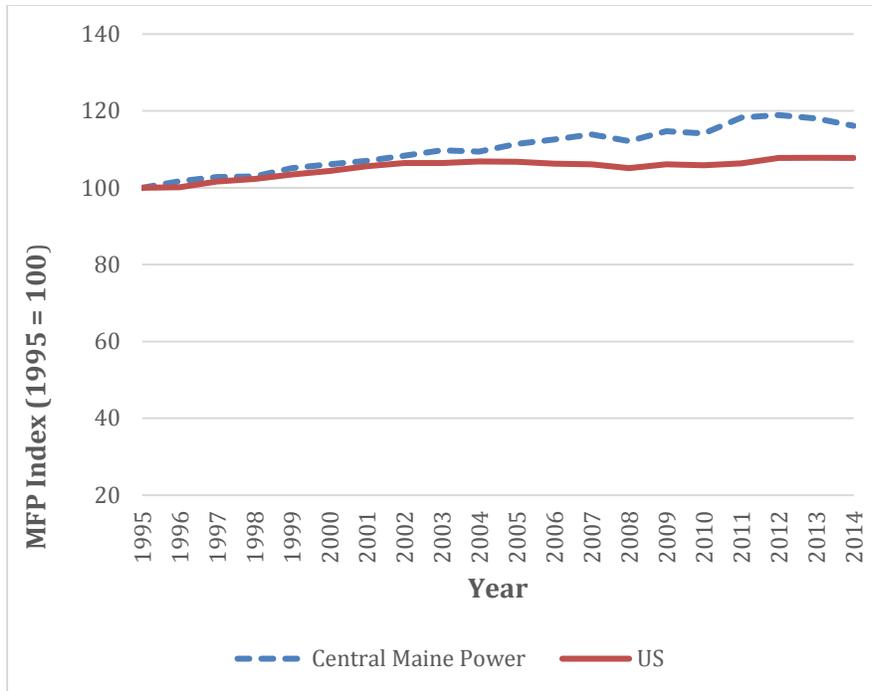


Figure 6. Comparison of Multifactor Productivity Trends of Central Maine Power and the U.S. Sample During Multiyear Rate Plan Periods. The MFP growth of CMP exceeded the industry norm during MRPs.

### Marketing Flexibility

During its first rate plan, CMP entered into special contracts with 18 large customers. These contracts featured discounts from tariffed rates in exchange for a guarantee that customers would not attempt to shift their loads to competitors or self-generate during the contract term. In its 1999 10-K filing with the Securities Exchange Commission, CMP described the importance of pricing flexibility and its impacts on the company:

Central Maine believes that without offering the competitive pricing provided in the agreements, a number of these customers would be likely to install additional self-generation or take other steps to decrease their electricity purchases from Central Maine. The revenue loss from such a usage shift could have been substantial.<sup>86</sup>

### Service Quality

During the second of CMP's three plans, the Energy and Utilities Committee of Maine's Legislature asked the Public Utilities Commission to investigate effects of the rate plans on service quality performance. This review ultimately resulted in a third-party report.<sup>87</sup> Results of this review were mixed. CMP generally met or exceeded service quality targets. However, performance was uneven. Feeders serving densely populated areas like Portland received greater attention, and these feeders had a greater effect on measured performance systemwide than feeders in rural areas. These performance differences may reflect the fact that reliability PIMs measured only systemwide performance and did not measure performance at a more granular level.

<sup>86</sup> Central Maine Power (1998), p. 81.

<sup>87</sup> Williams Consulting (2007).

## Current Status

In 2013, near the conclusion of its third plan, CMP proposed a fourth-generation plan that would have significantly accelerated its revenue growth to help fund a forecasted capex surge.<sup>88</sup> Table 4 shows that CMP's capital productivity trend slowed after 2007. The case ended in a settlement that returned the company to a more traditional regulatory system.<sup>89</sup> A capital tracker for a new customer information system was approved, as was revenue decoupling. While service quality PIMs and the ESM no longer apply, pricing flexibility has continued. No rate case has subsequently been filed.

## **6.2 California**

The California Public Utilities Commission (CPUC) has extensive experience with PBR. This includes the longest experience in North America with MRPs for retail energy utility services. The CPUC has jurisdiction over an energy utility industry that in North America is second in size only to that under the jurisdiction of the Federal Energy Regulatory Commission. Six investor-owned electric utilities (two of which are very large) are regulated, along with natural gas, telecommunications, water, railroad, rail transit and passenger transportation companies. This gives the CPUC strong incentives to contain regulatory costs. MRPs were also facilitated by the CPUC's routine use of forward test years. California's power market was restructured in the 1990s, but two of three large, jurisdictional electric utilities have continued to have sizable generation operations.

The CPUC has limited the frequency of general rate cases using rate case plans for decades. Rate cases were staggered to reduce the chance that the CPUC had to consider cases for multiple large utilities simultaneously. A two-year plan for Southern California Edison was approved in 1980. The standard lag between rate cases was increased to three years in 1984. Longer (e.g., four- or five-year) rate case cycles have since been approved on several occasions.

The CPUC has not always characterized its plans as PBR but did acknowledge the merits of PBR in a 1994 order:

We intend to replace cost-of-service regulation with performance-based regulation. Doing so neither changes the [regulatory] compact's tenets, nor threatens fulfillment of those tenets. We make this change for several reasons.

First, prices for electric services in California are simply too high. The shift to performance-based regulation can provide considerably stronger incentives for efficient utility operations and investment, lower rates, and result in more reasonable, competitive prices for California's consumers. Performance-based regulation also promises to simplify regulation and reduce administrative burdens in the long term. Second, since the utilities' performance-based proposals currently before us leave both industry structure and the utility franchise fundamentally intact, consumers can expect service, safety and reliability to remain at their historically high levels. Third, the utilities' reform proposals are likely to provide an opportunity to earn that is at a minimum comparable to opportunities present in cost-of-service regulation. Finally, performance-based regulation can assist the utilities in developing the tools necessary to make the successful transition from an operating environment directed by government and focused on regulatory proceedings, to one in which consumers, the rules of competition, and market forces dictate. This is of critical importance in our view.<sup>90</sup>

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<sup>88</sup> The Commission stated its opposition to a new plan with a hybrid ARM based on a capital cost forecast.

<sup>89</sup> Maine Public Utilities Commission (2014).

<sup>90</sup> California PUC (1994), pp. 34–35.

The CPUC also has been a national leader in revenue decoupling and PIMs for DSM. This makes California a good case study of the impact performance-based regulation can have on utility DSM as well as cost management. The evolution of MRP design in the state is of further interest given its long history and the diverse situations to which plans have applied.

## Plan Design

### Attrition Relief Mechanisms

Establishment of multiyear rate case cycles for California energy utilities raised issues of whether and how rates could be adjusted between rate cases. Utilities in the early 1980s were subject to cost pressures from inflation and capacity growth. The three largest utilities invested in nuclear power plants but were denied permission to fund their (often delayed) construction by charging for a return on construction work in progress. The CPUC encouraged large-scale purchases of power from non-utility generators. Revenue decoupling insulated utilities from risks of demand fluctuations but denied them extra revenue from growth in sales volumes, numbers of customers served, and other billing determinants.

Under these circumstances, the CPUC acknowledged that escalation of revenue is typically needed between rate cases.<sup>91</sup> ARMs were thus permitted,<sup>92</sup> and energy costs were addressed by trackers. The out-years of the rate case cycle came to be called *attrition years*. Various approaches to ARM design have been used over the years in California. Predetermined “stepped rate” increases were approved in 1980.<sup>93</sup> However, high inflation encouraged use of inflation measures in ARMs, and many subsequent California ARMs have provided some automatic inflation relief. A hybrid approach to ARM design has been used on many occasions. The broad outline of the first ARMs for Pacific Gas and Electric (PG&E), which started in 1981, is remarkably similar to that of hybrid ARMs that are still occasionally used today.<sup>94</sup>

- O&M expenses were escalated only for inflation. The CPUC implicitly acknowledged that growth in productivity and operating scale also drive cost escalation but assumed that their impact was offsetting.<sup>95</sup>
- Capex per customer was fixed in constant dollars at a five-year average of recent net plant additions, then escalated for inflation.
- Other components of capital cost, like depreciation and return on rate base, were forecasted using cost of service methods. Subsequent hybrid ARMs used in California have involved variations on this basic theme. For example, capex budgets have occasionally been fixed in real terms for several years at forward test year value, then escalated for construction cost inflation. Detailed indexes of utility O&M input price inflation have replaced indexes of

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<sup>91</sup> The CPUC has nevertheless persistently maintained that attrition adjustments are not an entitlement even under revenue decoupling and has occasionally rejected their implementation. See, for example, the rejection of PG&E’s 2002 attrition adjustment in D.03-03-034.

<sup>92</sup> The ARM was sometimes called an Attrition Relief Adjustment and has in recent years been called a post-test-year mechanism.

<sup>93</sup> California PUC D. 92497 (1980a) for Southern California Gas and California PUC D. 92549 (1980b) for Southern California Edison.

<sup>94</sup> Hybrid ARMs are frequently featured by utilities in their post-test year proposals.

<sup>95</sup> “Our labor and nonlabor costs adopted for test year 1982 will be escalated by appropriate inflation factors for labor and nonlabor expenses.... We will not adopt a growth factor but assume that any growth or increase in activity levels will be offset by increased productivity and efficiency.” California PUC (1981) Cal. PUC LEXIS 1279; 7CPUC 2d 349.

macroeconomic price inflation in escalation of revenue requirements for O&M expenses. Some plans have permitted utilities to escalate their labor revenue to reflect wage growth in their union contracts.

Several utilities experimented with fully indexed ARMs between 1998 and 2007. For example, PG&E, Southern California Edison, and San Diego Gas & Electric all operated under indexed ARMs.<sup>96</sup> Southern California Gas, America's largest gas distributor, operated under a revenue-per-customer index with inflation and X factor terms. Larger utilities have in recent years most commonly operated under revenue caps with comprehensive stair step escalators. Cost trackers have provided supplemental revenue for advanced metering infrastructure and some reliability-related capex.

### Revenue Decoupling

Revenue decoupling has often been used in conjunction with California multiyear rate plans to reduce utilities' incentives to boost retail sales. Revenue decoupling mechanisms called *supply adjustment mechanisms* were first instituted for gas distributors in the late 1970s at the conclusion of a generic proceeding.<sup>97</sup> By 1982, the CPUC approved revenue decoupling mechanisms (called *Electric Revenue Adjustment Mechanisms*) for the three largest California electric utilities. The appeal of decoupling for electric utilities came from several sources:

- Power conservation became a priority in the state in the 1970s, spurred by generation capacity concerns and high fuel prices.<sup>98</sup> The CPUC declared in 1976 that "Conservation is to rank at least equally with supply as a primary commitment and obligation of a public utility."<sup>99</sup> Utilities played a large role in administering DSM programs (and still do).
- Electric utilities had experimental rate designs such as inverted block rates that were intended to promote conservation but increased sensitivity of utility earnings to demand shifts.
- Utilities experienced substantial risk from other sources, including multiyear rate plans and the CPUC's unwillingness to grant funding for nuclear plant construction work in progress.

Despite a generally positive experience, use of decoupling for California electric utilities fell off in the mid 1990s due, in part, to rules governing the transition to retail competition. There was also some thought that DSM might be provided in the future by independent marketers. A return to decoupling was mandated in 2001 by state legislation motivated in part by the need to promote conservation and contain utility risk during the California power crisis.<sup>100</sup> The three largest electric utilities recommenced decoupling, which continues today.

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<sup>96</sup> Indexed ARMs are still used for California energy utilities serving smaller state loads. For example, a 2007 decision in a PacifiCorp rate case approved a settlement that outlined an MRP featuring a price cap index and a three-year term. The index has escalated base rates to reflect growth in an annual forecast of CPI less a productivity adjustment of 0.5 percent. Supplemental revenue is permitted for the California portion of major plant addition costs exceeding \$50 million. Parties later agreed to defer PacifiCorp's scheduled 2010 rate case for one year and adopted an identical MRP in the 2011 general rate case. The CPUC agreed to extend PacifiCorp's renewed MRP for several additional years, and the utility will not file a new rate case until 2019 at the earliest.

<sup>97</sup> CPUC Decision 88835, Case No. 10261, May 1978.

<sup>98</sup> Fossil fueled generators in California burned oil, gas or both.

<sup>99</sup> CPUC Decision 85559, March 1976, p. 489.

<sup>100</sup> See California Public Utilities Code (2001).

## Demand-Side Management PIMs

California was also an early innovator in the area of DSM PIMs. The first experimental DSM PIMs were implemented in 1990. These measures did not survive deregulation of California's electricity market later in the decade.

In 2007, California reintroduced DSM PIMs for larger utilities through the Risk-Reward Incentive Mechanism. This mechanism featured a relatively complex shared savings approach to compensation. Each utility had targets for three metrics (if applicable): electricity savings, gas savings and peak demand reductions. Under the original incentive design, utilities could receive a reward of up to 12 percent of the dollar value of evaluated net benefits of eligible DSM programs if they performed strongly on all three metrics. Conversely, they would be penalized if they fell below 65 percent of the target for any one of the three metrics. Critically, utility financial outcomes would be based on evaluated (*ex post*), not predicted (*ex ante*), net benefits. That meant that utility outcomes were not known until program evaluations were completed. This choice extended the process and added complexity. However, the CPUC felt it important to reward or penalize how programs actually performed in order to properly align utility incentives and protect ratepayers from adverse outcomes.<sup>101</sup>

The Risk-Reward Incentive Mechanism was implemented for the first time at the end of the 2006–2008 utility program cycle. Disputes over net benefits soon developed, as the CPUC's evaluation consultants estimated program results that substantially differed from the utilities' estimates and implied very different financial outcomes, in part due to the sharp earnings cutoffs in the mechanism's reward structure.<sup>102</sup> Disputes stretched over several years and proved intractable enough that the CPUC modified the mechanism. It based net benefit calculations on parameters (for example, net-to-gross ratios) estimated before programs were implemented, as well as on actual program delivery outcomes.<sup>103</sup> It also lowered the incentive to a flat 7 percent of net benefits and eliminated the possibility of penalties. Savings used to calculate rewards were in between the utilities' and the CPUC's estimates. For programs from 2010 to 2012, the CPUC simplified these PIMs, establishing rewards conditioned primarily on utility spending (management fees) rather than evaluated program performance.

In 2013, the CPUC adopted the Energy Savings Performance Incentive.<sup>104</sup> Under this mechanism, performance awards for many programs were based on energy savings delivered, not net benefits. Energy savings were not discounted, unlike energy benefits in the earlier net benefits calculation. Thus, the revised mechanism provided greater relative rewards for deeper, longer-lived savings. The revised mechanism did not include a potential penalty and avoided sharp earnings cutoffs of the Risk-Reward Incentive Mechanism. Rewards under the Energy Savings Performance Incentive were expected to be lower, and the incentive also capped the maximum achievable reward at a lower level, compared to the Risk-Reward Incentive Mechanism, largely due to the absence of an earnings penalty.

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<sup>101</sup> See CPUC, 2007b, Interim Opinion on Phase 1 Issues: Shareholder Risk/Reward Incentive Mechanism for Energy Efficiency Programs, [http://docs.cpuc.ca.gov/word\\_pdf/FINAL\\_DECISION/73172.pdf](http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/73172.pdf).

<sup>102</sup> The reward/penalty function consisted of four tiers: a penalty if evaluated energy/capacity savings were less than 65 percent of a target; a dead band of no reward or penalty if savings were between 65 percent and 85 percent of a target; a 9 percent shared savings reward if savings were between 85 percent and 100 percent of a target; and a 12 percent shared savings reward if savings exceeded a target. Each transition between tiers created a sharp reward discontinuity. A small change in the evaluated savings could produce a big change in the reward. Further exacerbating these issues, a utility was paid based on the worst of the three outcomes. For example, if a utility fell below 65 percent of any of the three targets, it earned a penalty even if it performed strongly on the other two. In one case, a utility's estimated savings implied a \$180 million reward; the evaluation consultants' estimates implied a \$75 million penalty. See Chandrashekeran et al. (2015).

<sup>103</sup> This CPUC decision was controversial, with one commissioner objecting that the revised mechanism largely eliminated the actual performance incentives and ratepayer protections provided by the prior, *ex post*-based mechanism. See [http://docs.cpuc.ca.gov/word\\_pdf/FINAL\\_DECISION/128882.pdf](http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/128882.pdf).

<sup>104</sup> CPUC (2013).

The Energy Savings Performance Incentive calculates savings *ex post*, reintroducing one of the challenges under the previous incentive mechanism. Some parameters that are considered relatively certain were locked in *ex ante*; those deemed “sufficiently uncertain” by the CPUC required *ex post* measurement. In reintroducing *ex post* calculations, the CPUC emphasized the need to protect ratepayers from paying out rewards based on overly optimistic *ex ante* projections, arguing that this objective outweighed the utilities’ desire for revenue certainty and justified potential disputes over *ex post* savings calculations. The Energy Savings Performance Incentive rewarded both codes and standards support programs and “non-resource” programs (those that cannot support an energy savings calculation — largely market transformation programs) using a management fee based on utility dollars spent. The Risk-Reward Incentive Mechanism had not rewarded these programs. Incentives distributed for 2013 and 2014, as well as some rewards for 2015, have prompted far fewer disputes over process and savings estimates.

The CPUC recently developed a pilot PIM program for DERs such as distributed generation and storage. The CPUC approved a management fee mechanism that would offer investor-owned electric utilities 4 percent of annual payments made to DER providers pretax as an incentive to use third-party DERs to cost-effectively displace or defer the need for capex for traditional distribution system investments that were previously planned and authorized.<sup>105</sup> Utilities are required to pursue at least one project and have the option to pursue three more.

The CPUC also authorized the utilities to keep any savings from capex underspends due to DER that had been previously approved until the next general rate case.<sup>106</sup> Estimated costs of the DER and administration of the solicitation are recoverable with interest up to a preapproved cap when rates are reset in the next rate case. Administrative costs above the cap will be reviewed for reasonableness in the next rate case.

In their procurement decisions, utilities are required to consider the net market value of potential DER pilot projects. The net market value calculation includes a broad range of factors, including capacity, energy, ancillary grid services, costs of grid integration, deferred distribution and transmission system costs, and the cost of the DER procurement contract. During the pilot, each of the three major electric utilities are allowed to use different methods for ensuring that DERs rewarded by the incentive are incremental to the utility’s existing plans and efforts as governed by other Commission proceedings, in order to test the performance of each method.

### Other MRP Provisions

Other characteristics of California electric utility regulation also merit note:

- The CPUC decided in Decision 89-01-040 to address target rates of return on capital of all energy utilities in a separate annual proceeding. This meant that revenue requirements generated by ARMs often have been subject to supplemental rate of return adjustments. Some of these adjustments have been formulaic.<sup>107</sup>

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<sup>105</sup> California PUC (2016).

<sup>106</sup> This is not a change from current California regulatory practices, but was explicitly stated nonetheless.

<sup>107</sup> For example, San Diego Gas & Electric’s Market Indexed Capital Adjustment Mechanism, approved in 1996, featured a trigger mechanism that updated the cost of capital if bond yields deviated from the benchmark by a specific amount. A similar mechanism was established in 2008 for all large California utilities.

- Cost allocation and rate design issues are commonly addressed in a second phase of a general rate case. In attrition years, utilities have additional opportunities to adjust cost allocations and rate designs in rate design “windows.”<sup>108</sup>
- Use of capital cost trackers has been limited in California, due in part to the fact that hybrid and forecasted ARMs have been prevalent. Several plans have permitted separate treatment of discrete major plant additions such as those for power plants and AMI.
- The CPUC has experimented with incentivized trackers for generation fuel and purchased power expenses. For example, San Diego Gas and Electric had a PIM that assessed the effectiveness of its generation and dispatch costs through simulations of annual production costs using expected and actual data. PIMs also have been used for nuclear generation plant capacity factors where sharing of energy cost variances would occur if the capacity factor of a facility was above or below the dead band.
- The CPUC has approved MRPs for generating facilities, independent of other utility assets. For example, in the late 1980s, the CPUC approved an MRP for PG&E’s Diablo Canyon nuclear plant where it was permitted to charge an escalating price per MWh for power produced. This charge initially compensated PG&E for capital costs as well as O&M expenses,<sup>109</sup> strengthening the company’s incentive to keep the plan running. The Diablo Canyon rate plan expired in 2001.
- Earnings sharing mechanisms and PIMs for service quality have not been routinely featured in California MRPs. During the experimentation with index-based ARMs, earnings sharing mechanisms and service quality PIMs were more common. The CPUC has monitored service quality performance since at least the 1990s.

## Outcomes

### Cost Control

Table 5 and Figure 7 compare the distributor productivity trends of California’s three largest electric utilities to the norm for our full U.S. electric utility sample. Over the full 1986–2014 period during which MRPs have been extensively used in California, the MFP growth of these utilities averaged a 0.14 percent annual *decline*, whereas the MFP of our full U.S. sample averaged 0.43 percent annual *growth*.<sup>110</sup> Thus, the MFP growth of the California utilities was 57 basis points *slower* on average. All three utilities had subpar trends. The capital productivity growth of California utilities has been especially slow. In the 1980–1985 period, before MRPs were widely used, MFP trends of these utilities and the full sample were similar.

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<sup>108</sup> Any attrition relief adjustment that the ARM puts in motion is pooled with certain other revenue requirement adjustments and recovered in advice letter filings using the Phase II cost allocations, as amended by changes effected in the rate design windows.

<sup>109</sup> In 1997, however, the plan was revised so that the mechanism recovered only the incremental costs of the plant (costs of O&M and new plant additions). The ongoing recovery of sunk costs was achieved through a separate transition charge.

<sup>110</sup> The MFP growth trends of California utilities were fairly similar to those for the full sample during the six-year 1980 to 1985 period before MRPs became common.

These unflattering results may reflect special California operating challenges. However, the results may also reflect ineffective plan design. We have noted that California ARMs have often based a utility's budget for plant additions on its own historical additions, and passed through the escalation of a utility's union wages.

Table 5. How the Power Distributor Productivity Growth of Larger California Utilities Compared to That of Other U.S. Electric Utilities: 1980–2014\*

	California Average			U.S. Sample Average		
	MFP	O&M PFP	Capital PFP	MFP	O&M PFP	Capital PFP
1980	-0.10%	-2.39%	0.96%	-0.49%	-4.19%	1.24%
1981	0.65%	-0.85%	1.22%	0.17%	-2.42%	1.25%
1982	-0.54%	-3.92%	0.78%	0.87%	-1.20%	1.53%
1983	-0.20%	-3.46%	0.99%	0.51%	-0.38%	0.98%
1984	1.43%	-0.20%	2.00%	1.27%	-0.22%	1.79%
1985	1.27%	-1.44%	1.78%	0.95%	-0.21%	1.37%
1986	0.96%	2.23%	0.61%	0.91%	0.88%	0.97%
1987	0.58%	2.56%	0.02%	0.44%	-0.12%	0.68%
1988	1.86%	10.04%	-0.35%	0.57%	1.55%	0.24%
1989	0.80%	3.51%	-0.04%	0.26%	0.00%	0.23%
1990	0.35%	3.49%	-0.71%	0.18%	0.64%	-0.05%
1991	-1.13%	-0.85%	-1.18%	-0.03%	0.58%	-0.32%
1992	-0.71%	0.98%	-1.26%	0.48%	1.61%	0.10%
1993	-1.45%	-1.66%	-1.38%	0.45%	1.19%	0.12%
1994	0.01%	3.17%	-0.93%	0.94%	2.44%	0.29%
1995	0.27%	0.02%	0.32%	0.94%	3.58%	-0.04%
1996	1.43%	3.26%	0.89%	0.11%	0.67%	-0.13%
1997	0.41%	-1.07%	0.87%	1.53%	4.68%	0.39%
1998	-0.24%	-1.81%	0.32%	0.67%	0.73%	0.71%
1999	-0.53%	1.21%	-1.08%	1.08%	2.24%	0.52%
2000	-0.32%	1.19%	-0.92%	0.89%	0.86%	0.73%
2001	1.63%	1.41%	1.76%	1.20%	2.73%	0.61%
2002	-1.21%	-3.73%	-0.45%	0.79%	2.73%	0.33%
2003	-1.21%	-3.63%	-0.29%	-0.03%	-1.50%	0.43%
2004	-0.14%	0.34%	-0.31%	0.41%	0.76%	0.22%
2005	-0.90%	-2.64%	-0.12%	-0.07%	-0.25%	0.09%
2006	-1.36%	-3.95%	-0.06%	-0.52%	-1.07%	-0.21%
2007	-0.57%	-0.56%	-0.58%	-0.12%	0.00%	-0.02%
2008	-1.44%	-2.17%	-0.80%	-0.99%	-2.06%	-0.09%
2009	0.83%	2.22%	-0.56%	1.01%	2.73%	-0.46%
2010	-1.15%	-0.58%	-1.47%	-0.27%	-0.47%	0.05%
2011	-1.94%	-1.12%	-2.29%	0.50%	0.05%	0.50%
2012	-0.39%	0.82%	-0.91%	1.29%	2.90%	0.58%
2013	1.33%	3.94%	0.23%	0.03%	0.40%	-0.05%
2014	0.04%	3.81%	-1.28%	-0.03%	-1.41%	0.56%
<b>Average Annual Growth Rates</b>						
<b>1980-2014</b>	<b>-0.05%</b>	<b>0.23%</b>	<b>-0.12%</b>	<b>0.45%</b>	<b>0.53%</b>	<b>0.43%</b>
<b>1980-1985</b>	<b>0.42%</b>	<b>-2.04%</b>	<b>1.29%</b>	<b>0.55%</b>	<b>-1.44%</b>	<b>1.36%</b>
<b>1986-2014</b>	<b>-0.14%</b>	<b>0.70%</b>	<b>-0.41%</b>	<b>0.43%</b>	<b>0.93%</b>	<b>0.24%</b>
<b>2008-2014</b>	<b>-0.39%</b>	<b>0.99%</b>	<b>-1.01%</b>	<b>0.22%</b>	<b>0.30%</b>	<b>0.15%</b>

\*Shading indicates years when MRPs were in effect.

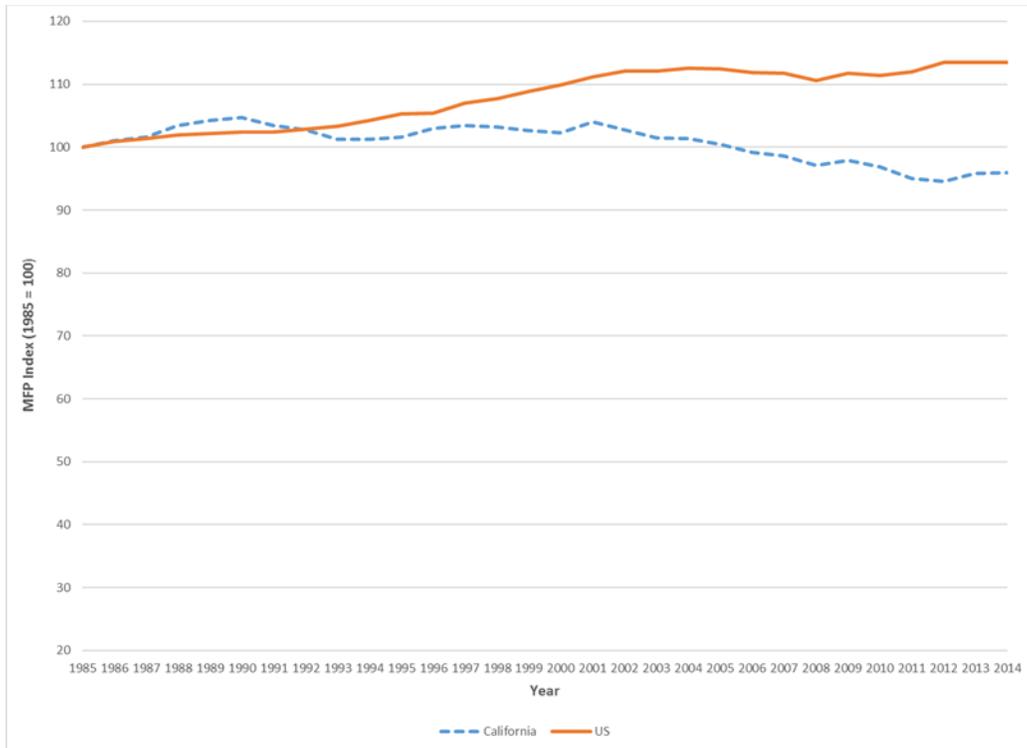


Figure 7. Comparison of Multifactor Productivity Trends of California Distributors and the U.S. Sample during Multiyear Rate Plan Periods. MFP growth of California utilities has fallen short of industry norms under MRPs.

### DSM Programs

California electric utilities have typically operated large DSM programs, traditionally ranked near the top of most surveys. Since 1996, the American Council for an Energy-Efficient Economy (ACEEE) has issued annual scorecards evaluating state efforts and achievements in energy efficiency.<sup>111</sup> These surveys include estimates of DSM spending (or budgets) as a percentage of utility revenue. In the eight years for which data were available since 2006, California has averaged a 5.5 ranking out of 51 U.S. jurisdictions (with 1 the highest possible ranking).

### Rate Designs

California has also been a national leader in use of rate designs that encourage DSM. For example, inclining block rate designs intended to encourage conservation have been mandated for residential customers since 1976.<sup>112</sup> Until recently, California investor-owned utilities (IOUs) had a very steep inclining block rate structure for these customers, consisting of four tiers ranging from \$0.13/kWh for the lowest tier of usage to \$0.42/kWh for the highest tier.<sup>113</sup> In a 2015 decision,<sup>114</sup> the CPUC reduced the number of tiers to two (plus a third tier for very high energy users) and specified that the second tier's price should be 25 percent higher than the first. The result is that the lowest tiers now face a higher price

<sup>111</sup> Berg et al. (2016).

<sup>112</sup> California Public Utilities Code, section 739.

<sup>113</sup> St. John (2015).

<sup>114</sup> CPUC (2015b).

than before, while the higher tiers face a lower one — in other words, a flatter rate structure. This reduces what was formerly a very significant incentive for efficiency and distributed generation deployment for customers using large amounts of electricity. On the other hand, it raises this incentive for customers with lower usage.

Time of use rates are currently optional for residential customers. The CPUC has ordered the IOUs to transition most residential customers to default time of use pricing in 2019.<sup>115</sup> Most commercial and industrial IOU customers in California already face seasonally differentiated default time of use prices, which were introduced in 2014. While these customers can opt into non-time-differentiated rates, few have done so.

### Service Quality

California's regulatory system for service quality is more reactive than proactive and has featured several investigations to assess utilities' service quality performance. An early investigation focused on whether PG&E had adequately responded to severe storms in 1995. In its decision, the CPUC ordered standardized service quality and reliability reporting requirements to be developed. Southern California Edison and Sempra had service quality PIMs in rate plans with index-based ARMs during the late 1990s and early 2000s.

Edison's service quality PIMs included one for customer satisfaction, as measured by a survey. In 2003 a whistleblower brought to the utility's attention that fraud had occurred in the customer satisfaction surveys. The company investigated the claims, confirmed that there had been misconduct, expanded the investigation to include the other PIMs, and notified the CPUC.

The Commission opened its own investigation on the matter. It found that Southern California Edison had provided false and misleading data in support of its performance claims on the customer satisfaction survey and health and safety PIMs. The Commission's decision required a refund of rewards that Edison had obtained through false reporting, made the utility forego recovery of additional rewards through these PIMs, and fined the utility an additional sum. The Commission was particularly concerned that the utility had gamed an incentive mechanism, stating that:

Incentive mechanisms, such as the [PIMs], require a great deal of trust between the Commission and the utility's entire management. In turn, the utility's management must communicate through its practices, rules, and corporate culture that the data submitted to the Commission that impacts the incentive mechanisms must be completely accurate and timely. Increasingly, this Commission is turning to incentive mechanisms in order to align the interests of ratepayers and shareholders and to achieve desirable policy outcomes in the most cost effective and least burdensome manner. If the Commission is to continue to rely on and potentially create new incentive mechanisms, we must be able to trust the utilities to be accurate, timely, and completely honest about their reporting, and further, we must be vigilant against abuse and appropriately penalize violations in order to safeguard the integrity of incentive mechanisms going forward for all utilities.<sup>116</sup>

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<sup>115</sup> Ibid.

<sup>116</sup> CPUC (2008), p. 102–103.

## 6.3 New York

New York has also had a long history with MRPs for energy utilities. Plans have been widely used there since the mid-1990s. Experience with MRPs has spanned some years when electric utilities were still vertically integrated, and more than 15 years after industry restructuring was completed. DSM programs are provided primarily by a state agency, the New York State Energy Research and Development Authority, but utilities also have some programs. MRPs are usually outcomes of negotiated settlements in regulatory proceedings.

The inclination of New York's Public Service Commission and Department of Public Service (DPS) to adopt MRPs has several root causes. Regulatory cost savings can be sizable, since New York's economy is large and there are six investor-owned electric utilities (and even more investor-owned gas utilities) to regulate.<sup>117</sup> MRPs also have been facilitated by New York's long-standing use of forward test years in rate cases. One of the earliest MRPs, for Orange & Rockland Utilities, was motivated in part by concerns about performance incentives. The Commission stated in approving the plan:

Economic regulation, like most acts of market intervention, can have unintended and undesirable consequences. In the case of a regulated monopoly, the consequence most frequently watched for and least easily avoided is operating inefficiency within the firm, resulting from the "cost plus" nature of price controls. In theory, the [MRP] should encourage greater operating efficiency, because the period of regulatory lag during which the company would be allowed to retain savings from productivity gains would be longer.<sup>118</sup>

Reducing regulatory cost has also been cited in the Commission's support of MRPs. For example, in a 2008 rate case decision for Consolidated Edison, the Commission discussed the drawbacks of annual rate cases.

We generally prefer multi-year rate plans in instances where the terms are broadly seen to be better than those that might result from a litigated one-year rate case. In addition, we note that this proceeding includes many of the same, or similar, issues and major cost drivers as did the Company's last one-year electric rate case. These circumstances raise a significant concern that the public benefit might not be optimized if the upcoming Consolidated Edison electric rate filing — the third in three years — ultimately boils down to consideration of the same, or similar, issues on which parties largely just replicate arguments we have already carefully reviewed and either accepted or rejected. We also question how well the public interest may be served by the demands on time and resources of the Company, DPS Staff, and other parties in the face of continual annual rate proceedings.<sup>119</sup>

The relatively poor performance of several New York utilities after a series of storms including Superstorm Sandy led the governor to issue an order establishing a commission, called the Moreland Commission on Utility Storm Preparation and Response (Moreland Commission), to investigate and review the storm preparedness of New York's electric utilities, the adequacy of regulatory oversight, and the jurisdiction, responsibility, and mission of New York's energy agency and authority functions.<sup>120</sup> The findings of the Moreland Commission encouraged the governor to push for a reassessment of electric utility regulation more generally. We discuss some Moreland Commission findings further below.

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<sup>117</sup> A seventh investor-owned electric utility, Long Island Lighting, was transferred to the state-owned Long Island Power Authority during the 1990s.

<sup>118</sup> New York Public Service Commission (1990).

<sup>119</sup> New York Public Service Commission (2009), p. 282.

<sup>120</sup> Moreland Commission (2013a).

In 2014 New York’s Public Service Commission initiated a generic proceeding to consider how the regulatory system of power distributors and their marketplace roles should evolve in an era of rapid change in distribution, metering, and DER costs and technologies.<sup>121</sup> This came to be called the “REV” proceeding after a Department of Public Service Staff report entitled *Reforming the Energy Vision*.

Track One of the proceeding considered appropriate roles of power distributors going forward. Utilities are envisioned as distributed system platform providers that accommodate customer-side DERs and energy service companies and may offer new services that use smart grid technologies. Utilities are now required to file Distribution System Integration Plans that among other things, consider the use of DERs to avoid capex. The first filings were made last summer.<sup>122</sup> Track Two of the proceeding has addressed miscellaneous ratemaking issues such as rate designs and MRP design. We discuss the outcomes further below.

## Plan Designs

New York rate plans have featured forecasted ARMs.<sup>123</sup> Since decoupling has been common, most ARMs have effectively been revenue caps.<sup>124</sup> A “one-way” net plant reconciliation (“claw back”) mechanism has been added to MRPs in recent years which returns to customers benefits of capex underspends.<sup>125</sup> Plans typically have a term of only three years. In the early 1990s and since 2007, plans also typically have included revenue decoupling and PIMs for utility DSM. Where New York utilities do not have an approved MRP but have revenue decoupling, they often have filed frequent rate cases. MRPs also typically have featured asymmetrical ESMs that share only surplus earnings.

Service quality PIMs are common in New York and are sometimes extensive. There are PIMs for customer service as well as reliability. In addition to these PIMs, service quality standards for SAIDI and CAIDI have been in place since 1991 which, if breached, require a corrective action plan to be filed with the Commission. Consolidated Edison’s most recent plan had separate PIMs for its radial and network systems. This plan also featured PIMs for performance following major events (e.g., outages) and a wide variety of asset management activities.

New York plans during the late 1990s and early 2000s were somewhat different from plans that were approved in the early 1990s and after 2007. These plans did not feature revenue decoupling or DSM PIMs, but retained ESMs and service quality PIMs. Several plans featured rate freezes often tied to restructuring plans or merger approvals. A plan for Niagara Mohawk had a 10-year term.

The Commission issued an order on Track Two of its REV proceeding in 2016, including the design of its regulatory system.<sup>126</sup> Among the specific issues addressed are the following:

- The net plant reconciliation mechanism will be reformed to enable utilities to profit from DERs that displace previously approved capital projects. Because this will often be achieved through increased operating expenses, rather than capital expenses, the existing mechanism would require utilities to forfeit approved capital earnings. This creates a disincentive for utilities to adopt lower cost DER alternatives. To address this, the Commission will permit utilities to retain earnings on previously approved, traditional utility capital projects included

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<sup>121</sup> New York Public Service Commission (2014a).

<sup>122</sup> Walton (2016a).

<sup>123</sup> Indexed ARMs have, however, been proposed by utilities on several occasions.

<sup>124</sup> From the late 1990s to mid-2000s, revenue decoupling was not featured in New York regulation. These plans were price caps where base rates were specified for each year of the plan.

<sup>125</sup> An underspend occurs if utility capex is less than the budget which the ARM provides.

<sup>126</sup> New York Public Service Commission (2016a).

in base revenue, even if these projects do not materialize, until rates are reset in the next rate case. To qualify for this treatment, a utility must demonstrate that DSM or other types of DERs displaced the capital project. The Commission expressed interest in considering further modifications to the claw back mechanism in the future, such as sharing any realized savings between the utility and customers over a longer time horizon.

- As utilities transition to a platform provider role, the Commission expects a growing share of their income to be Platform Service Revenues,<sup>127</sup> new revenues arising from the operation or facilitation of distribution-level markets.
- *Earnings Adjustment Mechanisms* are New York’s term for performance incentive mechanisms. They are to focus on outcomes, rather than on utility inputs or the attainment of specific program targets, and are not restricted to items under the utility’s direct control. The Commission expects these adjustment mechanisms to be most important in the near term, serving as a “bridge” to the time when markets provide utilities with a sizable share of revenue in the form of platform services revenues.

To avoid encouraging utilities to grow rate base, the Commission stated that Earnings Adjustment Mechanisms should not take the form of basis-point adjustments to earnings (though they may be designed in reference to basis-point changes and fixed in dollar amounts before the mechanisms take effect). Mechanisms also generally should avoid estimated counterfactuals in order to reduce controversy and cost. In addition, they should be financially meaningful, encourage strategic, portfolio-level approaches beyond narrow programs, and generally be structured on a multiyear basis.

Though specific metrics and associated Earnings Adjustment Mechanisms will be worked out in future proceedings, the Commission provided requirements and guidance in several areas:

- *System Efficiency.* The Commission will require utilities to propose system efficiency Earnings Adjustment Mechanisms that address both peak reduction and load factor. Initial proposals should include only the possibility of positive adjustments.
- *Energy Efficiency.* Pending recommendations from the Clean Energy Advisory Council based on State Energy Plan and Clean Energy Standard goals, energy efficiency Earnings Adjustment Mechanisms will be redesigned. One focal point will be systemwide electric usage intensity (e.g., measured as kWh per capita, kWh per customer or kWh per unit of GDP).
- *Interconnection.* An Earnings Adjustment Mechanism will address interconnection of distributed generation and storage projects over 50 kW. It will include a threshold tied to meeting timeliness requirements, and a positive adjustment based on evaluations by interconnection customers of application quality and applicant satisfaction. Negative adjustments may also be considered in individual utility proceedings. The Track Two order required the utilities to develop an Earnings Adjustment Mechanism for distributed generation connection timeliness, customer satisfaction with distributed generation interconnection processes and audits of failed distributed generation interconnection applications.

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<sup>127</sup> One potential problem with Platform Service Revenues is that margins from them are netted off of the revenue requirement in each rate case. Another is that competitors will endeavor to limit the role of utilities in the provision of new services. MRPs can help utilities retain margins from these new revenues for several years.

- *Customer Engagement.* The Commission declined to implement an Earnings Adjustment Mechanism related to general customer engagement. However, the Commission will consider proposals in this area. For example, Earnings Adjustment Mechanisms could reward utilities for increased customer participation in time-varying rates or adoption of ground-source heat pumps and electric vehicles.
- *Scorecards.* The Commission plans to use scorecard metrics to track utility progress, which could serve as the basis for Earnings Adjustment Mechanisms in the future.
- Utilities may also earn new revenues from displacing traditional infrastructure projects with non-wires alternatives (NWAs) in other ways. The Brooklyn Queens Demand Management program of Consolidated Edison (Con Ed) is the best-known example.<sup>128</sup> Approved by the Commission in 2014, its goal is to use DERs to delay or offset the need for traditional infrastructure upgrades in a portion of the Brooklyn and Queens boroughs.<sup>129</sup> In the absence of this program, upgrades needed by 2017 would have an estimated cost of approximately \$1 billion and included a new area substation, a new switching station at an existing station, and new subtransmission feeders.<sup>130</sup>

To overcome the disincentive for Con Ed to pursue NWA projects, the Commission adopted the following performance incentives contingent on satisfactory performance on the company's existing reliability PIMs:<sup>131</sup>

1. Con Ed is permitted to earn its authorized overall rate of return (as approved in its most recent electric rate case) on all deferred Brooklyn-Queens program costs up to a cap. These amounts would be recovered over a 10-year period.
2. The utility can earn up to an additional 100 basis points (incremental to its authorized rate of return on equity) on program costs contingent on performance.

An NWA incentive mechanism was approved in 2016 which gives Central Hudson Gas and Electric a 30 percent share of savings associated with delaying investments in traditional power plant structures and reductions in wholesale capacity requirements. Program costs will be amortized and recovered over the subsequent five-year period.<sup>132</sup>

- The Commission declined to extend the terms of MRPs from three to five years in recognition of the need for a high level of regulatory oversight during the early REV transitional period. However, the Commission stated that longer plans had significant potential to achieve long-term benefits and declined to preclude parties from pursuing longer plans if desired.

Consolidated Edison was the first utility to have its rate case litigated after the Track Two decision was issued. This placed the company in the position of being the first to implement several REV features.<sup>133</sup> A separate decision on the same day as the rate case decision approved an incentive mechanism that allowed

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<sup>128</sup> For further discussion, see Walton (2016b).

<sup>129</sup> New York Public Service Commission (2014b).

<sup>130</sup> Concurrently with the BQDM program, Con Ed is undertaking about 17 MW of traditional infrastructure investments.

<sup>131</sup> The utility proposed an additional shareholder incentive in its application. This proposal was a shared savings mechanism, under which the utility would have retained a 50 percent share of the annual net savings realized by customers. The Commission rejected this proposal, however, believing that the other two incentive mechanisms were sufficient.

<sup>132</sup> New York Public Service Commission (2016b).

<sup>133</sup> In the case of New York State Electric & Gas and Rochester Gas & Electric, Earnings Adjustment Mechanisms are being developed as a compliance filing to the rate case.

Con Ed to receive 30 percent of the net benefits of NWA projects, except on the Brooklyn Queens Demand Management program.<sup>134</sup> Costs of NWA projects will be recovered over a 10-year period. The net plant reconciliation mechanism was revised to allow Con Ed to use the revenue requirements that would otherwise be refunded to customers as a result of capex underspends from successful DER deployments to offset the revenue requirements of any related non-wires alternative project first.

Earnings adjustment mechanisms and metrics were approved to encourage superior Consolidated Edison performance in several areas.

- In the area of energy efficiency and demand response, two metrics are relied on to assess Con Ed's performance. The first encourages Con Ed to increase its incremental gigawatt-hour (GWh) savings from energy efficiency programs. The second metric encourages Con Ed to improve its demand response effectiveness as measured by incremental system peak megawatt (MW) reductions from energy efficiency programs.
- With respect to deployment of incremental DERs, a metric encourages incremental use of DERs from solar energy, combined heat and power, battery storage, demand response and beneficial electrification, such as thermal storage, heat pumps and electric vehicle charging.
- Measurement of customer load factors is intended to encourage Con Ed to improve those of poor load factor customers. This metric is customer-specific and compares the customer's average load to their peak. Due to the need to conduct further research on this metric, no targets or incentives were assigned to this metric for the first year.
- Metrics also measure Con Ed's weather-normalized average use adjusted for incremental beneficial usage. One measures residential use per customer; another measures commercial use per employed person in Con Ed's service territory.
- Separate metrics are used to assess Con Ed's performance on distributed generation interconnection timeliness, customer satisfaction with distributed generation interconnections, and independent audits of failed distributed generation interconnection applications. Development of specific targets was deferred beyond the rate case, so that no Earnings Adjustment Mechanism will apply for the first rate year.

All of the proposed Earnings Adjustment Mechanisms will be reviewed each year for potential revisions. The incentives increase for each Earnings Adjustment Mechanism during the term of the MRP, with the maximum reward exceeding \$50 million in year three of the plan.

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<sup>134</sup> New York Public Service Commission (2017).

## Outcomes

### Utility Cost

Table 6 and Figure 8 compare the power distributor productivity trends of New York electric utilities to the averages for our full U.S. electric utility sample. From 1980–1993, before MRPs became commonplace, the MFP growth of New York power distributors averaged 0.98 percent annually. This was 51 basis points above the average for sampled power distributors nationally. Over the 1994–2014 period during which MRPs have been prevalent, the MFP trend of the New York utilities averaged 0.54 percent annually, whereas the average for our full national sample was a similar 0.45 percent. Capital productivity growth was more rapid in New York but O&M productivity growth was slower. Evidence that MRPs have improved cost performance is therefore not strong. This is not surprising since New York’s approach to MRP design is conservative, with short rate case cycles.

Table 6. How the Power Distributor MFP Growth of New York Utilities Compared to That of Other U.S. Electric Utilities: 1980–2014\*

	New York Average			U.S. Sample Average		
	MFP	O&M PFP	Capital PFP	MFP	O&M PFP	Capital PFP
1980	0.78%	-1.47%	1.42%	-0.49%	-4.19%	1.24%
1981	1.57%	1.73%	1.42%	0.17%	-2.42%	1.25%
1982	-0.28%	-4.42%	1.63%	0.87%	-1.20%	1.53%
1983	1.75%	1.82%	1.65%	0.51%	-0.38%	0.98%
1984	2.28%	1.81%	2.37%	1.27%	-0.22%	1.79%
1985	1.74%	-0.19%	2.39%	0.95%	-0.21%	1.37%
1986	1.89%	2.03%	1.82%	0.91%	0.88%	0.97%
1987	0.84%	-1.83%	1.78%	0.44%	-0.12%	0.68%
1988	1.94%	2.09%	1.87%	0.57%	1.55%	0.24%
1989	1.29%	1.73%	0.98%	0.26%	0.00%	0.23%
1990	0.01%	-1.19%	0.56%	0.18%	0.64%	-0.05%
1991	-1.65%	-4.97%	-0.12%	-0.03%	0.58%	-0.32%
1992	1.38%	4.27%	0.18%	0.48%	1.61%	0.10%
1993	0.16%	-0.35%	0.35%	0.45%	1.19%	0.12%
1994	1.67%	4.18%	0.61%	0.94%	2.44%	0.29%
1995	0.65%	0.12%	0.82%	0.94%	3.58%	-0.04%
1996	0.29%	-0.54%	0.59%	0.11%	0.67%	-0.13%
1997	0.16%	-1.63%	0.96%	1.53%	4.68%	0.39%
1998	-0.29%	-5.04%	1.70%	0.67%	0.73%	0.71%
1999	1.70%	1.78%	1.45%	1.08%	2.24%	0.52%
2000	0.60%	1.22%	0.18%	0.89%	0.86%	0.73%
2001	2.23%	2.96%	1.91%	1.20%	2.73%	0.61%
2002	-0.33%	-5.18%	1.18%	0.79%	2.73%	0.33%
2003	1.51%	1.37%	1.66%	-0.03%	-1.50%	0.43%
2004	0.90%	3.65%	-0.53%	0.41%	0.76%	0.22%
2005	-1.50%	-1.35%	-1.46%	-0.07%	-0.25%	0.09%
2006	-1.08%	-2.58%	-0.01%	-0.52%	-1.07%	-0.21%
2007	2.10%	3.91%	0.47%	-0.12%	0.00%	-0.02%
2008	-0.16%	-0.54%	0.58%	-0.99%	-2.06%	-0.09%
2009	2.26%	3.65%	0.32%	1.01%	2.73%	-0.46%
2010	-1.32%	-3.61%	0.90%	-0.27%	-0.47%	0.05%
2011	3.79%	7.39%	0.72%	0.50%	0.05%	0.50%
2012	1.19%	0.67%	0.53%	1.29%	2.90%	0.58%
2013	-2.93%	-6.18%	-0.14%	0.03%	0.40%	-0.05%
2014	-0.09%	-1.02%	0.51%	-0.03%	-1.41%	0.56%
<b>Average Annual Growth Rates</b>						
<b>1980-2014</b>	<b>0.72%</b>	<b>0.12%</b>	<b>0.89%</b>	<b>0.45%</b>	<b>0.53%</b>	<b>0.43%</b>
<b>1980-1993</b>	<b>0.98%</b>	<b>0.08%</b>	<b>1.31%</b>	<b>0.47%</b>	<b>-0.16%</b>	<b>0.72%</b>
<b>1994-2014</b>	<b>0.54%</b>	<b>0.15%</b>	<b>0.62%</b>	<b>0.45%</b>	<b>0.99%</b>	<b>0.24%</b>
<b>2008-2014</b>	<b>0.39%</b>	<b>0.05%</b>	<b>0.49%</b>	<b>0.22%</b>	<b>0.30%</b>	<b>0.15%</b>

\*Shading indicates years when MRPs for a majority of New York’s electric utilities were in effect.

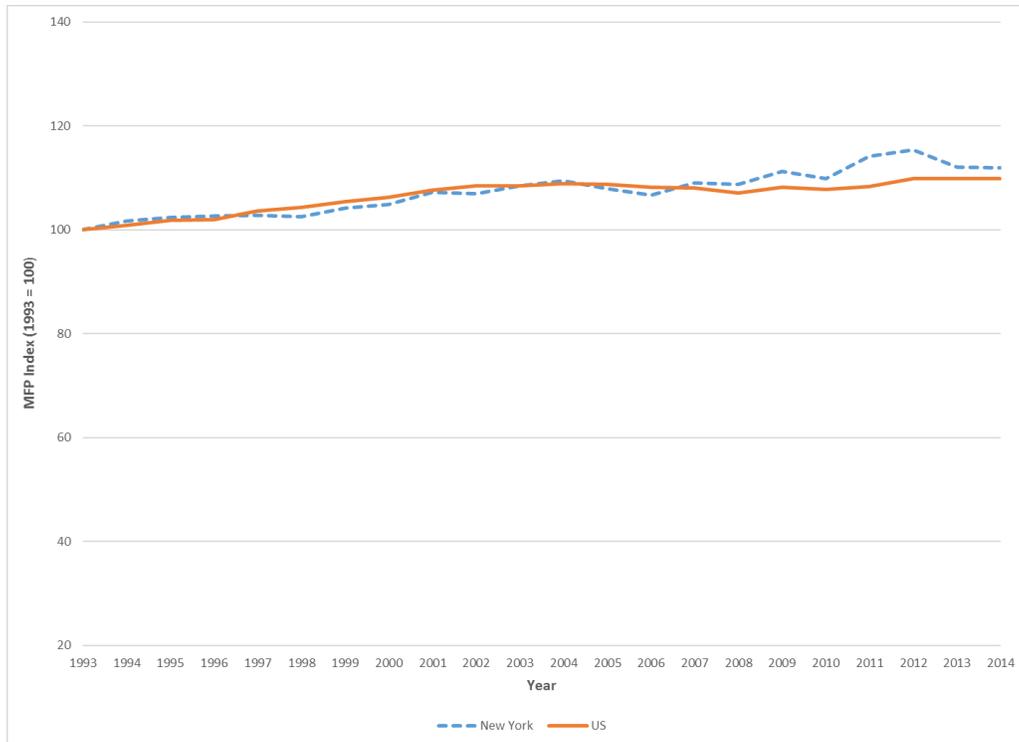


Figure 8. Comparison of Multifactor Productivity Trends of New York Distributors and the U.S. Sample During Multiyear Rate Plan Periods. The MFP trend of New York distributors has modestly exceeded industry norm under MRPs.

### Rate Designs

In recent years New York utilities have had some of the highest residential customer charges in the United States. AMI is not pervasive.<sup>135</sup> The Commission recently directed utilities to develop strategies to increase opt-in of mass market (i.e., residential and small commercial) customers to time-of-use rates.<sup>136</sup> Utilities are to develop promotional and customer engagement tools with reference to best practices in states where participation in opt-in time-varying pricing programs is higher.

Utilities also will offer Smart Home Rates as demonstration projects. These rates will combine granular time-varying rates with location and time-based compensation for DERs, in a way that is managed automatically to optimize value for both the customer and system. Smart Home rates are intended to allow a customer to be compensated for multiple services (e.g., load shifting, peak reduction, voltage regulation).

In the longer term, the Commission supports time-sensitive rates for both commodity and delivery services. It has directed its staff to propose a study of the potential bill impacts of a range of mass-market rate reforms, including time-of-use and demand charges. The Commission identifies Smart Home Rates as “the model for a rate design that should become the widely-adopted norm as markets mature.”<sup>137</sup>

<sup>135</sup> At least one utility, Consolidated Edison, is beginning a large-scale deployment of AMI.

<sup>136</sup> New York Public Service Commission (2016a).

<sup>137</sup> New York Public Service Commission (2016a), p. 135.

## Service Quality

New York's customer service and reliability PIMs generally have been successful. Over the past five years, New York utilities have generally had stable outage frequency and duration (with major storms excluded). In a 2016 staff report analyzing the customer service PIMs, staff concluded:

With one exception...the electric and gas utilities' performance on measures of customer service quality in 2015 was satisfactory. The [customer service PIMs] currently in place at the utilities in New York State establish strong standards for performance and put significant amounts of shareholder earnings at risk for nonperformance. Overall, these mechanisms have been effective in encouraging companies to make customer service a corporate priority and providing criteria for ensuring that the quality of customer service remains at satisfactory levels.<sup>138</sup>

In spite of these successes there have been some concerns about the utilities' reliability performance. For example, Consolidated Edison was the subject of a 2006–2007 investigation about reliability due in part to complaints by the legislature. Superstorm Sandy had impacts that were particularly severe, leading the Moreland Commission to conclude in its final report that the utilities had not done enough to effectively respond to severe storms.<sup>139</sup>

## **6.4 MidAmerican Energy**

MidAmerican Energy is a VIEU based in Des Moines that provides electric service in most of Iowa and portions of two adjacent states. The company operated under a sequence of MRPs without intervening rate cases for more than a decade through a series of settlements approved by the Iowa Utilities Board. The settlements had many common features, including rate freezes that extended to charges for energy procured.

### **Plan Designs**

MidAmerican's first MRP began with a 1997 general rate case settlement that featured a three-and-a-half-year rate case stayout.<sup>140</sup> Residential rates were reduced in two steps at the outset. Rates for commercial and industrial customers were not directly reduced. Instead, amounts allocated for these reductions were to be used to fund negotiated contracts with customers or unbundled pricing retail access pilots. The energy adjustment clause was eliminated, exposing the company to fluctuations in prices of energy commodities but permitting it to benefit if high prices in bulk power markets bolstered margins from sales in these markets. A capital cost tracker was included in the plan to address costs of plant additions at the Cooper Nuclear Station. An earnings sharing mechanism (ESM) refunded a share of any earnings surpluses to customers.<sup>141</sup> An off-ramp was included to allow rate cases in the event that earnings were excessively low or high. Iowa law required utilities to offer DSM programs. Costs of these programs were tracked, but no DSM PIMs were approved. Service quality monitoring was instituted in the early 2000s through a change to the state's administrative code.

This plan also allowed MidAmerican to utilize additional marketing flexibility through waivers of existing flexible pricing rules. The company could provide discounts based on the cost to serve individual customers without being required to offer the same discount to all competing customers. The pricing floor

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<sup>138</sup> New York State Department of Public Service (2016), pp. 13–14.

<sup>139</sup> Moreland Commission (2013b).

<sup>140</sup> Iowa Utilities Board (1997).

<sup>141</sup> The term revenue sharing is often used instead of earnings sharing in Iowa.

was set at the short-run marginal cost of serving that customer. Contracts in excess of five years were permitted.

Subsequently, approved settlements made small changes to the framework but continued the rate case stayout.<sup>142</sup> The customers' share from the earnings sharing mechanism was redirected into a source of funding for new plants. The capital tracker for Cooper plant additions expired.

Through separate legislation, Iowa electric utilities, including MidAmerican, gained unusual certainty with regard to future ratemaking treatment of generating plant additions. Instead of cost trackers, this certainty has been in the form of ratemaking principles to be applied to new facilities when they are added to the utility's rate base. These principles may include a prudence decision up to a cost cap, the allocation of plant costs to Iowa ratepayers, allowed ROE for the life of the plant, and plant service life.

Throughout the 1997–2013 period, MidAmerican's tariffed base rates did not increase. For residential customers, they decreased by \$15 million. The company was nevertheless able to handle effects of several severe weather events and environmental compliance while building a coal-fired generating unit, a gas-fired combined cycle plant, and more than 1,800 MW of wind generation. These assets were added to the utility's rate base years after they entered service, which allowed them to be added at less than their gross plant value due to depreciation. The customer share of earnings yielded by the ESM-funded accelerated depreciation of the coal-fired Walter Scott, Jr. Energy Center Unit 4 exceeded \$300 million.<sup>143</sup>

Surplus earnings were aided by bulk power market sales margins. In 2003 testimony, a MidAmerican witness stated:

In Iowa rate cases prior to the adoption of revenue sharing in 1997, the appropriate treatment of wholesale margins was a contested issue. Since the adoption of revenue sharing, these margins have been shared with retail customers. In fact, since revenues from Iowa retail operations have consistently produced returns below 12% [the threshold for revenue sharing], the revenue sharing mechanism has essentially been a mechanism for sharing these wholesale margins with retail customers.<sup>144</sup>

Declines in bulk power market prices after 2007 helped trigger an off-ramp that resulted in a cost tracker being added to the plan. Other stresses identified by the company in requesting a tracker included environmental, coal and coal transportation costs. The company filed a full rate case in 2013, resulting in a new MRP that phased in a \$135 million base rate increase over three years. This MRP also reinstated an energy adjustment clause. Variances from test year revenue levels resulting from sales for resale continue to be shared solely through the ESM.

## **Outcomes**

### Cost Performance

The infrequency of rate cases and the unlikely ability of poorly managed distributor costs to trigger rate cases gave MidAmerican incentive to contain distributor costs that approached those in competitive markets. Table 7 and Figure 9 compare the power distributor productivity growth of MidAmerican to averages for our full U.S. electric utility sample. From 1980 to 1995, before the start of MRPs,

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<sup>142</sup> Iowa Utilities Board (2001; 2003).

<sup>143</sup> Fehrman (2012), p. 3.

<sup>144</sup> Gale (2003), pp. 24–25.

MidAmerican's power distributor MFP growth fell by 1.37 percent annually. This was 190 basis points below the MFP growth trend of sampled power distributors nationally. Over the 17-year period over which MidAmerican Energy operated without a rate case (1997–2013), the MFP of its power distributor services averaged 1.16 percent annual growth. That compares to the 0.42 percent trend for our full sample of U.S. power distributors during the same period. The MFP growth differential therefore averaged 74 basis points in the years of the MRPs. The capital productivity growth of MidAmerican was especially rapid.

### Service Quality

In 2015, staff of the Iowa Utilities Board performed a review of reliability performance of the state's two large investor-owned electric utilities. It found that between 2002 and 2014, reliability metrics for both companies were stable. This report also showed that MidAmerican's budgeted transmission and distribution expenses had risen between 2002 and 2005, plateaued until 2008, and fell off for 2009, 2010 and 2011, coinciding with dropping bulk power prices.

### DSM Programs

In the eight years for which data were available since 2006, Iowa has averaged a 10.25 average ranking (out of 50) in ACEEE's scorecard on the percent of electric revenues devoted to energy efficiency spending.

Table 7. How the Power Distributor MFP Growth of MidAmerican Energy Compared to That of Other U.S. Electric Utilities: 1980–2014\*

Year	MidAmerican Energy			U.S. Sample Average		
	MFP	O&M PFP	Capital PFP	MFP	O&M PFP	Capital PFP
1980	-1.93%	-4.26%	-0.78%	-0.49%	-4.19%	1.24%
1981	-2.73%	-5.09%	-1.58%	0.17%	-2.42%	1.25%
1982	-0.58%	3.85%	-2.54%	0.87%	-1.20%	1.53%
1983	1.20%	0.45%	1.46%	0.51%	-0.38%	0.98%
1984	1.89%	1.51%	2.00%	1.27%	-0.22%	1.79%
1985	-0.91%	2.81%	-1.80%	0.95%	-0.21%	1.37%
1986	-0.31%	-2.19%	0.11%	0.91%	0.88%	0.97%
1987	-3.56%	-4.46%	-3.35%	0.44%	-0.12%	0.68%
1988	-1.58%	-1.40%	-1.63%	0.57%	1.55%	0.24%
1989	-2.83%	-5.80%	-1.94%	0.26%	0.00%	0.23%
1990	-1.73%	-1.63%	-1.76%	0.18%	0.64%	-0.05%
1991	-1.82%	0.89%	-2.71%	-0.03%	0.58%	-0.32%
1992	-2.57%	1.99%	-3.92%	0.48%	1.61%	0.10%
1993	-0.02%	2.36%	-0.70%	0.45%	1.19%	0.12%
1994	-0.03%	1.26%	-0.40%	0.94%	2.44%	0.29%
1995	-4.42%	2.64%	-6.55%	0.94%	3.58%	-0.04%
1996	-0.19%	2.55%	-0.99%	0.11%	0.67%	-0.13%
1997	-0.06%	-3.21%	0.84%	1.53%	4.68%	0.39%
1998	-0.44%	-6.77%	1.45%	0.67%	0.73%	0.71%
1999	1.20%	3.47%	0.54%	1.08%	2.24%	0.52%
2000	1.97%	-1.61%	3.04%	0.89%	0.86%	0.73%
2001	-0.02%	-3.98%	1.30%	1.20%	2.73%	0.61%
2002	1.15%	3.17%	0.43%	0.79%	2.73%	0.33%
2003	0.48%	-1.19%	1.10%	-0.03%	-1.50%	0.43%
2004	1.15%	-1.15%	2.13%	0.41%	0.76%	0.22%
2005	0.58%	-0.01%	0.88%	-0.07%	-0.25%	0.09%
2006	1.27%	2.15%	0.72%	-0.52%	-1.07%	-0.21%
2007	-0.42%	-3.61%	2.59%	-0.12%	0.00%	-0.02%
2008	0.85%	1.50%	-0.27%	-0.99%	-2.06%	-0.09%
2009	6.10%	9.84%	0.58%	1.01%	2.73%	-0.46%
2010	2.00%	1.35%	2.48%	-0.27%	-0.47%	0.05%
2011	1.99%	3.30%	1.21%	0.50%	0.05%	0.50%
2012	2.54%	3.77%	1.87%	1.29%	2.90%	0.58%
2013	0.75%	-2.73%	2.42%	0.03%	0.40%	-0.05%
2014	2.32%	1.20%	2.85%	-0.03%	-1.41%	0.56%
<b>Average Annual Growth Rates</b>						
<b>1980-2014</b>	<b>0.04%</b>	<b>0.03%</b>	<b>-0.03%</b>	<b>0.45%</b>	<b>0.53%</b>	<b>0.43%</b>
<b>1980-1995</b>	<b>-1.37%</b>	<b>-0.44%</b>	<b>-1.63%</b>	<b>0.53%</b>	<b>0.23%</b>	<b>0.65%</b>
<b>1997-2013</b>	<b>1.16%</b>	<b>0.38%</b>	<b>1.24%</b>	<b>0.42%</b>	<b>0.90%</b>	<b>0.23%</b>
<b>2008-2014</b>	<b>2.37%</b>	<b>2.61%</b>	<b>1.59%</b>	<b>0.22%</b>	<b>0.30%</b>	<b>0.15%</b>

\*Shading indicates years when MRPs were in effect.

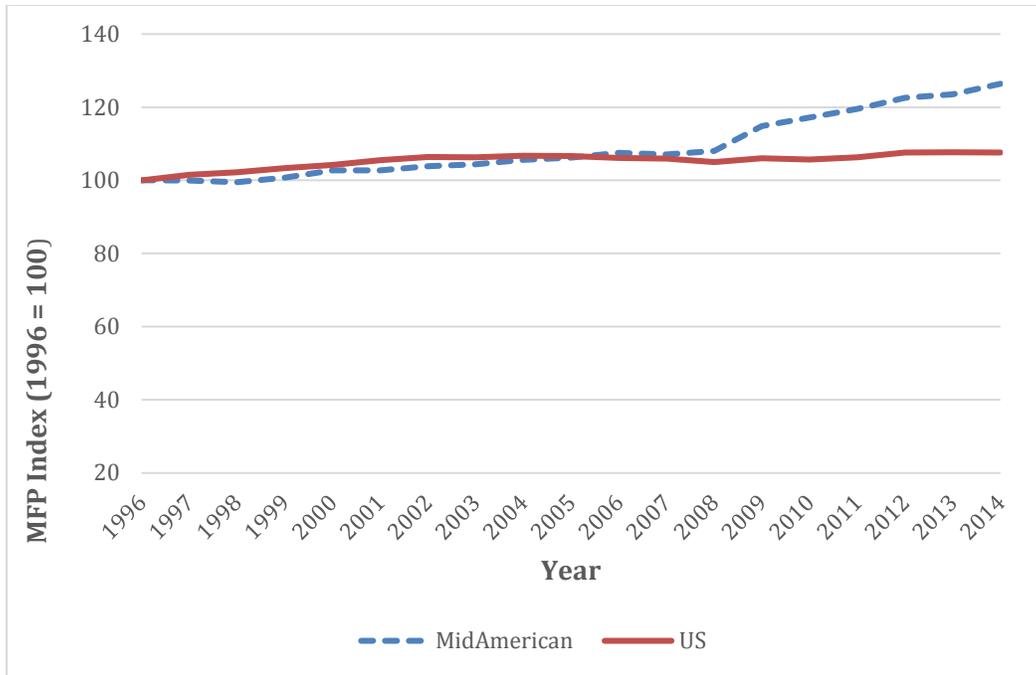


Figure 9. Comparison of Multifactor Productivity Trends of MidAmerican Energy and the U.S. Sample During Multiyear Rate Plan Periods. The MFP trend of MidAmerican exceeded the industry norm under its MRPs.

## 6.5 Other U.S. Electric Utilities With Extended Rate Stayouts

We noted above that many U.S. electric utilities have avoided general rate cases for lengthy periods. These utilities have been able to operate without rate cases for various reasons. In some cases, utility costs were likely to grow slowly due, for example, to recent completion of one or more large generating stations. Some utilities were able to slow cost growth with mergers or acquisitions. Others may have started their stayout periods with favorable initial rates due to high allowed rates of return. Some operated under an MRP for part of the period or a rate freeze during transition to retail power market competition and were not required to file a rate case upon their conclusion.

Table 8 identifies U.S. electric utilities in our sample that have experienced rate stayouts exceeding 12 years since 1980. About half of these utilities were vertically integrated throughout the sample period. Others started as VIEUs but restructured during the period.

We calculated productivity trends of these utilities as power distributors during the years of their rate stayouts and compared these trends to average annual productivity growth rates of our full U.S. sample during the same years. Table 8 presents results. We found that multifactor productivity growth of utilities during extended rate stayouts exceeded that of the full U.S. sample during the same period by 29 basis points on average. Operation and maintenance and capital productivity growth were both superior. During other years of the full 1980–2014 sample period, MFP growth of these utilities exceeded MFP growth of the full U.S. sample by less than a basis point on average. This evidence suggests that extended rate stayouts lowered distributor costs.

Table 8. Difference Between Company and U.S. Power Distributor MFP Trends During Extended Stayout Periods

Company	Stayout Period			Stayout Period MFP Trend			Stayout Period O&M PFP Trend			Stayout Period Capital PFP Trend		
	Start	End	Duration*	Company	US Sample	Difference	Company	US Sample	Difference	Company	US Sample	Difference
Baltimore Gas and Electric Company	1993	2010	18	0.30%	0.45%	-0.15%	1.42%	1.11%	0.31%	-0.02%	0.20%	-0.21%
Dayton Power and Light Company	1992	2014	23	0.49%	0.45%	0.04%	1.76%	1.02%	0.74%	0.07%	0.23%	-0.15%
Duke Energy Carolinas, LLC	1991	2007	17	0.65%	0.51%	0.14%	2.91%	1.29%	1.62%	-0.10%	0.22%	-0.32%
Duke Energy Progress, LLC	1988	2012	25	0.64%	0.45%	0.19%	2.42%	1.09%	1.32%	-0.10%	0.19%	-0.29%
Duquesne Light Company	1988	2006	19	1.04%	0.52%	0.53%	1.61%	1.27%	0.34%	0.96%	0.22%	0.74%
El Paso Electric Company	1995	2009	15	0.76%	0.46%	0.30%	2.58%	1.12%	1.46%	-0.82%	0.20%	-1.02%
Fitchburg Gas and Electric Light Company	1985	1999	15	-0.35%	0.63%	-0.98%	0.10%	1.36%	-1.27%	-0.30%	0.34%	-0.64%
Florida Power & Light Company	1984	2001	18	0.99%	0.71%	0.27%	2.78%	1.32%	1.46%	0.24%	0.46%	-0.22%
Indiana Michigan Power Company	1993	2007	15	0.41%	0.55%	-0.14%	1.41%	1.32%	0.09%	-0.09%	0.27%	-0.36%
Indianapolis Power & Light Company	1995	2014	20	0.97%	0.42%	0.55%	1.38%	0.91%	0.47%	0.85%	0.24%	0.62%
Kentucky Power Company	1991	2005	15	0.41%	0.62%	-0.22%	1.28%	1.54%	-0.25%	-0.06%	0.27%	-0.33%
Kentucky Utilities Company	1983	1999	17	0.61%	0.66%	-0.05%	0.37%	1.17%	-0.80%	0.62%	0.46%	0.16%
Kingsport Power Company	1992	2014	23	0.26%	0.45%	-0.19%	0.70%	1.02%	-0.32%	0.19%	0.23%	-0.04%
Massachusetts Electric Company	1995	2009	15	1.27%	0.46%	0.81%	1.93%	1.12%	0.81%	0.75%	0.20%	0.54%
Metropolitan Edison Company	1993	2006	14	1.61%	0.60%	1.01%	1.88%	1.41%	0.47%	1.51%	0.29%	1.22%
ALLETE (Minnesota Power)	1994	2008	15	1.50%	0.46%	1.04%	1.23%	1.10%	0.13%	1.61%	0.25%	1.35%
MDU Resources Group, Inc.	1987	2001	15	1.13%	0.65%	0.49%	1.07%	1.56%	-0.49%	1.15%	0.27%	0.88%
Niagara Mohawk Power Corporation	1995	2009	15	1.64%	0.46%	1.18%	3.03%	1.12%	1.91%	0.35%	0.20%	0.14%
Nstar Electric	1992	2005	14	0.15%	0.67%	-0.52%	0.92%	1.61%	-0.69%	-0.26%	0.31%	-0.57%
Ohio Edison Company	1990	2007	18	1.23%	0.49%	0.74%	1.24%	1.26%	-0.02%	1.19%	0.21%	0.99%
Ohio Power Company	1995	2011	17	0.46%	0.42%	0.04%	1.43%	0.96%	0.47%	0.13%	0.21%	-0.09%
Otter Tail Corporation	1993	2007	15	0.02%	0.55%	-0.53%	-0.36%	1.32%	-1.68%	0.40%	0.27%	0.14%
PECO Energy Company	1990	2010	21	0.91%	0.41%	0.50%	1.19%	1.09%	0.10%	0.74%	0.16%	0.58%
Pennsylvania Electric Company	1984	2006	23	0.82%	0.58%	0.23%	1.32%	1.07%	0.25%	0.64%	0.39%	0.24%
Pennsylvania Power Company	1988	2014	27	0.62%	0.42%	0.20%	1.31%	0.97%	0.33%	0.35%	0.20%	0.15%
Potomac Edison	1994	2010	17	1.71%	0.45%	1.27%	2.24%	1.11%	1.14%	1.48%	0.20%	1.28%
Tampa Electric Company	1993	2008	16	0.95%	0.46%	0.50%	1.67%	1.11%	0.56%	0.75%	0.25%	0.51%
Duke Energy Kentucky, Inc.	1992	2006	15	0.84%	0.59%	0.25%	2.99%	1.43%	1.56%	0.01%	0.28%	-0.27%
West Penn Power Company	1995	2014	20	1.29%	0.42%	0.86%	2.49%	0.91%	1.58%	0.84%	0.24%	0.60%
<b>Averages</b>												
<b>Stayout Period Average</b>				<b>0.80%</b>	<b>0.52%</b>	<b>0.29%</b>	<b>1.60%</b>	<b>1.20%</b>	<b>0.40%</b>	<b>0.45%</b>	<b>0.26%</b>	<b>0.19%</b>

\* Period is inclusive of both endpoints. End dates in January and start dates in December were assigned values one year earlier and later respectively.

## 6.6 Statistical Tests of Productivity Impacts

The productivity growth rates of individual utilities are quite volatile from year to year. Differences between the annual productivity growth rates of utilities operating under MRPs and annual full sample growth rates may therefore not reflect the impact of the plans. A statistical technique called *hypothesis testing* can be used to infer whether a utility's productivity growth is impacted by an MRP or, if instead, the observed difference between the productivity trends of individual utilities operating under MRPs and the full sample is a coincidence caused by volatility. We conducted hypothesis tests, called *T-tests*, to evaluate whether the average productivity trend of a utility under an MRP or stay out was significantly greater than the productivity trend of the full sample during the same years.

The first T-test was applied to observations of the differences in the MFP trends between utilities operating under a stay out and the full sample during the stay out period. The null hypothesis was that the difference in productivity trends is equal to zero. The alternative hypothesis is that the difference is greater than zero or, on average, utilities operating under a stayout have higher productivity trends than the full U.S. sample during the stayout period. The sample (N=29) consists of the number of "stayout utilities" in Table 8. The mean difference in the productivity trend is .29 percent, and the standard deviation is .53 percent. The t-statistic for this sample is 2.914, which is greater than the 5 percent one-sided critical value of 1.701. Thus, we can reject the null hypothesis in favor of the alternative hypothesis that companies operating under a stayout have a higher productivity trend during the stayout period than the full sample.

A second T-test was applied to observations of the differences between the productivity trends of utilities operating under formal MRPs as well as stayouts and the trend for the full sample in the same years. The null and alternative hypotheses were the same as in the first test. The sample (N=40) consists of the utilities in the first test plus the California and New York utilities that have operated under an MRP, MidAmerican Energy, and Central Maine Power. The mean difference in the productivity trend is .22 percent and the standard deviation is .61 percent. The t-statistic for this sample is 2.224, which is greater than the 5 percent one-sided critical value of 1.683. Thus, we can again reject the null hypothesis in favor of the alternative hypothesis. The average difference in the productivity trend of .22 percent is half of the productivity trend of the full sample over the 1980–2014 time period, suggesting that MRPs have an economically significant effect on utility operations.

## 6.7 PBR for Ontario Electric Utilities

The Ontario Energy Board has emerged in recent years as a top practitioner of PBR.<sup>145</sup> The event that drove innovation was the transfer of responsibility to the Board in the late 1990s to regulate more than 200 provincial power distributors. In addition to power distributors, the Board regulates large provincially owned transmission and generation companies and two large gas utilities.

Power distributors regulated by the Board are remarkably varied. Hydro One, which provides most transmission services in Ontario, also provides distribution services to many towns and unincorporated areas. In addition, large distributors serve Ottawa and Toronto. Most other distributors serve small towns, suburbs or rural areas of the province, and some have just a few hundred or thousand customers. Many of these distributors are municipally owned while the largest, Hydro One Networks, is provincially owned.

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<sup>145</sup> PEG Research has advised the Board on PBR for many years, performing several productivity and benchmarking studies.

Despite long experience with cost of service regulation (for gas utilities), the Board opted to use MRPs in power distributor regulation.<sup>146</sup> The Board stated in a draft policy decision three reasons why use of PBR would be helpful in electric utility regulation:

1. With passage of [a bill restructuring the electricity industry], the Board will have the task of regulating a large number of diverse utilities in the province. Since PBR has the potential to provide an expedient mechanism for adjusting rates over time as circumstances change, it is expected to result in fewer rate reviews before the Board and, hence, a lesser regulatory burden.
2. PBR would allow the Board to establish minimum service quality and reliability standards and maintain compliance with these standards.
3. PBR can provide greater incentives for cost reduction and productivity gains compared to those available under traditional cost of service regulation while protecting the interests of consumers.<sup>147</sup>

The Board has since approved a sequence of multiyear rate plans. PBR is called *incentive regulation* (IR) and rate plans are called *incentive regulation mechanisms* (IRMs). The first plan (IRM1) began in 2001. The Board extended this plan to March 2005 to allow utilities additional time to “explore the incentives for improvements and savings provided by the current PBR regime.” However, IRM1 was suspended well before its termination date as a result of price spikes in Ontario’s new bulk power market. Bill 210, enacted in December 2002, froze existing rates until May 2006 unless approval was otherwise granted by the Minister of Energy.<sup>148</sup>

Rates were adjusted in May 2006 based on rate cases filed in 2005. Between 1999 and May 2006, distributors therefore operated without rate cases and received only one or two modest base rate increases. During this period, utilities had strong incentives to contain costs, and some utilities may have deferred some expenditures.

IRM2 used the May 2006 rates as a starting point. Roughly a third of all distributors were then scheduled for rate cases in each year of the 2008–2010 period. After these rate cases (called *rebasings*), distributors switched over to IRM3. Terms of these plans were initially fixed at three years plus a rebasing year. This was later extended, resulting in plans for some companies lasting five years. Extension was partly based on the Board’s in-depth reexamination of its ratemaking practices, called “A Renewed Regulatory Framework for Electricity,” which began in 2010. A fourth generation IRM and some optional alternative MRP approaches resulted from these deliberations.

## Plan Design

### Attrition Relief Mechanism

All four IRMs featured indexed price caps. Macroeconomic inflation measures have been used in some plans and industry-specific measures in others. X factors have commonly had two components: a productivity factor reflecting the MFP trend of a peer group and a stretch factor. The peer groups in first and fourth generation IRMs were broad samples of Ontario power distributors, whereas the peer group in the third generation IRM was a broad sample of U.S. distributors.

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<sup>146</sup> The Board has subsequently embraced MRPs for regulation of provincial gas distributors.

<sup>147</sup> Ontario Energy Board (1998), p. 3.

<sup>148</sup> Legislative Assembly of Ontario (2002).

Stretch factors in third and fourth generation IRMs have varied between utilities based on results of statistical benchmarking studies commissioned by the Board. The benchmarking study in the fourth generation PBR uses an econometric model of total cost and is updated annually. Details of this benchmarking methodology are discussed in Appendix B.3.

### Capital Cost Trackers

Capital cost treatments have evolved over Ontario's four IRMs. Supplemental revenue for capex was not available in the first IRM. A separate Ontario policy led to the use of trackers to finance costs of AMI deployment. In the proceeding to approve IRM2, distributors requested supplemental revenue for capex. This request was rejected due to a lack of perceived need, but distributors claiming a need for high capex were permitted to file a rate case early. The Board expressed concerns about special treatments of capital in its decision:

In a capital intensive business such as electricity distribution, containing capital expenditures is a key to good cost management. The addition of a capital investment factor would mean that incentive under the price cap mechanism would be significantly reduced because the factor would address incremental capital spending separately and outside of the price cap. Further, it would unduly complicate the application, reporting, and monitoring requirements for 2nd Generation IRM because it would require special consideration to be implemented effectively.<sup>149</sup>

During the proceeding that led to IRM3, a number of utilities again argued that an indexed price cap would not fund their special capex needs. The Board responded by adding to the plans an Incremental Capital Module that could provide distributors with supplemental capex funding. The Board described this as “reserved for...circumstances that are not captured as a Z-factor and where the distributor has no other options for meeting its capital requirements within the context of its financial capabilities underpinned by existing rates.”<sup>150</sup> The eligibility criteria for supplemental capex funding subsequently evolved but have consistently required that the capex funded by an Incremental Capital Module not be recoverable in rates, be prudent and the distributors' most cost-effective option, and exceed a materiality threshold. An eligibility formula ensures that forecasted total capex exceeds funding expected from depreciation and higher revenue from price cap index escalation and growth in billing determinants by a certain percentage (currently 10 percent).

Distributors are required to report their actual capex annually. Variances between forecasted and actual capex are reviewed by the Board to determine whether they are material enough to warrant a true-up in a subsequent rate case. Cost overruns are reviewed for prudence, while material underspends result in refunds to ratepayers.

Around 15 of approximately 70 Ontario power distributors have received approval for revenue from Incremental Capital Modules. These modules are typically used to address costs of large capital projects. About two-thirds of applications filed under the program included transformer-related assets as the focal point of the funding request.<sup>151</sup>

In 2014 the Board made “Advanced” Capital Modules rather than Incremental Capital Modules the major source of supplemental capital revenue in IRMs. Utilities must apply in advance, at the time of their rate cases, for supplemental funding of projects that are detailed in five-year Distribution System Plans. Reviews of Advanced Capital Module requests thus coincide with a review of projects proposed in Distribution System Plans, allowing for greater regulatory efficiency. An Incremental Capital Module

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<sup>149</sup> Ontario Energy Board (2006), p. 37.

<sup>150</sup> Ontario Energy Board (2008), p. 31.

<sup>151</sup> Ontario Energy Board (2014), p. 7.

remains available for projects not included in a Distribution System Plan, as well as for projects that are in the plan whose eligibility for supplemental funding could not be determined in the rate case, or projects that expand after the plan is presented.

### Other Plan Provisions

Terms of incentive regulation mechanisms in Ontario have varied over the years but have typically been four or five years. Reliability PIMs have never been used in Ontario power distributor regulation. However, reliability metrics and targets have been used routinely since IRM1.

Demand-side management PIMs and LRAMs have been offered as an incentive for distributors' DSM programs. A third-party administrator also offers DSM programs.

An earnings sharing mechanism to address overearnings was established for IRM1 but was abandoned in later plans. Some Custom IR plans include such a mechanism where distributor underspending is a concern.

### New Plan Options

The Renewed Regulatory Framework deliberations resulted in two additional options to address the diversity of Ontario distributors.

- Custom IR is designed for distributors expecting several years of high capex. ARMs are based on forecasts of O&M and capital cost. Forecasts should be informed by Board-sponsored productivity and benchmarking analyses. Distributors operating with a Custom IR plan do not have the option to request supplemental capital funding. Custom IR plans have recently been granted to several of the larger distributors.
- The Annual IR index is designed for distributors that do not expect to undertake large capital projects. This option features a price cap index with an inflation — X formula, but the X factor is fixed to reflect the high end of the stretch factor range in IRM4 for all plan years. Utilities that choose the Annual IR index cannot obtain supplemental capital funding. The term of a plan with an Annual IR index is not fixed. The availability to distributors of IRM4 and the Annual IR index is a good example of the use of menus in MRP design.

### Scorecards

Part of the implementation of the Renewed Regulatory Framework has been the development of a performance scorecard for Ontario distributors. The scorecard includes data on a distributor's cost, earnings, customer service quality, reliability, DSM and safety performance.

Figure 10 provides an example of a scorecard which was posted on the website of the Board.<sup>152</sup> Cost performance is addressed by two unit cost metrics and the outcome of the econometric benchmarking study that the Board updates annually. Financial metrics include a comparison of the company's ROE to its regulated targets. There are also metrics for less traditional areas, such as peak load management and the quality of service to renewable generation customers.

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<sup>152</sup> Scorecard - Hydro Ottawa Limited (2015), <http://www.ontarioenergyboard.ca/documents/scorecard/2014/Scorecard%20-%20Hydro%20Ottawa%20Limited.pdf>.

Results are presented in a manner that informs the reader of the utility's performance. For example, a company's billing accuracy is presented along with the target. The trend in performance is indicated for several metrics.

## **Outcomes**

### Cost Performance

Table 9 and Figure 11 present productivity trends of Ontario power distributors over the 2003–2011 period. This sample period excludes early years of operation under MRPs in Ontario, including the years of the rate freeze. Some distributors in the sample period we consider may have been catching up on their capex after years of deferrals.

Our results differ from those relied upon by the Board to set X factors in IRM4 because we have changed the output index to rely solely on customers, in order to make results more comparable to those from our U.S. productivity research for Berkeley Lab.<sup>153</sup> We have removed

2012 from our calculations due to concerns about cost data for that year.<sup>154</sup> Note also that the sample excludes Ontario's two largest distributors, Hydro One and Toronto Hydro Electric.

The table shows that Ontario distributors' multifactor productivity grew on average by 0.45 percent annually from 2003 to 2011. This exceeded the U.S. trend of -0.01 percent for these years by 4 basis points. O&M productivity averaged 0.76 percent annually while capital productivity growth averaged 0.26 percent annually. The year-by-year results show that O&M, capital and multifactor productivity grew most rapidly during the 2003–2005 period, the last years of the rate freeze. MFP growth then slowed and was negative in two years.

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<sup>153</sup> The original results can be found in Kaufmann, Hovde, Kalfayan, and Rebane (2013). Our results were updated using the working papers:  
<http://www.ontarioenergyboard.ca/oeb/Industry/Regulatory%20Proceedings/Policy%20Initiatives%20and%20Consultations/Renewed%20Regulatory%20Framework/Measuring%20Performance%20of%20Electricity%20Distributors>.

<sup>154</sup> While data for 2012 are available, use of these data is problematic for several reasons. For example, Ontario distributors were in the process of changing accounting systems from Canadian Generally Accepted Accounting Principles to the International Financial Reporting Standards, likely making data less comparable.

Scorecard - Hydro Ottawa Limited

9/28/2015

Performance Outcomes	Performance Categories	Measures	2010	2011	2012	2013	2014	Trend	Target		
									Industry	Distributor	
Customer Focus Services are provided in a manner that responds to identified customer preferences.	Service Quality	New Residential/Small Business Services Connected On Time	100.00%	100.00%	100.00%	100.00%	100.00%	↔	90.00%		
		Scheduled Appointments Met On Time	100.00%	97.30%	97.40%	97.40%	98.30%	⬇	90.00%		
		Telephone Calls Answered On Time	82.10%	82.90%	82.50%	82.20%	80.30%	⬇	65.00%		
	Customer Satisfaction	First Contact Resolution				85.2%	84.1%	↔	98.00%		
		Billing Accuracy				99.6%	99.61%	↔			
		Customer Satisfaction Survey Results				90%	83%				
Operational Effectiveness Continuous improvement in productivity and cost performance is achieved; and distributors deliver on system reliability and quality objectives.	Safety	Level of Public awareness [measure to be determined]									
		Level of Compliance with Ontario Regulation 22/04	NI	NI	C	C	C	⬆		C	
		Serious Electrical Incident Index	Number of General Public Incidents	1	0	1	0	1	↔		0
	Rate per 10, 100, 1000 km of line		0.188	0.000	0.178	0.000	0.182	↔		0.078	
	System Reliability	Average Number of Hours that Power to a Customer is Interrupted	1.05	2.44	1.31	1.64	1.59	⬆		at least within 1.05 - 2.44	
		Average Number of Times that Power to a Customer is Interrupted	0.77	1.40	1.13	1.36	0.86	⬆		at least within 0.77 - 1.40	
	Asset Management	Distribution System Plan Implementation Progress				105%	94%				
	Cost Control	Efficiency Assessment				3	3	3			
		Total Cost per Customer <sup>1</sup>	\$536	\$529	\$560	\$579	\$623				
		Total Cost per Km of Line <sup>1</sup>	\$29,776	\$28,793	\$31,107	\$33,222	\$36,169				
Public Policy Responsiveness Distributors deliver on obligations mandated by government (e.g., in legislation and in regulatory requirements imposed further to Ministerial directives to the Board).	Conservation & Demand Management	Net Annual Peak Demand Savings (Percent of target achieved) <sup>2</sup>		14.13%	28.85%	45.57%	70.53%	⬆		85.28MW	
		Net Cumulative Energy Savings (Percent of target achieved)		37.74%	65.64%	88.69%	110.71%	⬆		374.73GWh	
	Connection of Renewable Generation	Renewable Generation Connection Impact Assessments Completed On Time	100.00%	100.00%	100.00%	100.00%	100.00%				
		New Micro-embedded Generation Facilities Connected On Time				100.00%	100.00%			90.00%	
Financial Performance Financial viability is maintained; and savings from operational effectiveness are sustainable.	Financial Ratios	Liquidity: Current Ratio (Current Assets/Current Liabilities)	1.45	1.43	1.18	1.07	0.86				
		Leverage: Total Debt (includes short-term and long-term debt) to Equity Ratio	1.22	1.32	1.37	1.64	1.65				
		Profitability: Regulatory Return on Equity	Deemed (included in rates)		8.57%	9.42%	9.42%	9.42%			
			Achieved		7.86%	9.41%	7.80%	8.06%			

Notes:

1. These figures were generated by the Board based on the total cost benchmarking analysis conducted by Pacific Economics Group Research, LLC and based on the distributor's annual reported information.  
 2. The Conservation & Demand Management net annual peak demand savings include any persisting peak demand savings from the previous years.

Legend: ⬆ up ⬇ down ↔ flat  
 ● target met ● target not met

Figure 10. Sample Ontario Performance Metrics Scorecard.

Table 9. Productivity Trends of Ontario Power Distributors: 2003–2011

Year	Output		Inputs						Productivities					
	Total Customers <sup>1</sup>		Capital <sup>1</sup>		O&M <sup>1</sup>		Multifactor <sup>2</sup>		Capital		O&M		Multifactor	
	Level	Growth	Level	Growth	Level	Growth	Level	Growth	Level	Growth	Level	Growth	Level	Growth
	[A]		[B]		[C]		[D]		[E = A-B]		[F = A-C]		[G = A-D]	
2002	2,528,664		100		100		100.00		100.00		100.00		100.00	
2003	2,590,817	2.43%	101	1.01%	102	1.77%	101.30	1.29%	101.43	1.42%	100.66	0.66%	101.14	1.13%
2004	2,647,118	2.15%	103	1.66%	100	-1.51%	101.79	0.48%	101.92	0.49%	104.41	3.66%	102.84	1.67%
2005	2,703,821	2.12%	104	1.65%	99	-1.14%	102.42	0.61%	102.40	0.47%	107.87	3.26%	104.40	1.51%
2006	2,748,114	1.62%	105	0.80%	101	1.50%	103.51	1.06%	103.25	0.82%	108.01	0.12%	104.99	0.56%
2007	2,781,589	1.21%	108	2.44%	105	3.82%	106.62	2.96%	101.99	-1.23%	105.22	-2.61%	103.17	-1.75%
2008	2,823,654	1.50%	109	1.16%	106	1.67%	108.08	1.36%	102.34	0.34%	105.04	-0.17%	103.28	0.15%
2009	2,849,054	0.90%	109	0.19%	107	0.44%	108.39	0.29%	103.07	0.70%	105.52	0.45%	103.95	0.61%
2010	2,885,251	1.26%	111	1.80%	104	-2.39%	108.61	0.20%	102.52	-0.54%	109.45	3.65%	105.08	1.06%
2011	2,919,186	1.17%	113	1.30%	108	3.28%	110.87	2.06%	102.38	-0.13%	107.16	-2.11%	104.12	-0.89%
<b>Average Annual Growth Rates:</b>														
<b>2003-2011</b>		<b>1.60%</b>		<b>1.33%</b>		<b>0.83%</b>		<b>1.15%</b>		<b>0.26%</b>		<b>0.76%</b>		<b>0.45%</b>

Notes:

<sup>1</sup> Data are from PEG Working Papers: Part II - TFP and BM database calculation, filed with PEG's report "Empirical Research in Support of Incentive Rate-Setting: Final Report to the Ontario Energy Board" on November 21, 2013 (and updated on January 24, 2014).

<sup>2</sup> This is a Törnqvist index using the total cost shares of capital and OM&A as weights.

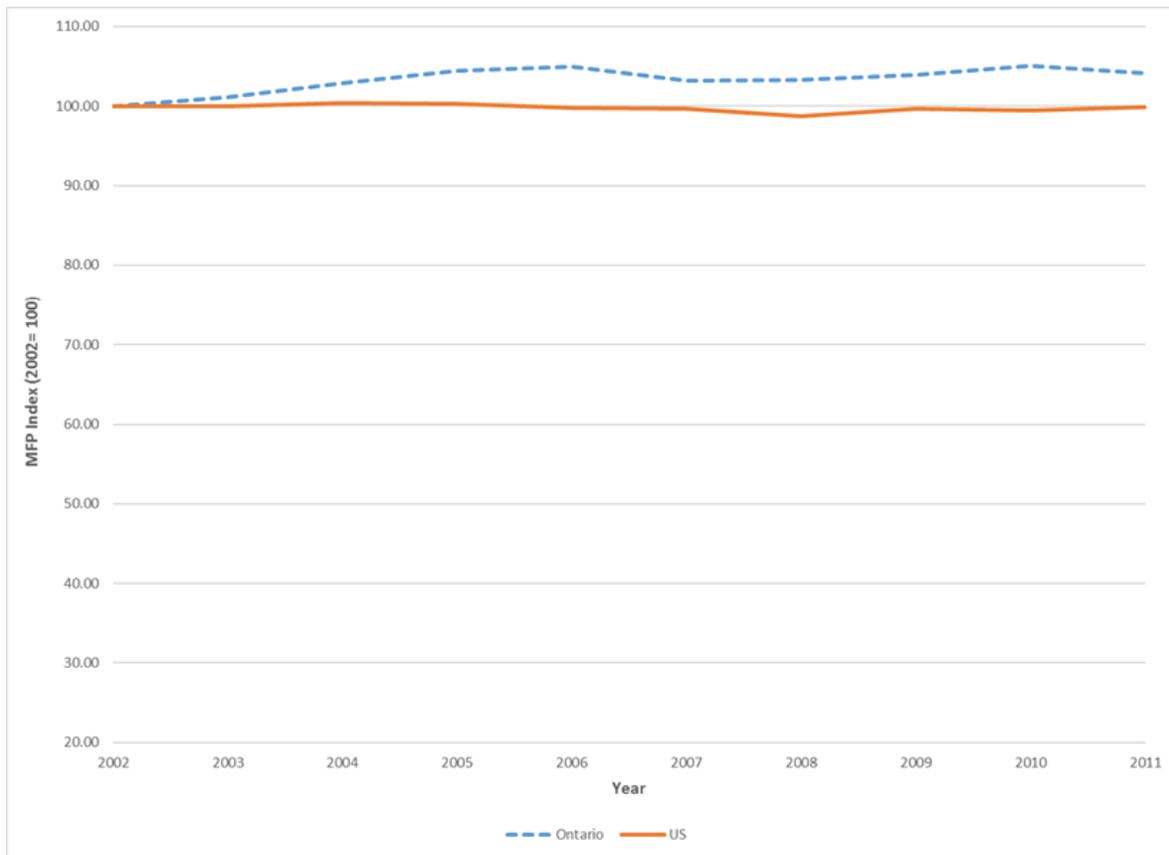


Figure 11. Comparison of Multifactor Productivity Trends of Ontario Distributors and the U.S. Sample During Multiyear Rate Plan Periods. The MFP trend of Ontario distributors exceeded the industry norm under MRPs.

### Consolidation

Since the late 1990s, Ontario’s power distribution industry has consolidated from more than 200 distributors that existed prior to PBR to about 70 distributors. Hydro One Networks has purchased more than 80 distributors. The Ontario government has noted on several occasions that the industry could become more efficient with greater distributor consolidation. Consolidation may have spurred productivity growth.

### Service Quality

Effects of the Ontario MRPs on utility service quality are unclear, potentially a result of data the Board has been gathering. Reported reliability metrics do not exclude major events, leading to potentially large year-to-year variations in performance due to weather events beyond distributors’ control. In addition, the period of operation under MRPs (2005–2012) has witnessed the rollout of AMI and SCADA systems. These deployments are often linked to a worsening of measured reliability because more outages are detected by automatic reporting systems.

Some observers have suggested that Ontario distributors had high levels of service quality at the beginning of the MRPs, even to the point of arguing that some utilities had engaged in “gold-plating” their systems. These observers find that during the 2000s, which encompassed IRM1, a rate freeze, and IRM2, reliability suffered.

[R]eliability has declined continuously from 2000 to 2008; degradation has become progressively worse. Results in the middle years [during the rate freeze] (2003-2005) are significantly worse than the earlier [IRM1] years (2000-2002), and results in the last years (2006-2008) [in which rates were reset and IRM2 was in effect] significantly worse than the middle.<sup>155</sup>

A 2010 Board staff report presented more mixed results:

The [customer] surveys indicate that the majority of consumers are generally satisfied with current levels of system reliability, with 89% of residential consumers and 92% of business consumers reporting that they are “somewhat satisfied” or “very satisfied” with the reliability of electricity supply. However, over 75% of respondents in both groups indicated that, despite being generally satisfied, they still believe it is important for distributors to continue to work to reduce the number of outages.... There was a strong consensus amongst many participants that the Board should focus on ensuring that system reliability levels are maintained. These participants believe that the current regime is adequate for the purposes of ensuring continued sustainability and reliability.... Ratepayer groups that supported the development of a new reliability regime were in the minority. Some ratepayer representatives suggested that reliability has declined almost continually over the last 8 years.<sup>156</sup>

## 6.8 Power Distribution MRPs in Great Britain<sup>157</sup>

The power distribution industry of Great Britain also has a history very different from that of the United States. Until 1990, British electric utilities were not investor-owned. In the intervening years, these utilities have been privatized and restructured into separate generation, transmission and distribution operations. End users are billed by retailers, not distributors. This arrangement reduces the role of distributors in provision of DSM programs. Regulatory requirements of British utilities are codified in their licenses, rather than tariffs, administrative codes or laws.

There are currently 14 power distributors, eight gas distributors, three electric transmitters and one gas transmitter in Britain. The sizable task of regulating these utilities has been assigned to the Office of Gas and Electricity Markets (Ofgem). Ofgem also regulates gas and electric commodity markets.

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<sup>155</sup> Cronin and Motluk (2011).

<sup>156</sup> Ontario Energy Board (2010), p. 7–10.

<sup>157</sup> A 2016 Berkeley Lab report (Lowry and Woolf) discussed the British system of energy utility regulation. This section provides additional history and plan design details and discusses notable outcomes.

Since privatization, British energy utilities have operated under a sequence of MRPs called *price controls*. The British approach to price controls has its roots in a 1983 document by British economist Stephen Littlechild, which relied on five criteria to evaluate regulatory options:<sup>158</sup>

- protect against monopoly power
- encourage efficiency and innovation
- minimize regulatory cost
- promote competition
- maximize proceeds from privatization

Traditional cost of service regulation was rejected by policymakers after scoring poorly on four of the five criteria. The one criteria where cost of service regulation performed well was protecting against monopoly power.

Littlechild proposed to regulate rate growth with an index using an inflation – X formula. Regulators have refined various features of the plans over the years in their periodic price control reviews. To date there have been five completed generations of price controls, with the sixth price control beginning in 2015. Ofgem undertook a substantial review of its regulatory practices beginning in 2008. The revised regulatory system that resulted from these deliberations is called *RIIO* (Revenues = Incentives + Innovation + Outputs).

## Plan Design

### Plan Term

British MRPs have traditionally had five-year terms. With the adoption of RIIO, the term of plans was extended to eight years. This strengthens performance incentives but has complicated the task of developing and reviewing plans.

### Attrition Relief Mechanism

Price controls for power distributors in Britain originally featured price caps but now feature revenue caps. Caps of both kinds have been escalated by hybrid methods. Allowed revenue trajectories are established based on multiyear total cost forecasts. Principal components are forecasts of the value of the current capital stock and of capital spending, depreciation, the return on capital, and O&M spending. Because of the focus on component costs, the British approach to ARM design is sometimes called the *building block* method.

Britain's Retail Price Index (RPI) has been used as the inflation measure of the revenue cap indexes. Given forecasts of total cost, billing determinants and inflation, past plans have selected combinations of initial rates and an X factor such that forecasted revenue equals forecasted cost. The revenue cap escalator in RIIO has an implicit X factor of zero.

Use of forecasts to establish allowed revenue led to concerns by Ofgem and its predecessor, the Office of Electricity Regulation, about utility exaggerations of capex requirements. For example, underspends occurred in a period when utilities had forecasted high capex due to an "echo effect" when facilities installed in a past capex surge approached the end of their service lives. In its 1994–1995 price control review, the regulator accepted the need for a high level of replacement capex, noting that facilities from a

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<sup>158</sup> Littlechild (1983). Littlechild subsequently served as director general of the electricity regulator.

prior capex surge were approaching retirement age. The regulator nonetheless reduced individual company total capex proposals by as much as 25 percent because not all of the capex was deemed necessary.

In its next price control review, the agency compared distributors' actual capex during the expiring price control to the budgets that had been approved. Figure 12 shows that actual capex was lower than the regulator's approved levels. The regulator came to the conclusion that the "echo effect" was less pronounced than it had expected.<sup>159</sup>

The regulator suspected that some utilities had misrepresented their capex needs. This experience encouraged the regulator to consider some implications of extensive capex underspends in developing a new price control.<sup>160</sup> Ofgem began by reassessing its policy on underspending:

Ofgem would expect such companies to retain the benefit of their under-spend. Given that, to a significant extent, the nature and timing of capital expenditure (particularly non-load related expenditure) is discretionary, measures need to be introduced to ensure that companies are only rewarded for genuine efficiency not timing benefits obtained through manipulation of the periodic regulatory process.

In this context, it is particularly important to ensure that companies do not have a perverse incentive to 'achieve' periodic delays in capital expenditure, such that they regularly under-spend Ofgem's forecasts, thereby gaining a financial benefit, and then claim a higher allowance for the subsequent period in respect of the capital expenditure which has not been undertaken... Further where [distributors] underspend in one period and then forecast an increase in expenditure in the next, this will be carefully scrutinized.<sup>161</sup>

The regulator further stated that:

The unavoidable information asymmetry between regulator and regulated companies is a major issue especially since, under the present regime, regulated companies have an incentive to overstate required expenditures when discussing future price controls with the regulator.<sup>162</sup>

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<sup>159</sup> Offer (1999), p. 46.

<sup>160</sup> During the course of the proceeding, Offer merged with the British gas regulator Ofgas to become Ofgem.

<sup>161</sup> Ofgem (1999), p. 41.

<sup>162</sup> Ofgem (1999), p. 7.

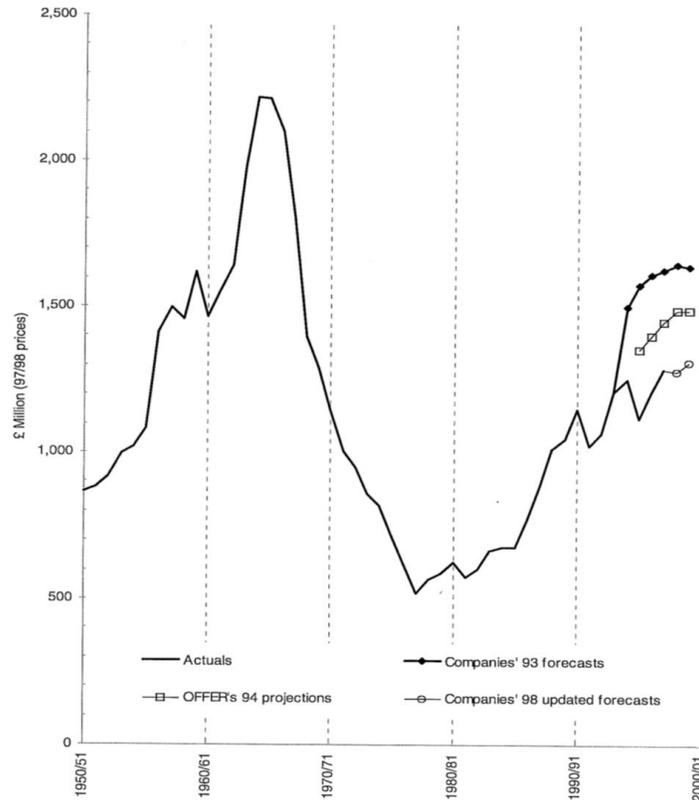


Figure 12. Distribution Business Capital Expenditures (1997/98 Prices). A capex surge during the period 1993–2000 was due to an “echo effect” from a past capex surge that was lower than forecasted.<sup>163</sup>

Ofgem penalized three distributors in its final decision which had provided exaggerated forecasts of capex and operating expenditures (opex). Nevertheless, it became apparent that forecasting overstatements had continued. Ofgem found that capex was being underspent by utilities under the first three years of the new price control.<sup>164</sup> Many power distributors were also providing forecasts describing a need for capex that was more than 20 percent greater than previous forecasts.<sup>165</sup>

Due in part to such experiences, Ofgem has over the years commissioned numerous statistical benchmarking and engineering studies to develop its own independent view of required cost growth. In 2004, Ofgem added to rate plans an Information Quality Incentive (IQI) to encourage more accurate capex forecasts. This complicated PIM, an example of an incentive-compatible menu, is discussed further in Appendix A.3.

Distributors that have well-justified business plans at an early stage of the RIIO proceeding can be “fast-tracked.” Fast-tracking allows the distributor to receive approval of its business plans as much as a year earlier than would otherwise be the case and avoid more intense scrutiny of its business plan. This enables the distributor a greater opportunity to focus on executing its business plan during the run-up to the new MRP.

Another innovative feature of RIIO is its focus on total expenditures (totex) to level the playing field between capex and opex. Ofgem has explained the rationale for a totex focus:

<sup>163</sup> Offer (1999), p. 45.

<sup>164</sup> Ofgem (2004a).

<sup>165</sup> Ofgem (2004b).

The incentives to manage different types of costs under the price control are not equal. These imbalances may distort the decisions that [distributors] need to make between capex and opex solutions and create boundary issues. This is not in customers' interests as it may lead to [distributors] seeking to outperform the settlement by favoring capex over opex (or vice versa). This may lead to inefficient network development and higher charges for customers in the short or long term....

These rules create two undesirable effects:

- Incentives are distorted toward adopting capex rather than opex solutions. This means that [distributors] are not incentivized to minimize total lifetime costs as they are sometimes better off by adopting a capex solution rather than a cheaper opex solution due to the way that the different expenditures are treated.
- Boundary issues are created. There is an incentive to record expenditure in the areas with the highest rates of capitalization even if the expenditure was not technically in that area. This requires significant policing of the cost reporting of [distributors].<sup>166</sup>

To address these problems, Ofgem decided to equalize the incentives between opex and capex for most cost categories.<sup>167</sup> Instead of traditional expensing and capitalization rules, Ofgem fixed the amount of total expenditures that could be capitalized at 85 percent. Newly capitalized costs would be recovered over a 45-year period, while existing rate base costs would be recovered over a 20-year period. The remaining 15 percent would be expensed.

### Performance Metric System

RIIO features complicated performance metric systems that include several PIMs. Metrics in this system are called *outputs*. The performance incentive mechanisms in RIIO place a sizable share of distributor revenue at risk, prompting some commentators to call RIIO a “results-based” approach to regulation. However, the unusually large sensitivity of earnings to performance mechanisms in RIIO is due mainly to the Information Quality Incentive.

With respect to service quality, Ofgem adopted guaranteed reliability standards early on, later adding guaranteed standards of performance for connections. One example of a guaranteed standard is that distributors are required to restore service within 12 hours in normal weather conditions. Distributors must make predetermined payments directly to customers each time a minimum performance standard is not met. Ofgem also developed a reliability PIM called the *Interruptions Incentive Scheme* that addresses distributors' outage frequency and duration performance.

Ofgem has expanded its customer satisfaction PIM over the years into a Broad Measure of Customer Satisfaction. This encompasses the number of complaints that a distributor has and an assessment of customer satisfaction with distributors' responsiveness with regard to outages, connections and general inquiries. Ofgem has also experimented with PIMs to encourage reductions in line losses.

Distributors are required to report annually on numerous additional metrics. These have expanded over the years from cost and revenue reporting to include measures that are not commonly reported in the United States, including the health of assets, substation utilization levels and air emissions. Business

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<sup>166</sup> Ofgem (2010), p. 107.

<sup>167</sup> Costs that were not provided this treatment include many types of administrative and general expenses, pensions and several costs that receive supplemental funding, discussed later in this section.

Carbon Footprint metrics include distributors' annual electricity losses in addition to their direct carbon emissions.

Ofgem reviews distributors' annual reports on these metrics and issues its own report summarizing distributors' performance. Reports feature a scorecard with "traffic lighting," using red to indicate poor performance, green to indicate good performance, and yellow to indicate performance in between.

RIIO also changed asset health metrics into a risk index. The risk index is a composite measure of asset health and criticality indexes, reflecting risks of asset failures for a distributor. The asset health index measures the likelihood of an asset failure, while the criticality index measures the impact of a potential asset failure. The risk index has become the basis for a PIM with a possible penalty or reward of 2.5 percent of avoided or incurred costs.

RIIO has also increased use of discretionary financial incentives. A stakeholder engagement incentive encourages distributors to engage with customers and incorporate their input in decisions and to identify vulnerable customers and take efforts to ensure their energy needs are met. An incentive for connections engagement assesses a distributor's effort in formulating and pursuing strategies for providing and improving connection services to large customers, as well as a distributor's use of information learned from these customers to improve these services. A load index measures substation loading on a distributor's primary network.

### Revenue Decoupling

While being described as a "price control," Ofgem today uses revenue caps. A "correction factor" refunds or charges customers for variances between actual and allowed revenue. In past plans, sales volume and customer growth increased the company's allowed and actual revenue to some extent.<sup>168</sup> However, this linkage was eventually eliminated, resulting in revenue decoupling that continues through RIIO today.

### Cost Trackers

British MRPs often feature mechanisms similar to cost trackers for various costs that are difficult to control. For example, most pension costs have been tracked. Trackers also have been put in place for an assortment of special projects including load reinforcement, high value projects and rail electrification. Supplemental revenue can only be requested at one or two prespecified periods during the rate plan. Another variant on cost trackers is supplemental allowances that distributors can access for specific projects. These allowances have been developed for various purposes, including improvement in the reliability of service to "worst served customers," workforce renewal, distributor innovation efforts, and to encourage distributors to begin making changes toward a low carbon future.

### Outcomes

From 2008–2010, as part of the RPI-X@20 process to modernize its regulatory system, Ofgem undertook an extensive review of effects of its price controls. Reviews are also held at the end of each price control. In these reviews, Ofgem indicated that many MRP features had functioned well. For example, in 2009 the regulator stated:

We have found that allowed revenue have declined since RPI-X regulation was introduced and we expect network charges to have followed a similar trend. Improvements in operating

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<sup>168</sup> The percentage of revenue growth tied to the growth in revenue drivers, including customer and sales growth, was determined for each rate plan.

efficiency and stability in the allowed cost of capital have facilitated these declines. Capital investment has been increasing and the reliability of the supply to customers has improved. These have all been driven at least partly by the regulatory framework...

Our analysis reveals changes in recent years, however. Allowed revenue has stabilized or increased, reflecting increased investment. Operating efficiency improvements are expected to continue, but the scale may be limited compared to the period since RPI-X regulation...

We have also found evidence that the regulated networks have generally managed to beat the regulatory settlement. Whilst this in itself is not necessarily cause for concern, there are questions about the extent to which companies are able to outperform and whether those companies earning the highest returns are indeed those that perform best for consumers.<sup>169</sup>

## Cost Performance

Studies of multifactor productivity trends of British power distributors like those we have undertaken for North American distributors have been hampered by poor data. In particular, a consistent time series dataset is not available for many years, as the definitions of costs have changed over time.<sup>170</sup>

Ofgem commissioned a study of historic and expected productivity trends of British power distributors and the U.K. economy.<sup>171</sup> The study found that from program year 1991–1992 to program year 2001–2002, the British distributors averaged annual MFP growth of 4.3 percent. The opex productivity trend was 7.9 percent while the capital productivity trend was 1.2 percent. These MFP results were substantially higher than those of the U.K. economy as a whole and U.S. power distributors for similar time periods. However, the MFP measurement methodology was different.

In its RPI-X@20 review, Ofgem found that during the course of the price controls, real controllable operating costs per unit of energy distributed declined by 3.1 percent per year.<sup>172</sup> This decline exceeded the targets set by Ofgem in the price control reviews. In addition, distributors often underspent their capex budgets.

A major focus of Ofgem reviews of distributors' performance is comparisons of actual and allowed spending. The regulator found that 12 of 14 distributors had underspent their allowance. Ofgem attributed this outcome to several factors: improvements in efficiency, with unit costs for asset replacement work falling significantly; falling input prices; and a drop in reinforcement, connection and high value projects due to economic conditions. However, distributors had not delivered on their commitments in some areas, such as flood risk reduction programs.<sup>173</sup>

## Reliability

The RPI-X@20 review assessed the reliability performance of power distributors under price controls. It found that the frequency and duration of outages had declined about 30 percent between 1990 and 2008. These trends continued, with a further 20 percent reduction in outage frequency and 30 percent reduction in outage duration between program year 2009–2010 and program year 2014–2015.<sup>174</sup>

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<sup>169</sup> Ofgem (2009a), p. 26.

<sup>170</sup> Ofgem (2009e).

<sup>171</sup> Information comparable to what we have gathered on the MFP trends of U.S. power distributors is unavailable.

<sup>172</sup> Real controllable operating costs were defined as operating costs less depreciation and "atypical" items.

<sup>173</sup> Ofgem (2015), p. 22.

<sup>174</sup> Ofgem (2015), p. 45.

## RIIO

In February 2017, Ofgem released its first annual report on experience under RIIO.<sup>175</sup> The regulator reported that 12 of 14 distributors were spending less than they were allowed.<sup>176</sup> After the first year, distributors expected to underspend their allowances by 3 percent for the entire term of RIIO.

The report also noted that distributors had managed to over-earn by about 300 basis points on average. Ofgem believed that ROE performance was “predominantly driven by all [distributors] performing well against the Interruptions Incentive Scheme.”<sup>177</sup> All distributors earned rewards under the scheme.

Distributors also had strong performances in several other areas:

- All distributors decreased their business carbon footprint and sulfur hexafluoride leaks during the first year of RIIO.
- Distributors also significantly improved their times to quote new connections. The industry average for the first year of RIIO was 46 percent to 49 percent lower than the target.<sup>178</sup>
- No distributors were penalized under the Incentives on Connections Engagement, as Ofgem was pleased with quality and detail of distributors’ submissions.

All distributors received awards from the Broad Measure of Customer Service, and only one distributor was penalized as a result of poor customer satisfaction survey score.

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<sup>175</sup> Ofgem (2017).

<sup>176</sup> On average, the distributors spent 9 percent less than their allowance for the first year of RIIO. These areas of underspending were partly offset by increased spending on inspections, repairing faults on the networks, and service quality.

<sup>177</sup> Ofgem (2017), p. 13.

<sup>178</sup> Ofgem (2017), p. 33.

## 7.0 Conclusions

The electric utility industry has played a key role over the years in the high performance of the U.S. economy. The industry was largely built under the cost of service approach to utility regulation. This regulatory system sets base rates in general rate cases at levels that compensate utilities for the costs they incur for capital, labor and materials. The scope of trackers that expedite recovery of utility costs has expanded in some jurisdictions to encompass costs of capital and other base rate inputs, as well as energy.

We have shown in this report that the efficacy of cost of service regulation (COSR) varies with business conditions. When conditions favor utilities, as often was the case in the years when COSR became an American tradition, rate cases are infrequent, performance incentives are strong, and regulatory cost is restrained. When business conditions are unfavorable, utilities file frequent rate cases or seek tracker treatment for more costs, or do both. As a consequence, performance incentives are weaker and regulatory cost is higher.

Multiyear rate plans are a salient alternative to COSR for electric utilities. Extensive experience has accumulated with these plans. Regulators have typically approved MRPs on the grounds that they strengthen performance incentives while reducing regulatory cost. Plans have had diverse provisions, and extensive experimentation has occurred.

MRPs can improve the efficiency of regulation. With less time spent on general rate cases, costs of regulation can be reduced, or resources can be redeployed to other useful activities like rate design and distribution system planning. In principle, MRPs that do not impair utility performance or harm customers could be adopted solely on the basis of better regulatory efficiency.

It is difficult to assess the impacts of MRPs and rate case frequency on utility cost performance. Costs of utilities are, after all, influenced by many other business conditions (e.g., severe storms and system age) as well as by their regulatory system. This report reviewed impacts of regulation on utility cost performance using two analytical tools: numerical incentive power analysis and empirical research on utility productivity trends.

Both lines of research suggest that MRPs (and, more generally, infrequent rate cases) can materially improve utility cost performance. For example, multifactor productivity growth of the U.S. electric, gas and sanitary sector was found to be considerably slower relative to that of the economy in a period of frequent rate cases than it was in periods when rate cases were much less frequent. We also found that the MFP growth of investor-owned electric utilities that operated for many years without rate cases, due to MRPs or other circumstances, was significantly more rapid than the U.S. electric utility norm. Stronger incentives produced cost savings of 3 percent to 10 percent after 10 years.

Our incentive power research suggests that *modest* steps in the direction of MRPs from traditional regulation produce only modest improvements in utility cost performance. This is also consistent with our empirical research, which showed that the MFP growth of California and New York utilities, which typically operated under conservative MRPs, were similar to or worse than the U.S. electric utility norm on balance. More robust MRPs — such as those with five-year plans, no earnings sharing, efficiency carryover mechanisms, and avoidance of rate cases between plans — can potentially produce larger gains. Recent innovations in MRP design, such as advances in efficiency carryover mechanisms, can increase incentive power.

**Our incentive power research and case studies have important implications. First, utility performance and regulatory cost should be on the radar screen of state utility regulators, consumer groups and utility managers. We have shown that key business**

**conditions facing utilities today are less favorable than in prior periods when COSR worked well. This can lead to increased rate case frequency and expanded use of cost trackers which weaken utility incentives for improved cost performance.**

Notwithstanding potential benefits of MRPs, they have not been adopted for energy utilities in most U.S. jurisdictions.<sup>179</sup> Several reasons can be advanced.

- COSR is well established in the United States, and some commissions are accomplished practitioners. When challenges emerge to the continuation of COSR, quick fixes such as revenue decoupling to address problems related to declining average use and expanded use of cost trackers have been more appealing to many regulators than the more extensive changes required to implement MRPs. State regulators also have tended to resist sweeping change in the direction of cost-plus regulation such as formula rate plans.
- Continuing evolution of COSR will slow diffusion of MRPs. For example, capital cost trackers can be incentivized. Use of PIMs to encourage cost-effective use of DERs can be expanded.
- It can be difficult to design MRPs that generate strong utility performance incentives without undue risk and that share benefits of better performance fairly with customers.
- Some adverse conditions (e.g., need for high capex) which give rise to frequent rate cases and expansive cost trackers under COSR have proven challenging to accommodate under MRPs.
- MRPs invite strategic behavior and plan design controversies. The dollars at stake invite stakeholders to energetically defend their positions. In proceedings to approve plans with indexed ARMs, for example, controversy over X factors has been common.
- Transitional regulatory systems that limit risks of bad outcomes from MRPs through such means as earnings sharing mechanisms and relatively short plan terms often do not generate substantially greater performance improvements than traditional COSR.<sup>180</sup>
- Utilities in most states have not proposed MRPs. While this may reflect their perception of the regulatory climate in their jurisdictions, many utilities may believe that they will make more money (or make the same money more easily) from frequent rate cases and more expansive cost trackers than under an MRP.
- Many consumer advocates are unsure of their role in an MRP system of regulation. Under COSR, consumer advocates intervene in each general rate case to reduce the revenue requirement. The substantial long-term cost to customers of slow productivity growth due to COSR is less visible. The lost opportunity for consumer advocates to spend more time on other regulatory issues may also be underappreciated.
- A key advantage of MRPs is the ease with which they can address brisk inflation. However, inflation has been slow in recent years.
- The impetus for PBR in many countries has come more from regulators and other policymakers than it has from utilities. Regulatory commissions in U.S. states typically have a less daunting

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<sup>179</sup> For another discussion of why MRPs are not more popular in the United States, see Costello (2016).

<sup>180</sup> These transitional plans may nonetheless be important stepping stones to more effective regulatory systems.

mandate than regulators in other countries, who often have national jurisdictions with numerous utilities. This reduces the appeal of streamlined regulation.

Notwithstanding these considerations, we believe that use of MRPs is likely to increase in electric utility regulation over time.

- Key business conditions that trigger general rate cases are more likely to deteriorate than to improve in coming years. For example, inflation is more likely to rebound than to slow further due, for example, to rising bond yields. Penetration of customer-side DERs is likely to increase.
- Use of MRPs is already growing in the regulation of vertically integrated U.S. electric utilities.
- Continuing innovation in the United States, Canada and other countries will produce better MRP approaches. For example, regulators are becoming more skilled at designing plans for utilities engaged in accelerated grid modernization. Incentive compatible menus and efficiency carryover mechanisms help to ensure customer benefits.
- A growing number of power distributors will complete accelerated modernization programs and enter a period of more routine capex requirements that pose fewer problems for MRP design.

The strengths and weaknesses of MRPs are not fully understood. Plan design continues to evolve to address outstanding challenges. Areas of recommended future research include impacts of MRPs (and reduced rate case frequency more generally) on service quality, operating risk, and levels of bills that customers pay.<sup>181</sup> Evidence gathered for this report suggests that MRPs did not impair reliability, but this evidence was anecdotal. Lack of data is a major barrier to more comprehensive research on reliability and bill impacts.

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<sup>181</sup> In addition, more refined statistical tests of the impacts of MRPs can be devised.



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## Appendix A. Further Discussion of Multiyear Rate Plan Designs

This appendix discusses some topics in incentive plan design in greater detail. We consider earnings sharing mechanisms (ESMs), Z factors, marketing flexibility and Ofgem's Information Quality Incentive.

### A.1 Earnings Sharing Mechanisms

Earnings sharing mechanisms share earnings variances that arise when a utility's return on equity (ROE) deviates from a commission-approved target. Treatment of earnings variances may depend on their magnitude. For example, there are often dead bands in which the utility does not share smaller variances (e.g., less than 100 basis points from the ROE target) with customers. Beyond the dead band there may be one or more additional bands in which earnings are shared in different proportions between customers and the utility.<sup>182</sup> While some ESMs share both surplus and deficit earnings, others share only surplus earnings. This maintains an incentive for companies to become more efficient to avoid under-earning.

Whether or not to add an ESM is one of the more difficult decisions in multiyear rate plan (MRP) design. The offsetting pros and cons of ESMs may help to explain why they are only featured in about half of current U.S. and Canadian MRPs. On the plus side, an ESM can reduce risks that revenue will deviate substantially from cost. Unusually high or low earnings may be undesirable to the extent that they reflect windfall gains or losses, poor plan design, data manipulation, or strategic deferrals of expenditures. Reduced likelihood of extreme earnings outcomes can help parties agree to a plan and make it possible to extend the period between rate cases.

On the downside, ESMs weaken utility performance incentives. Permitting marketing flexibility can be complicated in the presence of an ESM because discounts available to some customers can affect earnings variances that are shared with all customers.<sup>183</sup> ESM filings can be a source of controversy. Customers may complain, for example, if the ROE never gets outside the dead band so that surplus earnings are shared. There is less need for an ESM if the plan features other risk mitigation measures such as inflation indexing, Z factors or revenue decoupling.

### A.2 Z Factors

A Z factor adjusts revenue for miscellaneous hard-to-foresee events that impact utility earnings. Many MRPs have explicit eligibility requirements for Z factor events. Here is a typical list of requirements.

Causation: The costs must be clearly outside of the base upon which rates were derived.

Materiality: The costs must have a significant impact on utility finances. Materiality can be measured based on individual events, cumulative impacts of multiple events, or both.

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<sup>182</sup> An ESM is therefore sometimes referred to as a "banded ROE."

<sup>183</sup> This problem can be contained by sharing only the utility's earnings surpluses.

Outside of Management Control: The cost must be attributable to events outside of management's ability to control.

Prudence: The cost must have been prudently incurred.

One of the primary rationales for Z factor adjustments is the need to adjust revenue for effects of changes in tax rates and other government policies on the utility's cost. Another rationale for Z factors is to adjust for effects of miscellaneous other external developments on utility costs which are not captured by inflation and X factors. Z factors can potentially reduce operating risk, without weakening performance incentives for the majority of costs. Z factors can thus reduce the possibility that an MRP needs to be reopened, while maintaining most benefits of MRPs.

## **A.3 Marketing Flexibility**

### **Need for Flexibility**

Regulators have long acknowledged the need to afford utilities some flexibility in fashioning rate and service offerings. A utility's need for marketing flexibility is greater to the extent that demand for its services is complex, changing and elastic (i.e., sensitive) with respect to the terms of services offered. When demand is elastic, rates that are too high produce more bypass of utility services.<sup>184</sup> Demand elasticity is greater when customers have alternative ways to meet their needs which are competitive with respect to cost and quality. Elasticity is also greater for products that are "discretionary" in the sense that they do not address a customer's most basic needs.

While "core" customers have fewer options and lower elasticities of demand for basic services, electric utilities have long relied on marketing flexibility to customize terms of service to large-volume customers. These customers play a larger role in the earnings of VIEUs than they do in the earnings of UDCs. One reason is that UDCs do not profit from sizable sums these customers pay for power supplies. Another is that some of these customers take service at transmission voltage and do not pay for many distribution-level costs. In addition, all types of utilities desire flexibility when marketing underutilized capacity in competitive markets (e.g., leasing land in transmission corridors).<sup>185</sup>

Interest among electric utilities in marketing flexibility is growing as demand for power services is becoming more complex, changeable and sensitive to terms of service that utilities offer. For example, advanced metering infrastructure, other smart grid technologies, distributed storage, and plug-in electric vehicles open the door to a variety of new utility services. Large-load customers have a growing interest in customized green power services to meet corporate goals. Distributed generation and storage pose a growing competitive challenge in some jurisdictions. However, for the foreseeable future regulators will likely control terms of service to distributed generation and storage customers carefully.

Marketing flexibility can also help utilities encourage customers to use their services in less costly ways. For example, AMI makes it more cost-effective to offer time-varying tariffs to

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<sup>184</sup> Uneconomic bypass occurs when a customer would use a system more at a lower rate that still exceeds the cost of service. When uneconomic bypass is reduced, customers make more contributions to fixed costs that lower rates for other customers.

<sup>185</sup> Margins from "other revenues" benefit retail customers by, for example, reducing the retail revenue requirement in rate cases.

residential and small business customers. These tariffs can encourage reduced loads at times when the cost of electricity is especially high and slow the need for costly upgrades for substations and load-following generation capacity.

## **Flexibility Measures**

Marketing flexibility runs the gamut from greater effort by regulators to approve new rates and services by traditional means to “light-handed” regulation and even decontrol of certain utility offerings.<sup>186</sup> Light-handed regulation typically takes the form of expedited approval of new or revised rate and service offerings. These offerings may be subject to further scrutiny at a later date, such as in the next rate case. Pricing floors are often established based on marginal or incremental cost of service to ensure that customers of new rates and services contribute to margin.

Regulators most commonly grant marketing flexibility for rate and service offerings with certain characteristics. Generally speaking, flexibility is encouraged where new offerings are likely to benefit target customers while also benefitting other customers — for example, by increasing contributions to margins so that contributions by other customers can be reduced. Optional offerings have often been accorded expedited treatment by regulators because targeted customers are protected by their recourse to service under standard tariffs, as well as offerings by potential third-party providers that compete with the utility.

Several kinds of offerings may be deemed optional, such as:

1. A discount from rates in a standard tariff, offered to particular customers — for example, due to relatively high elasticity of their demands for utility services
2. An optional tariff that is available to all qualifying customers, such as a time-sensitive rate for electric vehicle charging
3. Special (negotiated) customer-specific contracts for utility services
4. A new premium quality service for customers prepared to pay for better quality
5. A discretionary service such as lighting on a backyard power pole
6. Special service packages (which may include standard services as components), such as a rate for a bundle of services that includes premium quality service and electric vehicle charging

## **Why MRPs Facilitate Marketing Flexibility**

MRPs facilitate marketing flexibility for several reasons. Less frequent general rate cases reduce the chore of deciding how to allocate the revenue requirement between a complex and changing mix of market offerings. Multiyear rate plans also reduce concerns about cross-subsidies between service classes because infrequent rate cases and other plan provisions, such as service baskets, insulate core customers from potentially adverse consequences of marketing flexibility.<sup>187</sup> To the

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<sup>186</sup> Decontrol of utility rate and service offerings is typically limited to markets that are robustly competitive.

<sup>187</sup> Cost trackers create a “back door” to cross-subsidization unless discounting of tracked costs is prohibited.

extent that the utility's earnings losses from special terms of services for certain customers can't be recovered from other customers, regulators are more confident that discounts are prudent.

In addition to facilitating marketing flexibility, MRPs create a special need for flexibility since rate cases are less frequently available as occasions for redesigning rates. Special proceedings to redesign rates in a revenue-neutral way can occur during an MRP. Alternatively, utilities may be permitted (or required) to gradually change rate designs during a rate plan in accordance with commission-approved goals. For example, the commission could approve a phase-in of time-sensitive usage charges.

MRPs can also strengthen utility incentives to improve marketing because the utilities are able to keep resultant margins longer. For example, under MRPs utilities have greater motivation to discourage load patterns that are especially costly. Under price caps, utilities have more incentive to encourage large-load customers to expand their operations.

## Marketing Flexibility Precedents

Electric utilities have long been granted flexibility by regulators in rates and services they offer to some of the markets they serve. For example, rates utilities charge for use of their assets in various competitive markets are frequently not addressed by state regulators. Examples include sales in bulk power markets and rental of surplus office space. Light-handed regulation is sometimes accorded to special contracts for large-load customers with price-elastic demands or an interest in customized green power services.<sup>188</sup> However, special contracts for utility services require specific approval in many jurisdictions.

Multiyear rate plans have been extensively used to regulate utilities in industries where market-responsive rates and services are a priority. The example of Central Maine Power is discussed in Section 6 in this report. However, MRPs have not to date played a large role in fostering electric utility marketing flexibility. One reason is that many MRPs to date have applied to utility distribution companies, which traditionally had less need for special pricing for large-load customers.

## A.4 Britain's Information Quality Incentive

Britain's Information Quality Incentive (IQI) rewards distributors for making conservative cost forecasts and then performing better.<sup>189</sup> The IQI is essentially a menu consisting of cost forecast-allowed revenue combinations. It currently applies to most operation and maintenance (O&M) expenses and capex. Each utility is asked to give a cost forecast and is eventually given an allowed revenue amount based on this forecast. The IQI's input on allowed revenue is in two parts: *ex-ante* allowed revenue and an IQI adjustment factor. By announcing its cost forecast, the utility implicitly chooses both its *ex-ante* allowed revenue and an IQI adjustment factor formula.

The *ex-ante* allowed revenue is a weighted average of the regulator's and the utility's cost forecasts. The regulator's forecast receives 75 percent weight while the utility's forecast receives

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<sup>188</sup> Duke Energy (2015).

<sup>189</sup> Ofgem states that distributors with "less well justified capex forecasts, as compared with the views of Ofgem's consultants would be permitted to spend above the amounts that they had justified to Ofgem but [these distributors] would receive relatively lower returns for underspending. In contrast, those [distributors] that had better justified their forecasts, and were in line with the views of the consultants, would be rewarded with a higher rate of return and a stronger incentive for efficiency." See Ofgem (2009b), p. 38.

25 percent weight. This treatment alone greatly reduces the payoff to the distributor from a high cost forecast. The substantial weight assigned to the regulator's forecast reflects the large investment it makes in engineering and consulting services to develop an independent review of future cost.

The IQI adjustment factor is composed of an incentive rate and an additional income factor. The incentive rate specifies sharing, between utilities and customers, of variances between the utility's actual expenditures and the allowed revenue for these expenditures it was granted *ex ante*. The utility's share of these variances increases as the difference between the utility's cost forecast and regulator's own forecast decreases. The additional income factor, also referred to as an upfront reward or penalty, provides an immediate incentive for the utility to provide a cost forecast that is at or below Ofgem's own forecast.

Together these provisions make the menu "incentive compatible." The utility is rewarded when its cost forecast is low and its actual cost is similar. The IQI discourages a strategy of proposing a high forecast and subsequently incurring low costs.

Figure A-1 shows the IQI menu developed for the 2010-2015 plan:<sup>190</sup>

- The first row is a ratio of the utility's cost forecast to the regulator's cost forecast. A ratio of less than 100 means the utility has presented a lower cost forecast than the regulator, while a ratio above 100 means the utility's cost forecast is higher than the regulator's.
- The second row is the utility's share of what it over- or underspends relative to the *ex-ante* allowed revenue. The utility's share of these variances increases when its cost forecast is low. This feature provides greater incentives for the utility to cut costs and provide a forecast that is not inflated.
- The third row is the *ex-ante* revenue the utility can collect, expressed as a percentage of the regulator's cost forecast. This is much closer to Ofgem's forecast than to the utility's.
- The fourth row is the additional *ex post* income the utility can collect, expressed as a percentage of the regulator's cost forecast. This is a reward for a low cost forecast.

Values in the second section of Figure A-1, labeled IQI Adjustment Factor, illustrate possibilities for additional revenue (expressed as a percentage of Ofgem's cost forecast) which the utility can collect once it reports actual expenditures for the price control period. The amount of additional revenue depends on how the company's forecast compares to Ofgem's forecast and to the company's ultimate expenditures. The revenue adjustment is more favorable to the utility to the extent that its expenditures are low relative to its own forecast and Ofgem's forecast. The highest reward is offered for spending less than a utility forecast that was low relative to Ofgem's forecast.

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<sup>190</sup> There have not been any major changes to the IQI methodology since this matrix was established.

Utility's cost forecast (% of Ofgem's cost forecast)	95	100	105	110	115	120	125	130	135	140
Utility's share of under/over spending (incentive rate)	0.53	0.5	0.48	0.45	0.43	0.4	0.38	0.35	0.33	0.3
<i>Ex-ante</i> allowed revenue (% of Ofgem's cost forecast)	98.75	100	101.25	102.5	103.75	105	106.25	107.5	108.75	110
<i>Ex-post</i> additional income (% of Ofgem's cost forecast)	3.09	2.5	1.84	1.13	0.34	-0.5	-1.41	-2.38	-3.41	-4.5
Actual utility expenditure (% of Ofgem's cost forecast)	<b>IQI Adjustment Factor (% of Ofgem's cost forecast)</b>									
90	7.69	7.5	7.19	6.75	6.19	5.5	4.69	3.75	2.69	1.5
95	5.06	5	4.81	4.5	4.06	3.5	2.81	2	1.06	0
100	2.44	2.5	2.44	2.25	1.94	1.5	0.94	0.25	-0.56	-1.5
105	-0.19	0	0.06	0	-0.19	-0.5	-0.94	-1.5	-2.19	-3
110	-2.81	-2.5	-2.31	-2.25	-2.31	-2.5	-2.81	-3.25	-3.81	-4.5
115	-5.44	-5	-4.69	-4.5	-4.44	-4.5	-4.69	-5	-5.44	-6
120	-8.06	-7.5	-7.06	-6.75	-6.56	-6.5	-6.56	-6.75	-7.06	-7.5
125	-10.69	-10	-9.44	-9	-8.69	-8.5	-8.44	-8.5	-8.69	-9
130	-13.31	-12.5	-11.81	-11.25	-10.81	-10.5	-10.31	-10.25	-10.31	-10.5
135	-15.94	-15	-14.19	-13.5	-12.94	-12.5	-12.19	-12	-11.94	-12
140	-18.56	-17.5	-16.56	-15.75	-15.06	-14.5	-14.06	-13.75	-13.56	-13.5
145	-21.19	-20	-18.94	-18	-17.19	-16.5	-15.94	-15.5	-15.19	-15

Figure A-1. IQI Matrix for Ofgem's 5th Distribution Price Control Review.<sup>191</sup> IQI Matrix is an incentive compatible menu intended to encourage utilities to make low expenditure forecasts and then outperform them.

Suppose, by way of illustration, that a utility made a forecast that was just 5 percent above Ofgem's. Its *ex ante* allowed revenue would be only 1.25 percent above Ofgem's forecast, but it would be entitled to a fairly high 48 percent of surplus earnings and additional income equal to 1.84 percent of Ofgem's forecast. If its actual cost turned out to be the same as its forecast, it would garner an additional reward equal to 0.06 percent of Ofgem's forecast.

<sup>191</sup> Ofgem (2009c), p. 111. Presented here with some small changes to be more easily understood.

## Appendix B. Details of the Technical Work

This appendix provides more technical details of two lines of research presented in this report. One is the numerical incentive power research. The other is the empirical research on power distributor productivity. We also discuss some statistical benchmarking concepts.

### B.1 Incentive Power Research<sup>192</sup>

This section discusses incentive power research that PEG has conducted over the years on behalf of several utilities and regulatory commissions.<sup>193</sup> Implications of this research are summarized in Section 5 of this report.

#### Overview of Research

Our incentive power research considers how the performance of utilities differs under alternative regulatory systems that feature various performance-based regulation (PBR) features as well as systems that resemble traditional rate regulation. The research can be used to explore multiyear rate plan (MRP) design options such as earnings sharing mechanisms and alternative plan terms.

At the heart of our research is a mathematical optimization model of the cost management of a company subject to rate regulation. We consider a company facing business conditions like those of a large energy distributor. In the first year of the decision problem, we assume for our example calculations that total annual cost is around \$500 million for a company of average efficiency. Capital accounts for a little more than half of total cost. The annual depreciation rate is a constant 5 percent, the weighted average cost of capital is 7 percent, and the income tax rate is 30 percent.

Some assumptions have been made in the model to simplify the analysis. There is no inflation or output growth that would cause cost to grow over time.<sup>194</sup> The utility's revenue will be the same year after year in the absence of a rate case.

The company has opportunities to reduce its cost through cost reduction initiatives. Two kinds of cost reduction projects are available. Projects of the first type lead to temporary (specifically, one-year) cost reductions. Projects of the second type involve a net cost increase in the first year in exchange for *sustained* reductions in future costs. Projects in this category vary in their payback periods. The payback periods we consider are one year, three years and five years. For projects of each kind, there are diminishing returns to additional cost reduction effort in a given year. In total, we consider eight kinds of cost reduction projects — four for O&M expenses and four for capex. In our simulations, the company is permitted to pass up each kind of project in a given year (so that there is zero effort) but cannot choose *negative* levels of effort which constitute deliberate waste. This is tantamount to assuming that deliberate waste is recognized by the regulator and disallowed.

The company can increase earnings by undertaking cost containment projects, but experiences employee distress and other *unaccountable* costs when pursuing such projects. These costs are assumed to occur in

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<sup>192</sup> Further details of this research can be requested from the authors.

<sup>193</sup> Our research in this area was for several years spearheaded by Travis Johnson, a graduate of the Massachusetts Institute of Technology and Stanford Business School who is now a professor at the McCombs School of Business at the University of Texas.

<sup>194</sup> The comparatively low weighted-average cost of capital reflects these assumptions.

the first year of the initiative. We have assigned these unaccountable costs a value, in the reckonings of management as it crafts a business plan, that is about one quarter the size of the *accountable* upfront costs.

The company is assumed to choose the cost containment strategy that maximizes the net present value of earnings, less the unaccountable costs of performance improvement just discussed, given the regulatory system, income tax rate and available cost reduction opportunities. We are interested in examining how the company's cost management strategy differs under alternative regulatory systems.

### Reference Regulatory Systems<sup>195</sup>

We have developed five “reference” regulatory systems that constitute useful comparators for MRPs:

One is “cost plus” regulation, in which a company's revenue is exactly equal to its cost every year. This has no real-world counterpart, since even traditional regulation requires at least a one-year rate case cycle and some incentive, once rates are set, to cut costs of base rate inputs. Another reference system is full externalization of the ratemaking process so that rates are no longer trued up periodically to the company's costs. Such an outcome would be obtained if the company were to embark on a permanent revenue cap regime.

The other three reference regimes approximate traditional regulation. In each, there is a predictable cycle of rate cases in which revenue is reset to the company's cost. We consider cycles of one, two and three years.

### Multiyear Rate Plans

We considered various types of MRPs in our incentive power research. In most of these plans, there is no stretch factor shaving the revenue requirement mechanistically from year to year. The plans differ with respect to several kinds of provisions:

- *Plan term.* We consider terms of three, five, six and 10 years.
- *Impact of earnings sharing.* Plans considered also vary with respect to the earnings sharing specification. We consider earnings sharing mechanisms that have various company/customer allocations of earnings variances. Company shares considered are zero, 25 percent, 50 percent and 75 percent. None of the mechanisms considered have dead bands or multiple sharing bands, as these complicate calculations.
- *How rates change with rate case.* Our characterization of the rate case is important in modeling both traditional regulation and the MRP regimes. We assume in most model runs that rates in the initial year of the new regulatory cycle are, with one qualification, set to reflect the cost of service in the last year of the previous regulatory cycle.<sup>196</sup> The qualification is that any upfront *accountable* costs of initiatives for sustainable cost reductions that are undertaken in the historical reference year are amortized over the term of the plan.
- *Efficiency carryover mechanisms.* We also have considered the impact of some stylized efficiency carryover mechanisms. In one mechanism, the revenue requirement at the start of a new plan is based on a percentage ( $\alpha\%$ ) of the cost in the last year of the previous plan and (1-

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<sup>195</sup> The tables presented later in this appendix present results for these various scenarios.

<sup>196</sup> This is reasonable considering the lack of inflation and the stability of demand.

$\alpha$ )% on the revenue requirement in that year. This effectively permits the company to share  $(1-\alpha)$ % any deviation between its cost and the revenue requirement. We consider alternative values of  $\alpha$ , ranging from 90 percent to 50 percent.

In addition, we considered an efficiency carryover mechanism in which the revenue requirement in the first year of a new rate plan is adjusted for a percentage of the variance between an exogenous benchmark value of cost in the last plan year and the actual cost incurred. The revenue requirement for the first year of the new MRP is thus a weighted average of the benchmark and actual cost. The same result can be achieved by positing that the revenue requirement in year  $t$  is based 50/50 on the cost and the benchmark in year  $t-1$ .

- *Avoided rate case option.* We also have considered a menu approach to incenting long-term efficiency gains. It gives the company the option at the end of the plan to start the new plan without a rate case. The revenue requirement for the next plan is in this eventuality established on the basis of a predetermined formula. The formula we consider is a stretch factor reduction in the revenue requirement established in the preceding rate case.<sup>197</sup> The company can thus avoid a rate case if it agrees to a starting revenue requirement for the new plan that regulators believe offers value to customers.

Another decision that must be made in comparing alternative regulatory systems is what occurs at the conclusion of a plan. Our view is that the best way to compare the merits of alternative systems is to have them repeat themselves numerous times. For example, we examine the incentive impact of five-year plan terms by examining the cost containment strategy of a company faced with the prospect of a lengthy series of five-year plans.

### Identifying the Optimal Strategy

Numerical analysis was used to predict the utility's optimal strategy. Under this approach we considered, for each regulatory system and each kind of cost containment initiative, thousands of different possible responses by the company. We chose as the predicted strategy the one yielding the highest value for the utility's objective function. An advantage of numerical analysis in this application is that it permits us to consider regulatory systems of considerable realism.

## **Research Results**

Tables B-1 to B-3 present a summary of results from the incentive power model. For each of several regulatory systems the tables show the net present value of cost reductions from the operation of the system over many years. In the columns on the right-hand side of the tables, we report the average percentage reduction in the company's total cost that results from the regulatory system. We report outcomes for the first and second plan and the long run. We discuss here only the long-run results.

Results are presented for 10 percent, 30 percent and 50 percent levels of initial operating inefficiency. We focus here on the 30 percent results since our benchmarking research over the years has suggested that this is a normal level of operating inefficiency. Table B-1 presents the 30 percent results. Tables B-2 and B-3 show that performance gains from more incentivized regulatory systems are generally larger for less efficient companies. Changes in productivity from the various PBR mechanisms are greatest in Table B-3 (companies starting with 50 percent inefficiency) and smallest in Table B-2 (companies starting with 10 percent inefficiency).

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<sup>197</sup> In a world of input price and output growth, a more complex formula would be required.

## Results for Reference Regulatory Systems

Table B-1 shows that no cost reduction initiatives are undertaken under cost plus regulation. This reflects the fact that there is no monetary reward for undertaking cost reduction initiatives, all of which involve unaccountable costs. At the other extreme, a complete externalization of future rates such as might occur if rate cases were never held again produces performance improvements relative to cost plus regulation that, over many years, accumulate to a net present value (NPV) of more than \$2 billion. Average annual performance gains of 2.71 percent (or 271 basis points) are achievable in the long run.

As for the traditional regulatory systems, the system with a *three*-year cycle incents companies to achieve long-run savings with an NPV of about \$900 million — a major improvement over cost plus regulation but less than half of the savings that are potentially available from efficiency initiatives. Average annual performance gains rise from zero to 0.90 percent. The fact that some cost savings occur under traditional regulation is not surprising inasmuch as the assumed three-year regulatory cycle permits some gains to be reaped from temporary cost reduction opportunities and from projects with one-year payback periods. A two-year rate case cycle produces only 0.66 percent annual performance gains.

Table B- 1 Results From the Incentive Power Model: 30% Initial Inefficiency

	Net Present Value (\$m) of Cost Reductions	Relative Incentive Power	Average Annual Performance Gain*	
			First two rate cycles	Long run
<b>Reference Regulatory Options</b>				
Cost plus	0	0%	0.00%	0.00%
2 Year Cost of Service	657	29%	1.19%	0.66%
3 Year Cost of Service	899	39%	1.22%	0.90%
Full Rate Externalization	2299	100%	3.93%	2.71%
<b>Impact of Plan Term</b>				
Term = 3 years	899	39%	1.22%	0.90%
Term = 5 years	1318	57%	1.93%	1.41%
Term = 6 years	1428	62%	1.96%	1.58%
Term = 10 years	1664	72%	2.35%	2.23%
<b>Impact of Earnings Sharing Mechanism</b>				
5-year plans				
No Sharing	1318	57%	1.93%	1.41%
Company Share = 75%	1075	47%	1.29%	1.17%
Company Share = 50%	966	42%	1.14%	1.01%
Company Share = 25%	879	38%	1.03%	0.88%
<b>Impact of Efficiency Carryover Mechanism 1 (Previous Revenue as Benchmark)</b>				
3-Year Plans, Extern				
Externalized Percentage = 0%	899	39%	1.93%	0.90%
Externalized Percentage = 10%	990	43%	1.29%	1.07%
Externalized Percentage = 25%	1336	58%	1.80%	1.66%
Externalized Percentage = 50%	1799	78%	3.41%	2.15%
5-Year Plans, Extern				
Externalized Percentage = 0%	1318	57%	1.93%	1.41%
Externalized Percentage = 10%	1469	64%	2.07%	1.55%
Externalized Percentage = 25%	1598	70%	2.30%	1.76%
Externalized Percentage = 50%	1989	86%	3.00%	2.27%
<b>Impact of Efficiency Carryover Mechanism 2 (Fully Exogenous Benchmark)</b>				
3-Year Plans				
Externalized Percentage = 0%	899	39%	1.93%	0.90%
Externalized Percentage = 10%	1535	67%	2.26%	1.93%
Externalized Percentage = 25%	1824	79%	3.68%	2.29%
Externalized Percentage = 50%	2016	88%	3.84%	2.54%
5-Year Plans				
Externalized Percentage = 0%	1318	57%	1.93%	1.41%
Externalized Percentage = 10%	1621	70%	2.34%	1.80%
Externalized Percentage = 25%	1908	83%	3.08%	2.31%
Externalized Percentage = 50%	2109	92%	3.57%	2.56%
<b>Rate Option Plans</b>				
3-Year Plans				
No rate option	899	39%	1.93%	0.90%
Yearly rate reduction = 1%	2299	100%	3.93%	2.71%
Yearly rate reduction = 1.5%	2299	100%	3.93%	2.71%
Yearly rate reduction = 2%	2299	100%	3.93%	2.71%
Yearly rate reduction = 2.5%	899	39%	1.93%	0.90%
5-Year Plans				
No rate option	1318	57%	1.93%	1.41%
Yearly rate reduction = 1%	2299	100%	3.93%	2.71%
Yearly rate reduction = 1.5%	2299	100%	3.93%	2.71%
Yearly rate reduction = 2%	1318	57%	1.93%	1.41%
Yearly rate reduction = 2.5%	1318	57%	1.93%	1.41%

\* = measured by the average year-over-year percent decrease in costs

Table B-2 Results From the Incentive Power Model: 10% Initial Inefficiency

	Net Present Value (\$m) of Cost Reductions	Relative Incentive Power	Average Annual Performance Gain*	
			First two rate cycles	Long run
<b>Reference Regulatory Options</b>				
Cost plus	0	0%	0.00%	0.00%
2 Year Cost of Service	436	29%	1.08%	0.57%
3 Year Cost of Service	623	42%	1.02%	0.76%
Full Rate Externalization	1496	100%	2.64%	2.32%
<b>Impact of Plan Term</b>				
Term = 3 years	623	42%	1.02%	0.76%
Term = 5 years	811	54%	1.10%	1.15%
Term = 6 years	976	65%	1.19%	1.30%
Term = 10 years	1088	73%	1.48%	1.73%
<b>Impact of Earnings Sharing Mechanism</b>				
5-year plans				
No Sharing	811	54%	1.10%	1.15%
Company Share = 75%	723	48%	0.97%	0.97%
Company Share = 50%	653	44%	0.87%	0.84%
Company Share = 25%	602	40%	0.83%	0.73%
<b>Impact of Efficiency Carryover Mechanism 1 (Previous Revenue as Benchmark)</b>				
3-Year Plans, Extern				
Externalized Percentage = 0%	623	42%	1.02%	0.76%
Externalized Percentage = 10%	672	45%	1.09%	0.87%
Externalized Percentage = 25%	887	59%	1.32%	1.36%
Externalized Percentage = 50%	1123	75%	1.87%	1.80%
5-Year Plans, Extern				
Externalized Percentage = 0%	811	54%	1.10%	1.15%
Externalized Percentage = 10%	932	62%	1.20%	1.27%
Externalized Percentage = 25%	1025	69%	1.36%	1.47%
Externalized Percentage = 50%	1239	83%	1.91%	1.90%
<b>Impact of Efficiency Carryover Mechanism 2 (Fully Exogenous Benchmark)</b>				
3-Year Plans				
Externalized Percentage = 0%	623	42%	1.02%	0.76%
Externalized Percentage = 10%	1037	69%	1.65%	1.64%
Externalized Percentage = 25%	1182	79%	2.08%	1.94%
Externalized Percentage = 50%	1253	84%	2.48%	2.16%
5-Year Plans				
Externalized Percentage = 0%	811	54%	1.10%	1.15%
Externalized Percentage = 10%	1033	69%	1.42%	1.42%
Externalized Percentage = 25%	1229	82%	1.97%	1.83%
Externalized Percentage = 50%	1280	86%	2.41%	2.26%
<b>Rate Option Plans</b>				
3-Year Plans				
No rate option	623	42%	1.02%	0.76%
Yearly rate reduction = 1%	1496	100%	3.93%	2.71%
Yearly rate reduction = 1.5%	1496	100%	3.93%	2.71%
Yearly rate reduction = 2%	623	42%	1.02%	0.76%
Yearly rate reduction = 2.5%	623	42%	1.02%	0.76%
5-Year Plans				
No rate option	811	54%	1.10%	1.15%
Yearly rate reduction = 1%	1496	100%	2.64%	2.32%
Yearly rate reduction = 1.5%	811	54%	1.10%	1.15%
Yearly rate reduction = 2%	811	54%	1.10%	1.15%
Yearly rate reduction = 2.5%	811	54%	1.10%	1.15%

\* = measured by the average year-over-year percent decrease in costs

Table B-3. Results From the Incentive Power Model: 50% Initial Inefficiency

	Net Present Value (\$m) of Cost Reductions	Relative Incentive Power	Average Annual Performance Gain*	
			First two rate cycles	Long run
<b>Reference Regulatory Options</b>				
Cost plus	0	0%	0.00%	0.00%
2 Year Cost of Service	905	30%	1.33%	0.75%
3 Year Cost of Service	1430	47%	2.36%	1.05%
Full Rate Externalization	3022	100%	4.75%	3.05%
<b>Impact of Plan Term</b>				
Term = 3 years	1430	47%	2.36%	1.05%
Term = 5 years	1778	59%	2.29%	1.65%
Term = 6 years	2143	71%	2.37%	1.82%
Term = 10 years	2520	83%	3.29%	2.42%
<b>Impact of Earnings Sharing Mechanism</b>				
5-year plans				
No Sharing	1778	59%	2.29%	1.65%
Company Share = 75%	1603	53%	2.06%	1.36%
Company Share = 50%	1520	50%	1.96%	1.22%
Company Share = 25%	1354	45%	1.75%	1.02%
<b>Impact of Efficiency Carryover Mechanism 1 (Previous Revenue as Benchmark)</b>				
3-Year Plans, Extern				
Externalized Percentage = 0%	1430	47%	2.36%	1.05%
Externalized Percentage = 10%	1551	51%	2.48%	1.21%
Externalized Percentage = 25%	2017	67%	3.17%	1.90%
Externalized Percentage = 50%	2481	82%	4.08%	2.42%
5-Year Plans, Extern				
Externalized Percentage = 0%	1778	59%	2.29%	1.65%
Externalized Percentage = 10%	1979	65%	2.52%	1.81%
Externalized Percentage = 25%	2279	75%	2.75%	2.02%
Externalized Percentage = 50%	2666	88%	3.68%	2.60%
<b>Impact of Efficiency Carryover Mechanism 2 (Fully Exogenous Benchmark)</b>				
3-Year Plans				
Externalized Percentage = 0%	1430	47%	2.36%	1.05%
Externalized Percentage = 10%	2202	73%	3.58%	2.20%
Externalized Percentage = 25%	2531	84%	4.30%	2.61%
Externalized Percentage = 50%	2793	92%	4.61%	2.84%
5-Year Plans				
Externalized Percentage = 0%	1778	59%	2.29%	1.65%
Externalized Percentage = 10%	2309	76%	2.81%	2.04%
Externalized Percentage = 25%	2558	85%	3.68%	2.54%
Externalized Percentage = 50%	2880	95%	4.35%	2.88%
<b>Rate Option Plans</b>				
3-Year Plans				
No rate option	1430	47%	2.36%	1.05%
Yearly rate reduction = 1%	3022	100%	4.75%	3.05%
Yearly rate reduction = 1.5%	3022	100%	4.75%	3.05%
Yearly rate reduction = 2%	3022	100%	4.75%	3.05%
Yearly rate reduction = 2.5%	3022	100%	4.75%	3.05%
5-Year Plans				
No rate option	1778	59%	2.29%	1.65%
Yearly rate reduction = 1%	3022	100%	4.75%	3.05%
Yearly rate reduction = 1.5%	3022	100%	4.75%	3.05%
Yearly rate reduction = 2%	3022	100%	4.75%	3.05%
Yearly rate reduction = 2.5%	1778	59%	2.29%	1.65%

\* = measured by the average year-over-year percent decrease in costs

### Impact of Plan Term

Consider now the effect of extending the plan term beyond the conventional three-year rate case cycle. Extending the term from three years to five years increases annual performance gains by about 51 basis points in the long run. Evidently, stronger performance incentives elicit better performance. Extending the term from three years to 10 years increases average annual performance gains by 133 basis points.

The benefits of a longer plan term are greater when rate cases would be more frequent under traditional regulation. For example, if rate cases would otherwise be held every two years, a five-year MRP with no earnings sharing produces 75 basis points of additional annual performance gains in the long run.

### Impact of Earnings Sharing

The third panel of Table B-1 shows that the addition of earnings sharing mechanisms (ESMs) reduces cost savings compared to a plan of the same duration with no sharing mechanism. For example, a five-year plan in which the company keeps 75 percent of earnings variances produces only 27 basis points of additional performance gains annually in the long run compared to a three-year rate case cycle.

However, plans with an earnings sharing mechanism can deliver more cost savings than a pattern of frequent rate cases. For example, a five-year plan with 75/25 sharing produces 51 more basis points of annual performance gains than traditional regulation with a two-year cycle.

### Impact of Efficiency Carryover Mechanism

Let's consider now the impact of the efficiency carryover mechanism that uses the predetermined revenue requirement from the previous plan as the benchmark. The fourth panel of Table B-1 shows that, in the context of a five-year rate plan, assigning the benchmark a weight of 25 percent produces 35 basis points of additional performance gains. Of greater interest perhaps is that it boosts the performance gains from a three-year plan by a substantial 76 basis points. Thus, this efficiency carryover mechanism can give a three-year plan considerable incentive power.

Let's turn now to the alternative efficiency carryover mechanism approach in which cost in the historical reference year is compared to a *fully external* benchmark such as that produced by an econometric model developed using industry data. Remarkably, the fifth panel of Table B-1 shows that assigning the benchmark a weight of only 25 percent more than doubles the cost savings produced by three-year plans. This suggests that a benchmark-based efficiency carryover mechanism has the potential to strengthen performance incentives rather dramatically. With a *five*-year rate case cycle, the effect of the same 25 percent externalization is still substantial, but more modest than in a three-year cycle. This is mainly due to the fact that more of the potential cost savings are achieved by the five-year term.

### Impact of Rate Case Avoidance

Let's turn now to the impact of rate case avoidance. The sixth panel of Table B-1 shows that, in three-year plans with stretch factors of 1 percent, 1.5 percent and 2 percent, this approach produces the same dramatic cost efficiency savings that would result from full rate externalization. Evidently, the company judges that with a high level of cost containment effort it can get its costs permanently below the cost growth target and acts accordingly.

## Conclusions

Our incentive power research for this report yields important results on the consequences of alternative regulatory systems. Most fundamentally, the results show that the frequency of rate cases can have a material impact on utility cost performance. Under COSR, performance will be considerably better when rate cases typically occur every three years than when they typically occur every two years. Thus, the favorability of business conditions affects operating performance.

Our research also shows that an MRP with a five-year rate case cycle can simulate the stronger incentives, especially when rate cases are more frequent than every three years. In addition, an MRP should have advantages when the alternative is pervasive cost trackers. Incentives are weakened under an ESM. We also show that adding innovative plan provisions on the frontier of PBR, such as efficiency carryover mechanisms and menus, can materially strengthen performance incentives. Many of the real-world plans reviewed in this report did not have these incentive power “turbochargers.”

## **B.2 Utility Productivity Research**

We presented results of our utility productivity research in Section 6 of this report. This section of Appendix B discusses productivity and revenue cap indexes, sources of productivity growth, and productivity trends of U.S. power distributors. We also provide mathematical details of the calculations.

### **Productivity Indexes**

#### The Basic Idea

A productivity index is the ratio of an output quantity index (Outputs) to an input quantity index (Inputs):

$$Productivity = \frac{Outputs}{Inputs} \quad [B1]$$

It is used to measure the efficiency with which firms convert production inputs into the goods and services that they provide. The growth trend of a productivity trend index can then be shown mathematically to be the *difference* between the trends in the output and input quantity indexes.

$$trend Productivity = trend Outputs - trend Inputs. \quad [B2]$$

Productivity grows when the output index rises more rapidly (or falls less rapidly) than the input index. Productivity can be volatile but tends to grow over time. The volatility is typically due to fluctuations in output, the uneven timing of certain expenditures, or both. The volatility of productivity growth tends to be greater for individual companies than the average for a group of companies.

The scope of a productivity index depends on the array of inputs that are considered in the input quantity index. Some indexes measure productivity in the use of a single input class such as labor. A *multifactor* productivity index measures productivity in the use of multiple inputs.

The output (quantity) index of a firm or industry summarizes trends in the scale of operation. Growth in each output dimension that is itemized is measured by a subindex. One possible objective of output research is to measure the impact of output growth on company *cost*. In that case, the sub-indexes should measure the dimensions of the “workload” that drive cost. If there is more than one pertinent scale

variable, the weights for each variable should reflect the relative cost impacts of these drivers.<sup>198</sup> A productivity index calculated using a cost-based output index may fairly be described as a “cost efficiency index.”

### Sources of Productivity Growth

Research by economists has found the sources of productivity growth to be diverse. One important source is technological change. New technologies permit an industry to produce given output quantities with fewer inputs.

Economies of scale are a second source of productivity growth. These economies are available in the longer run if cost tends to grow more slowly than output. A company’s potential to achieve incremental scale economies depends on the pace of its output growth. Incremental scale economies (and thus productivity growth) will typically be reduced when output growth slows.

A third important source of productivity growth is change in inefficiency. Inefficiency is the degree to which a company fails to operate at the maximum efficiency that technology allows. Productivity growth rises (falls) when inefficiency diminishes (increases). The lower the company’s current efficiency level, the greater the potential for productivity growth from a change in inefficiency.

Another driver of productivity growth is changes in the miscellaneous external business conditions, other than input price inflation and output growth, which affect cost. A good example for an electric power distributor is the share of distribution lines that are undergrounded. An increase in the share of lines that are undergrounded will tend to slow multifactor productivity growth (because of the higher capital requirements) but accelerate O&M productivity growth (since there is less line maintenance).

Finally, consider that in the short to medium run a utility’s productivity growth is driven by the position of the utility in the cycle of asset replacement. Productivity growth will be slower to the extent that the need for replacement capex is large relative to the existing stock of capital.

### **Revenue Cap Indexes**

Index research provides the basis for revenue cap indexes. The following basic result of cost research is a useful starting point:

$$\text{growth Cost} = \text{growth Input Prices} - \text{growth Productivity} + \text{growth Outputs} \quad [\text{B3}]$$

The cost trend is the difference between the trends in input price and productivity indexes plus the trend in operating scale as measured by a cost-based output index. This result provides the rationale for a revenue cap escalator of the following general form:

$$\text{growth Revenue} = \text{growth Input Prices} - X + \text{growth Outputs} \quad [\text{B4a}]$$

where

$$X = \overline{MFP} + \text{Stretch}. \quad [\text{B4b}]$$

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<sup>198</sup> The sensitivity of cost to the change in a business condition variable is commonly measured by its cost “elasticity.” Elasticities can be estimated econometrically using data on the operations of a group of utilities. A multiple category output index with elasticity weights is unnecessary if econometric research reveals that there is one dominant cost driver.

Here X, the “X factor,” is calibrated to reflect a base MFP growth target ( $\overline{MFP}$ ). A “stretch factor” is often added to the formula which slows revenue cap index growth in a manner that shares with customers the financial benefits of performance improvements expected during the MRP. Since the X factor often includes *Stretch*, it is sometimes said that the index research has the goal of “calibrating” (rather than solely determining) X.

For electric power distributors, the number of customers served is a useful scale variable for a revenue cap index. Relation [B3] can then be restated as:

$$\begin{aligned} \text{trend Cost} & \\ &= \text{trend Input Prices} - (\text{trend Customers} - \text{trend Inputs}) + \text{trend Customers} \\ &= \text{trend Input Prices} - \text{trend MFP}^N + \text{trend Customers} \end{aligned} \quad [\text{B5a}]$$

where  $MFP^N$  is an MFP index that uses the number of customers to measure output.

Rearranging the terms of [B5a] we obtain:

$$\begin{aligned} \text{trend Cost} - \text{trend Customers} & \\ &= \text{trend (Cost/Customer)} = \text{trend Input Prices} - \text{trend MFP}^N. \end{aligned} \quad [\text{B5b}]$$

This provides the basis for the following revenue per customer index formula:<sup>199</sup>

$$\text{growth Revenue/Customer} = \text{growth Input Prices} - X + Y + Z \quad [\text{B6}]$$

where

$$X = \overline{MFP}^N + \text{Stretch}.$$

## Productivity Trends of U.S. Power Distributors

### Data

The primary source of our cost and quantity data is FERC Form 1. Selected Form 1 data were for many years published by the U.S. Energy Information Administration (EIA).<sup>200</sup> More recently, the data have been available electronically in raw form from FERC and in more processed forms from commercial vendors. FERC Form 1 data used in this study were obtained directly from government agencies and processed by PEG Research. Customer data were drawn from FERC Form 1 in the early years of the sample period and from Form EIA-861 (the *Annual Electric Power Industry Report*) in later years.

Data were eligible for inclusion in the sample from all major investor-owned electric utilities in the United States that filed the Form 1 in 1964 (the benchmark year for our study, described further below)

<sup>199</sup> This general formula for the design of revenue cap indexes is currently used in the PBR plans of ATCO Gas and AltaGas in Canada. The Régie de l’Energie in Québec has directed Gaz Métro to develop a plan featuring revenue per customer indexes. Revenue per customer indexes were previously used by Southern California Gas and Enbridge Gas Distribution, the largest gas distributors in the United States and Canada, respectively.

<sup>200</sup> This publication series had several titles over the years. A recent title is Financial Statistics of Major US Investor-Owned Electric Utilities.

and that, together with any important predecessor companies, have reported the necessary data continuously. To be included in the study the data also were required to be of good quality and plausible. One important quality criterion was that there were no major shifts in cost between the distribution and transmission plant. Data from 86 utilities met our standards and were used in our indexing work. We believe that these data are the best available for rigorous work on the productivity trends of U.S. power distributors.

Table B-4 lists the companies from which data were drawn. Most broad regions of the United States are well-represented.<sup>201</sup>

### Scope of Research

The total cost of power distributor services considered in the study was the sum of applicable O&M expenses and capital costs. Reported costs of any gas services provided by combined gas and electric utilities in the sample were excluded.<sup>202</sup> We also excluded expenses for purchased power and customer service and information. The featured results employed a geometric decay approach to capital cost measurement that is explained further below. Capital cost is the sum of depreciation expenses, a return on the value of net plant, taxes and capital gains.

We calculated indexes of growth in the O&M, capital, and multifactor productivity of each sampled utility in the provision of power distributor services. Simple arithmetic averages of those growth rates were then calculated for all sampled companies.

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<sup>201</sup> Unfortunately, the requisite customer data are not available for most Texas distributors.

<sup>202</sup> Gas service costs of combined gas and electric utilities are itemized on FERC Form 1 for easy removal. We exclude customer service and information expenses because on FERC Form 1 these include DSM expenses.

Table B-4. Companies Included in Our Power Distributor Productivity Research

Alabama Power	MDU Resources Group
ALLETE (Minnesota Power)	Metropolitan Edison
Appalachian Power	MidAmerican Energy
Arizona Public Service	Mississippi Power
Atlantic City Electric	Monongahela Power
Avista	Narragansett Electric
Baltimore Gas and Electric	Nevada Power
Central Hudson Gas & Electric	New York State Electric & Gas
Central Maine Power	Niagara Mohawk Power
Cleco Power	Northern States Power - MN
Cleveland Electric Illuminating	Northwestern Public Service
Connecticut Light and Power	Nstar Electric
Consolidated Edison	Ohio Edison
Dayton Power and Light	Ohio Power
Delmarva Power & Light	Oklahoma Gas and Electric
Duke Energy Carolinas	Orange and Rockland Utilities
Duke Energy Florida	Otter Tail Power
Duke Energy Indiana	Pacific Gas and Electric
Duke Energy Kentucky	PacifiCorp
Duke Energy Ohio	PECO Energy
Duke Energy Progress	Pennsylvania Electric
Duquesne Light	Pennsylvania Power
El Paso Electric	Portland General Electric
Empire District Electric	Public Service Company of Colorado
Entergy Louisiana	Public Service Company of Oklahoma
Entergy Mississippi	Public Service Electric and Gas
Entergy New Orleans	Rochester Gas and Electric
Fitchburg Gas and Electric Light	San Diego Gas & Electric
Florida Power & Light	South Carolina Electric & Gas
Georgia Power	Southern California Edison
Green Mountain Power	Southern Indiana Gas and Electric
Gulf Power	Superior Water, Light and Power
Idaho Power	Tampa Electric
Indiana Michigan Power	Toledo Edison
Indianapolis Power & Light	Union Electric
Jersey Central Power & Light	United Illuminating
Kansas City Power & Light	Virginia Electric and Power
Kansas Gas and Electric	West Penn Power
Kentucky Power	Western Massachusetts Electric
Kentucky Utilities	Wheeling Power
Kingsport Power	Wisconsin Electric Power
Louisville Gas and Electric	Wisconsin Power and Light
Massachusetts Electric	Wisconsin Public Service

**Number of Sampled Companies: 86**

The major tasks in a power distributor's operation are the local delivery of power and the reduction of its voltage. Most power is delivered to end users at the voltage at which it is consumed. U.S. distributors also typically provide an array of customer services such as metering and billing.

### Index Construction

Productivity growth was calculated for each sampled utility as the difference between the growth rates of output and input quantity trends. We used as a proxy for output growth the growth in the total number of retail customers served.

In calculating input quantity trends, we broke down the applicable cost into those for distribution plant, general plant, labor, and material and service (M&S) inputs. The cost of labor was defined for this purpose as O&M salaries and wages and pensions and other benefits. The cost of M&S inputs was defined as applicable O&M expenses net of these labor costs. The growth of the multifactor input quantity index is a weighted average of the growth in quantity subindexes for labor, materials and services, and power distribution plant.

### Sample Period

The full sample period for which productivity results were calculated was 1980-2014.<sup>203</sup>

### Index Results

Table B-5 summarizes our productivity research for the full sample. Over the full 1980-2014 sample period, the average annual growth rate in the MFP of all sampled U.S. power distributors was about 0.45 percent. Customer growth averaged 1.16 percent annually, whereas input growth averaged 0.70 percent. O&M productivity growth averaged 0.53 percent while capital productivity growth averaged 0.43 percent. O&M productivity growth was much more volatile than capital productivity growth.

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<sup>203</sup> In other words, 1980 was the earliest year for growth rate calculations.

Table B-5. U.S. Power Distribution Productivity Trends

	<b>Output</b>	<b>Inputs</b>	<b>PFP O&amp;M</b>	<b>PFP Capital</b>	<b>MFP</b>
1980	1.77%	2.26%	-4.19%	1.24%	-0.49%
1981	1.66%	1.49%	-2.42%	1.25%	0.17%
1982	1.63%	0.76%	-1.20%	1.53%	0.87%
1983	0.96%	0.45%	-0.38%	0.98%	0.51%
1984	1.60%	0.33%	-0.22%	1.79%	1.27%
1985	1.71%	0.76%	-0.21%	1.37%	0.95%
1986	1.70%	0.79%	0.88%	0.97%	0.91%
1987	1.77%	1.33%	-0.12%	0.68%	0.44%
1988	1.47%	0.90%	1.55%	0.24%	0.57%
1989	1.49%	1.23%	0.00%	0.23%	0.26%
1990	1.42%	1.25%	0.64%	-0.05%	0.18%
1991	1.17%	1.20%	0.58%	-0.32%	-0.03%
1992	1.12%	0.64%	1.61%	0.10%	0.48%
1993	1.41%	0.96%	1.19%	0.12%	0.45%
1994	1.39%	0.45%	2.44%	0.29%	0.94%
1995	1.40%	0.46%	3.58%	-0.04%	0.94%
1996	1.16%	1.05%	0.67%	-0.13%	0.11%
1997	1.37%	-0.16%	4.68%	0.39%	1.53%
1998	1.54%	0.87%	0.73%	0.71%	0.67%
1999	0.81%	-0.27%	2.24%	0.52%	1.08%
2000	1.37%	0.48%	0.86%	0.73%	0.89%
2001	1.59%	0.39%	2.73%	0.61%	1.20%
2002	1.17%	0.38%	2.73%	0.33%	0.79%
2003	1.14%	1.17%	-1.50%	0.43%	-0.03%
2004	1.06%	0.66%	0.76%	0.22%	0.41%
2005	1.07%	1.14%	-0.25%	0.09%	-0.07%
2006	0.51%	1.03%	-1.07%	-0.21%	-0.52%
2007	1.02%	1.14%	0.00%	-0.02%	-0.12%
2008	0.54%	1.53%	-2.06%	-0.09%	-0.99%
2009	0.26%	-0.75%	2.73%	-0.46%	1.01%
2010	0.45%	0.72%	-0.47%	0.05%	-0.27%
2011	0.28%	-0.22%	0.05%	0.50%	0.50%
2012	0.39%	-0.91%	2.90%	0.58%	1.29%
2013	0.44%	0.41%	0.40%	-0.05%	0.03%
2014	0.65%	0.68%	-1.41%	0.56%	-0.03%
<b>Average Annual Growth Rates</b>					
<b>1980-2014</b>	<b>1.16%</b>	<b>0.70%</b>	<b>0.53%</b>	<b>0.43%</b>	<b>0.45%</b>
<b>1996-2014</b>	<b>0.88%</b>	<b>0.49%</b>	<b>0.77%</b>	<b>0.25%</b>	<b>0.39%</b>
<b>2008-2014</b>	<b>0.43%</b>	<b>0.21%</b>	<b>0.30%</b>	<b>0.15%</b>	<b>0.22%</b>

Over the more recent 1996-2014 sample period, the average annual growth rate in the MFP of all sampled U.S. power distributors was similar, at 0.39 percent. Customer growth slowed modestly to average 0.88 percent annually, while input growth averaged 0.49 percent annually. O&M productivity growth accelerated to average 0.77 percent, while capital productivity growth slowed to average 0.25 percent.

Since 2007 the MFP growth of power distributors has slowed modestly, averaging 0.22 percent annually. This is mainly due to a slowdown in O&M productivity growth, which averaged 0.30 percent annually. Capital productivity growth slowed slightly to average 0.15 percent.

Table B-6 provides the annual growth rates in the MFP indexes for the individual utilities in our sample. We report results for the full sample period (1980-2014) and for the 1996-2014 and 2008-2014 sample periods.

### Additional Details on Productivity Research

*Input Quantity Indexes.* The quantity subindex for labor is the ratio of salary and wage expenses to a regionalized salary and wage labor price index.<sup>204</sup> The quantity subindex for M&S inputs is the ratio of the expenses to the GDPPI. Details of the capital quantity index are provided below.

The summary quantity indexes for O&M, capital, and all inputs were of chain-weighted Törnqvist form.<sup>205</sup> This means that their annual growth rate was determined by the following general formula:

$$\ln\left(\frac{Inputs_t}{Inputs_{t-1}}\right) = \sum_j \frac{1}{2} \cdot (sc_{j,t} + sc_{j,t-1}) \cdot \ln\left(\frac{X_{j,t}}{X_{j,t-1}}\right) \quad [B7]$$

where in each year  $t$ ,

$Inputs_t$  = Summary input quantity index

$X_{j,t}$  = Quantity subindex for input category  $j$

$sc_{j,t}$  = Share of input category  $j$  in the applicable cost

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<sup>204</sup> The growth rate of the labor price index was calculated for most years as the growth rate of the national employment cost index (ECI) for the salaries and wages of the utility sector plus the difference between the growth rates of multi-sector ECIs for workers in the utility's service territory and in the nation as a whole.

<sup>205</sup> For seminal discussions of this index form, see Törnqvist (1936) and Theil (1965).

Table B-6. Power Distributor MFP Trends of Individual U.S. Electric Utilities

Distributor	Average Annual MFP Growth Rate		
	1980-2014	1996-2014	2008-2014
Alabama Power	-0.52%	-0.61%	-0.50%
ALLETE (Minnesota Power)	0.86%	1.32%	0.54%
Appalachian Power	0.12%	0.38%	-0.29%
Arizona Public Service	0.39%	0.88%	0.98%
Atlantic City Electric	0.37%	0.10%	-1.37%
Avista	0.41%	0.09%	-0.71%
Baltimore Gas and Electric	0.35%	-0.06%	-1.08%
Central Hudson Gas & Electric	0.81%	-0.04%	-0.45%
Central Maine Power	0.66%	0.79%	0.28%
Cleco Power	-0.14%	-0.35%	-0.42%
Cleveland Electric Illuminating	0.40%	0.49%	0.05%
Connecticut Light and Power	0.41%	-0.10%	0.03%
Consolidated Edison	0.06%	-0.45%	-0.44%
Dayton Power and Light	0.84%	0.35%	-0.93%
Delmarva Power & Light	0.60%	0.71%	-1.08%
Duke Energy Carolinas	-0.04%	1.09%	0.75%
Duke Energy Florida	0.64%	0.38%	1.00%
Duke Energy Indiana	0.58%	0.08%	-0.09%
Duke Energy Kentucky	0.35%	0.54%	-1.24%
Duke Energy Ohio	0.58%	0.81%	-0.87%
Duke Energy Progress	0.56%	0.65%	1.35%
Duquesne Light	0.64%	0.73%	0.04%
El Paso Electric	0.88%	0.45%	-0.17%
Empire District Electric	-0.09%	-0.26%	-0.65%
Entergy Louisiana	0.63%	0.71%	1.86%
Entergy Mississippi	-0.01%	-0.17%	0.40%
Entergy New Orleans	0.43%	-0.54%	4.37%
Fitchburg Gas and Electric Light	0.34%	0.22%	0.98%
Florida Power & Light	0.84%	0.66%	1.06%
Georgia Power	0.40%	1.11%	1.09%
Green Mountain Power	0.82%	0.52%	1.05%
Gulf Power	0.21%	0.28%	-0.39%
Idaho Power	1.29%	1.48%	1.23%
Indiana Michigan Power	0.30%	-0.02%	-0.46%
Indianapolis Power & Light	0.81%	1.17%	0.86%
Jersey Central Power & Light	0.68%	0.63%	0.84%
Kansas City Power & Light	1.01%	0.76%	0.37%
Kansas Gas and Electric	0.70%	0.57%	0.18%
Kentucky Power	-0.71%	-0.56%	-1.42%
Kentucky Utilities	0.18%	0.01%	-2.38%
Kingsport Power	0.46%	0.23%	-1.33%
Louisville Gas and Electric	0.33%	0.20%	-2.39%
Massachusetts Electric	0.96%	1.10%	0.72%
MDU Resources Group	0.61%	0.76%	1.01%
Metropolitan Edison	1.25%	1.42%	1.06%

Table B-6 (continued) Power Distributor MFP Trends of Individual U.S. Electric Utilities

<b>Distributor</b>	<b>1980-2014</b>	<b>1996-2014</b>	<b>2008-2014</b>
MidAmerican Energy	0.04%	1.22%	2.37%
Mississippi Power	-1.18%	-1.42%	0.65%
Monongahela Power	0.10%	0.57%	0.54%
Narragansett Electric	0.80%	0.57%	-0.03%
Nevada Power	0.99%	1.12%	1.67%
New York State Electric & Gas	1.02%	1.57%	1.51%
Niagara Mohawk Power	0.54%	0.81%	0.68%
Northern States Power - MN	0.73%	0.26%	1.06%
Northwestern Public Service	0.30%	0.68%	1.01%
Nstar Electric	0.40%	0.59%	1.14%
Ohio Edison	0.97%	1.34%	1.02%
Ohio Power	0.28%	0.45%	-0.20%
Oklahoma Gas and Electric	0.14%	-0.07%	-0.49%
Orange and Rockland Utilities	0.82%	0.32%	0.07%
Otter Tail Power	0.00%	0.04%	0.37%
Pacific Gas and Electric	0.24%	-0.04%	0.10%
PacifiCorp	0.08%	1.18%	2.26%
PECO Energy	0.91%	0.16%	-0.21%
Pennsylvania Electric	0.84%	0.94%	1.15%
Pennsylvania Power	0.60%	0.75%	0.51%
Portland General Electric	0.57%	-0.72%	0.10%
Public Service Company of Colorado	0.72%	0.01%	0.90%
Public Service Company of Oklahoma	0.00%	-0.43%	0.07%
Public Service Electric and Gas	0.80%	0.76%	0.49%
Rochester Gas and Electric	1.05%	0.64%	0.97%
San Diego Gas & Electric	-0.31%	-0.41%	0.21%
South Carolina Electric & Gas	0.16%	0.21%	0.02%
Southern California Edison	-0.08%	-0.45%	-1.47%
Southern Indiana Gas and Electric	0.29%	-0.03%	-1.19%
Superior Water, Light and Power	0.57%	0.31%	-0.40%
Tampa Electric	0.97%	0.80%	0.42%
Toledo Edison	1.07%	1.13%	0.94%
Union Electric	0.38%	0.25%	0.45%
United Illuminating	-0.72%	-1.51%	-5.50%
Virginia Electric and Power	0.65%	0.88%	0.64%
West Penn Power	0.83%	1.38%	1.73%
Western Massachusetts Electric	0.75%	1.01%	0.42%
Wheeling Power	0.11%	-0.19%	-1.06%
Wisconsin Electric Power	0.41%	0.11%	0.74%
Wisconsin Power and Light	-0.04%	-0.29%	-0.38%
Wisconsin Public Service	0.82%	0.57%	2.31%
<b>Full Sample Averages</b>	<b>0.45%</b>	<b>0.39%</b>	<b>0.22%</b>

The growth rate of each summary index is a weighted average of the growth rates of the input quantity subindexes. Each growth rate is calculated as the logarithm of the ratio of the quantities in successive years. Data on the average shares of each input in the applicable total cost of each utility in the current and prior years served as weights.

*Productivity Growth Rates and Trends.* The annual growth rate in each company's productivity index is given by the formula:

$$\begin{aligned} & \ln\left(\frac{\text{Productivity}_t}{\text{Productivity}_{t-1}}\right) \\ &= \ln\left(\frac{\text{Output Quantities}_t}{\text{Output Quantities}_{t-1}}\right) - \ln\left(\frac{\text{Input Quantities}_t}{\text{Input Quantities}_{t-1}}\right) \end{aligned} \quad [\text{B8}]$$

The long-run trend in each productivity index was calculated as its average annual growth rate over the full sample period.

*Capital Cost Measurement.* A service price approach is used to measure capital costs. This approach has a solid basis in economic theory and is widely used in scholarly empirical work. In the application of the general method used in this study, the cost of a given class of utility plant  $j$  in a given year  $t$  ( $CK_{j,t}$ ) is the product of a capital service price index ( $WKS_{j,t}$ ) and an index of the capital quantity at the end of the prior year ( $XK_{j,t-1}$ ):

$$CK_{j,t} = WKS_{j,t} \cdot XK_{j,t-1} \quad [\text{B9a}]$$

It can then be shown mathematically that:

$$\text{growth } CK_{j,t} = \text{growth } WKS_{j,t} + \text{growth } XK_{j,t-1} \quad [\text{B9b}]$$

In constructing both indexes we used the geometric decay approach. We took 1964 as the benchmark year. The values for these indexes in the benchmark year are based on the net value of plant as reported in FERC Form 1. We estimated the benchmark year (inflation-adjusted) value of net distribution plant by dividing this book value by a triangularized weighted average of 37 values of an index of utility construction cost for a period ending in the benchmark year.<sup>206</sup> The construction cost index ( $WKA_t$ ) was the applicable regional Handy-Whitman index of the cost of the relevant asset category.<sup>207</sup>

The following formula was used to compute subsequent values of each capital quantity index:

$$XK_{j,t} = (1-d) \cdot XK_{j,t-1} + \frac{VI_{j,t}}{WKA_{j,t}} \quad [\text{B10}]$$

Here, the parameter  $d$  is the economic depreciation rate and  $VI_t$  is the value of gross additions to utility plant. The economic depreciation rate was set at 4.34 percent for distribution plant. It is based on a weighted average of economic depreciation rates for different types of distribution assets. The depreciation rate also reflects declining balance parameters that were 0.91 for structures and 1.65 for equipment.

<sup>206</sup> A triangularized weighted average places a greater weight on more recent values of the construction cost index. This makes sense intuitively since more recent plant additions are less depreciated and to that extent tend to have a bigger impact on net plant value.

<sup>207</sup> These data are reported in the Handy-Whitman Index of Public Utility Construction Costs, a publication of Whitman, Requardt and Associates.

Following is the full formula for the capital service price indexes for each asset category:

$$WKS_{j,t} = [CK_{j,t}^{Taxes} / XK_{j,t-1}] + d \cdot WKA_{j,t} + WKA_{j,t-1} \left[ r_t - \frac{(WKA_{j,t} - WKA_{j,t-1})}{WKA_{j,t-1}} \right]. \quad [B11]$$

The first term in the expression corresponds to the cost of taxes and utility franchise fees ( $CK_{j,t}^{Taxes}$ ). The second term corresponds to the cost of depreciation. The third term corresponds to the real rate of return on capital. This term was smoothed to reduce capital cost volatility.

The calculation of [B11] requires an estimate of the rate of return on capital ( $r_t$ ). We employed a weighted average of rates of return for debt and equity.<sup>208</sup> Prior to 1995, we relied on a 50/50 average of the average yield on AA utility bonds and ROE using data from Moody's.<sup>209</sup> For subsequent years, we relied on a 50/50 average of the embedded average interest rate on long-term debt as calculated from FERC Form 1 data and the average allowed rate of ROE approved in electric utility rate cases for each year as reported by the Edison Electric Institute.<sup>210</sup>

### B.3 Statistical Benchmarking

Quantitative performance benchmarking commonly involves one or more gauges of activity. These are sometimes called *key performance indicators* (KPIs) or *metrics*. The values of these indicators for a utility are compared to benchmark values that reflect performance standards. Given information on the cost of a utility and a certain cost benchmark one might, for instance, measure its cost performance by taking the ratio of the two values:

$$Cost\ Performance = Cost^{Actual} / Cost^{Benchmark}.$$

Benchmarks are often developed using data on the operations of agents that are involved in the activity under study. Statistical methods are useful in the calculation of benchmarks and are sometimes used in performance appraisals. An approach to benchmarking that features statistical methods is called *statistical benchmarking*.

### Econometric Benchmarking

Cost benchmarks should reflect the cost pressures a utility faces. The impact of external business conditions on the costs of utilities can be estimated using statistics. Consider, by way of example, the following simple model of power distributor cost. In a given year  $t$ , the cost of power distributor  $h$  ( $C_{h,t}$ ) is a function of the number of customers it serves ( $N_{h,t}$ ) and the market wage rate ( $W_{h,t}$ ):

$$C_{h,t} = a_0 + a_1 N_{h,t} + a_2 W_{h,t} \quad [B12]$$

The parameters  $a_1$  and  $a_2$  determine the impact of the business conditions on cost.

<sup>208</sup> This calculation was made solely for the purpose of measuring productivity trends and does not prescribe appropriate rate of return levels for utilities.

<sup>209</sup> Moody's Public Utility Manual (1995).

<sup>210</sup> Edison Electric Institute.

A branch of statistics called *econometrics* has developed procedures for estimating the parameters of economic functions using historical data.<sup>211</sup> The parameters of a utility cost function can be estimated using historical data on the costs incurred by a group of utilities and the business conditions that they faced. Abundant, high quality data are available for this purpose from the federal government. The sample used in model estimation is typically a “panel” data set that pools time series data for several companies.

Tests can be constructed for the hypothesis that the parameter for a candidate cost driver equals zero. A variable is deemed a statistically significant cost driver if this hypothesis is rejected at a high level of confidence.

A cost function fitted with econometric parameter estimates may be called an *econometric cost model*. We can use such a model to predict a company’s cost given local values for cost driver variables. These predictions are econometric benchmarks. Cost performance can be measured by comparing a company’s cost in year  $t$  to the cost projected for that year and company by the econometric model. There is no need to choose a peer group because the methodology uses the exact business conditions faced by the benchmarked company.

Suppose, for example, that we wish to benchmark the cost of a hypothetical utility called Eastern Edison. We might then predict the cost of Eastern Edison in period  $t$  using the following model constructed from [B12]:

$$\hat{C}_{Eastern,t} = \hat{a}_0 + \hat{a}_1 \cdot N_{Eastern,t} + \hat{a}_2 \cdot W_{Eastern,t} . \quad [B13]$$

Here  $\hat{C}_{Eastern,t}$  denotes the predicted cost of the company,  $N_{Eastern,t}$  is the number of customers it served, and  $W_{Eastern,t}$  measures the wage rate in its region. The  $\hat{a}_0$ ,  $\hat{a}_1$ , and  $\hat{a}_2$  terms are parameter estimates. Performance might then be measured using a formula such as

$$Performance = \frac{C_{Eastern,t}}{\hat{C}_{Eastern,t}} .$$

Table B-7 provides details of the econometric model of total power distributor cost that is used to set stretch factors in the IRM4 multiyear rate plan in Ontario. There is one input price variable (a capital price index), three scale variables (the number of customers, the retail delivery volume, and peak demand), two additional business conditions (average line length and a system age variable), and a trend variable. Note that the number of customers is the scale variable with the highest parameter estimate and  $t$  statistic. This model has a translogarithmic functional form so that, in addition to the “first order terms” representing the basic business condition variables, there are interaction and quadratic terms for the price and output variables. Model parameters were estimated using Ontario data

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<sup>211</sup> The estimation of model parameters is sometimes called regression.

Table B-7. Econometric Cost Model for Ontario<sup>212</sup>

**VARIABLE KEY**

Input Price: WK = Capital Price Index  
 Outputs: N = Number of Customers  
           C = System Capacity Peak Demand  
           D = Retail Deliveries  
 Other Business Conditions: L = Average Line Length (km)  
                                   NG = % of 2012 Customers added in the last 10 years  
 Trend = Time Trend

EXPLANATORY VARIABLE	ESTIMATED COEFFICIENT	T-STATISTIC
WK*	0.6271	85.5530
N*	0.4444	8.0730
C*	0.1612	3.2140
D*	0.1047	3.4010
WKxWK*	0.1253	4.5320
NxN	-0.3776	-1.6160
CxC	0.1904	0.9340
DxD*	0.1646	2.1660
WKxN*	0.0536	3.4540
WKxC	0.0100	0.7200
WKxD	-0.0001	-0.0100
NxC	0.1415	0.7040
NxD	0.0674	0.6790
CxD*	-0.1990	-2.3070
L*	0.2853	13.9090
NG*	0.0165	2.4110
Trend*	0.0171	12.5700
Constant*	12.815	683.362
System Rbar-Squared	0.983	
Sample Period	2002-2012	
Number of Observations	802	

\*Variable is significant at 95% confidence level

<sup>212</sup> Kaufmann, Hovde, Kalfayan, and Rebane (2013), p. 58.





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1 Cyclotron Road  
Mail Stop 90-4000  
Berkeley, CA 94720  
510-486-4000

<http://gridmodernization.labworks.org/>

# Exploring the Use of Alternative Regulatory Mechanisms to Establish New Base Rates

RESPONSE TO PC51  
REQUEST FOR COMMENTS

**PREPARED FOR**

Joint Utilities of Maryland

**PREPARED BY**

William Zarakas  
Sanem Sergici  
Pearl Donohoo-Vallett  
Nicole Irwin

March 29, 2018

# Notice

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# Table of Contents

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I.	Introduction .....	1
II.	Commission Processes to Enable Alternative Rate Plans .....	4
A.	Alternative Regulatory Mechanisms.....	5
B.	Commission Staffing Requirements .....	8
III.	Alternative Regulatory Mechanisms in Action.....	10
A.	Transition to Alternative Regulatory Mechanisms.....	11
B.	Transitions between Regulatory Plans.....	14
C.	Frequency of Rate Changes and Reconciliation of Forecasts .....	16
D.	Impact on Ratepayers.....	20
IV.	Appendix – Case Studies .....	1
A.	Entergy (Arkansas).....	1
B.	Florida Power & Light .....	2
C.	Hawai’ian Electric Company .....	4
D.	Commonwealth Edison (Illinois) .....	5
E.	Southwestern Electric Power Company (Louisiana).....	7
F.	Public Service Company of New Hampshire .....	8
G.	Public Service Company of New Mexico.....	10
H.	Consolidated Edison (New York).....	1
I.	Northern States Power (North Dakota) .....	3
J.	Puget Sound Energy (Washington).....	4

# I. Introduction

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The Brattle Group was asked by the Joint Utilities of Maryland<sup>1</sup> to apply our ongoing research of regulatory issues and processes in order to answer questions posed by the Maryland Public Service Commission (“Commission”) with respect to the Commission’s issuance of its Notice of Technical Conference: *Exploring the Use of Alternative Rate Plans or Methodologies to Establish New Base Rates for an Electric Company or Gas Company*.

In its Notice of Technical Conference on Alternative Forms of Rate Regulation, the Commission asked six primary questions concerning:

1. The manner in which those state regulatory commissions determined which alternative rate plans were acceptable;
2. The implementation period to transition from one form of regulatory rate making principles to the alternative rate plan;
3. Any restrictions placed by other state regulatory commissions on the use of alternative rate plans, including whether a utility can switch between alternative rate plans in subsequent cases;
4. The frequency by which the utility may file for rate increases under an alternative rate plan;
5. How reconciliations and refunds may be made when the utility is using a forecasted test year or other forecasted methodology; and
6. The impacts on the ratepayers resulting from the use of the alternative rate plans.

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<sup>1</sup> The Joint Utilities are Baltimore Gas and Electric Company, Delmarva Power & Light Company and Potomac Electric Power Company.

In addition to these six questions, the Commission posed a seventh request for information related to whether state commissions with alternative rate plans required additional staff resources or staff with different skills than previously utilized.

This report focuses on three forms of alternative rate plans (or alternative regulatory mechanisms)<sup>2</sup>: future test years (“FTY”), formula rates (“FR”), and multi-year rate plans (“MRPs”). **Future (or forward) test years** seek to minimize imbalances in revenue recovery by setting rates based on best projections, rather than history. **Formula rates** are regulatory mechanisms that allows for periodic adjustment of rates based on forms of “true-ups.” The use of formula rates improves alignment of revenue recovery to utility costs by allowing rates to more closely track changes in utility operations. **Multi-year rate plans** are designed to improve overall utility performance in controlling costs. Under the MRPs, rate cases occur less frequently (typically three or so years in the U.S., but as many as eight under the U.K.’s Revenue = Incentives + Innovation + Outputs, or RIIO plan).

The questions raised by the Commission are appropriate to ask as it is considering the impact of enhancement to its current regulatory regime, and as it considers joining the other states that have adopted alternative regulatory plans. Most of the questions raised are answerable based on the record established in state regulatory proceedings. Two questions, however, are less directly discernable. First, the manner in which state regulatory commissions determine that the benefits of adopting an alternative regulatory mechanism is typically not clearly spelled out in state commission orders and decisions. Second, retrospectively determining the impacts on ratepayers involves complex empirical analysis which has not been undertaken by most (or possibly any) state regulators. Nonetheless, we answered these more difficult questions as best possible based on regulatory records and interviews with staff.

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<sup>2</sup> We use the alternative rate plan and alternative regulatory mechanism terminology interchangeably in this report.

The Brattle Group has undertaken a variety of surveys and studies concerning the scope and motivations underlying the adoption of alternative regulatory mechanisms, which we used to answer the Commission’s questions. We also took a “deep dive” approach by selecting ten utilities across different jurisdictions for review. These ten jurisdictions were selected to include a mix of states that have relatively recently implemented an alternative regulatory mechanism as well as jurisdictions with commissions typically considered to be leaders in their field.<sup>3</sup> Within each jurisdiction, we selected a single utility to illustrate how the alternative regulatory mechanism was selected and implemented (see

Table 1). While most of these jurisdictions employ multiple alternative regulatory mechanisms (typically a future test year in conjunction with either formula rate or MRP), we have focused on the mechanisms shown in

Table 1.

**Table 1: Jurisdictions and Utilities Reviewed**

State	Utility	Utility Short Name	Alternative Rate Plan Type
New Mexico	Public Service of New Mexico	PSNM	FTY
Arkansas	Entergy Arkansas	Entergy	FR
Illinois	Commonwealth Edison	ComEd	FR
Louisiana	Southwestern Electric Power Company	SWEPCo	FR
Florida	Florida Power and Light	FPL	MRP
Hawai'i	Hawai'ian Electric Company	HECO	MRP
New Hampshire	Public Service Company of New Hampshire	PSNH	MRP
New York	Consolidated Edison	ConEd	MRP
North Dakota	Nothern States Power	NSP	MRP
Washington	Puget Sound Energy	PSE	MRP

Section II of this report focuses on the initial implementation of alternative rate plans and commission staffing requirements for alternative rate plans (Questions 1 and 7). Section III reviews

<sup>3</sup> Several jurisdictions have long-running alternative rate plans, such as Alabama Power’s use of formula rates, which was initiated in 1982. See “Case Study of Alabama Rate Stabilization and Equalization Mechanism”, Edison Electric Institute, June 2011.

the structural and implementation details of each utility's alternative rate plan (Questions 2 through 6).

## II. Commission Processes to Enable Alternative Rate Plans

**Regulatory approval of an alternative regulatory mechanism is based on the commission's perspective on the relative risks and benefits of the mechanism or plan, combined with legal and/or regulatory considerations. While described as "alternative," the regulatory mechanisms considered here have recently become mainstream, with a majority of states allowing the use of multi-year rate plan, forward test year, or formula rate, as shown in**

Table 2.<sup>4</sup> This section discusses the processes through which alternative regulatory mechanisms have been approved, and staffing requirements deemed necessary in order to effectively implement such plans.

---

<sup>4</sup> Counting the usage of alternative regulatory mechanisms is not as straightforward as it may sound. States are frequently served by multiple utilities, each of which may be regulated under a different mix of mechanisms. Furthermore, state regulators may not always refer to similar mechanisms by the same names, which means that some judgement needs to be applied to draw comparisons across jurisdictions. For example, California and New York both set rates for a three-year rate case cycle, which we consider to be an MRP / incentive regulation approach. However, regulators there refer to it as a three-year general rate case (GRC) cycle. Also, regulators in Oklahoma refer to certain true-up based rate plans (applied to gas LDCs) as performance rate plans; we categorize them as formula rates.

**Table 2: Survey of States with Alternative Regulatory Mechanisms for Electric Utilities (\*)  
(includes Washington, D.C.)**

<b>Mechanism</b>	<b>Number of States</b>	
Multi-Year Rate Plans	[1]	20
Formula Rates	[2]	11
Forward Test Years	[3]	25

Sources and Notes:

(\*) Count for formula rates includes states that have also allowed formula rates for gas utilities.

[1] Mark Lowry, Matthew Makos, and Gretchen Waschbusch, "Alternative Regulation for Emerging Utility Challenges: 2015 Update," November 11, 2015 (prepared for Edison Electric Institute).

[2] Mark Lowry, Matthew Makos, and Gretchen Waschbusch, "Alternative Regulation for Emerging Utility Challenges: 2015 Update," November 11, 2015 (prepared for Edison Electric Institute); Arkansas Public Service Commission, "Formula Rate Plan Rider," Docket No. 16-052-U, Order No. 8, Approved May 18, 2017. Includes 5 states (Georgia, Oklahoma, South Carolina, Tennessee, and Texas) that have formula rates only for gas utilities.

[3] Mark Lowry, Matthew Makos, and Gretchen Waschbusch, "Alternative Regulation for Emerging Utility Challenges: 2015 Update," November 11, 2015 (prepared for Edison Electric Institute). S&P Global Market Intelligence Regulatory Research Associates, "Arkansas Regulatory Review," November 4, 2016. Indiana Code Title 8, Utilities and Transportation § 8-1-2-42.7.

## A. Alternative Regulatory Mechanisms

*Question 1: the manner in which those state regulatory commissions determined which alternative rate plans were acceptable;*

Overall, the application of alternative rate plans on a state-by-state or utility-by-utility basis reflects a combination of the commission’s view on the operating environment facing the utility, potential risks and rewards, and both regulatory and legal requirements. However, the scope of a state regulatory commission’s authority to implement such plans may be constrained by statute or regulatory precedent. Thus, a commission’s decision whether or not to implement an alternative regulatory mechanism may require that state law and/or regulatory code be modified.

State regulatory commissions can readily modify regulatory code when they find potential merit in an alternative regulatory mechanism, if the constraint lies within existing regulatory code. On the other hand, legislation may be required when existing law is explicit on such matters or when statutes specify the options that may be considered by state regulators. Our review indicates that state commissions have typically enabled the use of future test years without legislative input.

However, there are examples (such as New Mexico), where modification to regulation and implementation of a future test year required passage of legislation.<sup>5</sup>

**In our survey of ten jurisdictions (listed in Table 3), two of the three states with formula rates (Arkansas and Illinois) required passage of enabling legislation. In contrast, as shown in**

Table 3, none of the states in which regulators approved MRPs required additional legislation, although this is almost certainly not universally the case.<sup>6</sup>

**Table 3: Enabling Body (Commission or Legislative) of Alternative Regulatory Mechanisms**

State	Utility Short Name	Alternative Rate Plan Type	Method of Approval
New Mexico	PSNM	FTY	Legislative
Arkansas	Entergy	FR	Legislative
Illinois	ComEd	FR	Legislative
Louisiana	SWEPCo	FR	Commission
Florida	FPL	MRP	Commission
Hawai'i	HECO	MRP	Commission
New Hampshire	PSNH	MRP	Commission, Judicial
New York	ConEd	MRP	Commission
North Dakota	NSP	MRP	Commission
Washington	PSE	MRP	Commission

From a process perspective, our review indicates that utilities are typically the initiators of regulatory modification; state regulatory commissions typically respond to a request from a utility when approving a specific alternative regulatory mechanism. For example, the District of Columbia Commission’s order allowing Pepco DC to file for alternative regulatory mechanisms

<sup>5</sup> Ken Costello, “Future Test Years: Evidence from State Utility Commissions”, National Regulatory Research Institute, October 2013, p. 4.

<sup>6</sup> In implementing an MRP, the New Hampshire Public Utilities Commission did not specifically reference a legislative precedent, but cited both prior commission precedent and a judicial case related to attrition relief. State of New Hampshire Public Utilities Commission, Order 25,123, Docket No. DE 09-035, June 28, 2010, p. 31.

explicitly included the two mechanisms first proposed by the utility.<sup>7</sup> There have also been stakeholder processes initiated by commissions to investigate alternative regulatory mechanisms, for example the ongoing performance based regulation process in Hawai'i, to thoroughly vet different approaches and incorporate input from all stakeholders. However, these processes are relatively uncommon in our experience due to their prohibitive implementation cost.

Commissions generally will examine whether the alternative rate plan will result in a just and reasonable rate considering a number of factors involved in setting utility rates. Broadly speaking, the process typically involves consideration of various stakeholder perspectives and filing of testimony to discover plan details, potential impacts on the ratepayers and the utility business. Customer costs, utility financial integrity, utility performance and administrative burden of the plan may all be relevant concerns to consider. To the extent that there are jurisdictional policy goals (i.e. commitment to grid modernization, increased DER penetration or clean energy targets), they are also taken into account in assessing how the proposed regulatory mechanism helps achieve these goals. The end goal is to agree on an alternative mechanism that will be enabling for the utilities as they pursue investments to meet the needs of an evolving grid, while balancing customer rate impacts and ensuring service quality is maintained.

Excerpts from the settlements approving alternative rate mechanisms for utilities in our survey provide some color around the nature of commissions' considerations when determining their acceptability:

“The Stipulation and Settlement appears to provide FPL’s customers with a degree of stability and predictability with respect to their electricity rates while allowing FPL to maintain the financial strength to make investments necessary to provide

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<sup>7</sup> Public Service Commission of the District of Columbia, Order No. 18846, Formal Case No. 1139, July 25, 2017, pp. 184-185, 187.

customers with safe and reliable power.[...] In addition, we recognize that the Stipulation and Settlement reflects the agreement of a broad range of interests[.]”<sup>8</sup>

“Moreover, it provides for a series of rate increases intended, among other things, to ensure that the erosion of earnings attributable to attrition will not compel the Company to seek another rate increase in a short time. The settlement agreement offers this protection without unduly burdening customers and without removing all risk from the Company and its shareholders to operate an efficient business. Further, the term of the agreement is long enough to allow the rate changes to be meaningful, without being so long as to lock-in customers or the Company to a losing strategy for an unreasonable period. It also provides some protection for both customers and the Company from over- or under-earning.”<sup>9</sup>

As discussed later, and at length in similar reports,<sup>10</sup> alternative regulatory mechanisms are not monolithic. The components of the mechanisms can be structured in a variety of ways. Similarly, a regulatory plan applied to a given utility reflects its unique circumstances as well as jurisdiction specific policy considerations. In practice, this means that a plan may include one or more alternative regulatory mechanisms (e.g. future test year in a multi-year rate plan with an earnings sharing mechanism) in combination with an overall rate of return methodology.

## B. Commission Staffing Requirements

*Question 7: The Commission also is interested in whether other states, in implementing alternative rate plans, required additional staff resources or staff with different skills that previously utilized prior to implementing.*

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<sup>8</sup> Florida Public Service Commission, Order No. PSC-05-0902-AS-EI, Docket Nos. 050045-EI and 050188-EI, September 14, 2005, p. 6.

<sup>9</sup> State of New Hampshire Public Utilities Commission, Order 25,123, Docket No. DE 09-035, June 28, 2010, p. 41.

<sup>10</sup> See for example: Mark Lowry, Matthew Makos, and Gretchen Waschbusch, "Alternative Regulation for Emerging Utility Challenges: 2015 Update," November 11, 2015 (prepared for Edison Electric Institute).

The three alternative regulatory mechanisms considered here (future test years, formula rates, and MRPs) are all extensions of traditional rate making rather than a fundamental shift in regulatory approach. As a result, the core skills required by commission staff to implement alternative regulatory mechanisms are skills already associated with traditional regulatory plans. In our survey, we did not find staffing concerns cited in relation to the evaluation or implementation of alternative rate plans by commission staff testimony or in final orders for any of the utilities. While possible that these concerns were expressed in a different forum, the lack of commentary appears to indicate that staffing and resources have not been primary concerns for the commissions.

It is true that when commissions transition from the traditional model to an alternative regulatory mechanism, staff may need additional training. For instance, when transitioning from historical to future test years, staff will likely need additional training to gain skills in evaluating cost projections. NRRI's 2013 survey of commissions with regard to their use of future test years found that:<sup>11</sup>

“Some commissions reported that they had to acquire new staff expertise. Almost all commissions replied that a FTY took little if any time away from addressing other rate case topics. Only one respondent mentioned that given the limited time for rate cases and the complexity of evaluating forecasts, parties may have insufficient time to assess a utility's forecasts.”

In our survey, multiple commissions cited existing staffing concerns as a motivation to enact an alternative rate plan. When a utility's operating environment is changing rapidly (*e.g.*, changes in load, increases in costs, etc.), a historic test year can be out-of-date before the rate case settles, and the utility will have to refile rate cases frequently to update the test year. Frequent rate case filings

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<sup>11</sup> Ken Costello, “Future Test Years: Evidence from State Utility Commissions”, National Regulatory Research Institute, October 2013, p. 11.

pose a burden to commission staff, as illustrated by the Washington commission's order regarding PSE's multi-year rate plan:<sup>12</sup>

“An important policy objective underlying our decision is to relieve all stakeholders and the Commission from the burdens of almost continuous general rate case proceedings that have characterized our utility regulation during recent periods.”

Plans that span multiple years, such as MRPs and formula rates, remove the need for full annual rate case filings and, in some cases, implement a mandatory stay-out. Some commissions, such as California, Hawai'i, and New York, have adopted general rate case cycles rather than implementing alternative rate plans on a utility-by-utility basis. That is, they have determined that all utilities will be on a similar, multi-year rate case cycle. The filing dates for utilities are staggered to spread the burden of work on the commission. Future test years mitigate the need for frequent filings as the costs included in the test year are more representative of the utility's operating environment. However, a future test year is a short-term fix, to the extent that the utility's operating environment will continue to change, as the future test year only takes into account a single year in the evolution.

Alternative rate plans that involve annual reconciliations (*e.g.* formula rates) do require filings that require commission staff review. However, these filings are intended to be formulaic, and typically involve pre-determined filing requirements (and formats) and are somewhat limited in scope and timing. For example, ComEd recently completed its eighth filing under a formula rate mechanism. The ROE is determined formulaically (580 basis point premium above the 12-month average U.S. Treasury bond yield) and the cost of capital is then updated to reflect the utility's actual capital structure. The commission does continue to have the authority to investigate the prudence and reasonableness of utility investments, but the overall process is less time-intensive than when all

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<sup>12</sup> Washington Utilities and Transportation Commission, Order 07, Docket Nos. UE-121697 and UG-121705 (consolidated) and Docket Nos. UE-130137 and UG-130138 (consolidated), June 25, 2013, p. 8.

parameters are up for potential challenge. ComEd’s recent rate case lasted 6 months from the initial filing in April 2018 to the final order in December 2018.<sup>13</sup>

We have also informally surveyed several staff members from three of the ten states/utilities reviewed in our report. One staff member stated that *“it is not that the alternative regulatory models are driving the need for more staff and differently skilled staff. The major driver is the technological change: cost reductions in new distributed technologies and greater urgency to address climate goals. The alternative regulatory models are more a reaction, rather than the cause for the new needs.”* Another staff member indicated that *“at no time have additional Staff been contemplated in response to the needs of alternate regulation. What is possible is that occasionally and within narrowly defined financial limits we may be able to bring in consultants to support additional needs.”*

### III. Alternative Regulatory Mechanisms in Action

To answer specific questions related to the implementation of alternative regulatory mechanisms, we focused on ten individual utility plans. When possible, we selected the electric utility with the earliest use of the alternative regulatory mechanism in order to capture information on the transition to its use.

#### A. Transition to Alternative Regulatory Mechanisms

*Question 2: the implementation period to transition from one form of regulatory rate making principles to the alternative rate plan;*

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<sup>13</sup> S&P Global Market Intelligence, "RRA Regulatory Focus: Commonwealth Edison," January 4, 2019.

The transition period to an alternative regulatory mechanism depends to some extent on the origin of the proceeding and enabling body. For the utilities in our survey, the regulatory processes to approve alternative rate plans were either comparable in length to or slightly longer than the process under a traditional regulatory mechanism (see Table 4).<sup>14</sup> However, for those cases where legislative action was required, the legal amendment process typically precedes a filing under the new regulatory mechanism and makes the timelines more uncertain, as discussed in more detail below.

There are a few exceptions with shorter or longer regulatory process timelines: on the extremes are 1) Puget Sound Energy (PSE) in WA, which filed its MRP under an expedited rate case framework approved in the prior rate case filing,<sup>15</sup> and 2) Southwestern Electric Power Company (SWEPCO) in LA, for which the process was drawn out by a series of motions to delay.<sup>16</sup>

**Table 4: Regulatory Process Timelines for Alternative Rate Plans**

State	Utility Short Name	Alternative Rate Plan	Initial Filing	Final Order	Duration (Months)
New Mexico	PSNM	FTY	08/2015	09/2016	13
Arkansas	Entergy	FR	04/2015	02/2016	10
Illinois	ComEd	FR	11/2011	05/2012	7
Louisiana	SWEPCo	FR	01/2003	04/2008	64
Florida	FPL	MRP	03/2005	09/2005	6
Hawai'i	HECO	MRP	07/2010	06/2012	23
New Hampshire	PSNH	MRP	06/2009	06/2010	12
New York	ConEd	MRP	05/1991	04/1992	12
North Dakota	NSP	MRP	12/2012	02/2014	15
Washington	PSE	MRP	02/2013	06/2013	5

Notes: These timelines refer to each utility's initial alternative rate plan filing.

<sup>14</sup> The Edison Electric Institute reports a 10-month average regulatory lag (defined as the time between a rate case filing and decision) since industry restructuring. Edison Electric Institute, "Rate Review Summary: Q2 2018 Regulatory & Financial Update."

<sup>15</sup> S&P Global Market Intelligence, "Puget Sound Energy, Inc.: WA: D-UE-130137 | Rate Case Profile."

<sup>16</sup> See Louisiana Public Service Commission, Docket U-23327 Subdocket A (documents): <http://lpscstar.louisiana.gov/star/portal/lpsc/PSC/DocketDetails.aspx?DocketId=363b9e78-800a-4dfc-94de-839f05db879f>.

In cases where legislative action is required to enable the alternative regulatory mechanism, the legal amendment process can add uncertainty to the overall timeline. For example, when ComEd first sought to implement a formula rate plan in conjunction with its infrastructure investment commitments under the 2011 Energy Infrastructure Modernization Act (Senate Bill 1652), the filing was preceded by then-Governor Pat Quinn’s veto of SB 1652, and a subsequent override by the Illinois Legislature. The revised bill (HB 3036) that was eventually signed by the Governor (in December 2011) had not yet been approved when ComEd filed its formula rate plan under a concurrent regulatory docket.<sup>17</sup> However, the regulatory approval timeline itself was fairly concise: ComEd’s initial filing was submitted in November 2011 and the proceeding was decided on in May 2012. Similarly, in Arkansas, Entergy filed its rate case in April 2015, the same year as changes to the Arkansas Code. The order approving Entergy’s formula rate plan was finalized in February 2016 about 10 months after the initial filing. Entergy’s first annual filing for a true-up was in July 2016.<sup>18</sup>

The New Mexico legislature allowed the use of future test years in 2009. The first rate case including a future test year (for Southwestern Electric Power Co.) was filed in 2012 and settled 15 months later.<sup>19</sup> Although the time period between New Mexico enabling future test years and the settling of its first case is extended, the time period is not representative of all, or even most, states. For example, Michigan’s legislature enabled the use of future test years in 2017,<sup>20</sup> and Consumers Energy filed a rate case in March 2017, using a projected test year, that was finalized in March 2018.<sup>21</sup>

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<sup>17</sup> S&P Global Market Intelligence, “Electric Capital Investment Legislation Signed by Illinois Governor,” January 4, 2012.

<sup>18</sup> S&P Global Market Intelligence, “Entergy Arkansas, LLC: AR: D-15-015-U | Rate Case Profile.”

<sup>19</sup> S&P Global Market Intelligence, “New Mexico Public Regulation Commission.”

<sup>20</sup> S&P Global Market Intelligence, “Michigan Public Service Commission.”

<sup>21</sup> S&P Global Market Intelligence, “RRA – Rate Case Final Report Consumers Energy Co.”, August 9, 2018.

The use of a pilot program, or other transition mechanism, are commonly used in utility regulation to limit the scope of a new approach (e.g., limiting to a subset of utility expenditures) or scale of the approach (e.g., limiting the time span of the program) when the costs or benefits of an approach are uncertain. Other transition mechanisms can include phase-ins, whereby the scope of a program is gradually increased, or the use of additional reporting (monitoring), which can help the commission to understand how a mechanism may work in practice prior to adding financial incentives. Reporting-only mechanisms have been used, for example, when introducing emerging performance incentive mechanisms with novel scopes and metrics.

Based on our review of jurisdictions, pilot programs are not commonly used for the alternative rate plans considered. Specifically, pilot programs were not used for any of the utility rate plans surveyed. We are familiar with one instance of a formula rate plan being first implemented on a trial basis, which was then continued on a non-trial basis.<sup>22</sup> Because many alternative rate plans are limited in term, they already take on the structure of a time-limited pilot program. This time limitation provides a defined point for re-evaluation of the plan's performance. This was the view adopted by the New Hampshire commission in its approval of PSNH's MRP:<sup>23</sup>

“We also note that though this is not designated as a “pilot” or similar program, see id. at 15, the limited term of the settlement agreement effectively renders it a short term program. We find this limitation important because a great deal may change during the term of the settlement agreement and it may be advisable to revise or eliminate items such as this in the future.”

Commissions may institute additional reporting requirements during a transition to improve confidence in a new regulatory plan, notably those that include the use of projections in

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<sup>22</sup> Corporation Commission of the State of Oklahoma, Order No. 499253, Cause No. PUD 200400187, November 24, 2004, p. 8.

<sup>23</sup> State of New Hampshire Public Utilities Commission, Order 25,123, Docket No. DE 09-035, June 28, 2010, p. 32.

determining the revenue requirement. Commissions with projected test years (or other forward looking approaches such as MRPs) frequently request both historical and future test year operational information in the utility filing.<sup>24</sup> For example, Wisconsin requires utilities to file historical sales, O&M expenses, rate base, and working capital balances.<sup>25</sup> This approach, of requesting both the traditional and forward-looking approaches, can also be used to compare regulatory plans.

## B. Transitions between Regulatory Plans

*Question 3: any restrictions placed by other state regulatory commissions on the use of alternative rate plans, including whether a utility can switch between alternative rate plans in subsequent rate cases;*

Commissions do not typically require utilities to maintain an alternative rate plan in future rate cases, and utilities can and do switch between traditional and alternative rate plans. The approach for regulating a utility may change over time. For example, Entergy New Orleans was regulated under formula rates from 2004-2006 and then from 2010-2012.<sup>26</sup> Likewise, PSNH was regulated under an MRP from 2010-2015 and then returned to traditional rate making as the utility transitioned through the sale of generation assets.<sup>27</sup> These transitions between regulatory approaches may reflect changes to the underlying operating environment that prompted the use of the alternative regulatory plan or reflect other exogenous factors. We are unaware of any jurisdictions in which utilities have switched between multi-year rate plans and formula rates.

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<sup>24</sup> Ken Costello, “Future Test Years: Evidence from State Utility Commissions”, National Regulatory Research Institute, October 2013, p. 9.

<sup>25</sup> *Ibid.*, p. 32.

<sup>26</sup> Mark Newton Lowry, Matthew Makos, Gretchen Waschbusch, “Alternative Regulation for Emerging Utility Challenges: 2015 Update”, Edison Electric Institute, November 11, 2015, Table 8.

<sup>27</sup> State of New Hampshire Public Utilities Commission, Order 25,123, Docket No. DE 09-035, June 28, 2010.

State of New Hampshire Public Utilities Commission, Order 25,920, Docket No. DE 14-238, July 1, 2016.

Excluding utilities that are on a general rate case cycle (*i.e.*, HECO and ConEd), the utilities in our survey were not required to maintain formula rates or MRPs beyond the current term.<sup>28</sup>

The ability of a utility to transition between traditional rate making and an alternative rate plan (typically formula rates or multi-year rate plans), is bounded by stay-out requirements and mandatory refiling dates. Stay-out requirements prevent utilities from refiling for a change in base rates (or regulatory plan) for a certain number of years, typically 3-5 years. Stay-out requirements frequently include clauses to account for unanticipated events with significant financial impact and may allow a utility to refile if earnings are below a certain threshold. For example, PSNH's plan allowed the utility to refile if its allowed ROE dropped below 7%,<sup>29</sup> and NSP's plan included the ability to file for increased rates if an exogenous event results in a revenue requirement impact of at least \$1.5 million.<sup>30</sup> As shown in **Error! Reference source not found.**, all of the MRPs in the survey included mandatory stay-outs. At the end of the plan's term, the utility may be required to file a general rate case.<sup>31</sup> This mandatory refiling allows for typical rate case reviews as well as modifications to alternative rate plans.

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<sup>28</sup> None of the orders included such a requirement. The Louisiana PUC explicitly confirmed that it was up to the utility to re-propose a formula rate in its next general rate case.

<sup>29</sup> State of New Hampshire Public Utilities Commission, Order 25,123, Docket No. DE 09-035, June 28, 2010, p. 9.

<sup>30</sup> State of North Dakota Public Service Commission, Order Adopting Settlement, Docket No. PU-12-813, February 26, 2014, p. 33-34.

<sup>31</sup> If a utility is not required to file, rates are typically frozen at the level of the last year of the term.

**Table 5: Rate Case Filing Restrictions and Requirements for Surveyed Utilities**

State	Utility Short Name	Alternative Rate Plan Type	Mandatory Stayout?	Mandatory Refiling Date?	Required Continuance of Alternative
New Mexico	PSNM	FTY	X*	–	–
Arkansas	Entergy	FR	–	X	–
Illinois	ComEd	FR	–	X	–
Louisiana	SWEPCo	FR	–	X	–
Florida	FPL	MRP	X*	–	–
Hawai'i	HECO	MRP	X*	X	X
New Hampshire	PSNH	MRP	X*	X	–
New York	ConEd	MRP	X	–	X
North Dakota	NSP	MRP	X	–	–
Washington	PSE	MRP	X	X	–

Notes: (\*) indicates that there are off-ramp provisions that allow the utility to refile for a general rate case under certain conditions. PSNM has a mandatory stay-out that may not be related to the future test year.

## C. Frequency of Rate Changes and Reconciliation of Forecasts

*Question 4: the frequency by which the utility may file for rate increases under an alternative rate plan;*

*Question 5: how reconciliations and refunds may be made when the utility is using a forecasted test year or other forecasted methodology;*

Reconciliations between utility forecasted and actual costs, revenues, or a combination thereof are common across a variety of regulatory mechanisms. Cost trackers are a regulatory mechanism used in 45 states that can provide for a reconciliation between forecasted expenditures and actuals. Likewise, decoupling can provide a true-up between forecasted and actual revenues, typically on a per-customer basis. These mechanisms, including riders and decoupling, can, and frequently are, used in combination with future test years, formula rates, and multi-rate year plans.<sup>32</sup> We have not included these reconciliations in our discussions of alternative regulatory mechanisms.

<sup>32</sup> Because decoupling and formula rates accomplish similar goals, the two are not used in combination.

Utilities regulated under formula rates and MRPs typically have the potential for annual rate changes based upon pre-approved changes to the revenue requirement, reconciliations related to ROEs, and reconciliations between forecasted and actual expenditures. Customers may experience rate decreases, rate increases, or no change in rates on a year-to-year basis depending on the design of the plan and the utility’s performance. In our survey of utility rate plans, all nine with a formula rate or MRP included the potential for annual rate changes,<sup>33</sup> these potentials for rate changes and reconciliations are summarized in Table 6.

**Table 6: Reconciliations in Surveyed Alternative Rate Plans**

State	Utility Short Name	Alternative Rate Plan Type	ROE Reconciliation		Reconciliation (Non-ROE)	
			Over Earning	Under Earning	CapEx	OpEx
New Mexico	PSNM	FTY	X*	–	–	–
Arkansas	Entergy	FR	X	X	–	–
Illinois	ComEd	FR	X	X	–	–
Louisiana	SWEPco	FR	X	X	–	–
Florida	FPL	MRP	X	–*	X	–
Hawai'i	HECO	MRP	X	–	–	–
New Hampshire	PSNH	MRP	X	–	X	–
New York	ConEd	MRP	X	–	X	X
North Dakota	NSP	MRP	X	–	–	–
Washington	PSE	MRP	X	–	–	–

Notes: (\*) PSNM has an earning sharing mechanism as part of a rider that predates the future test year. If the ROE for FP&L falls below 9.6%; FP&L may file with the Commission for an increase in rates.

Under formula rates, base rates are typically adjusted based on ROE reconciliations. Backward true-ups compare the utility’s earned ROE for the historic year compared to an allowable range (deadband) for the earned ROE. If the utility’s ROE is outside the deadband, then rates are either increased or decreased to adjust the utility rates to allow the utility to make-up the difference between the target ROE and the earned ROE. The target ROE may be the allowed ROE (e.g., ComEd and Arkansas), the edge of the deadband, or some percentage of the difference between the allowed and earned ROE (e.g., Louisiana). As the true-up is on the utility, both capital and

<sup>33</sup> At least one MRP, the NSP MRP included a year with a mandatory base rate increase moratorium. State of North Dakota Public Service Commission, Order Adopting Settlement, Docket No. PU-12-813, February 26, 2014, p. 5.

operating expenditures are included. In addition, formula rates also include a forward adjustment. The forward adjustment compares a projected ROE to the allowed ROE range. If the projected ROE falls outside the range (outside the deadband) then rates are adjusted on a prospective basis to bring projected ROE back to the target ROE.

Multi-year rate plans typically have reconciliations more limited in scope and typically focused on capital expenditures, to the extent that reconciliations are included at all. Of the six MRPs included in our survey, three include some type of CapEx reconciliation and only one includes OpEx reconciliations. CapEx reconciliations can be made on the basis of a single investment (e.g., generation plant), investment type (e.g., grid modernization), or across all investments (e.g., distribution system plant). The CapEx reconciliation for FPL focuses on one plant and an allowance for investment in solar generation. The CapEx reconciliations for ConEd and PSNH were based on distribution plant balances. ConEd has multiple OpEx reconciliations including those for property taxes and non-officer variable pay.<sup>34</sup> In addition to the CapEx and Opex reconciliations, MRPs frequently include earning sharing mechanisms in which earnings above earned ROEs (and a deadband) are returned to customers. Each of the MRPs in our survey include an earning sharing mechanism; more broadly 10 of 17 MRPs included earning sharing mechanisms in a 2015 study.<sup>35</sup>

In our survey of MRPs, ConEd has the most reconciliations, with more than fifteen reconciliations across CapEx and OpEx including: property taxes, contractor costs, pensions and other post-employment benefits, environmental remediation, long term debt costs, and a portion of managerial pay. For the majority of the aforementioned categories, the credits or surcharges resulting from the reconciliation are deferred over the term of the plan and revenue requirement

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<sup>34</sup> State of New York Public Service Commission, Joint Proposal, Docket No. 16-E-0060, September 19, 2016, p. 35, 42.

<sup>35</sup> Mark Newton Lowry, Matthew Makos, Gretchen Waschbusch, “Alternative Regulation for Emerging Utility Challenges: 2015 Update”, Edison Electric Institute, November 11, 2015, Table 7.

impacts addressed in future rate proceedings.<sup>36</sup> For CapEx, the commission considers net plant balance. If ConEd under invests based on net plant balances on average across the three years, the revenue requirement will be deferred for ratepayers.<sup>37</sup>

Future test years may be used with other regulatory mechanisms that include reconciliations (including MRPs, formula rates, and decoupling), which makes identifying reconciliations related to the use of a future test year in isolation difficult. In the 2013 NRRI survey of future test years, 7 of the 14 utilities indicated that no reconciliations were used.<sup>38</sup> The remaining utilities identified reconciliations resulting from decoupling, ROE reconciliations (related to their existing formula rate plans), reconciliations resulting from MRPs, and rider/tracker reconciliations.<sup>39</sup>

Mechanically, annual adjustments made during the term of the alternative regulatory mechanisms are frequently made through riders. For example, in Louisiana and Arkansas, changes to rates resulting from the ROE true-ups are made exclusively through riders. Likewise under Public Service of Colorado's MRP, sharing of over-earnings would flow through to customers through a rider.<sup>40</sup> By contrast, ConEd delays most reconciliations to the next rate case.<sup>41</sup>

## D. Impact on Ratepayers

The impact on ratepayers from the implementation of one or more alternative regulatory mechanisms is difficult to discern, mainly because changes in rates are driven by underlying costs

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<sup>36</sup> State of New York Public Service Commission, Joint Proposal, Docket No. 16-E-0060, September 19, 2016, p. 35.

<sup>37</sup> State of New York Public Service Commission, Joint Proposal, Docket No. 16-E-0060, September 19, 2016, pp. 28-29.

<sup>38</sup> Ken Costello, "Future Test Years: Evidence from State Utility Commissions", National Regulatory Research Institute, October 2013, p. 51-52.

<sup>39</sup> New York stated that in a one-year litigated case, additional expense categories can be subject to true-up including pension, other post-employment benefits, environmental costs, storm costs, etc.

<sup>40</sup> Colorado Public Utilities Commission, Advice No. 1672, Docket 14AL-0660E.

<sup>41</sup> State of New York Public Service Commission, Joint Proposal, Docket No. 16-E-0060, September 19, 2016, pp. 28-29, 35-50.

and could have happened under any regulatory approach. Determining whether an increase in rates was caused by the adoption of an alternative rate mechanism requires the development of a counterfactual (“but for”) case, i.e., what would have happened to rates if the alternative regulatory mechanism had not been adopted. For example, in Illinois, Commonwealth Edison (ComEd) was required to undertake a grid modernization initiative that involved substantial capital expenditures. It is inaccurate to conclude that the utility incurred grid modernization expenditures because of the formula rate plan; ComEd would have most likely proceeded with the capital program (as it was recognized as a priority for policymakers), and the related costs would have made their way into rates. To our knowledge, empirical studies that estimate correlation between alternative rate plans and an increase or decrease in customer rates, other factors held constant, have not been conducted.<sup>42</sup> However, regulators provided their own assessments of the merits and benefits of alternative regulatory mechanisms at the conclusion of the plan’s term. State regulators opted to continue with the alternative regulatory mechanisms in seven of the ten cases that are included in our survey, suggesting that they found the subject plans to be consumer beneficial.

Under traditional regulation, the result of increasing underlying investment can be rate shock, as those new investments are incorporated into rate base. One feature of multi-year rate plans and formula rates is that investments can be integrated into the revenue requirement over time, or rate increases can be spread over the plan period. The gradual nature of rate increases can mitigate the rate shock that would have occurred under traditional regulation.

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<sup>42</sup> Even a largely academic study that addresses the impact of regulatory regime on prices (Tooraj Jamasb and Michael Pollitt, “Incentive Regulation of Electricity Distribution Networks: Lessons of Experience from Britain,” June 19, 2007) does not fully provide a “but for” case.

## IV. Appendix – Case Studies

### A. Entergy (Arkansas)

Entergy (Arkansas) – FR	
<b>Term</b>	2016 – 2020, inclusive (Docket: 15-015-U; Order No. 18)
<b>Approval</b>	2015 legislation (the Formula Rate Review Act)
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	Includes an annual filing for ROE reconciliation. Rates are adjusted through the formula rates rider included in the Entergy tariff and are limited to a change of 4% each year. <sup>43</sup>
<b>Mandatory Stay-Out?</b>	N/A
<b>Mandatory Refiling?</b>	Entergy must file for a request to extend the formula rate plan beyond 2020. Formula rate terms are limited to five years by the enacting legislation; <sup>44</sup> not required to be under the same plan type.
<b>Reconciliation between Actual and Forecasts</b>	ROE reconciliation: includes a forward looking adjustment and a backward-looking true-up mechanism; the return on equity is subject to a +/- 50 bps deadband (termed Target Return Rate). Outside the deadband, the ROE is adjusted to reach the allowed ROE subject to the 4% cap on change in revenues on a customer class basis. <sup>45</sup>

<sup>43</sup> Arkansas Public Service Commission, Order No. 19, Docket No. 15-015-U, March 21, 2016, Rate Schedule No. 44, Formula Rate Plan Rider, 44.5.4.

<sup>44</sup> AR Code § 23-4-1208 (2015).

<sup>45</sup> Arkansas Public Service Commission, Order No. 19, Docket No. 15-015-U, March 21, 2016, Rate Schedule No. 44, Formula Rate Plan Rider, 44.5.2.

Arkansas Public Service Commission, Application, Docket No. 16-036-FR, July 6, 2018, p. 15.

## B. Florida Power & Light

Florida Power & Light - MRP	
<b>Term</b>	Initial Plan: 2006 - 2009 (Docket: 050045-EI, Order No. PSC-05-0902-S-E1) Current Plan: 2017-2020 (Docket: 160021-EI; Order Approving Settlement)
<b>Approval</b>	Commission <sup>46</sup>
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	Authorized to implement stepwise revenue increases effective January 1, 2017, effective January 1, 2018, and effective on the in-service date of the Okeechobee Unit. <sup>47</sup> Base rates may also be adjusted through a pre-formulated “Solar Base Rate” adjustment, which is contingent upon investment in photovoltaic facilities. <sup>48</sup>
<b>Mandatory Stay-Out?</b>	If the ROE for FPL falls below 9.6%, FP&L may file with the Commission for an increase in rates. <sup>49</sup>
<b>Mandatory Refiling?</b>	Rates will be frozen at 2020 levels until a new rate case filed (no mandatory refiling); <sup>50</sup> not required to be under the same plan type.
<b>Reconciliation between Actual and Forecasts</b>	ROE Reconciliation: pending petition to Commission and Commission approval. FP&L's authorized ROE covers the range from 9.6% to 11.6%, with rates set using a 10.55% ROE. <sup>51</sup> If FP&L earns a return below this range (according to a monthly earnings surveillance report stated on an FPSC actual, adjusted basis), FP&L may petition the Florida PSC to amend its base

<sup>46</sup> House of Representatives Staff Analysis, HB7071, PCB EUS 17-01.

<sup>47</sup> Florida Public Service Commission, Order No. PSC-16-0560-AS-EI, Docket No. 160021-EI, December 15, 2016, p. 2.

<sup>48</sup> *Ibid.*, p. 3.

<sup>49</sup> Florida Public Service Commission, Stipulation and Settlement, Docket No. 160021-EI, October 6, 2016, p. 16.

<sup>50</sup> *Ibid.*, p. 11.

<sup>51</sup> Florida Public Service Commission, Order No. PSC-16-0560-AS-EI, Docket No. 160021-EI, December 15, 2016, p. 3.

rates. Similarly, if FP&L earns a return above this range, any party may petition the PSC to review FP&L's base rates.<sup>52</sup>

Other Reconciliation: for generation capital expenditures. If actual capital costs for constructing a new unit (the Okeechobee Unit) are less than projected costs, then the lower revenue requirement will be used. If the budget exceeds the projection, FP&L must seek permission to increase the allowed amount.<sup>53</sup> Similarly, the Solar Base Rate Adjustments allows FP&L can invest in up to 1,200 MW of solar generation subject to a cost cap and finding of cost effectiveness.<sup>54</sup>

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<sup>52</sup> Florida Public Service Commission, Order No. PSC-16-0560-AS-EI, Docket No. 160021-EI, December 15, 2016, pp. 16-17.

<sup>53</sup> *Ibid.*, pp. 10, 11.

<sup>54</sup> *Ibid.*, p. 1.

## C. Hawai’ian Electric Company

Hawai’ian Electric Company - MRP	
<b>Term</b>	<p>Initial Plan:</p> <ul style="list-style-type: none"> <li>- Revenue Decoupling Mechanism Established (Docket: 2008-0274; Final Decision and Order)</li> <li>- 2012-2014 (Docket: 2010-0080; Decision and Order No. 30505)</li> </ul> <p>Current Plan: 2018-2020 (Docket: 2016-0328; Order No. 35545)</p>
<b>Approval</b>	Legislative/Commission
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	<p>Rate adjustment mechanism (“RAM”) with three components that cover O&amp;M, depreciation, and rate base.<sup>55</sup> The total annual change to the RAM is capped and cannot create a change in revenues greater than inflation (as measured by the Gross Domestic Product Price Index) multiplied by base revenues.<sup>56</sup></p> <p>In addition to the RAM, the utility may recover capital expenditures pre-approved by the commission through the Major Projects Interim Recovery (“MPIR”) mechanism. The MPIR expenditures are not included in or subject to the RAM cap.</p>
<b>Mandatory Stay-Out?</b>	Yes; however, HECO may petition its commission to refile early.
<b>Mandatory Refiling?</b>	Yes; the utilities in Hawai’i follow a three-year general rate case cycle. Required to be under the same plan type.
<b>Reconciliation between Actual and Forecasts</b>	ROE Reconciliation: yes, with earnings sharing mechanism through which over-earnings are shared with customers. The earning sharing mechanism has no deadband. $9.5\% < ROE < 10.5\%$ , 25% to ratepayers; $10.5\% \leq ROE < 12.5\%$ , 50% to ratepayers; $ROE \geq 12.5\%$ , 90% to ratepayers. <sup>57</sup>

<sup>55</sup> Public Utilities Commission of Hawai’i, Final Decision and Order, Docket No. 2008-0274, August 31, 2010, pp. 71-76.

<sup>56</sup> This calculation excludes any revenue for fuel and purchase power expenses or revenues recovered through other surcharge or rate tracking mechanisms, plus RAM revenues less any earnings sharing mechanism credits. See Public Utilities Commission of Hawai’i, Order 32735, Docket No. 2013-0141, March 31, 2015, pp. 5-6, 93-98.

<sup>57</sup> Public Utilities Commission of Hawai’i, Final Decision and Order, Docket No. 2008-0274, August 31, 2010, p. 106.

## D. Commonwealth Edison (Illinois)

Commonwealth Edison (Illinois) – FR	
<b>Term</b>	Initial Plan: 2012- Ongoing (Docket: 11-0721 and Public Act 098-1175)  Current Plan: Current (Docket: 18-0808)
<b>Approval</b>	Legislative: ComEd obtained its formula rate plan as part of the 2011 Energy Infrastructure Modernization Act (EIMA, Act 1652). Under the EIMA provisions, ComEd agreed to meet infrastructure investment targets and to create jobs: \$1.3 billion over 5 years in system upgrades, modernization projects, and training facilities, plus \$1.3 billion within 10 years in further T&D and smart-grid system upgrades, and 2,000 FTE jobs (or pay penalties for shortfalls in job creation).
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	Includes an annual filing setting of the next year’s revenue requirement (which includes ROE reconciliation for the prior year, reflecting the difference between the prior year’s projected revenue requirement and actual costs incurred, with interest payments on that balance). The Commission reviews the prudence and reasonableness of ComEd’s investments before approving the rate base to be used in setting revenue requirement and rates.  Under the initial law granting formula rate authority, ComEd's FR would be terminated if the average annual rate increase for the years 2012 through 2014 exceeded 2.5%. <sup>58</sup>
<b>Mandatory Stay-Out?</b>	No
<b>Mandatory Refiling?</b>	ComEd’s formula rate authority is currently in effect until 2022 (extended under the Future Energy Jobs Act (FEJA) legislation of 2017). As of March 12 2019, a bill has been approved by the House Public Utilities Committee to extend ComEd’s formula rate authority through 2032. <sup>59</sup> Not required to be under the same plan type.

<sup>58</sup> Under FEJA, there are now rate caps in place for each customer group.

<sup>59</sup> Daniels, Steve. "ComEd Asks Springfield to Force You to Make a 13-year Bet on Interest Rates." Crain's Chicago Business. March 15, 2019.

<b>Reconciliation between Actual and Forecasts</b>	<p>ROE Reconciliation: yes; reconciliation of earned ROE around the target (ROE = US T-bond yield monthly average over the previous calendar year + 580 bp).</p> <p>Until the most recent rate case, ComEd had a 100 bp collar that set the upper and lower boundaries on the actual earned ROE vs. authorized level (with an offsetting adjustment if the difference lay outside those bounds). However, FEJA authorized ComEd to eliminate the ROE collar deadband to zero bp, which it did (Docket 18-0808).</p> <p>The ROE is also subject to penalties (up to 30 bp) for failure to meet certain performance metrics: frequency of total system outages; frequency of "Southern Region" outages; duration of outages; service reliability; number of estimated bills; and, consumption on inactive meters, unaccounted-for-energy, uncollectible expense.</p> <p>Initially, the Commission approved use of average rate base for the reconciliations, with interest at a hybrid cost of long- and short-term debt). The ROE reconciliation has since been revised to use year-end rate base, starting with reconciliation of 2011 costs (based on the passage of Senate Bill 9 in 2013). Additionally, interest is now applied at a rate equal to the Illinois Commerce Commission approved pre-tax WACC for the rate year.</p>
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## E. Southwestern Electric Power Company (Louisiana)

Southwestern Electric Power Company (Louisiana) –FR	
<b>Term</b>	Initial Plan: 2007-2009 (Docket: U-23327, Subdocket A-A; Order No. U-23327)  Current Plan: 2014-2017 <sup>60</sup> (Docket: U-32220; Order No. U-34200)
<b>Approval</b>	Commission
<b>Pilot/Transition?</b>	No; formula rates were first approved for an electric company in Louisiana in 1995 for then Louisiana Power & Light Company (now Entergy Louisiana, LLC). <sup>61</sup>
<b>Annual Base Rate Increases?</b>	The Formula Rate Plan Rider includes annual rate changes as a result of the ROE reconciliation.
<b>Mandatory Stay-Out?</b>	Yes; with an exception for extraordinary events as increases or decreases in costs having a net annual revenue requirement impact exceeding \$5 million on a Louisiana retail jurisdictional basis and that are classified as force majeure. <sup>62</sup>
<b>Mandatory Refiling?</b>	Yes; initially required to file prior to December 2018 but received extension to May 31, 2019; <sup>63</sup> not required to be under the same plan type.
<b>Reconciliation between Actual and Forecasts</b>	ROE Reconciliation: reconciliation of earned ROE around the target with a +/- 55 bps deadband. If the earned ROE is outside the deadband, the ROE is restored to 60% of the difference between the allowed and earned ROEs.

<sup>60</sup> Temporarily extended through 2018 in Order U-34199.

<sup>61</sup> Louisiana Public Service Commission, Order No. U-20925, Docket No. U-20925, June 2, 1995.

<sup>62</sup> Southwestern Electric Power Company, Tariff for Electric Service, Effective March 1, 2013, Section B, Formula Rate Plan Rider Schedule FRP, 3.B.

<sup>63</sup> Louisiana Public Service Commission, Order No. U-34199, Docket No. U-34199, December 19, 2018, p. 2.

## F. Public Service Company of New Hampshire

Public Service Company of New Hampshire – MRP	
<b>Term</b>	July 2010 – June 2015 (Docket: DE 09-035) <sup>64</sup>
<b>Approval</b>	Judicial; Commission approval for other utility sectors <sup>65</sup>
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	Settlement called for “step increases” throughout its term to guard against attrition. PSNH was also permitted to adjust rates, up or down, for Exogenous Events, focused on cost changes from state or federal governments, regulatory cost reassignments, or changes in accounting rules that impact rates by at least \$1 million <sup>66</sup> and able to adjust rates if inflation exceeded 4%. <sup>67</sup>
<b>Mandatory Stay-Out?</b>	PSNH was not permitted to file for a change in base rates (“permanent distribution rates”) to come into effect prior to the end of the term unless its 12-month rolling ROE was less than 7% for two consecutive quarters. <sup>68</sup> If all settling parties agreed and the Commission approved, the MRP could also be terminated. <sup>69</sup>
<b>Mandatory Refiling?</b>	2015 rates were scheduled to expire at the end of the term <sup>70</sup> and then extended; not required to file under same plan type.

<sup>64</sup> PSNH’s rates have been frozen at the 2015 levels as a result of an agreement with its commission related to divestiture of generation facilities. Under this agreement, reliability investments in the distribution system are recovered through a rider. See Eversource Energy’s Form 10-K for Fiscal Year Ended December 31, 2018, p. 6.

<sup>65</sup> State of New Hampshire Public Utilities Commission, Order 25,123, Docket No. DE 09-035, June 28, 2010, pp. 30-31.

<sup>66</sup> State of New Hampshire Public Utilities Commission, Settlement Agreement, Docket No. DE-09-035, April 30, 2010, Section 2.2.

<sup>67</sup> *Ibid.*, Section 2.3.

<sup>68</sup> *Ibid.*, Section 4.4.

<sup>69</sup> This portion of the 2010-2015 settlement was not included in the 2016 settlement that continued rates at 2015 levels. See “2015 Public Service Company of New Hampshire Restructuring and Rate Stabilization Agreement”, June 10, 2015, Section 13.1.

<sup>70</sup> State of New Hampshire Public Utilities Commission, Settlement Agreement, Docket No. DE-09-035, April 30, 2010, Section 13.1.

<p><b>Reconciliation between Actual and Forecasts</b></p>	<p>ROE Reconciliation: every quarter the company must report its rolling 12-month average ROE for its distribution company; if the ROE exceeds 10%, 75% of the overearnings are returned to customers.<sup>71</sup></p> <p>Other Reconciliation: on changes to the Net Distribution Plan (capital expenditures). PSNH was required to file financial documentation showing actual and forecasted changes to the net distribution utility plant.<sup>72</sup> If the difference between the actual change to the Net Distribution Utility Plant was less than a certain threshold, set on a year-by-year basis, then the actual net utility plant balance was compared to the forecasted. If the net utility balance was below the forecast, the revenue requirement in <u>the next step increase</u> was reduced by the revenue requirement associated with the difference between the forecasted and actual net distribution utility plant.<sup>73</sup></p>
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<sup>71</sup> State of New Hampshire Public Utilities Commission, Settlement Agreement, Docket No. DE-09-035, April 30, 2010, Section 4.1.

<sup>72</sup> *Ibid.*, Section 5.2.

<sup>73</sup> *Ibid.*, Sections 5.3-5.5.

## G. Public Service Company of New Mexico

Public Service Company of New Mexico - FTY	
<b>Term</b>	Initial Plan: 2016-2017 (Docket: 15-00261-UT; Final Order Partially Adopting Corrected Recommended Decision)  Current Plan: 2018-2019 (Docket: 16-00276-UT, Order on Notice of Acceptance)
<b>Approval</b>	Legislative <sup>74</sup>
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	Increase in retail non-fuel base rate revenues to be implemented in two phases. The total increase amount is based on a non-fuel revenue requirement from a test period of January 1 through December 31, 2018. The first increase will be implemented on February 1, 2018 ("Phase I") and the second increase will occur on January 1, 2019 ("Phase II"). <sup>75</sup>
<b>Mandatory Stay-Out?</b>	PSNM is not allowed to make non-fuel base rate changes with an effective date prior to Jan. 1, 2020. <sup>76</sup>
<b>Mandatory Refiling?</b>	No
<b>Reconciliation between Actual and Forecasts</b>	ROE Reconciliation: PSNM is required to return all earnings over the allowed ROE plus 50 bps to customers through a renewable energy rider that pre-dates the use of a future test year. <sup>77</sup>

<sup>74</sup> Senate Bill 477 ("SB 477") was passed by the New Mexico legislature and became effective in June 2009 (PNM 2012 10-K, p. A-4)

<sup>75</sup> New Mexico Public Regulation Commission, Modified Revised Stipulation, Case No. 16-00276-UT, p. 4 section A.1.

<sup>76</sup> *Ibid.*, p. 7.

<sup>77</sup> Public Service Company of New Mexico's Form 10-K for Fiscal Year Ended December 31, 2018, p. A-3.

## H. Consolidated Edison (New York)

Consolidated Edison (New York) - MRP	
<b>Term</b>	Initial Plan: 1992-1995 (Docket: 91-E-0462; Order: Opinion 92-8) Current Plan: 2017-2019 (Docket: 16-E-0060)
<b>Approval</b>	Commission
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	Includes an Attrition Relief Mechanism (ARM) based on company forecasts, which include inflation increases as well as modifications for known changes.
<b>Mandatory Stay-Out?</b>	The New York PSC may allow Con Ed to refile if it deems that circumstances exist that, in the judgement of the Commission, threaten the utility's economic viability or the ability to maintain safe, reliable service. <sup>78</sup>
<b>Mandatory Refiling?</b>	No; however, if the company does not file for new rates, it must make a compliance filing by December 1, 2019 to adjust the 2019 rates for 2020 (due to use of levelization in the 2016-2019 term). Required to file under the same plan type (since New York adopted a three year general rate case cycle in 1983). <sup>79</sup>
<b>Reconciliation between Actual and Forecasts</b>	ROE Reconciliation: for overearnings only. Target ROE and Deadband: 9.0%; +/- 50 bps deadband. Overearnings sharing: 9.5% ≤ ROE < 10% 50% to ratepayers; 10% ≤ ROE < 10.5% 75% to ratepayers; 10.5% ≤ ROE 90% to ratepayers  Other Reconciliation: CapEx and OpEx reconciliation. For OpEx, the commission will reconcile projections for approximately 20 line-items including property taxes, contractor costs, pensions and other post-employment benefits, environmental remediation, long term debt costs, and a portion of managerial pay. For the majority of the aforementioned categories, the credits or surcharges resulting from the reconciliation will be deferred over the term of the plan and revenue requirement impacts

<sup>78</sup> State of New York Public Service Commission, Joint Proposal, Docket No. 16-E-0060, September 19, 2016, p. 115.

<sup>79</sup> Matthew Wald, "Con Ed Nears Rate Increase In 3-Year Plan," New York Times. February 11, 1992.

addressed in future rate proceedings.<sup>80</sup> For CapEx, the commission will reconcile based on net plant balances. If the company underinvests based on net plant balances on average across the three years, the revenue requirement will be deferred for ratepayers.<sup>81</sup>

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<sup>80</sup> State of New York Public Service Commission, Joint Proposal, Docket No. 16-E-0060, September 19, 2016, p. 35.

<sup>81</sup> *Ibid.*, pp. 28-29.

## I. Northern States Power (North Dakota)

Northern States Power (North Dakota) - MRP	
<b>Term</b>	2013-2016 (Docket: PU-12-0813; Order Adopting Settlement)
<b>Approval</b>	Commission
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	4.9% rate increases in 2013, 2014, and 2015 <sup>82</sup>
<b>Mandatory Stay-Out?</b>	May not refile prior to November 1, 2016 with the potential to seek additional revenues under a force majeure clause (impact of at least \$1.5 million to the revenue requirement). <sup>83</sup>
<b>Mandatory Refiling?</b>	No
<b>Reconciliation between Actual and Forecasts</b>	ROE Reconciliation: allowed ROE increased over time (9.75% (2013), 10% (2014), 10%, (2015), and 10.25% (2016)). <sup>84</sup> NSP was required to share 50% of all overearnings with customers.

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<sup>82</sup> State of North Dakota Public Service Commission, Order Adopting Settlement, Docket No. PU-12-813, February 26, 2014, p. 5.

<sup>83</sup> State of North Dakota Public Service Commission, Order Adopting Settlement, Docket No. PU-12-813, February 26, 2014, pp. 6-7.

<sup>84</sup> State of North Dakota Public Service Commission, Order Adopting Settlement, Docket No. PU-12-813, February 26, 2014, Order adopting settlement p. 5.

## J. Puget Sound Energy (Washington)

J. Puget Sound Energy (Washington) – MRP	
<b>Term</b>	2013-2016 (Docket: UE-121697; Order No. 07)
<b>Approval</b>	Commission
<b>Pilot/Transition?</b>	No
<b>Annual Base Rate Increases?</b>	Fixed 3% escalation of allowed revenue per year.
<b>Mandatory Stay-Out?</b>	Yes <sup>85</sup>
<b>Mandatory Refiling?</b>	Yes; <sup>86</sup> not required to be under the same plan type.
<b>Reconciliation between Actual and Forecasts</b>	<p>ROE Reconciliation: all earned returns above the allowed ROE are shared 50/50 between ratepayers and the utility.</p> <p>Other Reconciliation: no; although PSE's decoupling plan included a reconciliation for allowed revenues per customer, this is not a reconciliation related to PSE's costs but strictly to its revenues.</p>

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<sup>85</sup> Washington Utilities and Transportation Commission, Order 07, Docket Nos. UE-121697 and UG-121705 (consolidated) and Docket Nos. UE-130137 and UG-130138 (consolidated), June 25, 2013, p. 4.

<sup>86</sup> *Ibid.*

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THE **Brattle** GROUP

# Blue Chip Financial Forecasts®

**Top Analysts' Forecasts Of U.S. And Foreign Interest Rates, Currency Values  
And The Factors That Influence Them**

**Vol. 39, No. 6, June 1, 2020**

**Wolters Kluwer**

## Consensus Forecasts of U.S. Interest Rates and Key Assumptions

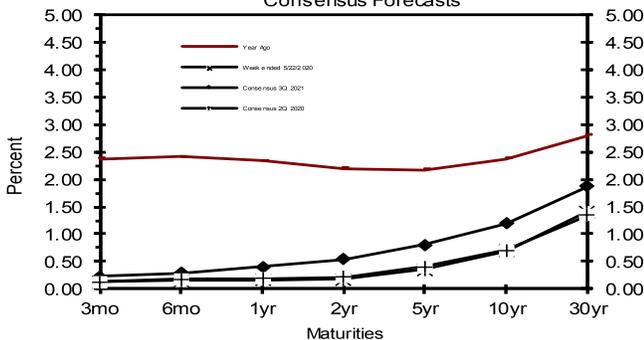
Interest Rates	History								Consensus Forecasts-Quarterly Avg.						
	Average For Week Ending				Average For Month				Latest Qtr	2Q 2020	3Q 2020	4Q 2020	1Q 2021	2Q 2021	3Q 2021
	May 22	May 15	May 8	May 1	Apr	Mar	Feb	1Q 2020	2020	2020	2020	2021	2021	2021	
Federal Funds Rate	0.05	0.05	0.05	0.04	0.05	0.65	1.58	1.26	0.1	0.1	0.1	0.1	0.1	0.2	
Prime Rate	3.25	3.25	3.25	3.25	3.25	3.78	4.75	4.43	3.3	3.3	3.3	3.3	3.3	3.4	
LIBOR, 3-mo.	0.37	0.40	0.46	0.68	1.09	1.10	1.68	1.53	0.7	0.5	0.5	0.5	0.5	0.6	
Commercial Paper, 1-mo.	0.14	0.12	0.14	0.19	0.47	1.36	1.55	1.49	0.3	0.3	0.4	0.4	0.4	0.5	
Treasury bill, 3-mo.	0.12	0.12	0.12	0.11	0.14	0.30	1.54	1.13	0.1	0.1	0.1	0.2	0.2	0.2	
Treasury bill, 6-mo.	0.15	0.15	0.15	0.13	0.17	0.30	1.51	1.12	0.2	0.2	0.2	0.2	0.2	0.3	
Treasury bill, 1 yr.	0.16	0.15	0.16	0.17	0.18	0.33	1.41	1.09	0.2	0.2	0.2	0.3	0.3	0.4	
Treasury note, 2 yr.	0.17	0.16	0.17	0.21	0.22	0.45	1.33	1.10	0.2	0.3	0.3	0.4	0.4	0.5	
Treasury note, 5 yr.	0.35	0.33	0.34	0.37	0.39	0.59	1.32	1.16	0.4	0.4	0.5	0.6	0.7	0.8	
Treasury note, 10 yr.	0.69	0.67	0.67	0.64	0.66	0.87	1.50	1.38	0.7	0.8	0.9	1.0	1.1	1.2	
Treasury note, 30 yr.	1.41	1.36	1.34	1.25	1.27	1.46	1.97	1.88	1.4	1.5	1.5	1.7	1.8	1.9	
Corporate Aaa bond	2.82	2.94	2.89	2.77	2.86	3.11	2.85	3.00	2.5	2.6	2.7	2.7	2.8	2.9	
Corporate Baa bond	3.66	3.81	3.74	3.68	3.87	4.11	3.50	3.76	4.0	4.0	4.0	4.2	4.2	4.3	
State & Local bonds	3.26	3.37	3.46	3.50	3.41	3.29	2.93	3.07	2.5	2.6	2.6	2.6	2.7	2.7	
Home mortgage rate	3.24	3.28	3.26	3.23	3.31	3.45	3.47	3.51	3.3	3.3	3.3	3.3	3.3	3.4	

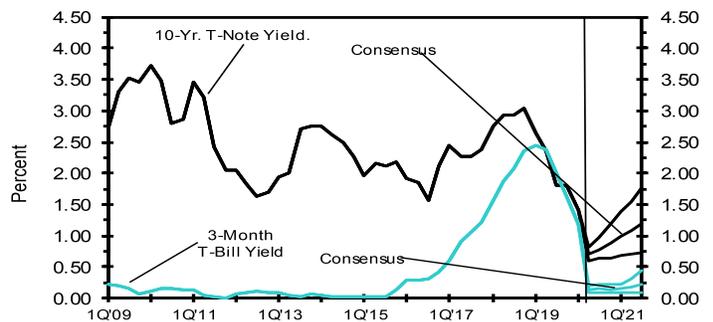
Key Assumptions	History								Consensus Forecasts-Quarterly					
	2Q				3Q				4Q				1Q	
	2018	2018	2018	2019	2019	2019	2019	2019	2020	2020	2020	2021	2021	2021
Fed's AFE \$ Index	105.5	107.8	109.4	109.4	110.3	110.5	110.3	111.2	113.2	113.6	113.6	113.4	112.9	112.4
Real GDP	3.5	2.9	1.1	3.1	2.0	2.1	2.1	-5.0	-34.0	15.2	8.2	6.2	4.7	3.7
GDP Price Index	3.2	2.0	1.6	1.1	2.4	1.8	1.3	1.4	-0.4	1.0	1.3	1.5	1.7	1.7
Consumer Price Index	2.2	2.1	1.3	0.9	3.0	1.8	2.4	1.2	-3.2	1.3	1.7	2.1	1.9	1.9

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data are sourced from Haver Analytics. Historical data for Fed's Major Currency Index are from FRSR H.10. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).

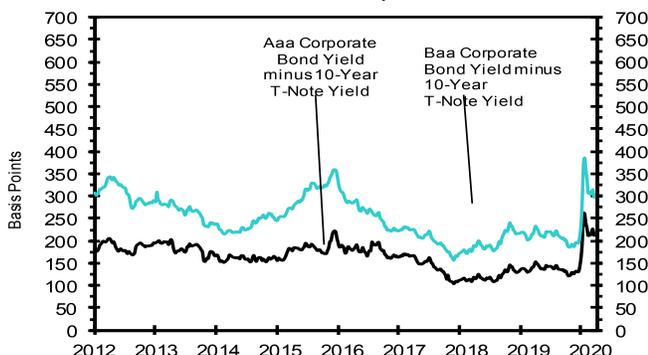
**U.S. Treasury Yield Curve**  
Week ended May 22, 2020 & Year Ago vs. 2Q 2020 & 3Q 2021 Consensus Forecasts



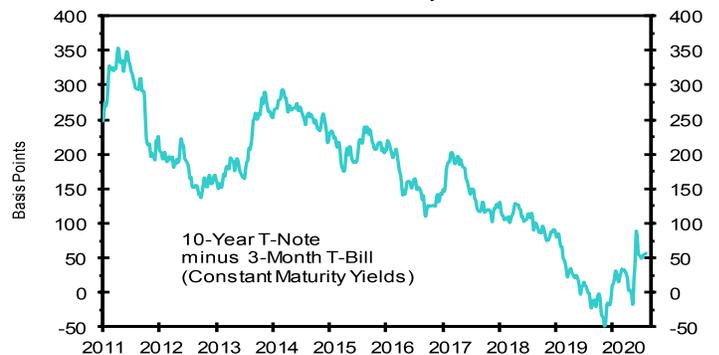
**U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield**  
(Quarterly Average) Forecast



**Corporate Bond Spreads**  
As of week ended May22, 2020



**U.S. Treasury Yield Curve**  
As of week ended May22, 2020



## Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2021 through 2026 and averages for the five-year periods 2022-2026 and 2027-2031. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

		Average For The Year					Five-Year Averages		
		2021	2022	2023	2024	2025	2026	2022-2026	2027-2031
1. Federal Funds Rate	<b>CONSENSUS</b>	<b>0.2</b>	<b>0.4</b>	<b>1.0</b>	<b>1.6</b>	<b>1.9</b>	<b>2.1</b>	<b>1.4</b>	<b>2.3</b>
	Top 10 Average	0.4	0.8	1.6	2.2	2.5	2.7	1.9	2.8
	Bottom 10 Average	0.1	0.1	0.4	1.0	1.3	1.5	0.9	1.7
2. Prime Rate	<b>CONSENSUS</b>	<b>3.4</b>	<b>3.6</b>	<b>4.1</b>	<b>4.7</b>	<b>5.0</b>	<b>5.2</b>	<b>4.5</b>	<b>5.4</b>
	Top 10 Average	3.5	3.9	4.6	5.3	5.5	5.7	5.0	5.9
	Bottom 10 Average	3.3	3.3	3.7	4.2	4.5	4.7	4.1	4.9
3. LIBOR, 3-Mo.	<b>CONSENSUS</b>	<b>0.6</b>	<b>0.9</b>	<b>1.4</b>	<b>2.0</b>	<b>2.3</b>	<b>2.4</b>	<b>1.8</b>	<b>2.6</b>
	Top 10 Average	0.8	1.3	1.9	2.5	2.7	3.0	2.3	3.1
	Bottom 10 Average	0.4	0.5	0.9	1.6	1.9	2.0	1.4	2.1
4. Commercial Paper, 1-Mo	<b>CONSENSUS</b>	<b>0.6</b>	<b>0.9</b>	<b>1.4</b>	<b>2.0</b>	<b>2.2</b>	<b>2.3</b>	<b>1.7</b>	<b>2.6</b>
	Top 10 Average	0.7	1.2	1.8	2.3	2.6	2.8	2.1	3.0
	Bottom 10 Average	0.3	0.5	1.1	1.6	1.9	2.0	1.4	2.2
5. Treasury Bill Yield, 3-Mo	<b>CONSENSUS</b>	<b>0.2</b>	<b>0.5</b>	<b>1.1</b>	<b>1.6</b>	<b>1.9</b>	<b>2.1</b>	<b>1.4</b>	<b>2.3</b>
	Top 10 Average	0.4	0.9	1.6	2.2	2.4	2.6	1.9	2.8
	Bottom 10 Average	0.1	0.2	0.5	1.1	1.4	1.6	0.9	1.8
6. Treasury Bill Yield, 6-Mo	<b>CONSENSUS</b>	<b>0.3</b>	<b>0.6</b>	<b>1.1</b>	<b>1.7</b>	<b>2.0</b>	<b>2.2</b>	<b>1.5</b>	<b>2.5</b>
	Top 10 Average	0.4	0.9	1.7	2.3	2.6	2.7	2.0	3.0
	Bottom 10 Average	0.2	0.2	0.6	1.2	1.5	1.7	1.1	1.9
7. Treasury Bill Yield, 1-Yr	<b>CONSENSUS</b>	<b>0.4</b>	<b>0.7</b>	<b>1.3</b>	<b>1.8</b>	<b>2.1</b>	<b>2.3</b>	<b>1.7</b>	<b>2.6</b>
	Top 10 Average	0.5	1.1	1.8	2.4	2.7	2.9	2.2	3.1
	Bottom 10 Average	0.2	0.3	0.7	1.3	1.6	1.8	1.1	2.0
8. Treasury Note Yield, 2-Yr	<b>CONSENSUS</b>	<b>0.5</b>	<b>0.9</b>	<b>1.5</b>	<b>2.0</b>	<b>2.3</b>	<b>2.5</b>	<b>1.8</b>	<b>2.7</b>
	Top 10 Average	0.8	1.3	2.0	2.5	2.9	3.0	2.4	3.3
	Bottom 10 Average	0.3	0.4	0.9	1.4	1.7	2.0	1.3	2.2
9. Treasury Note Yield, 5-Yr	<b>CONSENSUS</b>	<b>0.7</b>	<b>1.1</b>	<b>1.7</b>	<b>2.2</b>	<b>2.5</b>	<b>2.7</b>	<b>2.0</b>	<b>2.9</b>
	Top 10 Average	1.1	1.6	2.3	2.8	3.1	3.3	2.6	3.5
	Bottom 10 Average	0.5	0.7	1.2	1.6	1.8	2.1	1.5	2.3
10. Treasury Note Yield, 10-Yr	<b>CONSENSUS</b>	<b>1.2</b>	<b>1.5</b>	<b>2.1</b>	<b>2.5</b>	<b>2.7</b>	<b>2.9</b>	<b>2.3</b>	<b>3.1</b>
	Top 10 Average	1.5	2.0	2.6	3.1	3.3	3.5	2.9	3.8
	Bottom 10 Average	0.8	1.1	1.6	1.9	2.1	2.2	1.8	2.5
11. Treasury Bond Yield, 30-Yr	<b>CONSENSUS</b>	<b>1.8</b>	<b>2.2</b>	<b>2.7</b>	<b>3.1</b>	<b>3.3</b>	<b>3.5</b>	<b>3.0</b>	<b>3.8</b>
	Top 10 Average	2.2	2.7	3.3	3.7	3.9	4.1	3.5	4.4
	Bottom 10 Average	1.4	1.7	2.2	2.6	2.8	2.9	2.4	3.1
12. Corporate Aaa Bond Yield	<b>CONSENSUS</b>	<b>2.8</b>	<b>3.2</b>	<b>3.6</b>	<b>4.0</b>	<b>4.2</b>	<b>4.3</b>	<b>3.9</b>	<b>4.6</b>
	Top 10 Average	3.1	3.6	4.2	4.6	4.7	4.8	4.4	5.1
	Bottom 10 Average	2.4	2.7	3.1	3.5	3.7	3.8	3.4	4.2
13. Corporate Baa Bond Yield	<b>CONSENSUS</b>	<b>4.1</b>	<b>4.5</b>	<b>4.9</b>	<b>5.2</b>	<b>5.3</b>	<b>5.4</b>	<b>5.0</b>	<b>5.7</b>
	Top 10 Average	4.6	5.0	5.4	5.7	5.8	6.0	5.6	6.2
	Bottom 10 Average	3.6	3.9	4.3	4.6	4.7	4.8	4.4	5.2
14. State & Local Bonds Yield	<b>CONSENSUS</b>	<b>2.6</b>	<b>3.0</b>	<b>3.5</b>	<b>3.7</b>	<b>3.8</b>	<b>3.8</b>	<b>3.6</b>	<b>4.1</b>
	Top 10 Average	3.0	3.3	3.9	4.2	4.3	4.4	4.0	4.6
	Bottom 10 Average	2.3	2.6	2.9	3.2	3.2	3.3	3.0	3.7
15. Home Mortgage Rate	<b>CONSENSUS</b>	<b>3.4</b>	<b>3.6</b>	<b>4.0</b>	<b>4.4</b>	<b>4.5</b>	<b>4.7</b>	<b>4.2</b>	<b>4.9</b>
	Top 10 Average	3.8	4.0	4.5	4.8	5.0	5.2	4.7	5.5
	Bottom 10 Average	3.0	3.2	3.5	3.9	4.1	4.1	3.7	4.4
A. Fed's AFE Nominal \$ Index	<b>CONSENSUS</b>	<b>112.8</b>	<b>112.6</b>	<b>112.5</b>	<b>111.8</b>	<b>111.4</b>	<b>111.0</b>	<b>111.9</b>	<b>110.6</b>
	Top 10 Average	114.1	114.5	114.1	113.8	113.5	113.4	113.9	113.9
	Bottom 10 Average	111.7	110.7	110.7	110.2	109.5	108.7	110.0	107.6
		Year-Over-Year, % Change					Five-Year Averages		
		2021	2022	2023	2024	2025	2026	2022-2026	2027-2031
B. Real GDP	<b>CONSENSUS</b>	<b>3.2</b>	<b>3.2</b>	<b>2.4</b>	<b>2.2</b>	<b>2.1</b>	<b>2.0</b>	<b>2.4</b>	<b>2.1</b>
	Top 10 Average	5.7	4.3	2.9	2.5	2.3	2.3	2.9	2.4
	Bottom 10 Average	0.5	2.2	1.9	1.9	1.8	1.8	1.9	1.8
C. GDP Chained Price Index	<b>CONSENSUS</b>	<b>1.1</b>	<b>1.7</b>	<b>1.9</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>1.9</b>	<b>2.0</b>
	Top 10 Average	1.8	2.2	2.2	2.2	2.3	2.2	2.2	2.2
	Bottom 10 Average	0.3	1.3	1.6	1.8	1.8	1.8	1.7	1.9
D. Consumer Price Index	<b>CONSENSUS</b>	<b>1.3</b>	<b>2.0</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.2</b>
	Top 10 Average	2.2	2.5	2.3	2.3	2.4	2.3	2.4	2.4
	Bottom 10 Average	0.4	1.5	1.8	1.8	1.9	1.9	1.8	2.0

# Value Line Forecast for the U.S. Economy

	Actual					Estimated				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
<b>Gross Domestic Product and its Components (2012 Chain Weighted \$) Billions of Dollars</b>										
Final Sales	17254	17659	18051	18566	19096	17910	18507	19284	20017	20717
Total Consumption	11922	12248	12567	12945	13279	12225	12852	13494	14034	14525
Nonresidential Fixed Investment	2408	2425	2531	2692	2748	2392	2406	2514	2635	2767
Structures	522	496	520	541	518	409	378	401	429	463
Equipment & Software	1137	1122	1176	1255	1271	1102	1144	1179	1220	1269
Residential Fixed Investment	555	591	612	603	594	537	558	597	615	621
Exports	2377	2376	2459	2533	2532	2294	2483	2681	2842	2956
Imports	3098	3160	3309	3453	3487	2967	3329	3629	3774	3887
Federal Government	1183	1188	1197	1232	1276	1325	1348	1354	1341	1334
State & Local Governments	1908	1958	1971	1990	2022	2014	2083	2125	2157	2178
Gross Domestic Product	18219	18707	19485	20580	21438	20205	21118	22072	23004	23953
Real GDP (2012 Chain Weighted \$)	17387	17659	18051	18638	19072	17797	18428	19165	19855	20510
<b>Prices and Wages — Annual Rates of Change</b>										
GDP Deflator	1.0	1.0	1.9	2.4	1.7	0.7	1.0	0.5	0.6	0.8
CPI-All Urban Consumers	0.1	1.3	2.1	2.4	2.0	0.8	1.7	1.7	1.6	1.5
PPI-Finished Goods	-3.3	-1.0	3.2	3.0	1.0	-0.5	1.9	1.3	1.4	1.5
Employment Cost Index—Total Comp.	2.1	2.1	2.5	2.9	2.7	2.1	1.4	2.0	2.3	2.5
Productivity	1.3	0.3	1.3	1.4	1.9	8.9	-5.0	-3.0	-1.0	1.0
<b>Production and Other Key Measures</b>										
Industrial Prod. (% Change, Annualized)	-1.0	-2.0	2.3	3.9	-0.7	-2.4	7.5	5.0	4.0	3.0
Factory Operating Rate (%)	75.3	74.2	75.1	76.6	75.6	65.1	67.5	73.0	74.0	75.0
Nonfarm Inven. Change (2012 Chain Weighted \$)	131.3	28.5	35.3	55.2	75.3	-153.9	62.5	150.0	140.0	130.0
Housing Starts (Mill. Units)	1.11	1.18	1.21	1.25	1.30	1.12	1.17	1.25	1.28	1.30
Existing House Sales (Mill. Units)	5.23	5.44	5.53	5.33	5.33	4.12	5.50	6.00	5.80	5.50
Total Light Vehicle Sales (Mill. Units)	17.4	17.5	17.1	17.2	16.9	12.4	14.3	15.0	15.5	16.0
National Unemployment Rate (%)	5.3	4.9	4.4	3.9	3.7	15.2	13.8	10.0	8.0	6.0
Federal Budget Surplus (Unified, FY, \$Bill)	-439	-587	-666	-779	-1052	-3200	-2900	-2000	-1500	-1200
Price of Oil (\$Bbl., U.S. Refiners' Cost)	48.40	40.60	50.69	64.46	59.33	33.25	35.00	45.00	47.00	50.00
<b>Money and Interest Rates</b>										
3-Month Treasury Bill Rate (%)	0.1	0.3	0.9	1.9	2.2	0.4	0.2	0.2	0.2	0.2
Federal Funds Rate (%)	0.1	0.4	1.0	1.8	2.2	0.5	0.1	0.1	0.2	0.3
10-Year Treasury Note Rate (%)	2.2	1.9	2.3	2.9	2.2	0.9	0.8	1.0	1.3	1.5
Long-Term Treasury Bond Rate (%)	2.9	2.6	2.9	3.1	2.6	1.5	1.6	1.7	2.2	2.5
AAA Corporate Bond Rate (%)	3.9	3.7	3.8	3.9	3.4	2.7	2.9	3.0	3.1	3.3
Prime Rate (%)	3.3	3.5	4.1	4.9	5.3	3.6	3.3	3.3	3.3	3.5
<b>Incomes</b>										
Personal Income (Annualized % Change)	4.8	2.6	4.7	5.6	4.1	-1.8	3.5	3.8	4.0	4.2
Real Disp. Inc. (Annualized % Change)	4.1	1.8	2.9	4.0	2.4	2.4	1.0	1.5	2.0	2.5
Personal Savings Rate (%)	7.6	6.8	7.0	7.7	7.9	13.7	10.8	10.0	9.0	8.0
After-Tax Profits (Annualized \$Bill)	1740	1740	1814	1844	1862	1677	1809	1881	2013	2214
Yr-to-Yr % Change	-6.3	0.0	4.2	1.7	0.9	-9.9	7.9	4.0	7.0	10.0
<b>Composition of Real GDP—Annual Rates of Change</b>										
Gross Domestic Product	2.9	1.6	2.4	2.9	2.3	-6.7	3.5	4.0	3.6	3.3
Final Sales	2.6	2.2	2.3	2.8	2.9	-6.2	3.3	4.2	3.8	3.5
Total Consumption	3.7	2.7	2.6	3.0	2.6	-7.9	5.1	5.0	4.0	3.5
Nonresidential Fixed Investment	1.8	0.2	4.4	6.4	2.1	-12.9	0.6	4.5	4.8	5.0
Structures	-3.0	-5.0	4.7	4.1	-4.3	-20.9	-7.7	6.0	7.0	8.0
Equipment & Software	3.2	-1.3	4.7	6.8	1.3	-13.3	3.9	3.0	3.5	4.0
Residential Fixed Investment	10.2	6.5	3.5	-1.5	-1.5	-9.6	3.9	7.0	3.0	1.0
Exports	0.5	0.0	3.5	3.0	0.0	-9.4	8.2	8.0	6.0	4.0
Imports	5.3	2.0	4.7	4.4	1.0	-14.9	12.2	9.0	4.0	3.0
Federal Government	-0.1	0.4	0.8	2.9	3.5	3.8	1.7	0.5	-1.0	-0.5
State & Local Governments	3.2	2.6	0.6	1.0	1.6	-0.4	3.4	2.0	1.5	1.0

Short Label	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Yield on 30-year Treasury bonds, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	1.45	1.52	1.81	2.13	2.37	2.61	2.83	3.03	3.19	3.31	3.37	3.41	3.44
Gross domestic product, Source: BEA, Units: billions of dollars- annual rate, Last updated: 05/28/20 - 15:00	20,070.12	21,231.15	22,315.26	23,335.91	24,369.06	25,466.99	26,576.54	27,736.32	28,933.48	30,138.00	31,384.01	32,697.26	34,091.09
Yield on 10-year Treasury notes, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	0.84	0.69	0.90	1.22	1.50	1.81	2.10	2.40	2.64	2.82	2.93	3.00	3.05
Real gross domestic product, Source: BEA, Units: billions of chained 2012 dollars- annual rate, Last updated: 05/28/20 - 15:00	17,680.97	18,586.09	19,444.94	20,207.57	20,878.59	21,467.66	21,942.78	22,371.40	22,781.83	23,167.67	23,566.25	23,998.90	24,462.20
Yield on Aaa-rated corporate bonds, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	2.72	2.97	3.13	3.15	3.11	3.21	3.41	3.59	3.75	3.87	3.95	3.99	4.03
Rate on Aa-rated public utility bonds, Source: Moodys, Units: - percent per annum, Last updated: 05/28/20 - 15:00	3.09	3.47	3.65	3.69	3.65	3.78	3.99	4.19	4.36	4.51	4.59	4.64	4.68
Chained price index--gross domestic product, Source: BEA, Units: index- 2012=100.0, Last updated: 05/28/20 - 15:00	113.50	114.23	114.76	115.48	116.71	118.63	121.11	123.98	127.00	130.08	133.17	136.24	139.36
Consumer price index, all-urban, Source: BLS, Units: - 1982-84=1.00 seasonally adjusted, Last updated: 05/28/20 - 15:00	2.58	2.62	2.67	2.69	2.72	2.78	2.84	2.92	2.98	3.05	3.12	3.18	3.25

Short Label	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Yield on 30-year Treasury bonds, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	3.45	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
Gross domestic product, Source: BEA, Units: billions of dollars- annual rate, Last updated: 05/28/20 - 15:00	35,530.06	37,025.83	38,570.10	40,154.55	41,787.20	43,470.63	45,196.66	47,013.92	48,924.49	50,888.47	52,935.76	55,076.45	57,328.85
Yield on 10-year Treasury notes, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	3.06	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
Real gross domestic product, Source: BEA, Units: billions of chained 2012 dollars- annual rate, Last updated: 05/28/20 - 15:00	24,932.47	25,415.03	25,894.17	26,370.67	26,845.85	27,319.74	27,791.93	28,283.87	28,792.59	29,295.01	29,807.10	30,333.06	30,877.98
Yield on Aaa-rated corporate bonds, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	4.04	4.05	4.03	4.03	4.03	4.03	4.03	4.03	4.03	4.03	4.03	4.03	4.03
Rate on Aa-rated public utility bonds, Source: Moodys, Units: - percent per annum, Last updated: 05/28/20 - 15:00	4.69	4.70	4.68	4.68	4.68	4.68	4.68	4.68	4.68	4.68	4.68	4.68	4.68
Chained price index--gross domestic product, Source: BEA, Units: index- 2012=100.0, Last updated: 05/28/20 - 15:00	142.50	145.68	148.95	152.27	155.65	159.11	162.62	166.22	169.92	173.71	177.59	181.57	185.66
Consumer price index, all-urban, Source: BLS, Units: - 1982-84=1.00 seasonally adjusted, Last updated: 05/28/20 - 15:00	3.31	3.38	3.45	3.52	3.59	3.67	3.74	3.82	3.90	3.99	4.07	4.16	4.25

<b>Short Label</b>	<b>2046</b>	<b>2047</b>	<b>2048</b>	<b>2049</b>	<b>2050</b>
Yield on 30-year Treasury bonds, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	3.44	3.44	3.44	3.44	3.44
Gross domestic product, Source: BEA, Units: billions of dollars- annual rate, Last updated: 05/28/20 - 15:00	59,663.82	62,092.75	64,628.46	67,255.19	70,010.07
Yield on 10-year Treasury notes, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	3.05	3.05	3.05	3.05	3.05
Real gross domestic product, Source: BEA, Units: billions of chained 2012 dollars- annual rate, Last updated: 05/28/20 - 15:00	31,424.68	31,983.21	32,554.41	33,126.54	33,719.65
Yield on Aaa-rated corporate bonds, Source: FRB, Units: - percent per annum, Last updated: 05/28/20 - 15:00	4.03	4.03	4.03	4.03	4.03
Rate on Aa-rated public utility bonds, Source: Moodys, Units: - percent per annum, Last updated: 05/28/20 - 15:00	4.68	4.68	4.68	4.68	4.68
Chained price index--gross domestic product, Source: BEA, Units: index- 2012=100.0, Last updated: 05/28/20 - 15:00	189.86	194.14	198.52	203.02	207.62
Consumer price index, all-urban, Source: BLS, Units: - 1982-84=1.00 seasonally adjusted, Last updated: 05/28/20 - 15:00	4.34	4.43	4.53	4.63	4.73

## 20. Macroeconomic Indicators

(billion 2012 chain-weighted dollars, unless otherwise noted)

Indicators	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
<b>Real Gross Domestic Product</b>	<b>19,061</b>	<b>19,432</b>	<b>19,773</b>	<b>20,104</b>	<b>20,392</b>	<b>20,761</b>	<b>21,174</b>	<b>21,593</b>	<b>22,032</b>	<b>22,499</b>	<b>22,986</b>
<b>Components of Real Gross Domestic Product</b>											
Real Consumption	13,205	13,561	13,927	14,250	14,559	14,873	15,164	15,429	15,711	16,023	16,384
Real Business Fixed Investment	2,812	2,899	2,978	3,058	3,114	3,189	3,279	3,373	3,471	3,576	3,684
Real Government Spending	3,235	3,280	3,292	3,296	3,285	3,286	3,300	3,313	3,329	3,351	3,367
Real Exports	2,613	2,729	2,798	2,903	3,007	3,131	3,249	3,394	3,535	3,679	3,815
Real Imports	3,524	3,757	3,949	4,180	4,353	4,524	4,628	4,729	4,810	4,927	5,058
<b>Energy Intensity</b>											
<b>(thousand Btu per 2012 dollar of GDP)</b>											
Delivered Energy	3.95	3.89	3.85	3.80	3.76	3.69	3.62	3.55	3.48	3.41	3.34
Total Energy	5.25	5.13	5.07	4.99	4.91	4.82	4.70	4.60	4.50	4.41	4.32
<b>Price Indices</b>											
GDP Chain-type Price Index (2012=1.000)	1.123	1.150	1.179	1.208	1.238	1.266	1.295	1.325	1.357	1.389	1.422
<b>Consumer Price Index (1982-84=1.00)</b>											
All-urban	2.57	2.63	2.69	2.75	2.82	2.88	2.95	3.02	3.10	3.17	3.24
Energy Commodities and Services	2.24	2.29	2.32	2.36	2.40	2.44	2.51	2.60	2.67	2.73	2.77
<b>Wholesale Price Index (1982=1.00)</b>											
All Commodities	2.03	2.04	2.07	2.11	2.15	2.19	2.24	2.29	2.34	2.38	2.43
Fuel and Power	1.79	1.77	1.85	1.91	1.96	2.02	2.11	2.20	2.29	2.35	2.42
Metals and Metal Products	2.26	2.22	2.19	2.19	2.20	2.23	2.25	2.28	2.30	2.32	2.33
Industrial Commodities excluding Energy	2.09	2.10	2.12	2.15	2.18	2.21	2.25	2.29	2.33	2.37	2.41
<b>Interest Rates (percent, nominal)</b>											
Federal Funds Rate	2.42	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
10-Year Treasury Note	2.68	2.94	3.13	3.23	3.28	3.28	3.27	3.26	3.25	3.24	3.23
AA Utility Bond Rate	4.07	4.28	4.43	4.58	4.66	4.66	4.65	4.65	4.65	4.65	4.65



## 20. Macroeconomic Indicators

(billion 2012 chain-weighted dollars, unless otherwise noted)

Indicators											2019-
	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2050
<b>Real Gross Domestic Product</b>	<b>28,685</b>	<b>29,217</b>	<b>29,769</b>	<b>30,319</b>	<b>30,877</b>	<b>31,439</b>	<b>32,015</b>	<b>32,595</b>	<b>33,182</b>	<b>33,759</b>	<b>1.9%</b>
<b>Components of Real Gross Domestic Product</b>											
Real Consumption	20,777	21,181	21,594	22,016	22,445	22,886	23,342	23,813	24,290	24,769	2.0%
Real Business Fixed Investment	4,892	5,010	5,134	5,256	5,378	5,498	5,625	5,757	5,883	6,004	2.5%
Real Government Spending	3,620	3,642	3,664	3,683	3,703	3,721	3,737	3,753	3,772	3,788	0.5%
Real Exports	5,423	5,579	5,744	5,908	6,073	6,213	6,392	6,573	6,748	6,884	3.2%
Real Imports	6,745	6,888	7,051	7,225	7,402	7,546	7,760	7,971	8,163	8,297	2.8%
<b>Energy Intensity</b>											
<b>(thousand Btu per 2012 dollar of GDP)</b>											
Delivered Energy	2.78	2.74	2.71	2.68	2.65	2.62	2.59	2.56	2.54	2.51	-1.5%
Total Energy	3.60	3.56	3.51	3.47	3.43	3.39	3.36	3.32	3.29	3.26	-1.5%
<b>Price Indices</b>											
GDP Chain-type Price Index (2012=1.000)	1.854	1.896	1.940	1.985	2.032	2.080	2.130	2.183	2.237	2.292	2.3%
<b>Consumer Price Index (1982-84=1.00)</b>											
All-urban	4.23	4.33	4.43	4.54	4.65	4.76	4.87	4.99	5.12	5.25	2.3%
Energy Commodities and Services	3.63	3.74	3.83	3.95	4.06	4.17	4.31	4.45	4.58	4.69	2.4%
<b>Wholesale Price Index (1982=1.00)</b>											
All Commodities	2.99	3.05	3.10	3.16	3.22	3.28	3.35	3.42	3.49	3.55	1.8%
Fuel and Power	3.38	3.49	3.58	3.69	3.80	3.91	4.04	4.18	4.30	4.42	2.9%
Metals and Metal Products	2.36	2.37	2.37	2.37	2.38	2.37	2.38	2.38	2.39	2.39	0.2%
Industrial Commodities excluding Energy	2.87	2.92	2.96	3.01	3.06	3.10	3.15	3.21	3.26	3.31	1.5%
<b>Interest Rates (percent, nominal)</b>											
Federal Funds Rate	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	--
10-Year Treasury Note	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	--
AA Utility Bond Rate	4.66	4.67	4.67	4.67	4.67	4.66	4.66	4.66	4.66	4.67	--

**October 2, 2020**

**TABLE OF SUMMARY & INDEX CONTENTS**

**Summary & Index Page Number**

Industries, in alphabetical order ..... 1  
 Stocks, in alphabetical order ..... 2-23  
 Noteworthy Rank Changes ..... 24

**SCREENS**

Industries, in order of Timeliness Rank ..... 24	Stocks with Lowest P/Es ..... 35
Timely Stocks in Timely Industries ..... 25-26	Stocks with Highest P/Es ..... 35
Timely Stocks (1 & 2 for Performance) ..... 27-29	Stocks with Highest Annual Total Returns ..... 36
Conservative Stocks (1 & 2 for Safety) ..... 30-31	Stocks with Highest 3- to 5-year Dividend Yield .... 36
Highest Dividend Yielding Stocks ..... 32	High Returns Earned on Total Capital ..... 37
Stocks with High 3- to 5-year Price Potential ..... 32	Bargain Basement Stocks ..... 37
Biggest "Free Flow" Cash Generators ..... 33	Untimely Stocks (5 for Performance) ..... 38
Best Performing Stocks last 13 Weeks ..... 33	Highest Dividend Yielding Non-utility Stocks ..... 38
Worst Performing Stocks last 13 Weeks ..... 33	Highest Growth Stocks ..... 39
Widest Discounts from Book Value ..... 34	

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

**20.8**

26 Weeks Ago	Market Low	Market High
11.0	3-23-20	9-2-20
	11.0	21.4

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks

**2.4%**

26 Weeks Ago	Market Low	Market High
3.7%	3-23-20	9-2-20
	3.7%	2.2%

The Median Estimated **THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL** of all 1700 stocks in the VL Universe

**60%**

26 Weeks Ago	Market Low	Market High
145	3-23-20	9-2-20
	145	50%

The Median Estimated **18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE** of all 1700 stocks in the VL Universe

**20%**

26 Weeks Ago	Market Low	Market High
72%	3-23-20	9-2-20
	72%	14%

**ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER**

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

	PAGE		PAGE		PAGE		PAGE
Advertising (76) .....	2386	Electric Utility (East) (50) .....	136	Investment Co. (-) .....	1198	Publishing (84) .....	2374
Aerospace/Defense (73) .....	701	Electric Utility (West) (17) .....	2212	Investment Co. (Foreign) (-) .....	415	Railroad (31) .....	337
Air Transport (91) .....	301	Electronics (65) .....	1319	Machinery (54) .....	1701	*R.E.I.T. (66) .....	1510
Apparel (93) .....	2101	Engineering & Const (55) .....	1227	Maritime (75) .....	330	Recreation (83) .....	2301
Automotive (43) .....	101	Entertainment (58) .....	2327	Medical Services (28) .....	789	Reinsurance (68) .....	2018
Auto Parts (74) .....	971	Entertainment Tech (5) .....	2007	Med Supp Invasive (53) .....	170	Restaurant (78) .....	348
Bank (72) .....	2501	Environmental (44) .....	404	Med Supp Non-Invasive (25) .....	202	Retail Automotive (48) .....	2117
Bank (Midwest) (87) .....	773	Financial Svcs. (Div.) (57) .....	2534	Metal Fabricating (80) .....	727	Retail Building Supply (8) .....	1137
Beverage (29) .....	1965	Food Processing (19) .....	1901	*Metals & Mining (Div.) (77) .....	1580	Retail (Hardlines) (69) .....	2163
Biotechnology (15) .....	827	Foreign Electronics (40) .....	1982	Natural Gas Utility (37) .....	546	Retail (Softlines) (79) .....	2191
Brokers & Exchanges (7) .....	1794	Funeral Services (20) .....	1841	Natural Gas (Div.) (90) .....	523	Retail Store (24) .....	2134
Building Materials (45) .....	1101	Furn/Home Furnishings (81) .....	1146	Newspaper (-) .....	2381	Retail/Wholesale Food (23) .....	1945
Cable TV (9) .....	1010	Healthcare Information (33) .....	817	Office Equip/Supplies (88) .....	1411	Semiconductor (12) .....	1349
Cannabis (82) .....	1419	Heavy Truck & Equip (64) .....	148	Oil/Gas Distribution (86) .....	606	Semiconductor Equip (2) .....	1384
*Chemical (Basic) (59) .....	1596	Homebuilding (13) .....	1125	Oilfield Svcs/Equip. (96) .....	2413	Shoe (85) .....	2153
Chemical (Diversified) (60) .....	2431	Hotel/Gaming (89) .....	2349	Packaging & Container (46) .....	1170	Steel (70) .....	737
Chemical (Specialty) (61) .....	557	Household Products (1) .....	1186	Paper/Forest Products (56) .....	1161	Telecom. Equipment (34) .....	939
Computers/Peripherals (21) .....	1397	*Human Resources (71) .....	1636	Petroleum (Integrated) (95) .....	501	Telecom. Services (18) .....	916
Computer Software (3) .....	2583	Industrial Services (42) .....	374	Petroleum (Producing) (94) .....	2398	Telecom. Utility (38) .....	1021
Diversified Co. (67) .....	1741	Information Services (10) .....	428	Pharmacy Services (4) .....	966	*Thrift (63) .....	1501
*Drug (14) .....	1606	IT Services (16) .....	2614	Pipeline MLPs (92) .....	618	Tobacco (26) .....	1990
E-Commerce (22) .....	1814	*Insurance (Life) (51) .....	1555	Power (30) .....	1209	Toiletries/Cosmetics (52) .....	1000
Educational Services (41) .....	1997	Insurance (Prop/Cas.) (36) .....	752	*Precious Metals (6) .....	2663, 1566	Trucking (32) .....	317
Electrical Equipment (62) .....	1301	Internet (27) .....	2636	Precision Instrument (35) .....	112	Water Utility (11) .....	1785
Electric Util. (Central) (47) .....	901	Investment Banking (49) .....	1806	Public/Private Equity (-) .....	2442	Wireless Networking (39) .....	591

\*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXVI, No. 8.

Published weekly by VALUE LINE PUBLISHING LLC, 551 Fifth Avenue, New York, NY 10176

# Index to Stocks

Prices quoted are as of September 21, 2020.  
All shares are traded on the New York Stock Exchange except where noted.

**PAGE NUMBERS**

Bold type refers to full report.  
The number on the left signifies a Supplement (if available).

**RANKS**

**Industry Rank**

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?					
			Timeliness	Safety	Technical						Qtr. Ended	Earns. Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago		
1702 <b>AAON, Inc.</b> (NDQ)	AAON	56.05	2	3	2	.90	40- 65 (N- 15%)	39.2	0.7	1.43	.38	54	6/30	.34	.26	9/30	▲.19	.16	YES
702 <b>AAR Corp.</b>	AIR	18.27	5	4	4	1.70	25- 40 (35-120%)	NMF	NIL	d.63	NIL	73	5/31	d.43	.76	9/30	▼NIL	.075	YES
1966 <b>AB InBev ADR</b>	BUD	54.46	3	2	4	.95	90- 120 (65-120%)	17.7	1.8	3.08	.99	29	6/30	.18	1.25	9/30	.567	NIL	YES
1742 <b>ABB Ltd. ADR</b>	ABB	25.22	-	2	-	1.05	20- 25 (N- N%)	33.6	3.3	.75	.83	67	6/30	.19	.12	9/30	NIL	NIL	YES
375 <b>ABM Industries Inc.</b>	ABM	37.09	3	3	3	1.10	50- 75 (35-100%)	19.9	2.0	1.86	.74	42	7/31	.75	.60	12/31	.185	.18	YES
1412 <b>ACCO Brands</b>	ACCO	5.68	-	3	-	1.45	18- 25 (215-340%)	8.2	4.6	.69	.26	88	6/30	.12	.36	9/30	.065	.06	YES
2615 <b>ACI Worldwide</b> (NDQ)	ACIW	25.08	2	3	3	1.00	30- 45 (20- 80%)	25.1	NIL	1.00	NIL	16	6/30	.12	.05	6/30	NIL	NIL	YES
239 1320 <b>ADT Inc.</b>	ADT	8.72	3	3	2	1.20	13- 19 (50-120%)	NMF	1.6	d.65	.14	65	6/30	d.14	d.14	12/31	.035	.035	YES
1210 <b>AES Corp.</b>	AES	18.36	▲	3	3	1.10	16- 25 (N- 35%)	25.2	3.1	.73	.57	30	6/30	d.12	.02	9/30	.143	.137	YES
149 <b>AGCO Corp.</b>	AGCO	70.78	3	3	3	1.20	95- 145 (35-105%)	23.3	0.9	3.04	.64	64	6/30	.93	1.82	9/30	.16	.16	YES
SEE FINAL REPORT																			
2302 <b>AMC Entertainment Hldgs.</b> (NDQ)	AMC	24.51	4	3	4	.95	80- 120 (225-390%)	4.1	NIL	6.03	NIL	58	6/30	2.39	2.60	6/30	NIL	NIL	YES
2328 <b>AMC Networks</b>	AMCX	55.19	4	3	5	.55	65- 100 (20- 80%)	24.7	NIL	2.23	NIL	71	6/30	.47	.61	6/30	NIL	NIL	YES
1637 <b>AMN Healthcare</b>	AMN	10.32	2	3	1	.90	10- 15 (N- 45%)	NMF	NIL	.05	NIL	27	6/30	.02	.01	6/30	NIL	NIL	YES
2637 <b>ANGI Homeservices</b> (NDQ)	ANGI	22.68	-	3	-	.75	▲ 20- 30 (N- 30%)	NMF	0.1	NMF	.02-NIL	6	8/31	▲27.09(q)	16.08(q)	9/30	NIL	NIL	YES
1567 <b>ASA Gold &amp; Precious</b>	ASA	64.39	3	3	1	1.15	90- 130 (40-100%)	18.0	NIL	3.58	NIL	71	6/30	.92	.81	6/30	NIL	NIL	YES
1638 <b>ASGN Inc.</b>	ASGN	28.63	3	1	3	.85	55- 65 (90-125%)	8.5	7.4	3.36	2.11	18	6/30	.83	.89	9/30	.52	.51	YES
917 <b>AT&amp;T Inc.</b>	T	7.11	3	3	1	1.20	12- 18 (70-155%)	28.4	NIL	.25	NIL	34	6/30	.05	d.08	6/30	NIL	NIL	YES
940 <b>A10 Networks</b>	ATEN	50.70	2	3	3	.75	55- 85 (10- 70%)	66.7	1.3	.76	.68	18	6/30	.30	d.05	12/31	◆.17	.17	YES
918 <b>ATN International</b> (NDQ)	ATNI	33.46	4	3	4	1.10	60- 90 (80-170%)	16.3	2.0	2.05	.68	62	5/31	.21	.81	9/30	.17	.17	YES
1302 <b>AZZ Inc.</b>	AZZ	55.59	3	3	3	1.60	70- 105 (25- 90%)	15.7	0.3	3.55	.16	24	6/30	1.18	.93	12/31	.04	.035	YES
1029 203 <b>Aaron's Inc.</b>	AAN	105.95	2	1	3	1.00	110- 135 (5- 25%)	31.1	1.4	3.41	1.44	25	6/30	.57	.82	12/31	◆.36	.32	YES
1607 <b>AbbVie Inc.</b>	ABBV	89.09	1	3	2	1.00	130- 200 (45-125%)	8.2	5.3	10.93	4.72	14	6/30	2.34	2.26	12/31	1.18	1.07	YES
1028 2192 <b>Abercrombie &amp; Fitch</b>	ANF	14.69	4	4	5	1.20	20- 35 (35-140%)	19.6	NIL	.75	NIL	79	7/31	.09	d.48	9/30	NIL	.20	YES
416 <b>Aberdeen Australia Fd. (ASE)</b>	IAF	4.47	-	3	-	1.10	7- 11 (55-145%)	NMF	3.6	NMF	.16	-	7/31	5.31(q)	5.94(q)	9/30	.023	.039	YES
1199 <b>Aberdeen Asia-Pac. Fd.(ASE)</b>	FAX	4.00	-	4	-	.75	4- 7 (N- 75%)	NMF	8.8	NMF	.35	-	4/30	4.30(q)	4.80(q)	9/30	.083	.083	YES
417 <b>Aberdeen Japan Equity</b>	JEQ	8.15	-	3	-	.90	9- 14 (10- 70%)	NMF	0.6	NMF	.05	-	4/30	8.17(q)	8.30(q)	9/30	NIL	NIL	YES
171 <b>ABIOMED Inc.</b> (NDQ)	ABMD	265.86	3	3	1	1.00	270- 405 (N- 50%)	76.0	NIL	3.50	NIL	53	6/30	.98	1.93	6/30	NIL	NIL	YES
941 <b>Acacia Communications(NDQ)</b>	ACIA	67.80	-	4	-	.70	50- 85 (N- 25%)	50.6	NIL	1.34	NIL	34	6/30	.37	d.05	6/30	NIL	NIL	YES
1846 2616 <b>Accenture Plc</b>	ACN	233.91	2	1	3	.95	240- 290 (5- 25%)	30.8	1.4	7.60	3.29	16	5/31	1.90	1.93	9/30	.80	NIL	YES
2008 <b>Activision Blizzard</b> (NDQ)	ATVI	81.41	1	3	2	.70	55- 85 (N- 5%)	32.6	0.6	2.50	.45	5	6/30	.75	.43	9/30	NIL	NIL	YES
1303 <b>Acuity Brands</b>	AYI	99.09	4	3	3	1.25	200- 300 (100-205%)	12.0	0.5	8.28	.52	62	5/31	1.94	2.53	9/30	.13	.13	YES
1200 <b>Adams Divers. Equity Fd</b>	ADY	15.81	-	2	-	1.00	16- 20 (N- 25%)	NMF	1.3	NMF	.20	-	6/30	17.46(q)	17.73(q)	9/30	.05	.05	YES
204 <b>Adaptive Biotech.</b> (NDQ)	ADPT	47.12	-	3	-	NMF	40- 60 (N- 25%)	NMF	NIL	d1.06	NIL	25	6/30	d.26	d.13	9/30	NIL	NIL	YES
972 <b>Adient plc</b>	ADNT	16.73	4	4	3	1.50	25- 40 (50-140%)	NMF	NIL	d1.43	NIL	74	6/30	d2.78	.38	6/30	NIL	NIL	YES
2584 <b>Adobe Inc.</b> (NDQ)	ADBE	475.64	1	2	3	.80	510- 690 (5- 45%)	56.7	NIL	8.39	NIL	3	8/31	1.97	1.61	6/30	NIL	NIL	YES
1998 <b>Adtalem Global Educ.</b>	ATGE	25.00	3	3	2	.95	50- 70 (100-180%)	9.7	NIL	2.58	NIL	41	6/30	.58	.97	6/30	NIL	NIL	YES
942 <b>ADTRAN, Inc.</b> (NDQ)	ADTN	10.30	3	3	1	1.10	10- 16 (N- 55%)	57.2	3.5	1.8	.36	34	6/30	.02	.08	9/30	.09	.09	YES
2118 <b>Advance Auto Parts</b>	AAP	148.43	2	3	3	1.15	165- 250 (10- 70%)	18.5	0.7	8.04	1.00	48	6/30	2.92	2.00	12/31	.25	.06	YES
405 <b>Advanced Disposal</b>	ADSW	30.23	-	3	-	.55	25- 35 (N- 15%)	88.9	NIL	.34	NIL	44	6/30	.07	d.01	6/30	NIL	NIL	YES
1350 <b>Advanced Energy</b> (NDQ)	AEIS	58.70	2	3	1	1.30	95- 140 (60-140%)	12.9	NIL	4.56	NIL	12	6/30	1.18	.45	6/30	NIL	NIL	YES
1351 <b>Advanced Micro Dev.</b> (NDQ)	AMD	77.94	1	4	3	1.20	30- 55 (N- N%)	76.4	NIL	1.02	NIL	12	6/30	.18	.08	6/30	NIL	NIL	YES
558 <b>AdvanSix Inc.</b>	ASIX	12.28	4	3	3	.75	20- 30 (65-145%)	10.8	NIL	1.14	NIL	61	6/30	.41	.53	6/30	NIL	NIL	YES
1228 <b>AECOM</b>	ACM	38.04	-	3	-	1.35	45- 65 (20- 70%)	17.1	NIL	2.22	NIL	55	6/30	.55	.72	6/30	NIL	NIL	YES
1102 <b>Aegion Corp.</b> (NDQ)	AEGN	14.18	4	3	3	1.00	25- 40 (75-180%)	14.6	NIL	.97	NIL	45	6/30	.25	.36	6/30	NIL	NIL	YES
2535 <b>AerCap Hldgs. NV</b>	AER	24.92	3	4	3	1.90	60- 95 (140-280%)	3.8	NIL	6.56	NIL	57	6/30	1.92	2.42	6/30	NIL	NIL	YES
1743 <b>Aerjet Rocketdyne</b>	AJRD	40.19	3	3	3	.90	50- 70 (25- 75%)	21.4	NIL	1.88	NIL	67	6/30	.46	.50	6/30	NIL	NIL	YES
703 <b>AeroVironment</b> (NDQ)	AVAV	62.24	3	3	1	.85	80- 110 (30- 75%)	34.6	NIL	1.80	NIL	73	7/31	.42	.71	6/30	NIL	NIL	YES
2536 <b>Affiliated Managers</b>	AMG	65.15	3	3	3	1.40	135- 205 (105-215%)	44.0	0.1	1.48	.04	57	6/30	.65	2.11	9/30	.01	.32	YES
1556 <b>Aflac Inc.</b>	AFL	36.41	▼	3	2	1.25	50- 65 (35- 80%)	7.4	3.2	▲4.91	1.15	51	6/30	1.28	1.13	9/30	.28	.27	YES
113 <b>Agilent Technologies</b>	A	98.13	2	2	3	.90	100- 135 (N- 40%)	30.3	0.7	3.24	.72	35	7/31	.78	.76	9/30	.18	.164	YES
1568 <b>Agnico Eagle Mines</b>	AEM	78.51	2	3	3	.55	▲ 115- 175 (45-125%)	32.6	1.0	▲2.41	.80	6	6/30	.24	.12	9/30	.20	.125	YES
2432 <b>Air Products &amp; Chem.</b>	APD	290.78	2	1	3	.90	280- 345 (N- 20%)	33.4	1.8	8.71	5.36	60	6/30	2.01	2.17	12/31	1.34	1.16	YES
1815 <b>Akamai Technologies</b> (NDQ)	AKAM	110.16	1	3	3	.75	120- 180 (10- 65%)	33.6	NIL	3.28	NIL	22	6/30	.98	.69	6/30	NIL	NIL	YES
1703 <b>Alamo Group</b>	ALG	100.02	3	3	3	1.00	135- 200 (35-100%)	21.3	0.5	4.69	.52	54	6/30	1.10	1.75	9/30	.13	.12	YES

★★ Supplementary Report in this week's issue.

▲ Arrow indicates the direction of a change. When it appears with the Latest Dividend, the arrow signals that a change in the regular payment rate has occurred in the latest quarter.

For Timeliness, 3-5 year Target Price Range, or Estimated Earnings 12 months to 3-31-21, the arrow indicates a change since the preceding week. When a diamond ◆ (indicating a new figure) appears alongside the latest quarterly earnings

results, the rank change probably was primarily caused by the earnings report. In other cases, the change is due to the dynamics of the ranking system and could simply be the result of the improvement or weakening of other stocks.

Volume LXXVI, Number 8, Issue 8. The Value Line Investment Survey (ISSN 0042-2401) is published weekly by Value Line Publishing LLC, 551 Fifth Avenue New York, NY 10176 and is accorded expeditious treatment prescribed for newspapers. Subscription rate for one year in the United States and US possessions is \$598. Foreign rates upon request. Periodical Postage Paid at New York, NY and additional mailing offices.

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS				3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?						
			Timeliness	Safety	Technical	Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago			
																			Qtr. Ended	Earnings Per sh.	Year Ago
302 Alaska Air Group	ALK	37.64	4	3	4	1.40	50- 75	(35-100%)	NMF	NIL	d7.68	NIL	91	6/30	d3.54	2.17	9/30	NIL	.35	YES	
1704 Albany Int'l 'A'	AIN	50.58	4	3	4	1.20	65- 95	(30- 90%)	18.6	1.5	2.72	.76	54	6/30	1.09	1.09	12/31	.19	.18	YES	
2433 Albarie Corp.	ALB	95.13	3	3	3	1.25	90- 135	(N- 40%)	32.9	1.6	2.89	1.54	60	6/30	.80	1.45	12/31	.385	.368	YES	
1581 Alcoa Corp.	AA	12.30	4	4	3	1.50	▲ 25- 40	(105-225%)	NMF	NIL	d1.02	NIL	77	6/30	d.02	d.01	6/30	NIL	NIL	YES	
1511 Alexandria Real Estate	ARE	155.89	1	3	2	.95	170- 250	(10- 60%)	42.6	2.7	▲3.66	4.24	66	6/30	1.82	.68	12/31	1.06	1.00	YES	
1608 Alexion Pharmac.	(NDQ) ALXN	111.74	3	3	5	.90	105- 155	(N- 40%)	37.9	NIL	▼2.95	NIL	14	6/30	d4.84	2.01	6/30	NIL	NIL	YES	
2638 Alibaba Group ADS	BABA	273.82	2	3	3	.90	235- 355	(N- 30%)	32.8	NIL	8.35	NIL	27	6/30	2.10	1.83	6/30	NIL	NIL	YES	
205 Align Techn.	(NDQ) ALGN	322.30	3	3	2	1.30	285- 425	(N- 30%)	92.1	NIL	3.50	NIL	25	6/30	d.52	1.26	6/30	NIL	NIL	YES	
1946 Ali. Couche-Tard	(TSE) ATDB.TO	44.86b	2	3	2	.75	65- 95	(45-110%)	18.3	0.7	2.45	.30	23	7/31	9.5(b)	.67(b)	9/30	.14(b)	.125(b)	YES	
828 Alkermes plc	(NDQ) ALKS	17.20	3	3	3	1.05	70- 100	(305-480%)	NMF	NIL	.07	NIL	15	6/30	.06	.09	6/30	NIL	NIL	YES	
753 Alleghany Corp.	Y	504.33	2	1	4	1.05	825-1010	(65-100%)	11.7	NIL	▲43.02	NIL	36	6/30	12.39	20.46	6/30	NIL	NIL	YES	
1582 Allegheny Techn.	ATI	9.38	5	5	2	1.00	▼ 13- 25	(40-165%)	NMF	NIL	▼d.11	NIL	77	6/30	d.02	.54	6/30	NIL	NIL	YES	
303 Allegiant Travel	(NDQ) ALGT	126.34	4	3	5	1.20	130- 195	(5- 55%)	NMF	NIL	d10.30	NIL	91	6/30	d5.96	4.33	9/30	NIL	.70	YES	
1321 Allegion plc	ALLE	97.77	3	3	4	1.15	120- 180	(25- 85%)	22.7	1.3	4.31	1.28	65	6/30	.92	1.26	9/30	.32	.27	YES	
902 ALLETE	ALE	51.75	3	2	3	.85	65- 90	(25- 75%)	17.1	4.9	3.02	2.55	47	6/30	.39	.64	9/30	.618	.588	YES	
429 Alliance Data Sys.	ADS	45.10	5	4	4	1.50	115- 195	(155-330%)	5.6	1.9	8.05	.84	10	6/30	1.86	3.83	9/30	.21	.63	YES	
635 Alliance Resource	ARLP						SEE FINAL SUPPLEMENT														
2537 AllianceBernstein Hldg.	AB	27.14	3	3	3	1.30	35- 50	(30- 85%)	12.0	8.5	2.26	2.30	57	6/30	.61	.54	9/30	.61	.56	YES	
903 Alliant Energy	(NDQ) LNT	49.83	3	2	2	.85	40- 55	(N- 10%)	21.4	3.1	2.33	1.52	47	6/30	.54	.40	9/30	.38	.355	YES	
973 Allison Transmission	ALSN	32.16	3	3	1	1.10	40- 60	(25- 85%)	13.1	2.1	2.45	.68	74	6/30	.20	1.46	9/30	.17	.15	YES	
240 818 Allscripts Healthcare	(NDQ) MDRX	7.93	3	3	3	1.10	11- 17	(40-115%)	10.6	NIL	.75	NIL	33	6/30	.18	.17	6/30	NIL	NIL	YES	
754 Allstate Corp.	ALL	92.03	1	1	4	1.00	160- 200	(75-115%)	7.7	2.3	11.96	2.16	36	6/30	2.46	2.18	12/31	.54	.50	YES	
1849 2502 Ally Financial	ALLY	24.55	4	3	5	1.45	60- 85	(145-245%)	8.1	3.1	3.03	.76	72	6/30	.61	.97	9/30	.19	.17	YES	
829 Alnylam Pharmac.	(NDQ) ALNY	130.92	2	4	2	1.05	135- 225	(5- 70%)	NMF	NIL	d6.63	NIL	15	6/30	d1.56	d2.02	6/30	NIL	NIL	YES	
236 2639 Alphabet Inc.	(NDQ) GOOG	1431.16	1	1	2	.90	2295-2805	(60- 95%)	26.3	NIL	54.48	NIL	27	6/30	10.13	14.21	6/30	NIL	NIL	YES	
447 2585 Alteryx, Inc.	AYX	110.31	▲2	3	2	.90	170- 250	(55-125%)	NMF	NIL	.65	NIL	3	6/30	.02	d.05	9/30	NIL	NIL	YES	
1011 Alice USA	ATUS	25.94	2	3	2	1.05	30- 50	(15- 95%)	34.6	NIL	.75	NIL	9	6/30	.19	.13	6/30	NIL	NIL	YES	
1705 Altra Industrial Motion	(NDQ) AIMC	37.52	3	3	2	1.35	50- 75	(35-100%)	16.3	0.4	2.30	.16	54	6/30	.60	.71	12/31	.04	.17	YES	
1991 Altria Group	MO	38.82	3	3	3	.85	70- 105	(80-170%)	8.9	8.9	4.38	3.44	26	6/30	1.09	1.10	12/31	▲.86	.84	YES	
239 2640 Amazon.com	(NDQ) AMZN	2960.47	1	2	3	.80	3080-4170	(5- 40%)	78.2	NIL	37.84	NIL	27	6/30	10.30	5.22	6/30	NIL	NIL	YES	
1352 Ambarella, Inc.	(NDQ) AMBA	50.76	3	3	5	1.10	35- 55	(N- 10%)	NMF	NIL	.18	NIL	12	7/31	.06	.21	6/30	NIL	NIL	YES	
1171 Amcor plc	AMCR	11.01	-	3	-	NMF	13- 19	(20- 75%)	19.3	5.0	.57	.55	46	6/30	.11	.06	9/30	.115	NIL	YES	
2617 Amdocs Ltd.	(NDQ) DOX	58.32	3	1	4	.90	85- 100	(45- 70%)	15.3	2.2	3.81	1.31	16	6/30	.90	.96	12/31	.328	.285	YES	
790 Amedisys, Inc.	(NDQ) AMED	240.24	3	3	3	.80	145- 220	(N- N%)	46.6	NIL	5.15	NIL	28	6/30	1.34	1.21	6/30	NIL	NIL	YES	
318 AMERCO	(NDQ) UHAL	364.79	3	2	4	.90	255- 345	(N- N%)	45.6	NIL	8.00	NIL	32	6/30	4.47	6.76	6/30	NIL	NIL	YES	
904 Ameren Corp.	AEE	76.62	1	2	2	.80	60- 85	(N- 10%)	21.5	2.7	3.56	2.08	47	6/30	.98	.72	9/30	.495	.475	YES	
919 America Movil	AMX	12.21	3	3	4	.90	19- 30	(55-145%)	11.1	3.0	1.10	.37	18	6/30	.26	.22	9/30	.168	.19	YES	
304 Amer. Airlines	(NDQ) AAL	12.21	5	5	4	1.55	17- 30	(40-145%)	NMF	NIL	d18.35	NIL	91	6/30	d7.82	1.82	9/30	NIL	.10	YES	
974 Amer. Axle	AXL	5.39	4	4	3	1.70	15- 25	(180-365%)	NMF	NIL	d1.60	NIL	74	6/30	d1.79	.55	6/30	NIL	NIL	YES	
2193 Amer. Eagle Outfitters	AEO	14.14	4	3	5	1.05	18- 25	(25- 75%)	22.1	NIL	.64	NIL	79	7/31	d.03	.39	9/30	NIL	.137	YES	
905 Amer. Elec. Power	AEP	79.36	3	1	4	.75	85- 105	(5- 30%)	18.0	3.7	4.40	2.96	47	6/30	1.05	.93	9/30	.70	.67	YES	
2538 Amer. Express	AXP	98.17	3	1	5	1.20	115- 145	(15- 50%)	25.6	1.8	3.84	1.72	57	6/30	.29	2.07	9/30	.43	.39	YES	
755 Amer. Financial Group	AFG	65.42	4	3	4	1.35	105- 160	(60-145%)	9.5	2.8	6.87	1.80	36	6/30	1.05	2.12	9/30	.45	.40	YES	
1512 Amer. Homes 4 Rent	AMH	27.81	3	3	3	1.00	25- 40	(N- 45%)	NMF	0.7	▲.19	.20	66	6/30	.05	.08	9/30	.05	.05	YES	
2539 Amer. Int'l Group	AIG	26.98	4	3	4	1.45	65- 100	(140-270%)	6.6	4.7	4.11	1.28	57	6/30	.66	1.24	9/30	.32	.32	YES	
1786 Amer. States Water	AWR	74.37	2	2	3	.65	60- 80	(N- 10%)	31.6	1.8	2.35	1.34	11	6/30	.69	.72	9/30	▲.335	.305	YES	
592 Amer. Tower 'A'	AMT	240.97	1	2	3	.90	230- 315	(N- 30%)	57.8	2.0	4.17	4.81	39	6/30	1.00	.96	12/31	▲1.14	1.01	YES	
559 Amer. Vanguard Corp.	AVD	13.58	4	3	3	1.15	25- 35	(85-160%)	27.7	NIL	.49	NIL	61	6/30	.13	.11	9/30	▼NIL	.02	YES	
1787 Amer. Water Works	AWK	139.72	1	3	2	.85	90- 140	(N- N%)	35.7	1.6	3.91	2.25	11	6/30	.97	.94	9/30	.55	.50	YES	
1103 Amer. Woodmark	(NDQ) AMWD	74.56	4	3	3	1.50	110- 165	(50-120%)	13.2	NIL	5.65	NIL	45	7/31	1.66	2.13	6/30	NIL	NIL	YES	
2540 Ameriprise Fin'l	AMP	150.39	3	2	2	1.40	190- 280	(25- 85%)	9.3	2.8	16.14	4.16	57	6/30	d4.31	3.57	9/30	1.04	.97	YES	
206 AmerisourceBergen	ABC	95.82	1	2	2	.90	125- 190	(30-100%)	12.0	1.8	7.99	1.68	25	6/30	1.85	1.76	9/30	.42	.40	YES	
1744 AMETEK, Inc.	AME	96.24	3	2	2	1.15	100- 135	(5- 40%)	29.3	0.7	3.28	.72	67	6/30	.72	.94	9/30	.18	.14	YES	
830 Amgen	(NDQ) AMGN	243.19	1	1	3	.85	295- 360	(20- 50%)	15.5	2.8	15.73	6.85	15	6/30	4.25	3.97	9/30	1.60	1.45	YES	
1385 Amkor Technology	(NDQ) AMKR	11.16	2	4	2	1.20	14- 25	(25-125%)	12.3	NIL	.91	NIL	2	6/30	.23	d.04	6/30	NIL	NIL	YES	
1322 Amphenol Corp.	APH	103.49	3	1	2	1.00	115- 145	(10- 40%)	29.5	1.0	3.51	1.00	65	6/30	.85	.93	12/31	.25	.25	YES	
2227 1353 Analog Devices	(NDQ) ADI	113.93	1	2	2	.95	120- 165	(5- 45%)	21.6	2.2	5.27	2.48	12	7/31	1.36	1.26	9/30	.62	.54	YES	
2450 172 AngioDynamics	(NDQ) ANGO	9.92	4	3	4	.95	13- 20	(30-100%)	NMF	NIL	d4.22	NIL	53	5/31	d4.10	.07	6/30	NIL	NIL		

PAGE NUMBERS

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential			Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?			
							Qtr. Ended	Earns. Per sh.	Year Ago					Qtr. Ended	Latest Div'd	Year Ago				
2019 Argo Group Int'l	ARGO	34.56	4	3	4	.90	50- 70	(45-105%)	16.1	3.6	2.15	1.24	68	6/30	d.18	.83	9/30	.31	.31	
1816 Arista Networks	ANET	195.10	3	3	3	1.10	310- 460	(60-135%)	23.3	NIL	8.37	NIL	22	6/30	1.83	2.33	6/30	NIL	NIL	YES
2673 1105 Armstrong World Inds.	AWI	65.99	3	3	3	1.15	85- 130	(30- 95%)	15.0	1.2	4.40	.80	45	6/30	1.03	1.28	9/30	.20	.175	YES
1323 Arrow Electronics	ARW	77.07	3	3	4	1.20	95- 140	(25- 80%)	11.2	NIL	6.88	NIL	65	6/30	1.59	1.60	6/30	NIL	NIL	YES
2119 Asbury Automotive	ABG	94.11	3	3	2	1.30	80- 120	(N- 30%)	15.6	NIL	6.05	NIL	48	6/30	2.52	2.38	6/30	NIL	NIL	YES
560 Ashland Global Hldgs.	ASH	68.64	3	3	2	1.30	90- 140	(30-105%)	24.1	1.6	2.85	1.10	61	6/30	.84	.37	9/30	.275	.275	YES
774 Assoc. Banc-Corp	ASB	12.66	4	3	3	1.15	20- 30	(60-135%)	11.2	5.7	1.13	.72	87	6/30	.26	.49	9/30	.18	.17	YES
2542 Assurant Inc.	AIZ	120.07	1	2	3	.90	105- 140	(N- 15%)	13.5	2.1	8.88	2.52	57	6/30	2.81	2.21	9/30	.63	.60	YES
2020 Assured Guaranty	AGO	19.20	3	3	3	1.45	45- 65	(135-240%)	8.0	4.2	2.41	.80	68	6/30	2.10	1.39	9/30	.20	.18	YES
150 Astec Inds. (NDQ)	ASTE	49.29	3	3	2	1.10	45- 70	(N- 40%)	35.0	0.9	1.41	.44	64	6/30	.67	.36	9/30	.11	.11	YES
1609 AstraZeneca PLC (ADS)(NDQ)	AZN	55.91	2	2	3	80	65- 85	(15- 50%)	47.0	2.5	▲1.19	1.40	14	6/30	.29	.05	9/30	.45	.45	YES
704 Astronics Corp. (NDQ)	ATRO	8.26	5	5	3	1.70	50- 70	(505-745%)	NMF	NIL	d1.27	NIL	73	6/30	d.77	.19	6/30	NIL	NIL	YES
2164 At Home Group	HOME	14.65	-	4	-	1.35	12- 20	(N- 35%)	NMF	NIL	d.15	NIL	69	7/31	1.41	.16	6/30	NIL	NIL	YES
2021 Athene Holding Ltd.	ATH	33.73	3	3	4	1.85	70- 95	(110-180%)	4.7	NIL	7.25	NIL	68	6/30	2.49	1.95	6/30	NIL	NIL	YES
305 Atlas Air Worldwide (NDQ)	AAWW	59.05	2	3	2	.95	85- 125	(45-110%)	4.9	NIL	12.10	NIL	91	6/30	4.71	.17	6/30	NIL	NIL	YES
2663 547 Atmos Energy	ATO	92.27	1	1	3	80	130- 160	(40- 75%)	19.0	2.7	4.86	2.46	37	6/30	.79	.68	9/30	.575	.525	YES
943 AudioCodes Ltd. (NDQ)	AUDC	31.25	2	3	2	.95	40- 60	(30- 90%)	25.4	0.9	1.23	.28	34	6/30	.32	.22	9/30	.14	.12	YES
1421 Aurora Cannabis	ACB	6.32	-	4	-	1.30	18- 30	(185-375%)	NMF	NIL	d6.70	NIL	82	3/31	d.97	d1.44	6/30	NIL	NIL	YES
2587 Autodesk, Inc. (NDQ)	ADSK	227.64	1	3	3	1.00	160- 240	(N- 5%)	96.9	NIL	2.35	NIL	3	7/31	.44	.18	6/30	NIL	NIL	YES
976 Autoliv, Inc.	ALV	71.30	3	3	4	NMF	90- 135	(25- 90%)	38.8	NIL	1.84	NIL	74	6/30	d2.00	1.25	9/30	NIL	.62	YES
2618 Automatic Data Proc. (NDQ)	ADP	131.03	3	1	4	1.10	175- 215	(35- 65%)	22.0	2.8	5.96	3.70	16	6/30	.96	1.09	9/30	.91	.79	YES
2120 AutoNation, Inc.	AN	51.47	3	3	2	1.10	60- 90	(15- 75%)	10.7	NIL	4.81	NIL	48	6/30	1.36	1.12	6/30	NIL	NIL	YES
2121 AutoZone Inc.	AZO	1186.01	▲2	3	3	.95	1410-2110	(20- 80%)	18.5	NIL	64.21	NIL	48	8/31	▲30.93	22.59	6/30	NIL	NIL	YES
1817 Avalara, Inc.	AVLR	123.73	-	3	-	NMF	75- 115	(N- N%)	NMF	NIL	d.35	NIL	22	6/30	d.13	d.20	6/30	NIL	NIL	YES
1515 AvalonBay Communities	AVB	145.93	3	3	4	1.05	175- 250	(20- 80%)	30.0	4.5	▼4.86	6.51	66	6/30	1.21	1.21	9/30	1.59	1.52	YES
240 137 AVANGRID, Inc.	AGR	48.14	3	2	3	80	35- 50	(N- 5%)	24.2	3.7	1.99	1.76	50	6/30	.28	.36	12/31	.44	.44	YES
207 Avanos Medical	AVNS	33.02	3	3	3	1.25	45- 70	(35-110%)	44.6	NIL	.74	NIL	25	6/30	.13	.28	6/30	NIL	NIL	YES
561 Avantor, Inc.	AVTR	22.79	-	3	-	NMF	20- 30	(N- 30%)	35.1	NIL	.65	NIL	61	6/30	.08	d.98	6/30	NIL	NIL	YES
447 944 Avaya Holdings	AVYA	14.81	3	4	2	.75	17- 30	(15-105%)	57.0	NIL	.26	NIL	34	6/30	.08	.23	6/30	NIL	NIL	YES
562 Avery Dennison	AVY	121.20	3	2	3	1.20	130- 180	(5- 50%)	22.0	2.0	5.52	2.38	61	6/30	.95	1.69	9/30	.58	.58	YES
2027 563 Avient Corp.	AVNT	25.55	-	3	-	1.35	35- 55	(35-115%)	18.6	3.2	1.37	.82	61	6/30	.25	.74	12/31	.203	.195	YES
2165 Avis Budget Group (NDQ)	CAR	28.81	4	4	3	1.60	25- 40	(N- 40%)	NMF	NIL	d6.10	NIL	69	6/30	d5.60	.79	6/30	NIL	NIL	YES
2163 Avista Corp.	AVA	34.33	3	2	3	.90	45- 60	(30- 75%)	17.8	4.8	1.93	1.64	17	6/30	.26	.38	9/30	.405	.388	YES
1324 Avnet, Inc. (NDQ)	AVT	25.99	4	2	4	1.05	45- 60	(75-130%)	16.3	3.2	1.59	.84	65	6/30	.64	.95	9/30	.21	.20	YES
564 Axalta Coating	AXTA	22.93	3	3	4	1.30	35- 50	(55-120%)	81.9	NIL	.28	NIL	61	6/30	d.35	.42	6/30	NIL	NIL	YES
1387 Axcelis Technologies (NDQ)	ACLS	22.64	2	3	2	1.25	25- 35	(10- 55%)	21.2	NIL	1.07	NIL	2	6/30	.39	.02	9/30	NIL	NIL	YES
2022 AXIS Capital Hldgs.	AXS	44.48	3	2	4	.90	65- 90	(45-100%)	9.8	3.7	4.56	1.64	68	6/30	.84	1.62	9/30	.41	.40	YES
705 Axon Enterprise (NDQ)	AAXN	83.18	3	4	3	.95	55- 90	(N- 14%)	NMF	NIL	.75	NIL	73	6/30	d.01	.14	6/30	NIL	NIL	YES
1610 Axsome Therapeutics (NDQ)	AXSM	78.79	▼4	4	2	1.10	95- 155	(20- 95%)	NMF	NIL	d2.62	NIL	14	6/30	d.49	d.41	9/30	NIL	NIL	YES
1903 B&G Foods	BGS	27.80	2	2	3	.50	40- 60	(45-115%)	14.3	6.8	1.95	1.90	19	6/30	.71	.38	12/31	.475	.475	YES
1022 BCE Inc.	BCE	41.27	3	2	4	.90	45- 60	(10- 45%)	17.7	6.0	2.33	2.46	38	6/30	.47	.72	12/31	.612	.602	YES
1795 BGC Partners (NDQ)	BGCP	2.36	-	4	-	NMF	6- 10	(155-325%)	3.9	1.7	.61	.04	7	6/30	.15	.17	9/30	.01	.14	YES
1584 BHP Group Ltd. ADR	BHP	52.92	3	2	2	1.10	65- 95	(25- 80%)	17.5	5.4	▼3.02	2.86(h)	77	6/30	1.22(p)	1.80(p)	9/30	1.10	1.56	YES
349 BJ's Restaurants (NDQ)	BJRI	32.38	5	4	5	1.60	40- 65	(25-100%)	NMF	NIL	d2.03	NIL	78	6/30	d1.38	.68	9/30	NIL	.12	YES
2136 BJ's Wholesale Club	BJ	41.23	-	3	-	NMF	40- 60	(N- 45%)	21.6	NIL	1.91	NIL	24	7/31	.76	.39	6/30	NIL	NIL	YES
242 775 BOK Financial (NDQ)	BOKF	50.64	4	3	3	1.30	80- 115	(60-125%)	10.2	4.0	4.97	2.04	87	6/30	.92	1.93	9/30	.51	.50	YES
502 BP PLC ADR	BP	18.32	4	3	3	1.30	50- 70	(175-280%)	NMF	6.9	d7.45	1.26	95	6/30	d4.98	.54	9/30	▼.315	.615	YES
1211 BWX Technologies	BWXT	57.96	2	3	3	.90	70- 100	(20- 75%)	20.3	1.3	2.86	.76	30	6/30	.67	.62	9/30	.19	.17	YES
114 Badger Meter	BMI	63.55	3	3	2	1.05	50- 75	(N- 20%)	39.0	1.1	1.63	.72	35	6/30	.33	.39	9/30	▲.18	.17	YES
635 2641 Baidu, Inc. (NDQ)	BIDU	124.55	3	3	4	1.05	220- 330	(75-165%)	18.1	NIL	6.90	NIL	27	6/30	1.46	.96	6/30	NIL	NIL	YES
2414 Baker Hughes	BKR	14.33	-	4	-	NMF	19- 30	(35-110%)	89.6	5.0	.60	.72	96	6/30	d.05	d.02	9/30	.18	.18	YES
565 Balchem Corp. (NDQ)	BCPC	95.24	2	3	1	.75	120- 180	(25- 90%)	34.8	0.5	2.74	.52	61	6/30	.65	.61	9/30	NIL	NIL	YES
1173 Ball Corp.	BLL	81.03	3	2	4	1.05	85- 115	(5- 40%)	43.1	0.7	1.88	.60	46	6/30	.28	.58	9/30	.15	.15	YES
2503 BancorpSouth Bank	BXS	19.22	2	3	3	1.05	30- 50	(55-160%)	10.1	3.9	1.90	.74	72	6/30	.57	.53	12/31	.185	.185	YES
920 Bandwidth Inc. (NDQ)	BAND	163.61	2	3	3	.70	145- 220	(N- 35%)	NMF	NIL	.11	NIL	18	6/30	.13	d.04	6/30	NIL	NIL	YES
2504 Bank of America	BAC	24.47	3	3	4	1.25	35- 50	(45-105%)	14.0	2.9	1.75	.72	72	6/30	.37	.74	9/30	.18	.18	YES
2505 Bank of Hawaii	BOH	49.22	4	2	3	1.05	80- 105	(65-115%)	12.9	5.4	3.83	2.68	72	6/30	.98	1.40	9/30	.67	.65	YES
2506 Bank of Montreal (TSE)	BMO.TO	79.17b	3	2	4	1.00	115- 160	(45-100%)	17.6	5.4	4.50	4.26	72	7/31	1.81(b)	2.34(b)	12/31	1.06(b)	1.03(b)	YES
2507 Bank of New York Mellon	BK	33.97</																		

PAGE NUMBERS

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R A N K S

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS						
		Timeliness	Safety	Beta	Qtr. Ended	Earnings Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago	Do Options Trade?			
																Yes	No		
1818 Black Knight, Inc.	BKI	84.57	2 3 3	.85	70-110	(N-30%)	42.7	NIL	1.98	NIL	22	6/30	.52	.49	6/30	NIL	NIL	YES	
2673 2400 Black Stone Minerals	BSM	6.05	4 3 3	1.10	7-12	(15-100%)	NMF	9.9	d.54	.60	94	6/30	d.07	.45	6/30	▲.15	.37	YES	
593 BlackBerry	BB	4.76	4 4 3	1.30	11-18	(130-280%)	31.7	NIL	.15	NIL	39	5/31	.02	.01	6/30	NIL	NIL	YES	
2543 BlackRock, Inc.	BLK	552.59	2 2 3	1.25	635-860	(15-55%)	19.4	2.6	28.50	14.52	57	6/30	7.85	6.41	9/30	3.63	3.30	YES	
2445 Blackstone Group	BX	51.73	- 3 -	1.25	50-75	(N-45%)	21.6	2.9	2.39	1.48	-	6/30	.81	.45	9/30	.37	.48	YES	
2544 Block (H&R)	HRB	14.18	3 3 4	1.00	25-35	(75-145%)	38.3	7.4	.37	1.05	57	7/31	.48	d.72	12/31	.26	.26	YES	
350 Bloomin' Brands (NDQ)	BLMN	14.56	5 4 5	1.60	20-35	(35-140%)	NMF	NIL	d1.05	NIL	78	6/30	d.74	.36	9/30	NIL	.10	YES	
151 Blue Bird Corp. (NDQ)	BLBD	11.95	▼4 3 4	1.00	30-50	(150-320%)	9.3	NIL	1.28	NIL	64	6/30	.16	.55	9/30	NIL	NIL	YES	
706 Boeing	BA	156.35	5 3 4	1.65	120-175	(N-10%)	NMF	NIL	d10.49	NIL	73	6/30	d4.20	d5.21	9/30	NIL	2.055	YES	
594 Boingo Wireless (NDQ)	WIFI	10.50	- 4 -	1.20	15-25	(45-140%)	NMF	NIL	d.45	NIL	39	6/30	d.13	NIL	6/30	NIL	NIL	YES	
1107 Boise Cascade	BCC	38.07	2 3 2	1.15	40-60	(5-60%)	13.4	1.1	2.84	.40	45	6/30	.85	.71	9/30	.10	.09	YES	
707 Bombardier Inc. 'B' (TSE)BBDB.TO	0.40b	- 5 -	1.30	2-3	(400-650%)	NMF	NIL	NIL	d.34	NIL	73	6/30	d.14(b)	d.05(b)	6/30	NIL	NIL	YES	
2642 Booking Holdings (NDQ)	BKNG	1652.39	3 3 3	1.10	2160-3240	(30-95%)	63.0	NIL	26.23	NIL	27	6/30	d10.81	23.59	6/30	NIL	NIL	YES	
2154 Boot Barn Holdings	BOOT	27.47	5 4 5	1.45	30-50	(10-80%)	26.2	NIL	1.05	NIL	85	6/30	d.02	.80	6/30	NIL	NIL	YES	
376 Booz Allen Hamilton	BAH	85.66	2 3 3	.90	80-120	(N-40%)	23.8	1.5	3.60	1.27	42	6/30	.93	.83	9/30	.31	.23	YES	
977 BorgWarner	BWA	37.41	3 3 3	1.25	55-80	(45-115%)	16.1	1.8	2.33	.68	74	6/30	d.14	1.00	9/30	.17	.17	YES	
2669 1967 Boston Beer 'A'	SAM	879.27	2 3 3	.70	505-760	(N-N)	83.7	NIL	10.51	NIL	29	6/30	d.48	2.36	6/30	NIL	NIL	YES	
2387 Boston Omaha (NDQ)	BOMN	15.22	2 3 4	.80	20-35	(30-130%)	27.7	NIL	.55	NIL	76	6/30	.14	d.09	6/30	NIL	NIL	YES	
1516 Boston Properties	BXP	81.11	4 3 4	1.15	150-230	(85-185%)	18.5	4.8	▲4.38	3.92	66	6/30	1.71	1.06	12/31	◆.98	.98	YES	
175 Boston Scientific	BSX	38.55	3 3 3	1.05	50-70	(30-80%)	55.1	NIL	.70	NIL	53	6/30	d.04	.29	6/30	NIL	NIL	YES	
2350 Boyd Gaming	BYD	27.27	4 3 3	1.60	30-50	(10-85%)	NMF	NIL	d2.33	NIL	89	6/30	d.98	.47	9/30	NIL	.07	YES	
1747 Brady Corp.	BRC	39.68	3 3 3	.95	55-85	(40-115%)	16.1	2.2	2.47	.88	67	7/31	◆.53	.68	12/31	▲.22	.218	YES	
525 Brigham Minerals	MNRL	9.34	- 4 -	NMF	20-35	(115-275%)	NMF	6.0	.09	.56	90	6/30	d.11	d.12	9/30	▼.14	.33	YES	
447 1999 Bright Horizons Family	BFAM	138.20	4 2 4	1.10	135-180	(N-30%)	NMF	NIL	.66	NIL	41	6/30	.01	.99	6/30	NIL	NIL	YES	
351 Brinker Int'l	EAT	44.63	4 3 5	1.40	40-60	(N-35%)	NMF	NIL	d.65	NIL	78	6/30	d.88	1.36	9/30	NIL	.38	YES	
377 Brink's (The) Co.	BCO	43.68	4 3 4	1.30	75-115	(70-165%)	16.5	1.4	2.64	.60	42	6/30	.67	.86	9/30	.15	.15	YES	
1613 Bristol-Myers Squibb	BMJ	57.77	3 1 2	.85	70-90	(20-55%)	20.3	3.1	▼2.84	1.80	14	6/30	d.04	.87	12/31	.45	.41	YES	
1992 Brit. Am. Tobacco ADR	BTI	33.82	3 3 4	.95	90-135	(165-300%)	7.6	8.5	4.45	2.86	26	6/30	3.178(p)	1.90(p)	9/30	.689	.675	YES	
1354 Broadcom Inc. (NDQ)	AVGO	351.79	3 3 3	1.10	265-395	(N-10%)	61.7	3.7	5.70	13.00	12	7/31	1.45	1.71	9/30	3.25	2.65	YES	
430 Broadridge Fin'l	BR	130.91	1 2 2	.85	145-195	(N-10%)	24.2	1.8	5.40	2.30	10	6/30	2.15	1.72	12/31	▲.575	.54	YES	
2663 Brookdale Senior Living	BKD				SEE FINAL SUPPLEMENT														
378 Brookfield Asset Mgmt.	BAM	32.53	3 3 3	1.30	40-60	(25-85%)	25.0	1.5	1.30	.48	42	6/30	d.43	.24	9/30	.12	.107	YES	
1748 Brookfield Infrastruc.	BIP	46.83	- 3 -	1.25	35-50	(N-5%)	NMF	4.1	.22	1.94	67	6/30	d.25	.12	9/30	.485	.503	YES	
1707 Brooks Automation (NDQ)	BRKS	45.33	2 3 1	1.25	50-70	(10-55%)	46.7	0.9	.97	.40	54	6/30	.32	.20	9/30	.10	.10	YES	
2545 Brown & Brown	BRO	44.02	2 1 2	.95	40-50	(N-15%)	29.7	0.8	1.48	.34	57	6/30	.34	.33	9/30	.085	.08	YES	
1968 Brown-Forman 'B'	BFB	75.84	3 1 3	.85	75-90	(N-20%)	42.1	0.9	1.80	.72	29	7/31	.40	.39	12/31	.174	.166	YES	
115 Bruker Corp. (NDQ)	BRKR	38.35	3 3 3	1.10	65-100	(70-160%)	27.8	0.4	1.38	.16	35	6/30	.16	.23	9/30	.04	.04	YES	
2303 Brunswick Corp.	BC	58.40	3 3 2	1.50	110-160	(90-175%)	19.5	1.6	2.99	.96	83	6/30	.99	1.45	9/30	.24	.21	YES	
848 2194 Buckle (The), Inc.	BKE	20.39	3 3 5	.90	25-35	(25-70%)	11.1	5.9	1.84	1.20	79	7/31	.71	.34	12/31	▲.30	.30	YES	
1028 1108 Builders FirstSource (NDQ)	Bldr	30.05	2 4 2	1.45	30-45	(N-50%)	13.6	NIL	2.21	NIL	45	6/30	.67	.63	6/30	NIL	NIL	YES	
1905 Bunge Ltd.	BG	45.73	3 3 4	1.00	65-95	(40-110%)	NMF	4.4	d.27	2.00	19	6/30	3.47	1.43	12/31	.50	.50	YES	
2138 Burlington Stores	BURL	207.00	3 3 3	1.10	190-290	(N-40%)	NMF	NIL	d.28	NIL	24	7/31	d.56	1.36	6/30	NIL	NIL	YES	
2619 CACI Int'l	CACI	215.44	2 3 2	.95	275-410	(30-90%)	15.8	NIL	13.67	NIL	16	6/30	3.68	1.96	6/30	NIL	NIL	YES	
708 CAE Inc. (TSE)	CAE.TO	19.11b	4 3 3	1.30	30-45	(55-135%)	95.6	NIL	2.0	NIL	73	6/30	d.11(b)	.24(b)	9/30	NIL(b)	.11(b)	YES	
1796 Cboe Global Markets (CBOE)	CBOE	90.00	1 2 5	.90	140-190	(55-110%)	22.3	1.9	4.03	1.68	7	6/30	1.03	.78	9/30	▲.42	.36	YES	
379 CBRE Group	CBRE	46.45	4 3 5	1.50	70-100	(50-115%)	18.6	NIL	2.50	NIL	42	6/30	.35	.81	6/30	NIL	NIL	YES	
2388 CDK Global Inc. (NDQ)	CDK	42.76	3 3 3	1.10	75-115	(75-170%)	21.7	1.4	1.97	.60	76	6/30	.49	.01	9/30	.15	.15	YES	
2620 CDW Corp. (NDQ)	CDW	108.81	3 3 3	1.00	105-160	(N-45%)	19.5	1.4	5.59	1.52	16	6/30	1.31	1.33	9/30	.38	.295	YES	
1355 CEVA, Inc. (NDQ)	CEVA	37.19	2 3 2	1.05	55-85	(50-130%)	NMF	NIL	.07	NIL	12	6/30	d.05	d.07	6/30	NIL	NIL	YES	
1597 CF Industries	CF	31.61	4 3 4	1.30	30-50	(N-60%)	19.3	4.0	1.64	1.27	59	6/30	.89	1.28	9/30	.30	.30	YES	
380 C.H. Robinson (NDQ)	CHRW	101.95	1 2 3	.70	125-170	(25-65%)	27.3	2.0	3.73	2.04	42	6/30	1.06	1.22	9/30	.51	.50	YES	
2546 CIT Group	CIT	17.01	5 3 3	1.70	35-50	(105-195%)	68.0	8.2	.25	1.40	57	6/30	d.99	1.33	9/30	.35	.35	YES	
1797 CME Group (NDQ)	CME	167.69	3 2 4	.95	155-205	(N-20%)	24.4	2.0	6.86	3.40	7	6/30	1.40	1.43	9/30	.85	.75	YES	
906 CMS Energy Corp.	CMS	59.99	3 2 2	.80	55-75	(N-25%)	23.1	2.9	2.60	1.71	47	6/30	.48	.33	9/30	.408	.383	YES	
759 CNA Fin'l	CNA	30.49	4 3 2	1.10	75-105	(145-245%)	10.5	4.9	2.90	1.48	36	6/30	.36	1.08	9/30	.37	.35	YES	
152 CNH Industrial N.V.	CNHI	7.49	4 3 4	1.35	13-19	(75-155%)	24.2	NIL	.31	NIL	64	6/30	d.07	.31	9/30	NIL	NIL	YES	
526 CNX Resources	CNX	11.38	3 4 3	1.00	20-35	(75-210%)	NMF	NIL	d1.24	NIL	90	6/30	d.78	.84	6/30	NIL	NIL	YES	
2621 CSG Systems Int'l (NDQ)	CSGS	40.15	2 3 3	.75	45-70	(10-75%)	16.1	2.3	2.49	.94	16	6/30	.32	.60	9/30	.235	.223	YES	
2401 CSW Industrials (NDQ)	CSWI	74.39	3 2 2	.85	95-125	(30-70%)	42.5	0.7	1.75	.54	94	6/30	.81	1.00	9/30	.135	.135	YES	
338 CSX Corp. (NDQ)	CSX	77.58	3 3 3	1.10	85-130	(10-70%)	22.2	1.3	3.50	1.04	31	6/30	.65	1.08	9/30	.26	.24	YES	
1326 CTS Corp.	CTS	21.72	4 3 4	1.10	35-50	(60-130%)	24.7	0.7	.88	.16	65	6/30	.16	.40	12/31	.04	.04	YES	
503 CVR Energy	CVI	12.75	5 3 3	1.10	50-75	(290-490%)	NMF	NIL	.02	NIL	95	6/30	d.05	1.16	9/30	▼NIL	.75		

PAGE NUMBERS

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS									
			Timeliness	Safety	Technical						Beta	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
																		Do Options Trade?		
2509	Can. Imperial Bank (TSE) CM.TO	101.82b	3	2	4	.90	115- 155	(15- 50%)	18.4	5.7	5.54	5.84	72	7/31	2.55(b)	3.06(b)	12/31	1.46(b)	1.44(b)	YES
339	Can. National Railway CNI	103.31	2	1	3	.90	130- 160	(25- 55%)	26.2	1.7	3.95	1.75	31	6/30	.95	1.44	9/30	.437	.413	YES
2402	Can. Natural Res. (TSE) CNQ.TO	22.09b	4	3	3	1.55	30- 45	(35-105%)	NMF	7.7	d2.00	1.70	94	6/30	d.65(b)	.87(b)	12/31	.425(b)	.375(b)	YES
340	Can. Pacific Railway CP	296.79	2	2	3	1.05	320- 480	(10- 60%)	22.5	1.0	13.19	2.88	31	6/30	3.09	3.97	12/31	.72	.63	YES
2139	Canadian Tire 'A' (TSE) CTCA.TO	124.55b	3	2	3	1.05	140- 190	(10- 55%)	14.6	3.7	8.52	4.55	24	6/30	d.33(b)	2.87(b)	12/31	1.138(b)	1.038(b)	YES
1983	Canon Inc. ADR(g) CAJ	16.20	3	2	3	.80	45- 55	(180-240%)	11.5	8.5	1.41	1.38	40	6/30	d.08	.30	9/30	.377	.736	YES
448	1422 Canopy Growth Corp. CGC	15.74	2	4	3	1.05	25- 40	(60-155%)	NMF	NIL	d.85	NIL	82	6/30	d.22	d.38	6/30	NIL	NIL	YES
209	Canter Medical Corp. CMD	43.01	4	3	3	1.65	85- 125	(100-190%)	28.9	NIL	1.49	NIL	25	7/31	d.05	.21	9/30	NIL	.10	YES
2547	Capital One Fin'l COF	71.65	4	3	5	1.40	65- 100	(N- 40%)	NMF	0.6	.45	.40	57	6/30	d2.21	3.22	9/30	.10	.40	YES
1502	Capitol Fed. Fin'l (NDQ) CFFN	8.98	3	3	4	.80	10- 16	(10- 80%)	17.3	3.8	.52	.34	63	6/30	.13	.17	9/30	.085	.085	YES
2103	Capri Holdings Ltd. CPRI	20.42	5	4	4	1.65	35- 60	(70-195%)	29.2	NIL	.70	NIL	93	6/30	d1.21	.30	6/30	NIL	NIL	YES
210	Cardinal Health CAH	47.10	3	3	1	1.05	80- 120	(70-155%)	8.9	4.1	5.32	1.94	25	6/30	1.04	.65	12/31	.486	.481	YES
1749	Carlisle Cos. CSL	118.73	3	2	4	1.10	165- 225	(40- 90%)	21.1	1.8	5.62	2.10	67	6/30	1.36	2.65	9/30	.525	.50	YES
2446	Carlyle Group (NDQ) CG	24.53	-	3	-	1.20	40- 60	(65-145%)	7.3	4.1	3.62	1.00	-	6/30	.41	1.23	9/30	.25	.43	YES
2123	CarMax, Inc. KMX	101.12	3	3	3	1.25	95- 145	(N- 45%)	33.2	NIL	3.05	NIL	48	5/31	.03	1.59	6/30	NIL	NIL	YES
1426	2305 Carnival Corp. CCL	14.29	5	5	4	1.50	35- 60	(145-320%)	NMF	NIL	d5.41	NIL	83	5/31	d3.30	.65	9/30	NIL	.50	YES
739	Carpenter Technology CRS	18.42	5	3	4	1.50	40- 60	(115-225%)	NMF	4.3	d1.21	.80	70	6/30	d.31	1.00	9/30	.20	.20	YES
1842	Carriage Services CSV	20.88	2	3	3	.95	40- 55	(90-165%)	14.1	1.7	1.48	.35	20	6/30	.36	.27	9/30	.088	.075	YES
1708	Carrier Global CARR	29.51	-	3	-	NMF	25- 40	(N- 35%)	21.9	1.1	1.35	.32	54	6/30	.33	NA	9/30	.08	NIL	YES
2104	Carter's Inc. CRI	86.79	3	3	5	.90	130- 195	(50-125%)	16.0	NIL	5.44	NIL	93	6/30	.54	.97	9/30	NIL	.50	YES
★	2124 Carvana Co. CVNA	173.67	3	5	2	1.70	90- 165	(N- N%)	NMF	NIL	d2.71	NIL	48	6/30	d.62	d.44	6/30	NIL	NIL	YES
946	Casa Systems CASA	SEE FINAL REPORT																		
406	Casella Waste Sys. (NDQ) CWST	53.88	2	3	3	.95	55- 85	(N- 60%)	79.2	NIL	.68	NIL	44	6/30	.25	.25	6/30	NIL	NIL	YES
1947	Casey's Gen'l Stores (NDQ) CASY	171.16	3	3	3	.80	115- 175	(N- N%)	28.1	0.7	6.10	1.28	23	7/31	3.24	2.31	12/31	.32	.32	YES
176	Casey's, Inc. CCTL	85.55	2	3	3	1.00	80- 120	(N- 40%)	96.1	NIL	.89	NIL	53	6/30	.85	.44	6/30	NIL	NIL	YES
153	Caterpillar Inc. CAT	145.33	3	2	3	1.15	175- 240	(20- 65%)	25.5	2.8	5.70	4.12	64	6/30	1.03	2.83	9/30	1.03	1.03	YES
2195	Cato Corp. CATO	8.02	4	3	4	.75	25- 35	(210-335%)	NMF	NIL	d.18	NIL	79	7/31	d.30	.48	9/30	NIL	.33	YES
2306	Cedar Fair L.P. FUN	28.69	3	3	4	1.15	60- 85	(110-195%)	NMF	NIL	d4.57	NIL	83	6/30	d2.35	1.11	9/30	NIL	.925	YES
2435	Celanese Corp. CE	109.54	3	3	5	1.20	115- 170	(5- 55%)	16.3	2.3	6.71	2.48	60	6/30	1.30	2.38	9/30	.62	.62	YES
1327	Celestica Inc. CLS	7.21	2	3	1	1.35	10- 14	(40- 95%)	8.1	NIL	.89	NIL	65	6/30	.25	.12	6/30	NIL	NIL	YES
1109	CEMEX ADS CX	3.65	3	4	3	1.45	6- 10	(65-175%)	60.8	NIL	.06	NIL	45	6/30	.01	.10	6/30	NIL	NIL	YES
504	Centene Energy (TSE) CVE.TO	5.26b	5	5	3	1.50	8- 15	(50-185%)	NMF	NIL	d.73	NIL	95	6/30	d.34(b)	.22(b)	9/30	NIL(b)	.05(b)	YES
792	Centene Corp. CNC	55.99	1	3	2	1.05	85- 130	(50-130%)	10.3	NIL	5.44	NIL	28	6/30	2.40	1.34	6/30	NIL	NIL	YES
529	Centennial Resource Dev. CDEV	SEE FINAL REPORT																		
907	CenterPoint Energy CNP	18.90	4	3	3	1.10	18- 25	(N- 30%)	15.2	3.3	1.24	.63	47	6/30	.17	.33	9/30	.15	.288	YES
418	Central & East. Europe CEE	20.25	-	4	-	1.05	25- 40	(25-100%)	NMF	2.5	NMF	.50	-	4/30	23.05(q)	28.43(q)	9/30	NIL	NIL	YES
1187	Central Garden & Pet (NDQ) CENT	37.22	2	3	1	.75	60- 85	(60-130%)	18.2	NIL	2.05	NIL	1	6/30	1.27	.80	6/30	NIL	NIL	YES
1586	Century Aluminum (NDQ) CENX	7.99	-	5	-	1.70	10- 18	(25-125%)	NMF	NIL	d1.00	NIL	77	6/30	d.19	d.18	6/30	NIL	NIL	YES
1023	CenturyLink, Inc. LUMN	10.26	3	3	3	1.00	14- 20	(35- 95%)	7.4	9.7	1.38	1.00	38	6/30	.42	.34	9/30	.25	.25	YES
819	Cerner Corp. (NDQ) CERN	68.70	3	2	3	.95	90- 120	(30- 75%)	23.8	1.0	2.89	.72	33	6/30	.63	.66	12/31	.18	.18	YES
211	Charles River CRL	217.93	2	3	3	1.20	135- 205	(N- N%)	42.1	NIL	5.18	NIL	25	6/30	1.34	.88	6/30	NIL	NIL	YES
2671	728 Charter Industries (NDQ) GTLS	67.00	3	3	3	1.90	85- 125	(25- 85%)	20.7	NIL	3.23	NIL	80	6/30	.63	.66	6/30	NIL	NIL	YES
1013	Charter Commun. (NDQ) CHTR	614.34	1	3	3	.95	435- 650	(N- 5%)	40.8	NIL	15.04	NIL	9	6/30	3.63	1.39	6/30	NIL	NIL	YES
1819	Check Point Software (NDQ) CHKP	116.88	2	1	2	.75	130- 160	(10- 35%)	19.2	NIL	6.10	NIL	22	6/30	1.38	1.21	6/30	NIL	NIL	YES
352	Cheesecake Factory (NDQ) CAKE	27.86	4	3	5	1.20	50- 75	(80-170%)	NMF	NIL	d1.06	NIL	78	6/30	d.87	.82	9/30	NIL	.36	YES
1948	Chefs' Warehouse (NDQ) CHEF	14.57	5	4	4	1.90	20- 35	(35-140%)	NMF	NIL	d1.17	NIL	23	6/30	d.57	.26	6/30	NIL	NIL	YES
2000	Chegg, Inc. CHGG	68.05	2	3	2	.90	70- 105	(5- 55%)	57.7	NIL	1.18	NIL	41	6/30	.37	d.02	9/30	NIL	NIL	YES
1750	Chemed Corp. CHE	479.52	2	2	2	.85	430- 580	(N- 20%)	29.2	0.3	16.42	1.36	67	6/30	4.41	3.06	9/30	.34	.32	YES
567	Chemours Co. (The) CC	20.59	3	4	4	1.70	20- 35	(N- 70%)	17.2	4.9	1.20	1.00	61	6/30	.15	.57	9/30	.25	.25	YES
608	Cheniere Energy Inc. (ASE) LNG	49.64	2	3	3	1.10	120- 180	(140-265%)	17.3	NIL	2.87	NIL	86	6/30	.78	d.44	6/30	NIL	NIL	YES
619	Cheniere Energy Part. CQP	32.93	3	3	2	.95	50- 75	(50-130%)	11.3	8.0	2.91	2.64	92	6/30	.78	.44	9/30	.645	.61	YES
548	Chesapeake Utilities CPK	75.13	2	2	3	.75	110- 150	(45-100%)	19.0	2.4	3.96	1.80	37	6/30	.64	.54	12/31	.44	.405	YES
236	505 Chevron Corp. CVX	76.30	4	3	3	1.30	95- 145	(25- 90%)	NMF	6.8	d4.08	5.16	95	6/30	d4.44	2.27	9/30	1.29	1.19	YES
2643	Chewy, Inc. CHWY	53.22	-	4	-	NMF	40- 65	(N- 20%)	NMF	NIL	d.46	NIL	27	7/31	d.08	d.21	6/30	NIL	NIL	YES
2196	Chico's FAS CHS	SEE FINAL REPORT																		
2197	Children's Place (NDQ) PLCE	28.90	5	3	5	1.45	50- 80	(75-175%)	9.3	NIL	3.11	NIL	79	7/31	d1.48	.19	9/30	NIL	.56	YES
419	China Fund (The) CHN	25.83	-	3	-	.90	30- 40	(15- 55%)	NMF	0.8	NMF	.20	-	4/30	23.43(q)	23.63(q)	9/30	NIL	NIL	YES
921	China Mobile (ADR) CHL	33.50	3	2	3	.70	55- 75	(65-125%)	8.3	6.3	4.05	2.10	18	6/30	1.97(p)	1.95(p)	9/30	.99	.89	YES
353	Chipotle Mex. Grill CHM	1206.52	3	3	3	.90	765- 1150	(N- N%)	NMF	NIL	10.02	NIL	78	6/30	.40	3.92	6/30	NIL	NIL	YES

PAGE NUMBERS

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Timeliness	Safety	Technical	Beta	3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	
		1	2	3										Qtr. Ended	Year Ago	Year Ago							
		1	2	3										Qtr. Ended	Year Ago	Year Ago							
1189	Clorox Co.	CLX	208.53	1	1	2	.50	155- 190 (N- N%)	27.6	2.1	7.56	4.44	1	6/30	2.41	1.88	9/30	1.11	1.06	YES			
2590	Cloudfare, Inc.	NET	38.96	-	3	-	NMF	30- 45 (N- 15%)	NMF	NIL	d.34	NIL	3	6/30	d.03	d.06	6/30	1.11	NIL	YES			
1969	Coca-Cola	KO	49.09	3	1	5	.90	55- 70 (10- 45%)	28.9	3.4	1.70	1.68	29	6/30	.42	.63	9/30	41	.40	YES			
1970	Coca-Cola Consol.	(NDQ) COKE	236.30	3	3	3	.70	280- 420 (20- 80%)	24.4	0.4	9.70	1.00	29	6/30	5.22	4.51	9/30	25	25	YES			
1971	Coca-Cola Euro. Part.	(NDQ) CCEP	39.62	3	3	4	1.10	60- 85 (50-115%)	15.8	NIL	2.50	NIL	29	6/30	.64(p)	1.28(p)	9/30	NIL	NIL	YES			
1014	Cogeco Commun.	(TSE) CCA.TO	108.60b	-	2	-	.60	90- 120 (N- 10%)	15.2	2.1	7.15	2.32	9	5/31	1.87(b)	1.94(b)	9/30	.58(b)	.525(b)	YES			
116	Cognex Corp.	(NDQ) CGNX	61.25	3	3	2	1.05	50- 70 (N- 15%)	62.5	0.4	.98	.22	35	6/30	1.19	.28	9/30	.055	.05	YES			
2622	Cognizant Technology	(NDQ) CTSH	67.39	3	2	3	1.05	80- 110 (20- 65%)	18.0	1.3	3.75	.88	16	6/30	.82	.94	9/30	22	20	YES			
117	Coherent, Inc.	(NDQ) COHR	105.72	3	3	3	1.15	195- 295 (85-180%)	NMF	NIL	.67	NIL	35	6/30	d.36	d.13	6/30	NIL	NIL	YES			
1751	Cofax Corp.	CFX	30.51	3	3	2	1.55	35- 50 (15- 65%)	24.0	NIL	1.27	NIL	67	6/30	.09	.54	6/30	NIL	NIL	YES			
1190	Colgate-Palmolive	CL	75.19	1	1	3	.70	65- 80 (N- 5%)	25.3	2.3	2.97	1.76	1	6/30	.74	.68	12/31	.44	.43	YES			
2105	Columbia Sportswear	(NDQ) COLM	87.72	3	3	5	1.15	105- 155 (20- 75%)	24.4	NIL	3.60	NIL	93	6/30	d.77	.34	9/30	NIL	.24	YES			
1709	Columbus McKinnon	(NDQ) CMCO	33.38	3	3	3	1.30	35- 55 (5- 65%)	24.7	0.7	1.35	.24	54	6/30	.07	.81	9/30	.06	.06	YES			
1015	Comcast Corp.	(NDQ) CMCSA	44.68	1	1	3	.80	70- 85 (55- 90%)	19.1	2.1	2.34	.92	9	6/30	.69	.78	12/31	.23	.21	YES			
776	Comcast Inc.	CMA	38.66	4	3	4	1.30	60- 90 (55-135%)	11.3	7.0	3.41	2.72	87	6/30	.80	1.94	12/31	.68	.67	YES			
777	Commerce Bancshs.	(NDQ) CBSH	54.39	3	1	4	.90	65- 80 (20- 45%)	20.8	2.0	2.61	1.08	87	6/30	.34	.91	9/30	27	.248	YES			
741	Commercial Metals	CMC	19.77	3	3	2	1.15	40- 60 (100-205%)	9.4	2.4	2.11	.48	70	5/31	.59	.66	9/30	.12	.12	YES			
448	CommScope Holding	(NDQ) COMM	9.29	4	3	3	1.35	20- 30 (115-225%)	6.7	NIL	1.38	NIL	34	6/30	.32	.66	6/30	NIL	NIL	YES			
2663	Community Health	CYH		SEE FINAL SUPPLEMENT																			
2447	Compass Diversified	CODI	16.95	3	3	4	1.00	25- 40 (45-135%)	NMF	8.5	d1.04	1.44	-	6/30	d.30	d.32	9/30	.36	.36	YES			
1598	Compass Minerals Int'l	CMP	56.07	2	3	3	.95	70- 110 (25- 95%)	20.0	5.1	2.80	2.88-1.44	59	6/30	.04	d.36	9/30	.72	.72	YES			
820	Computer Prog. & Sys.	(NDQ) CPSI	25.94	3	3	1	.90	40- 55 (55-110%)	11.8	1.5	2.19	.40	33	6/30	.39	.50	9/30	.10	.10	YES			
950	Comtech Telecom.	(NDQ) CMTL	14.99	5	4	3	1.30	25- 45 (65-200%)	36.6	2.7	.41	.40	34	4/30	d.16	.31	9/30	.10	.10	YES			
1909	Conagra Brands	CAG	35.04	1	3	2	.75	35- 55 (N- 55%)	14.0	2.5	2.50	.87	19	5/31	.75	.36	9/30	.213	.213	YES			
531	Concho Resources	CXO	46.25	4	3	4	1.40	90- 140 (95-205%)	15.8	1.7	2.93	.80	90	6/30	1.13	.69	9/30	.20	.125	YES			
177	CONMED Corp.	(NDQ) CNMD	73.29	4	3	3	1.40	90- 135 (25- 85%)	NMF	1.1	.23	.80	53	6/30	d.44	.27	12/31	.20	.20	YES			
2168	Conn's, Inc.	(NDQ) CONN	10.14	-	4	-	1.55	9- 16 (N- 60%)	29.0	NIL	.35	NIL	69	7/31	.70	.62	6/30	NIL	NIL	YES			
2403	ConocoPhillips	COP	34.36	4	3	3	1.35	70- 110 (105-220%)	NMF	4.9	d2.55	1.68	94	6/30	.24	1.40	9/30	.42	3.05	YES			
1025	Consol. Commun.	(NDQ) CNSL	5.95	3	4	1	1.00	13- 20 (120-235%)	7.2	NIL	.83	NIL	38	6/30	.19	d.10	9/30	NIL	NIL	YES			
138	Consol. Edison	ED	72.84	3	1	5	.75	85- 100 (15- 35%)	17.1	4.3	4.27	3.11	50	6/30	.57	.46	9/30	.765	.74	YES			
1789	Consolidated Water	(NDQ) CWCO	11.32	▼	4	3	.90	25- 35 (120-210%)	23.6	3.0	.48	.34	11	6/30	d.07	.16	12/31	.085	.085	YES			
1972	Constellation Brands	STZ	185.06	3	2	5	1.15	255- 345 (40- 85%)	20.9	1.7	8.87	3.10	29	5/31	2.30	2.21	9/30	.75	.75	YES			
2404	Continental Resources	CLR	13.82	5	4	3	1.40	30- 50 (115-260%)	NMF	NIL	d1.62	NIL	94	6/30	d.71	.63	9/30	NIL	NIL	YES			
212	Cooper Cos.	COO	341.86	3	2	5	.95	305- 415 (N- 20%)	35.4	NIL	9.65	.06	25	7/31	1.12	2.40	9/30	.03	.03	YES			
978	Cooper Tire & Rubber	CTB	30.60	3	3	2	1.05	50- 70 (65-130%)	16.3	1.4	1.88	.42	74	6/30	d.12	.18	9/30	.105	.105	YES			
979	Cooper-Standard	CPS	14.35	5	4	4	1.25	40- 65 (180-355%)	NMF	NIL	d9.32	NIL	74	6/30	d7.93	d.36	6/30	NIL	NIL	YES			
306	Copa Holdings, S.A.	CPA	56.33	5	4	5	1.50	85- 145 (50-155%)	NMF	NIL	d14.25	NIL	91	6/30	d9.08	1.20	9/30	NIL	.65	YES			
2125	Copart, Inc.	(NDQ) CPRT	102.63	3	2	3	1.05	80- 110 (N- 5%)	44.2	NIL	2.32	NIL	48	7/31	.69	.60	6/30	NIL	NIL	YES			
1949	Core-Mark Holding	(NDQ) CORE	28.38	3	3	2	.65	30- 50 (5- 75%)	25.6	1.7	1.11	.48	23	6/30	.38	.38	9/30	.12	.11	YES			
1518	CoreCivic, Inc.	CXW	8.22	-	4	-	1.25	18- 30 (120-265%)	7.1	NIL	▼1.15	NIL	66	6/30	.33	.47	9/30	▼NIL	.44	YES			
1847	432 CoreLogic	CLGX	67.48	-	3	-	1.15	80- 115 (20- 70%)	18.3	2.0	3.69	1.32	10	6/30	1.02	.82	9/30	▲.33	NIL	YES			
2416	Core Laboratories	CLB	17.13	5	4	3	1.50	30- 50 (75-190%)	32.3	0.2	.53	.04	96	6/30	.14	.43	9/30	.01	.55	YES			
1110	Cornerstone Building	CNR	7.67	-	5	-	1.65	15- 25 (95-225%)	11.8	NIL	.65	NIL	45	6/30	.21	.14	6/30	NIL	NIL	YES			
1820	Cornerstone OnDemand	(NDQ) CSOD	34.53	2	3	3	1.30	50- 75 (45-115%)	26.2	NIL	1.32	NIL	22	6/30	.40	.21	6/30	NIL	NIL	YES			
1305	Coming Inc.	GLW	31.42	3	3	3	1.10	30- 50 (N- 60%)	34.5	2.8	.91	.88	62	6/30	d.13	.09	9/30	.22	.20	YES			
1599	Corteve, Inc.	CTVA	28.22	-	3	-	NMF	30- 50 (5- 75%)	23.3	2.0	1.21	.57	59	6/30	1.26	1.42	9/30	.13	.13	YES			
433	CoStar Group	(NDQ) CSGP	824.00	2	2	3	.95	805-1085 (N- 30%)	84.9	NIL	9.71	NIL	10	6/30	2.34	2.23	6/30	NIL	NIL	YES			
2140	Costco Wholesale	(NDQ) COST	339.57	1	1	3	.65	380- 460 (10- 35%)	38.5	0.8	8.82	2.80	24	5/31	1.89	1.89	9/30	.70	.65	YES			
1849	1001 Coty Inc.	COTY	3.02	-	5	-	1.25	14- 25 (365-730%)	NMF	NIL	d.08	NIL	52	6/30	d.51	.16	9/30	NIL	.125	YES			
1821	Coupa Software	(NDQ) COUP	265.28	3	3	3	.65	95- 145 (N- N%)	NMF	NIL	d.72	NIL	22	7/31	d.64	d.32	6/30	NIL	NIL	YES			
1212	Covanta Holding Corp.	CVA	7.99	4	3	3	1.15	12- 18 (50-125%)	NMF	4.0	d.36	.32	30	6/30	d.10	d.15	12/31	◆.08	.25	YES			
354	Cracker Barrel	(NDQ) CBRL	115.70	4	3	4	.95	165- 245 (45-110%)	51.0	NIL	2.27	NIL	78	7/31	d.85	2.70	12/31	NIL	1.30	YES			
1973	Craft Brew Alliance	(NDQ) BREW	16.48	-	4	-	.85	11- 18 (N- 10%)	NMF	NIL	d.18	NIL	29	6/30	.02	.13	6/30	NIL	NIL	YES			
1752	Crane Co.	CR	50.42	4	3	3	1.35	85- 125 (70-150%)	13.3	3.4	3.80	1.72	67	6/30	.25	1.50	9/30	.43	.39	YES			
1028	2548 Credit Acceptance	(NDQ) CACC	308.95	3	3	1	1.25	620- 930 (100-200%)	12.1	NIL	25.61	NIL	57	6/30	5.40	8.68	6/30	NIL	NIL	YES			
1357	Cree, Inc.	(NDQ) CREE	58.41	3	3	2	1.00	45- 65 (N- 10%)	NMF	NIL	d1.06	NIL	12	6/30	d.36	d.33	6/30	NIL	NIL	YES			
2405	Crescent Point Energy	(TSE) CPG.TO	1.75b	5	5	1	1.75	4- 7 (130-300%)	NMF	0.6	d.39	.01	94	6/30	d.27(b)	.36(b)	12/31	.003(b)	.01(b)	YES			
2156	Crocs, Inc.	(NDQ) CROX	42.04	3	3	3	1.45	30- 45 (N- 5%)	42.5	NIL	.99	NIL	85	6/30	.83	.55	6/30	NIL	NIL	YES			
1423																							

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?			
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd		Year Ago		
																		Qtr. Ended	Earnings Per sh.
408 Darling Ingredients	DAR	33.23	2 3 3	1.15	30- 45	(N- 35%)	20.3	NIL	NIL	1.64	NIL	44	6/30	.39	.16	6/30	NIL	NIL	YES
356 Dave & Buster's Ent.	PLAY	16.28	5 5 4	1.75	35- 60	(115-270%)	NMF	NIL	d1.13	NIL	78	7/31	d1.29	.90	9/30	NIL	.15	YES	
794 DaVita Inc.	DVA	85.12	1 3 3	1.00	100- 150	(15- 75%)	12.5	NIL	6.79	NIL	28	6/30	1.62	1.16	6/30	NIL	NIL	YES	
2157 Deckers Outdoor	DECK	207.05	2 3 2	1.10	170- 255	(N- 25%)	25.4	NIL	8.15	NIL	85	6/30	d.28	d.67	6/30	NIL	NIL	YES	
155 Deere & Co.	DE	214.21	3 1 3	1.15	155- 190	(N- %)	32.9	1.4	6.51	3.04	64	7/31	2.57	2.71	12/31	.76	.76	YES	
2450 506 Delek US Holdings	DK	11.89	- 3 -	1.35	45- 65	(280-445%)	NMF	10.4	d2.41	1.24	95	6/30	d1.50	1.17	9/30	.31	.29	YES	
1399 Dell Technologies	DELL	65.50	- 3 -	NMF	70- 105	(5- 60%)	10.3	NIL	6.36	NIL	21	7/31	1.92	2.15	6/30	NIL	NIL	YES	
307 Delta Air Lines	DAL	29.82	5 3 5	1.45	50- 75	(70-150%)	NMF	NIL	d9.59	NIL	91	6/30	d4.43	2.35	9/30	NIL	.403	YES	
2376 Deluxe Corp.	DLX	25.43	4 3 3	1.20	70- 100	(175-295%)	NMF	4.7	d.30	1.20	84	6/30	.35	.75	9/30	.30	.30	YES	
357 Denny's Corp.	DENN	9.73	3 4 4	1.45	18- 30	(85-210%)	NMF	NIL	d.37	NIL	78	6/30	d.25	.23	6/30	NIL	NIL	YES	
179 Dentsply Sirona	XRAY	44.71	3 3 5	1.05	65- 100	(45-125%)	31.5	0.9	1.42	.40	53	6/30	d.18	.66	12/31	.10	.10	YES	
2199 Designer Brands	DBI	5.73	- 4 -	1.55	12- 20	(110-250%)	NMF	NIL	d.32	NIL	79	7/31	d1.28	.48	9/30	▼NIL	.25	YES	
1026 Deutsche Telekom ADR	DTEGY	17.17	2 3 1	.80	25- 35	(45-105%)	18.3	4.3	.94	.73	38	6/30	.18	.22	9/30	NIL	NIL	YES	
532 Devon Energy	DVN	9.27	5 3 3	1.65	19- 30	(105-225%)	NMF	4.7	d.53	.44	90	6/30	d.18	.43	9/30	.11	.09	YES	
214 DexCom Inc.	DXCM	391.69	2 4 2	.95	265- 445	(N- 15%)	NMF	NIL	2.44	NIL	25	6/30	.48	d.12	6/30	NIL	NIL	YES	
1974 Diageo plc	DEO	128.33	3 1 3	.95	135- 165	(5- 30%)	20.7	2.7	6.19	3.50	29	6/30	d3.97(p)	2.37(p)	12/31	.80	2.089	YES	
2406 Diamondback Energy	FANG	32.08	5 3 3	1.50	65- 95	(105-195%)	NMF	4.7	d2.48	1.50	94	6/30	d15.17	2.11	9/30	.375	.188	YES	
2225 Diana Shipping	DSX				SEE FINAL SUPPLEMENT														
2169 Dick's Sporting Goods	DKS	57.33	2 4 3	1.40	40- 70	(N- 20%)	20.8	2.2	2.75	1.25	69	7/31	3.21	1.26	9/30	.313	.275	YES	
1413 Diebold Nixdorf	DBD	7.26	- 5 -	1.50	13- 25	(80-245%)	7.0	NIL	1.04	NIL	88	6/30	.38	.06	6/30	NIL	NIL	YES	
636 1520 Digital Realty Trust	DLR	141.86	2 3 2	.85	125- 185	(N- 30%)	NMF	3.3	▼.80	4.63	66	6/30	.20	.15	9/30	1.12	1.08	YES	
2141 Dillard's, Inc.	DDS	33.11	3 4 5	1.15	45- 65	(35- 95%)	NMF	1.8	d3.51	.60	24	7/31	d.37	d1.75	12/31	.15	.15	YES	
358 Dine Brands Global	DIN	52.94	5 4 4	1.80	55- 95	(5- 80%)	44.5	NIL	1.19	NIL	78	6/30	d.87	1.18	9/30	▼NIL	.69	YES	
1358 Diodes Inc.	DIOD	47.32	3 3 2	1.05	45- 70	(N- 50%)	20.1	NIL	2.36	NIL	12	6/30	.54	.77	6/30	NIL	NIL	YES	
2549 Discover Fin'l Svcs.	DFS	55.02	4 3 5	1.55	110- 160	(100-190%)	17.7	3.2	3.10	1.76	57	6/30	d1.20	2.32	9/30	.44	.44	YES	
2329 Discovery, Inc.	DISCA	22.42	3 3 4	1.10	65- 100	(190-345%)	10.4	NIL	2.15	NIL	58	6/30	.40	1.33	6/30	NIL	NIL	YES	
1016 Dish Network 'A'	DISH	30.00	3 3 3	1.30	45- 70	(50-135%)	14.0	NIL	2.15	NIL	9	6/30	.78	.60	6/30	NIL	NIL	YES	
2330 Disney (Walt)	DIS	125.41	3 3 3	.95	135- 205	(10- 65%)	42.9	NIL	2.92	NIL	58	6/30	d2.61	.79	9/30	▼NIL	.88	YES	
2010 Dolby Labs.	DLB	65.45	3 2 2	.90	75- 100	(15- 55%)	43.1	1.3	1.52	.88	5	6/30	.66	.38	9/30	.22	.19	YES	
2142 Dollar General	DG	202.94	1 3 3	.70	180- 270	(N- 35%)	25.9	0.7	7.84	1.44	24	7/31	3.12	1.65	12/31	.36	.32	YES	
2027 2143 Dollar Tree, Inc.	DLTR	85.97	2 3 3	.75	125- 185	(45-115%)	16.7	NIL	5.15	NIL	24	7/31	1.10	.76	6/30	NIL	NIL	YES	
139 Dominion Energy	D	77.97	3 2 3	.80	65- 90	(N- 15%)	21.4	3.6	3.65	2.82	50	6/30	1.25	.13	9/30	.94	.918	YES	
359 Domino's Pizza	DPZ	404.97	1 2 2	.60	435- 590	(5- 45%)	32.6	0.8	12.43	3.12	78	6/30	2.99	2.19	9/30	.78	.65	YES	
455 1162 Domtar Corp.	UFS	27.83	4 3 4	1.20	40- 60	(45-115%)	NMF	NIL	.16	NIL	56	6/30	.36	.57	9/30	▼NIL	.455	YES	
1711 Donaldson Co.	DCI	46.55	3 2 3	1.10	70- 100	(50-115%)	24.6	1.8	1.89	.84	54	7/31	.50	.45	9/30	.21	.21	YES	
2390 Donnelley (R.R) & Sons	RRD				SEE FINAL REPORT														
981 Dorman Products	DORM	82.63	3 3 3	.85	80- 115	(N- 40%)	28.1	NIL	2.94	NIL	74	6/30	.47	.68	6/30	NIL	NIL	YES	
156 Douglas Dynamics	PLOW	34.80	4 3 3	1.10	45- 65	(30- 85%)	27.0	3.2	1.29	1.12	64	6/30	.33	1.14	9/30	.28	.274	YES	
1712 Dover Corp.	DOV	107.45	3 2 2	1.30	100- 135	(N- 25%)	22.2	1.8	4.85	1.98	54	6/30	1.13	1.56	9/30	▲.495	.49	YES	
2663 1600 Dow Inc.	DOW	47.91	- 2 -	NMF	55- 75	(15- 55%)	47.4	6.2	▼1.01	2.95	59	6/30	d.26	.86	9/30	.70	.70	YES	
2353 DraftKings Inc.	DKNG	51.49	- 4 -	NMF	40- 65	(N- 25%)	NMF	NIL	d.65	NIL	89	6/30	d.55	.02	6/30	NIL	NIL	YES	
2417 Dril-Quip, Inc.	DRQ	24.99	4 3 3	1.05	45- 65	(80-160%)	NMF	NIL	d.31	NIL	96	6/30	d.26	.05	6/30	NIL	NIL	YES	
2644 Dropbox, Inc.	DBX	19.23	- 3 -	NMF	30- 45	(55-135%)	24.7	NIL	.78	NIL	27	6/30	.22	.10	6/30	NIL	NIL	YES	
140 Duke Energy	DUK	82.57	3 2 4	.85	80- 110	(N- 35%)	15.8	4.7	5.21	3.88	50	6/30	1.08	1.12	9/30	▲.965	.945	YES	
1521 Duke Realty Corp.	DRE	35.83	3 3 2	.90	30- 45	(N- 25%)	64.0	2.6	.56	.94	66	6/30	.11	.20	9/30	.235	.215	YES	
360 Dunkin' Brands Group	DNKN	76.41	3 3 4	1.10	95- 145	(25- 90%)	29.4	2.1	2.60	1.61	78	6/30	.49	.86	9/30	▲.403	.375	YES	
1601 DuPont de Nemours	DD	56.18	- 2 -	NMF	70- 90	(25- 60%)	18.7	2.2	▼3.01	1.26	59	6/30	.70	.97	9/30	.30	.30	YES	
922 Dycom Inds.	DY	52.97	3 3 3	1.45	60- 90	(15- 70%)	17.7	NIL	2.99	NIL	18	7/31	1.18	1.09	6/30	NIL	NIL	YES	
1002 e.l.f. Beauty	ELF	18.08	2 4 2	1.30	16- 25	(N- 40%)	27.8	NIL	.65	NIL	52	6/30	.17	.14	6/30	NIL	NIL	YES	
1798 E*Trade Fin'l	ETFC	50.02	- 3 -	1.25	60- 85	(20- 70%)	15.5	1.1	3.23	.56	7	6/30	.88	.90	9/30	.14	.14	YES	
449 533 EOG Resources	EOG	38.81	4 3 3	1.25	95- 145	(145-275%)	86.2	3.9	.45	1.52	90	6/30	d.23	1.31	9/30	.375	.288	YES	
2624 EPAM Systems	EPAM	314.30	2 3 3	1.00	335- 505	(5- 60%)	62.5	NIL	5.03	NIL	16	6/30	1.14	1.02	6/30	NIL	NIL	YES	
534 EQT Corp.	EQT	15.45	- 4 -	NMF	20- 35	(30-125%)	NMF	NIL	d.34	NIL	90	6/30	d.18	.09	9/30	NIL	.03	YES	
1111 Eagle Materials	EXP	85.23	2 3 4	1.35	100- 150	(15- 75%)	14.4	0.2	5.90	.20	45	6/30	1.57	1.13	9/30	▼NIL	.10	YES	
2513 East West Bancorp	EWBC	32.91	3 3 3	1.15	60- 90	(80-175%)	8.8	3.3	3.75	1.10	72	6/30	.70	1.03	9/30	.275	.275	YES	
2436 Eastman Chemical	EMN	80.57	3 3 4	1.25	90- 130	(10- 60%)	17.1	3.3	4.71	2.64	60	6/30	.20	1.85	12/31	.66	.62	YES	
982 Eaton Corp. plc	ETN	97.38	3 3 3	1.30	95- 145	(N- 50%)	23.7	3.0	4.11	2.92	74	6/30	.70	1.50	9/30	.73	.71	YES	
2550 Eaton Vance Corp.	EV	37.15	3 3 4	1.40	60- 90	(60-140%)	12.4	4.0	2.99	1.50	57	7/31	d.01	.90	9/30	.375	.35	YES	
2645 eBay Inc.	EBAY	50.14	1 3 2	1.00	75- 115	(50-130%)	13.5	1.3	3.71	.66	27	6/30	1.04	.46	9/30	.16	.14	YES	
1017 EchoStar Corp.	SATS	26.93	3 3 3	.90	20- 30	(N- 10%)	NMF	NIL	d.53	NIL	9	6/30	d.12	d.32	6/30	NIL	NIL	YES	
568 Ecolab Inc.	ECL	198.47	3 1 3	1.15	220- 270	(10- 35%)	NMF	0.9	d4.47	1.88	61	6/30	d6.98	1.42	12/31	.47	.46	YES	
1191 Edgewell Personal Care	EPC	27.84	3 3 3	1.05	65- 95	(135-240%)	10.0	NIL	2.78	NIL	1	6/30	.66	1.11	6/30	NIL	NIL	YES	
2215 Edison Int'l	EIX	49.70</																	

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Timeliness	Safety	Technical Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?			
		Qtr. Ended	Earnings Per sh.	Year Ago									Qtr. Ended	Latest Div'd	Year Ago				
																	Qtr. Ended	Earnings Per sh.	Year Ago
1192 Energizer Holdings	ENR	39.51	2	3	2	1.05	70- 105 (75-165%)	14.7	3.0	2.62	1.20	1	6/30	.50	.37	9/30	.30	.30	YES
2028 622 Energy Transfer LP	ET	5.90	4	4	3	1.50	11- 19 (85-220%)	7.7	20.7	.77	1.22-.61	92	6/30	.13	.33	9/30	.305	.305	YES
1849 157 Enerpac Tool Group	EPAC	19.72	3	3	3	1.20	20- 30 (N- 50%)	82.2	0.2	.24	.04	64	5/31	d.08	.43	12/31	.04	.04	YES
535 Enerplus Corp.	(TSE) ERF.TO	2.47b	5	4	1	1.60	8- 13 (225-425%)	NMF	4.9	d3.66	.12	90	6/30	d2.74(b)	.36(b)	9/30	.03(b)	.03(b)	YES
1214 EnerSys	ENS	64.00	3	3	1	1.20	90- 130 (40-105%)	17.5	1.1	3.65	.70	30	6/30	.82	1.13	9/30	.175	.175	YES
611 EnLink Midstream LLC	ENLC	2.53	5	5	3	1.70	3- 6 (20-135%)	NMF	15.0	d.32	.38-.23	86	6/30	d.04	d.03	9/30	.094	.283	YES
1414 Ennis, Inc.	EBF	17.35	3	3	3	1.80	17- 25 (N- 45%)	16.5	5.2	1.05	.90	88	8/31	♦.25	.37	12/31	♦.225	.225	YES
1215 Enphase Energy	(NDQ) ENPH	70.72	3	3	3	1.00	50- 75 (N- 5%)	NMF	NIL	2.20	NIL	30	6/30	d.38	.08	9/30	NIL	NIL	YES
1755 EnPro Industries	NPO	54.55	4	3	3	1.35	80- 120 (45-120%)	33.9	1.9	1.61	1.04	67	6/30	d.31	.81	9/30	.26	.25	YES
1388 Entegris, Inc.	(NDQ) ENTG	66.60	2	3	2	1.10	60- 90 (N- 35%)	27.2	0.5	2.45	.34	2	6/30	.60	.39	9/30	.08	.08	YES
2331 Entercom Communic.	ETM		SEE FINAL REPORT																
909 Entercom Corp.	ETR	94.83	3	2	3	.95	105- 140 (10- 50%)	17.1	4.0	5.56	3.80	47	6/30	1.79	1.22	9/30	.93	.91	YES
623 Enterprise Products	EPD	16.31	4	3	2	1.15	35- 55 (115-235%)	8.6	10.9	1.89	1.78	92	6/30	.47	.55	9/30	.445	.44	YES
181 Envista Holdings	NVST	23.48	-	3	-	NMF	35- 50 (50-115%)	NMF	NIL	d.04	NIL	53	6/30	d.59	.48	6/30	NIL	NIL	YES
434 Equifax, Inc.	EFX	155.10	1	3	2	1.05	175- 260 (15- 70%)	26.5	1.0	5.85	1.56	10	6/30	1.60	1.40	9/30	.39	.39	YES
1522 Equinix, Inc.	(NDQ) EQIX	745.55	2	3	2	.90	600- 905 (N- 20%)	NMF	1.5	6.87	11.18	66	6/30	1.52	1.69	9/30	2.66	2.46	YES
2551 Equitable Holdings	EQH	17.64	-	3	-	NMF	30- 45 (70-155%)	3.9	3.9	4.52	.68	57	6/30	1.00	1.14	9/30	.17	.15	YES
1523 Equity Residential	EQR	52.03	3	3	4	1.00	75- 110 (45-110%)	35.2	4.6	1.48	2.41	66	6/30	.70	.83	12/31	♦.603	.568	YES
951 Ericsson ADR(g)	(NDQ) ERIC	10.75	2	3	1	.90	11- 16 (N- 50%)	20.3	1.5	.53	.16	34	6/30	.09	.06	9/30	NIL	NIL	YES
762 Erie Indemity	(NDQ) ERIE	213.36	3	2	2	.65	180- 245 (N- 15%)	37.6	1.8	5.67	3.86	36	6/30	1.57	1.68	9/30	.965	.90	YES
1754 ESCO Technologies	ESE	80.00	3	3	2	.95	80- 120 (N- 50%)	29.7	0.4	2.69	.32	67	6/30	.76	.81	12/31	.08	.08	YES
1790 Essential Utilities	WTRG	39.31	2	2	1	.90	40- 55 (N- 40%)	38.5	2.5	1.02	1.00	11	6/30	.29	.25	9/30	▲.251	.234	YES
1524 Essex Property Trust	ESS	204.31	2	3	4	1.05	280- 415 (35-105%)	37.9	4.2	5.39	8.48	66	6/30	1.29	1.40	12/31	2.078	1.95	YES
1148 Ethan Allen Interiors	ETH	14.34	4	3	3	.90	18- 25 (25- 75%)	47.8	5.9	.30	.84	81	6/30	d.15	.46	12/31	▲.21	.19	YES
2646 Etsy, Inc.	(NDQ) ETSY	116.01	2	3	1	1.20	80- 120 (N- 5%)	NMF	NIL	.45	NIL	27	6/30	.75	.14	9/30	NIL	NIL	YES
331 Euronav NV	EURN	9.43	2	4	3	1.05	10- 17 (5- 80%)	4.7	11.7	2.00	1.10	75	6/30	1.21	d.18	9/30	.47	NIL	YES
420 European Equity Fund	EEA	9.26	-	3	-	.95	10- 14 (10- 50%)	NMF	0.5	NMF	.05	-	6/30	9.93(q)	10.19(q)	9/30	NIL	NIL	YES
2023 Everest Re Group Ltd.	RE	202.31	3	1	3	.95	205- 250 (N- 25%)	15.5	3.1	13.09	6.20	68	6/30	4.77	8.15	9/30	1.55	1.40	YES
910 Evergy, Inc.	EVRG	50.01	3	2	3	1.00	60- 80 (20- 60%)	17.3	4.3	2.89	2.14	47	6/30	.59	.57	12/31	.505	.505	YES
141 Eversource Energy	ES	78.02	2	1	2	.90	75- 90 (N- 15%)	21.4	3.0	3.64	2.34	50	6/30	.75	.74	9/30	.568	.535	YES
796 Exact Sciences	(NDQ) EXAS	73.51	3	4	3	1.15	115- 190 (55-160%)	NMF	NIL	d1.99	NIL	28	6/30	d.58	d.30	6/30	NIL	NIL	YES
833 Exelixis, Inc.	(NDQ) EXEL	25.81	3	4	3	1.05	35- 55 (35-115%)	32.3	NIL	.80	NIL	15	6/30	.21	.25	6/30	NIL	NIL	YES
142 Xelcon Corp.	(NDQ) EXC	34.75	3	3	3	.95	40- 60 (15- 75%)	11.9	4.5	2.91	1.57	50	6/30	.73	.50	9/30	.383	.363	YES
2647 Expedia Group	(NDQ) EXPE	91.29	4	4	4	1.25	100- 165 (10- 80%)	NMF	NIL	d6.46	NIL	27	6/30	d5.34	1.21	9/30	NIL	.34	YES
383 Expeditors Int'l	(NDQ) EXPD	88.33	3	1	3	.95	95- 115 (10- 80%)	24.6	1.2	3.59	1.04	42	6/30	1.09	.88	9/30	NIL	NIL	YES
435 Exponent, Inc.	(NDQ) EXPO	72.55	3	3	1	.85	65- 100 (N- 40%)	49.7	1.0	1.46	.76	10	6/30	.31	.39	9/30	.19	.16	YES
2355 Extended Stay America	STAY	11.88	3	3	3	1.10	25- 40 (110-235%)	91.4	0.3	.13	.04	89	6/30	d.07	.28	9/30	.01	.23	YES
1525 Extra Space Storage	EXR	107.56	2	3	5	.95	95- 145 (N- 35%)	31.8	3.3	3.38	3.60	66	6/30	.80	.81	9/30	.90	.90	YES
848 Extreme Networks	EXTR		SEE FINAL SUPPLEMENT																
237 507 Exxon Mobil Corp.	XOM	36.43	3	3	3	1.15	60- 90 (65-145%)	NMF	9.6	d.11	3.48	95	6/30	d.26	.73	9/30	.87	.87	YES
952 F5 Networks	(NDQ) FFFV	117.77	3	3	3	.90	195- 290 (65-145%)	22.3	NIL	5.28	NIL	34	6/30	1.14	1.43	6/30	NIL	NIL	YES
118 FARO Technologies	(NDQ) FARO	57.81	3	3	2	1.15	35- 50 (N- N%)	NMF	NIL	d.91	NIL	35	6/30	d.50	d.37	6/30	NIL	NIL	YES
1307 FLIR Systems	(NDQ) FLIR	35.61	4	3	4	.95	55- 80 (55-125%)	15.6	1.9	2.28	.68	62	6/30	.64	.56	9/30	.17	.17	YES
1602 FMC Corp.	FMC	106.45	2	3	2	1.25	115- 170 (10- 60%)	16.1	1.8	6.61	1.88	59	6/30	1.72	1.66	12/31	.44	.40	YES
384 FTI Consulting	FCN	108.19	3	3	1	.75	105- 160 (N- 50%)	19.3	NIL	5.62	NIL	42	6/30	1.32	1.73	6/30	NIL	NIL	YES
236 2648 Facebook Inc.	(NDQ) FB	248.15	3	2	2	.90	380- 515 (55-110%)	29.2	NIL	8.49	NIL	27	6/30	1.80	1.99	6/30	NIL	NIL	YES
1847 436 FactSet Research	FDS	336.84	2	2	2	1.05	245- 330 (N- N%)	32.6	0.9	10.32	3.13	10	5/31	2.63	2.37	9/30	.77	.72	YES
2626 Fair Isaac	FICO	424.24	3	3	2	1.15	345- 515 (N- 20%)	58.7	NIL	7.23	NIL	16	6/30	2.15	2.12	6/30	NIL	NIL	YES
1426 1910 Farmer Bros. Co.	FARM		SEE FINAL SUPPLEMENT																
1138 Fastenal Co.	FAST	43.72	1	2	2	.95	40- 50 (N- 15%)	32.4	2.3	1.35	1.00	8	6/30	.42	.36	9/30	.25	.215	YES
1526 Federal Rty. Inv. Trust	FRT	73.28	4	1	4	1.05	145- 175 (100-140%)	48.2	5.8	▼1.52	4.24	66	6/30	.11	1.05	12/31	▲1.06	1.05	YES
158 Federal Signal	FSS	29.29	3	3	2	1.00	40- 60 (35-105%)	17.6	1.1	1.66	.32	64	6/30	.42	.54	9/30	.08	.08	YES
2552 Federated Hermes	FHI	21.19	3	3	3	1.40	40- 60 (90-185%)	8.9	5.1	2.38	1.08	57	6/30	.80	.62	9/30	.27	.27	YES
308 FedEx Corp.	FDX	238.74	2	2	3	1.10	220- 300 (N- 25%)	26.3	1.1	9.08	2.60	91	8/31	4.87	3.05	12/31	.65	.65	YES
103 Ferrari N.V.	RACE	184.10	2	3	3	.90	170- 255 (N- 40%)	56.8	0.7	3.24	1.30	43	6/30	.04	1.08	9/30	NIL	NIL	YES
1426 570 Ferro Corp.	FOE	11.66	-	3	-	1.30	19- 30 (65-155%)	14.4	NIL	.81	NIL	61	6/30	.12	.35	6/30	NIL	NIL	YES
104 Fiat Chrysler	FCAU	11.83	-	3	-	1.40	19- 30 (60-155%)	NMF	NIL	d.06	NIL	43	6/30	d.74	.56	9/30	NIL	NIL	YES
2553 Fidelity Nat'l Fin'l	FNF	32.10	2	3	4	1.30	55- 80 (70-150%)	10.8	4.1	2.97	1.32	57	6/30	1.11	.96	9/30	.33	.31	YES
2554 Fidelity Nat'l Info.	FIS	144.02	-	2	-	.95	150- 200 (5- 40%)	NMF	1.0	.68	1.40	57	6/30	.03	.35	9/30	.35	.35	YES
361 Fiesta Restaurant	(NDQ) FRGI	9.76	-	4	-	.85	17- 30 (75-205%)	NMF	NIL	d.58	NIL	78	6/30	d.33	.21	6/30	NIL	NIL	YES
778 Fifth Third Bancorp	(NDQ) FITB	20.86	4	3	5	1.40	30- 40 (45- 90%)	12.5	5.2	1.67	1.08	87	6/30	.30	.71	9/30	.27	.24	YES
1																			

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	Industry Rank	LATEST RESULTS			Do Options Trade?					
			Timeliness	Safety	Technical Beta							Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago		
																			Qtr. Ended	Earnings Per sh.
105 Ford Motor	F	6.87	3	4	4	1.30	11- 18	(60-160%)	NMF	NIL	d.10	NIL	43	6/30	.28	.04	9/30	NIL	.15	YES
1389 FormFactor, Inc. (NDQ)	FORM	24.50	2	3	2	1.20	40- 60	(65-145%)	19.6	NIL	1.25	NIL	2	6/30	.26	.09	6/30	NIL	NIL	YES
437 Forrester Research (NDQ)	FORR	31.90	4	3	3	.95	60- 90	(90-180%)	26.4	NIL	1.21	NIL	10	6/30	.65	.65	6/30	NIL	NIL	YES
2593 Fortinet Inc. (NDQ)	FTNT	117.83	1	3	3	.90	155- 235	(30-100%)	51.0	NIL	2.31	NIL	3	6/30	.68	.42	6/30	NIL	NIL	YES
911 Fortis Inc. (TSE)	FTS.TO	52.24b	2	2	2	.80	55- 80	(5- 55%)	20.5	3.9	2.55	2.02	47	6/30	.59(b)	.54(b)	9/30	.478(b)	.45(b)	YES
★ ★ 119 Fortive Corp.	FTV	72.37	-	3	-	1.20	75- 115	(5- 60%)	33.7	0.4	2.15	.28	35	6/30	.33	.46	9/30	.07	.07	YES
1149 Fortune Brands Home	FBHS	82.34	3	3	3	1.30	80- 120	(N- 45%)	21.7	1.2	3.79	.96	81	6/30	.94	1.03	12/31	♦.24	.22	YES
320 Forward Air (NDQ)	FWRD	55.25	3	3	3	.95	65- 100	(20- 80%)	33.5	1.3	1.65	.72	32	6/30	.11	.78	9/30	.18	.18	YES
2170 Fossil Group	FOSL																			
2332 Fox Corp. 'A'	FOXA	26.78	-	3	-	NMF	40- 65	(50-145%)	10.8	1.7	2.49	.46	58	6/30	.62	.73	12/31	.23	.23	YES
2308 Fox Factory Holding (NDQ)	FOXF	73.12	3	3	1	.90	80- 120	(10- 65%)	35.0	NIL	2.09	NIL	83	6/30	.32	.59	6/30	NIL	NIL	YES
1571 Franco-Nevada Corp.	FNV	141.36	2	3	2	.45	▲ 110- 170	(N- 20%)	51.8	0.7	▲ 2.73	1.04	6	6/30	.50	.34	9/30	.26	.25	YES
1308 Franklin Electric (NDQ)	FELE	56.72	3	3	3	.95	50- 75	(N- 30%)	30.2	1.1	1.88	.63	62	6/30	.54	.70	9/30	.155	.145	YES
2557 Franklin Resources	BEN	20.10	3	2	3	1.15	35- 50	(75-150%)	14.2	5.5	1.42	1.11	57	6/30	.58	.65	12/31	.27	.26	YES
1587 Freep!McMoRan Inc.	FCX	15.65	3	5	3	1.70	▲ 19- 35	(20-125%)	20.1	NIL	▲.78	NIL	77	6/30	.03	d.04	9/30	NIL	.05	YES
797 Fresenius Medical ADR	FMS	41.37	2	2	2	.90	60- 85	(45-105%)	15.4	1.7	2.68	.72	28	6/30	.66	.50	9/30	.717	NIL	YES
1912 Fresh Del Monte Prod.	FDP	22.56	4	3	3	.55	40- 60	(75-165%)	12.3	0.9	1.83	.20	19	6/30	.38	.78	9/30	.05	.06	YES
1913 Freshpet, Inc. (NDQ)	FRPT	105.20	2	4	3	1.00	45- 75	(N- N%)	NMF	NIL	.20	NIL	19	6/30	NIL	d.16	6/30	NIL	NIL	YES
385 frontdoor, inc. (NDQ)	FTDR	42.46	-	3	-	.80	50- 75	(20- 75%)	25.0	NIL	1.70	NIL	42	6/30	.57	.71	6/30	NIL	NIL	YES
332 Frontline Ltd.	FRO	6.63	3	5	3	1.30	7- 11	(5- 65%)	3.3	30.2	2.01	2.00-1.00	75	6/30	1.01	.01	6/30	▼.50	NIL	YES
1984 FUJIFILM Hldgs. ADR(g)(PNK)	FUJIY	47.05	3	2	4	.75	55- 75	(15- 60%)	47.1	1.7	1.00	.81	40	6/30	.64	.33	9/30	.443	.371	YES
571 Fuller (H.B.)	FUL	47.14	3	3	3	1.15	50- 80	(5- 70%)	22.3	1.4	2.11	.65	61	5/31	.61	.70	9/30	.163	.16	YES
2106 G-III Apparel Group (NDQ)	GIII	14.22	5	5	5	2.00	30- 60	(110-320%)	13.9	NIL	1.02	NIL	93	7/31	d.31	.23	6/30	NIL	NIL	YES
341 GATX Corp.	GATX	62.12	3	3	4	1.00	60- 90	(N- 45%)	19.2	3.1	3.24	1.92	31	6/30	1.05	1.78	9/30	.48	.46	YES
572 GCP Applied Tech.	GCP	20.40	3	3	1	1.05	25- 40	(25- 95%)	39.2	NIL	.52	NIL	61	6/30	.09	.19	6/30	NIL	NIL	YES
1527 GEO Group (The)	GEO	10.75	4	3	4	1.15	25- 40	(135-270%)	10.3	12.7	1.04	1.36	66	6/30	.31	.35	9/30	.48	.48	YES
598 GTT Communications	GTT	5.94	-	5	-	1.15	12- 25	(100-320%)	NMF	NIL	d3.80	NIL	39	3/31	d1.45	d.49	6/30	NIL	NIL	YES
1424 GW Pharmaceuticals plc(NDQ)	GWPH	100.06	3	4	4	1.05	100- 165	(N- 65%)	NMF	NIL	d1.61	NIL	82	6/30	d.24	d.01	6/30	NIL	NIL	YES
1202 Gabelli Equity	GAB	5.13	-	3	-	1.35	6- 9	(15- 75%)	NMF	1.0	NMF	.05	-	6/30	4.60(q)	5.91(q)	12/31	.018	.001	YES
2558 Gallagher (Arthur J.)	AJG	104.11	3	1	3	1.00	120- 145	(15- 40%)	25.6	1.7	4.06	1.80	57	6/30	.79	.58	9/30	.45	.43	YES
2171 GameStop Corp.	GME																			
1528 Gaming and Leisure (NDQ)	GLPI	36.10	4	3	3	1.35	50- 75	(40-110%)	17.2	6.6	▲ 2.10	2.40	66	6/30	.52	.43	9/30	.60	.68	YES
2382 Gannett Co., Inc.	GCI																			
1847 2201 Gap (The), Inc.	GPS	16.40	4	4	4	1.45	25- 40	(50-145%)	78.1	NIL	.21	NIL	79	7/31	d.17	.63	9/30	NIL	.243	YES
1309 Garmin Ltd. (NDQ)	GRMN	94.26	2	2	2	1.00	90- 125	(N- 35%)	23.2	2.7	4.06	2.56	62	6/30	.96	1.17	9/30	.61	.57	YES
438 Gartner Inc.	IT	126.41	2	3	4	1.15	185- 275	(45-120%)	52.7	NIL	2.40	NIL	10	6/30	1.20	1.45	6/30	NIL	NIL	YES
2225 GasLog Ltd.	GLOG																			
1426 1714 Gates Industrial plc	GTES	10.97	-	3	-	NMF	15- 20	(35- 80%)	20.3	NIL	.54	NIL	54	6/30	.03	.26	6/30	NIL	NIL	YES
1217 Generac Holdings	GNRC	181.23	2	3	3	1.05	240- 365	(30-100%)	32.2	NIL	5.62	NIL	30	6/30	1.02	.98	6/30	NIL	NIL	YES
1203 Gen'l Amer. Invest	GAM	33.75	-	3	-	1.10	45- 65	(35- 95%)	NMF	1.2	NMF	.40	-	6/30	38.51(q)	42.33(q)	9/30	NIL	NIL	YES
711 Gen'l Dynamics	GD	138.33	3	1	3	1.10	215- 260	(55- 90%)	12.2	3.2	11.32	4.40	73	6/30	2.18	2.77	12/31	1.10	1.02	YES
1756 Gen'l Electric	GE	6.35	-	4	-	1.30	13- 20	(105-215%)	27.6	0.6	.23	.04	67	6/30	d.15	.17	12/31	.01	.01	YES
1914 Gen'l Mills	GIS	57.87	1	1	2	.65	60- 70	(5- 20%)	15.6	3.5	3.72	2.04	19	5/31	1.10	.83	9/30	.49	.49	YES
1240 106 Gen'l Motors	GM	30.00	4	3	4	1.30	55- 80	(85-165%)	14.8	NIL	2.03	NIL	43	6/30	d.50	1.64	9/30	NIL	.38	YES
2158 Genesco Inc.	GCO	24.30	5	3	5	1.65	70- 100	(190-310%)	11.3	NIL	2.15	NIL	85	7/31	d1.23	.15	6/30	NIL	NIL	YES
386 Genpact Limited	G	37.63	2	2	2	1.05	55- 70	(45- 85%)	17.3	1.0	2.17	.39	42	6/30	.52	.49	9/30	.098	.085	YES
983 Gentex Corp. (NDQ)	GNTX	25.23	▼	3	2	.95	35- 50	(40-100%)	20.3	1.9	1.24	.48	74	6/30	.02	.45	12/31	.12	.115	YES
984 Gentherm Inc. (NDQ)	THRM	40.20	3	3	3	1.15	55- 80	(35-100%)	45.2	NIL	.89	NIL	74	6/30	d.32	.08	6/30	NIL	NIL	YES
985 Genuine Parts	GPC	96.55	3	3	5	1.20	125- 165	(30- 70%)	19.0	3.3	5.08	3.16	74	6/30	1.32	1.57	12/31	.79	.763	YES
1028 1557 Genworth Fin'l	GNW	3.18	-	5	-	1.40	▼ 2- 5	(N- 55%)	31.8	NIL	▼.10	NIL	51	6/30	d.04	.40	6/30	NIL	NIL	YES
120 Geospace Technologies	GEOS																			
742 Gibraltar Inds. (NDQ)	ROCK	61.81	2	3	2	1.10	50- 75	(N- 20%)	19.5	NIL	3.17	NIL	70	6/30	.84	.73	6/30	NIL	NIL	YES
2107 Gildan Activewear	GIL	19.12	4	3	4	1.35	30- 45	(55-135%)	NMF	NIL	.19	NIL	93	6/30	d.99	.56	9/30	▼NIL	.134	YES
1427 1617 Gilead Sciences (NDQ)	GILD	64.21	1	2	3	.65	75- 105	(15- 65%)	40.6	4.2	▼1.58	2.72	14	6/30	d2.66	1.47	9/30	.68	.63	YES
2448 Gladstone Capital (NDQ)	GLAD	7.72	-	3	-	1.40	20- 30	(160-290%)	7.6	10.1	1.02	.78	-	6/30	.48	.30	9/30	.195	.21	YES
1176 Glatfelter (P.H.)	GLT	13.37	3	2	2	1.15	25- 40	(85-200%)	47.8	4.0	.28	.54	46	6/30	d.05	.14	9/30	▲.135	.13	YES
182 Glaukos Corp.	GKOS	47.46	4	4	5	1.25	75- 125	(60-165%)	NMF	NIL	d1.21	NIL	53	6/30	d.90	d.12	6/30	NIL	NIL	YES
1618 GlaxoSmithKline ADR(g)	GSK	38.21	2	1	3	.85	55- 70	(45- 85%)	11.9	4.9	▲ 3.20	1.88	14	6/30	1.13	.49	9/30	.474	.53	YES
2559 Global Payments	GNP	175.56	-	3	-	1.20	170- 255	(N- 45%)	NMF	0.4	1.68	.78	57	6/30	.12	.77	9/30	.195	.01	YES
1558 Globe Life Inc.	GL	79.29	3	1	4	1.15	110- 135	(40- 70%)	11.4	0.9	6.97	.75	51	6/30	1.65	1.67	12/31	.188	.173	

PAGE NUMBERS

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?						
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd		Year Ago					
																		Qtr. Ended	Earnings Per sh.	Year Ago		
1758	Griffon Corp.	GFF	18.79	2	3	2	1.40	25- 40	(35-115%)	25.1	1.6	.75	.31	67	6/30	.59	.31	9/30	.075	.073	YES	
1951	Grocery Outlet	(NDQ)	GO	37.84	-	3	-	NMF		54.8	NIL	.69	NIL	23	6/30	.30	d.15	6/30	NIL	NIL	YES	
2126	Group 1 Automotive	GPI	84.88	4	3	2	1.30	95- 140	(10- 65%)	9.4	NIL	9.04	NIL	48	6/30	3.77	2.83	9/30	NIL	.28	YES	
2649	Groupon, Inc.	(NDQ)	GRPN	25.36	5	5	3	1.90	20- 40	(N- 60%)	NMF	d9.87	NIL	27	6/30	d2.53	d1.40	6/30	NIL	NIL	YES	
2650	Grubhub Inc.	GRUB	70.23	-	4	-	1.20	35- 55	(N- N%)	NMF	NIL	d.35	NIL	27	6/30	d.49	.01	6/30	NIL	NIL	YES	
798	Guardant Health	(NDQ)	GH	106.67	3	3	3	.90	95- 145	(N- 35%)	NMF	NIL	d1.61	NIL	28	6/30	d.57	d.13	6/30	NIL	NIL	YES
2108	Guess?, Inc.	GES	12.55	5	4	4	1.45	20- 35	(60-180%)	78.4	3.6	.16	.45	93	7/31	d.01	.38	12/31	▲.113	NIL	YES	
2594	Guidewire Software	GWRE	104.93	2	3	2	.90	125- 190	(20- 80%)	NMF	NIL	d.11	NIL	3	7/31	.46	.28	6/30	NIL	NIL	YES	
799	HCA Healthcare	HCA	125.45	3	3	3	1.15	160- 240	(30- 90%)	12.6	0.4	9.97	.45	28	6/30	1.50	2.21	9/30	NIL	.40	YES	
450	1112 HD Supply Holdings	(NDQ)	HDS	38.87	3	3	3	1.10	55- 85	(40-120%)	13.0	NIL	2.98	NIL	45	7/31	.83	1.08	6/30	NIL	NIL	YES
1150	HNI Corp.	HNI	32.84	4	3	3	1.10	50- 80	(50-145%)	21.3	3.7	1.54	1.22	81	6/30	.20	.38	9/30	.305	.305	YES	
1400	HP Inc.	HPQ	18.34	3	3	4	1.25	30- 45	(65-145%)	9.0	3.8	2.04	.70	21	7/31	.49	.58	12/31	▲.176	.16	YES	
2516	HSBC Holdings PLC	HSBC	18.64	3	4	3	.85	50- 70	(170-275%)	NMF	NIL	d.70	NIL	72	6/30	.05	1.10	9/30	NIL	1.00	YES	
215	Haemonetics Corp.	HAE	83.56	3	3	4	.80	110- 160	(30- 90%)	27.9	NIL	3.00	NIL	25	6/30	.46	.81	6/30	NIL	NIL	YES	
1915	Hain Celestial Group	(NDQ)	HAIN	34.87	3	3	3	.75	30- 45	(N- 30%)	39.6	NIL	.88	NIL	19	6/30	.32	.21	6/30	NIL	NIL	YES
2418	Halliburton Co.	HAL	13.22	4	4	3	1.70	20- 35	(50-165%)	NMF	1.4	d.06	.18	96	6/30	.05	.35	9/30	.045	.18	YES	
781	Hancock Whitney Corp.	(NDQ)	HWC	18.68	5	3	3	1.45	35- 50	(85-170%)	29.7	5.8	6.03	1.08	87	6/30	d1.36	1.01	9/30	.27	.27	YES
2109	Hanesbrands, Inc.	HBI	15.29	3	3	3	.95	18- 25	(20- 65%)	18.0	3.9	.85	.60	93	6/30	.60	.45	9/30	.15	.15	YES	
764	Hanover Insurance	THG	92.94	3	2	3	.95	120- 160	(30- 70%)	11.4	2.8	8.12	2.60	36	6/30	1.63	1.88	9/30	.65	.60	YES	
2664	2309 Harley-Davidson	HOG	24.28	4	3	3	1.25	70- 110	(190-355%)	25.6	0.3	.95	.08	83	6/30	d.60	1.23	9/30	.02	.375	YES	
953	Harmonic, Inc.	HLIT						SEE FINAL REPORT														
387	Harsco Corp.	HSC	14.00	4	3	3	1.50	25- 35	(80-150%)	20.3	NIL	.69	NIL	42	6/30	.13	.21	6/30	NIL	NIL	YES	
2664	2560 Hartford Fin'l Svcs.	HIG	36.24	4	2	3	1.15	60- 80	(65-120%)	7.5	3.6	4.81	1.30	57	6/30	1.22	1.33	9/30	.325	.30	YES	
2310	Hasbro, Inc.	(NDQ)	HAS	76.07	3	3	3	1.20	115- 170	(50-125%)	24.1	3.6	3.15	2.72	83	6/30	.02	.78	12/31	.68	.68	YES
2172	Haverty Furniture	HVT	20.80	3	3	3	.90	20- 30	(N- 45%)	29.3	3.8	.71	.80	69	6/30	d.52	.29	9/30	▲.20	.20	YES	
2217	Hawaiian Elec.	HE	32.44	3	2	3	.80	30- 40	(N- 25%)	18.8	4.1	1.73	1.32	17	6/30	.45	.39	9/30	.33	.32	YES	
309	Hawaiian Hldgs.	(NDQ)	HA	13.11	5	3	4	1.55	25- 35	(90-165%)	NMF	NIL	d8.26	NIL	91	6/30	d3.81	1.21	9/30	NIL	.12	YES
730	Haynes International	(NDQ)	HAYN	18.03	4	3	3	1.15	50- 70	(175-290%)	NMF	4.9	d.98	.88	80	6/30	d.65	.30	9/30	.22	.22	YES
1529	Healthcare R'lty Trust	HR	28.12	2	3	5	.85	35- 50	(25- 80%)	37.0	4.3	▲.76	1.20	66	6/30	.56	.03	9/30	.30	.30	YES	
388	Healthcare Svcs.	(NDQ)	HCSG	21.28	3	3	3	.90	35- 50	(65-135%)	18.0	3.9	1.18	.82	42	6/30	.31	.24	9/30	▲.204	.199	YES
821	HealthEquity, Inc.	(NDQ)	HQY	48.38	2	3	3	1.25	75- 115	(55-140%)	30.8	NIL	1.57	NIL	33	7/31	.42	.45	6/30	NIL	NIL	YES
1530	Heartpeak Properties	PEAK	26.29	1	3	4	1.05	25- 40	(N- 50%)	NMF	5.6	.20	1.48	66	6/30	.09	d.03	9/30	.37	.37	YES	
321	Heartland Express	(NDQ)	HTLD	18.66	2	2	1	.75	20- 30	(5- 60%)	21.0	0.4	.89	.32	62	6/30	.24	.27	12/31	.02	.04	YES
1572	Hecla Mining	HL	5.24	2	4	1	.95	10- 16	(90-205%)	34.9	0.4	.15	.02	6	6/30	d.03	d.10	9/30	.003	.003	YES	
712	HEICO Corp.	HEI	106.80	3	3	4	1.05	105- 155	(N- 45%)	70.7	0.1	1.51	.16	73	7/31	.40	.59	9/30	.08	.07	YES	
1641	Heidrick & Struggles	(NDQ)	HSII	20.46	3	3	3	.85	35- 50	(70-145%)	NMF	2.9	▼d.64	.60	71	6/30	d1.33	.73	9/30	.15	.15	YES
1003	Helen of Troy Ltd.	(NDQ)	HELE	192.06	2	3	2	1.00	145- 215	(N- 10%)	18.9	NIL	10.15	NIL	52	5/31	2.53	2.06	6/30	NIL	NIL	YES
1759	Helios Technologies	(NDQ)	HLIO	36.05	4	3	3	.80	60- 90	(65-150%)	26.9	1.0	1.34	.36	67	6/30	.55	.60	9/30	.09	.09	YES
2419	Helix Energy Solutions	HLX	2.79	-	5	-	2.15	6- 12	(115-330%)	69.8	NIL	.04	NIL	96	6/30	.04	.11	6/30	NIL	NIL	YES	
2420	Helmerich & Payne	HP	15.32	5	3	3	1.55	30- 45	(95-195%)	NMF	6.5	d3.54	1.00	96	6/30	d.34	.40	9/30	.25	.71	YES	
2628	Henry (Jack) & Assoc.	(NDQ)	JKHY	159.21	1	1	2	.85	145- 180	(N- 15%)	37.5	1.1	4.24	1.72	16	6/30	.80	.79	9/30	.43	.40	YES
2225	Herbalife Nutrition	HLF	47.71	2	3	2	1.00	55- 85	(15- 80%)	18.1	NIL	2.64	NIL	19	6/30	.95	.70	6/30	NIL	NIL	YES	
1917	Hershey Co.	HSY	137.00	3	2	2	.85	130- 180	(N- 30%)	23.4	2.4	5.86	3.25	19	6/30	1.31	1.31	9/30	▲.804	.773	YES	
508	Hess Corp.	HES	41.15	4	3	3	1.50	75- 115	(80-180%)	NMF	2.4	d3.05	1.00	95	6/30	d1.05	d.09	9/30	.25	.25	YES	
1401	Hewlett Packard Ent.	HPE	9.23	4	3	4	1.35	19- 30	(105-225%)	7.2	5.2	1.29	.48	21	7/31	.32	.45	12/31	.12	.113	YES	
2437	Hexcel Corp.	HXL	34.52	4	3	4	1.35	60- 90	(75-160%)	40.1	NIL	.86	NIL	60	6/30	.08	.94	9/30	NIL	.17	YES	
2450	2173 Hibbett Sports	(NDQ)	HIBB	38.77	3	4	4	1.45	25- 35	(N- N%)	13.8	NIL	2.80	NIL	69	7/31	2.95	d.13	6/30	NIL	NIL	YES
216	Hill-Rom Hldgs.	HRC	84.46	2	3	3	1.00	115- 175	(35-105%)	14.7	1.0	5.74	.88	25	6/30	1.95	1.23	9/30	.22	.21	YES	
1843	Hillenbrand, Inc.	HI	26.94	2	3	3	1.15	40- 65	(50-140%)	8.7	3.2	3.09	.85	20	6/30	.81	.57	9/30	.213	.21	YES	
2356	Hilton Grand Vacations	HGV	20.24	4	3	4	1.50	40- 60	(100-195%)	65.3	NIL	.31	NIL	89	6/30	d.56	.43	6/30	NIL	NIL	YES	
2357	Hilton Worldwide Hldgs.	HLT	85.48	3	3	5	1.10	115- 170	(35-100%)	69.5	NIL	1.23	NIL	89	6/30	d1.55	1.06	9/30	NIL	.15	YES	
1985	Hitachi, Ltd. ADR(g)	(PNK)	HTHIY	68.58	3	3	4	1.05	65- 100	(N- 45%)	49.0	2.6	1.40	1.79	40	6/30	4.28	2.31	9/30	NIL	NIL	YES
624	Holy Energy Part.	HEP	12.81	4	4	3	.90	20- 35	(55-175%)	8.3	10.9	1.55	1.40	92	6/30	.40	.43	9/30	.35	.673	YES	
509	HollyFrontier Corp.	HFC	21.21	4	3	3	1.35	40- 60	(90-185%)	NMF	6.8	d.18	1.44	95	6/30	d.25	2.18	9/30	.35	.33	YES	
217	Hologic, Inc.	(NDQ)	HOLX	65.12	3	3	2	1.10	90- 135	(40-105%)	21.2	NIL	3.07	NIL	25	6/30	.75	.35	6/30	NIL	NIL	YES
636	1140 Home Depot	HD	272.35	▼	3	1	3	1.05	255- 310	(N- 15%)	22.9	2.3	11.87	6.15	8	7/31	4.02	3.17	9/30	1.50	1.36	YES
107	Honda Motor ADR(g)	HMC	24.22	3	2	3	1.00	35- 50	(45-10													

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Safety			Technical Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS									
			Timeliness	↓	↓							↓	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
																			↓	↓	↓
439	IHS Markit (NDO)	INFO	78.05	3	3	2	1.15	90-135	(15-75%)	28.0	0.9	2.79	.68	10	5/31	.69	.71	9/30	.17	NIL	YES
121	II-VI Inc. (NDO)	IIVI	38.52	2	3	2	1.00	60-90	(55-135%)	23.9	NIL	1.61	NIL	35	6/30	.53	.43	6/30	NIL	NIL	YES
1390	IPG Photonics (NDO)	IPGP	157.79	3	3	3	.90	210-315	(35-100%)	46.1	NIL	3.42	NIL	2	6/30	.71	1.34	6/30	NIL	NIL	YES
802	IQVIA Holdings	IQV	154.08	3	3	2	1.15	170-255	(10-65%)	23.9	NIL	6.45	NIL	28	6/30	1.18	1.53	6/30	NIL	NIL	YES
1761	ITT Inc.	ITT	59.17	3	3	3	1.30	75-110	(25-85%)	23.2	1.1	2.55	.68	67	6/30	.53	.75	12/31	.169	.294	YES
2218	IDACORP, Inc.	IDA	80.37	2	2	3	.80	85-115	(5-45%)	17.2	3.5	4.66	2.83	17	6/30	1.19	1.05	9/30	.67	.63	YES
1716	IDEX Corp.	IEX	178.25	3	2	3	1.05	170-230	(N-30%)	37.9	1.1	4.70	2.00	54	6/30	1.10	1.50	9/30	.50	.50	YES
218	IDEXX Labs. (NDO)	IDXX	364.70	1	3	2	1.00	385-580	(5-60%)	61.8	NIL	5.90	NIL	25	6/30	1.72	1.43	6/30	NIL	NIL	YES
2334	iHeartMedia, Inc. (NDO)	IHRT	8.85	-	4	-	NMF	11-19	(25-115%)	NMF	NIL	d1.14	NIL	58	6/30	d1.35	.27	6/30	NIL	NIL	YES
731	Illinois Tool Works	ITW	191.51	3	1	3	1.10	225-275	(15-45%)	34.9	2.4	5.48	4.56	80	6/30	1.01	1.91	12/31	▲1.14	1.07	YES
450	219 Illumina Inc. (NDO)	ILMN	270.13	3	3	2	.85	360-540	(35-100%)	44.8	NIL	6.03	NIL	25	6/30	.32	1.99	6/30	NIL	NIL	YES
2311	IMAX Corp.	IMAX	12.73	4	3	4	.80	35-50	(175-295%)	NMF	NIL	d.42	NIL	83	6/30	d.44	.32	6/30	NIL	NIL	YES
2013	Immersion Corp. (NDO)	IMMR	7.23	-	5	-	.95	9-15	(25-105%)	NMF	NIL	d.54	NIL	5	6/30	d.03	d.27	6/30	NIL	NIL	YES
1427	834 Immunomedics, Inc. (NDO)	IMMU	85.41	-	4	-	1.35	35-60	(N-N)	NMF	NIL	d1.21	NIL	15	6/30	d.30	d.40	9/30	NIL	NIL	YES
511	Imperial Oil Ltd. (ASE)	IMO	13.24	4	3	3	1.45	25-35	(90-165%)	NMF	4.8	d.56	.64	95	6/30	d.53	.54	12/31	.16	.17	YES
835	Incyte Corp. (NDO)	INCY	85.39	3	3	2	.90	130-190	(50-125%)	23.9	NIL	3.58	NIL	15	6/30	1.32	.48	6/30	NIL	NIL	YES
421	India Fund (The)	IFN	16.31	-	3	-	.95	18-30	(10-85%)	NMF	0.2	NMF	.04	-	6/30	17.78(q)	23.70(q)	9/30	NIL	.017	YES
450	954 Infinaera Corp. (NDO)	INFN	6.20	2	5	1	1.20	6-12	(N-95%)	NMF	NIL	d1.20	NIL	34	6/30	d.33	d.64	6/30	NIL	NIL	YES
2629	Infosys Ltd. ADR	INFY	13.61	3	1	3	.95	20-25	(45-85%)	22.7	1.8	.60	.25	16	6/30	.13	.13	9/30	.127	NIL	YES
574	Ingevity Corp.	NGVT	50.65	4	3	3	1.30	95-145	(90-185%)	13.6	NIL	3.73	NIL	61	6/30	.49	1.36	6/30	NIL	NIL	YES
1952	Ingles Markets (NDO)	IMKTA	35.44	2	3	1	.50	40-60	(15-70%)	7.2	1.9	4.91	.66	23	6/30	3.12	1.16	9/30	.165	.165	YES
1920	Ingreon Inc.	INGR	78.75	3	3	4	.90	110-160	(40-105%)	11.5	3.2	6.84	2.54	19	6/30	1.12	1.66	9/30	.63	.625	YES
575	Innospec Inc. (NDO)	IOSP	63.54	3	3	3	.95	85-130	(35-105%)	NMF	1.7	d.09	1.06	61	6/30	d1.62	.90	9/30	NIL	NIL	YES
220	Inogen, Inc. (NDO)	INGN	28.51	5	3	3	.80	90-135	(215-375%)	64.8	NIL	.44	NIL	25	6/30	.12	.45	6/30	NIL	NIL	YES
1359	Inphi Corp.	IPHI	106.31	2	3	2	1.10	125-190	(20-80%)	30.1	NIL	3.53	NIL	12	6/30	.95	.35	6/30	NIL	NIL	YES
2174	Insight Enterprises (NDO)	NSIT	56.39	3	3	4	1.10	75-115	(35-105%)	13.4	NIL	4.20	NIL	69	6/30	1.32	1.38	6/30	NIL	NIL	YES
1642	Insperty Inc.	NSP	64.78	4	4	3	1.35	75-125	(15-95%)	18.7	2.5	3.47	1.60	71	6/30	1.33	.69	9/30	.40	.30	YES
743	Insteel Industries (NDO)	IIIN	17.18	3	3	3	1.15	40-60	(135-250%)	19.3	0.7	.89	.12	70	6/30	.34	.11	9/30	.03	.03	YES
185	Insulet Corp. (NDO)	PODD	224.57	2	3	3	.95	95-145	(N-N)	NMF	NIL	.41	NIL	53	6/30	.22	.02	6/30	NIL	NIL	YES
1333	Integer Holdings	ITGR	57.06	4	3	3	1.40	90-135	(60-135%)	22.8	NIL	2.50	NIL	65	6/30	.32	1.23	6/30	NIL	NIL	YES
186	Integra LifeSciences (NDO)	IART	45.06	3	3	3	1.00	65-95	(45-110%)	21.8	NIL	2.07	NIL	53	6/30	.33	.73	6/30	NIL	NIL	YES
2665	1360 Intel Corp. (NDO)	INTC	49.72	1	1	5	.85	90-105	(80-110%)	10.9	2.7	4.55	1.32	12	6/30	1.23	1.06	12/31	◆.33	.315	YES
1004	Inter Parfums (NDO)	IPAR	37.69	4	3	3	1.10	60-90	(60-140%)	37.7	NIL	1.00	NIL	52	6/30	d.10	.39	9/30	◆.27	.275	YES
1799	Interactive Brokers (NDO)	IBKR	47.90	3	3	3	1.05	50-75	(5-55%)	28.0	0.8	1.71	.40	7	6/30	.57	.43	9/30	.10	.10	YES
1848	836 Intercept Pharm. (NDO)	ICPT	40.21	3	4	3	1.45	75-125	(85-210%)	NMF	NIL	d8.74	NIL	15	6/30	d1.92	d2.28	6/30	NIL	NIL	YES
1800	Intercontinental Exch.	ICE	99.27	1	2	3	.90	100-140	(N-40%)	22.5	1.2	4.42	1.20	7	6/30	1.07	.94	9/30	.30	.275	YES
599	InterDigital Inc. (NDO)	IDCC	57.35	2	3	1	1.15	90-140	(55-145%)	35.8	2.4	1.60	1.40	39	6/30	.72	.24	12/31	.35	.35	YES
1151	Interface Inc. 'A' (NDO)	TILE	6.36	3	4	3	1.50	30-45	(370-610%)	5.6	0.6	1.13	.04	81	6/30	.27	.51	9/30	.01	.065	YES
2451	1402 Int'l Business Mach. (NDO)	IBM	120.25	3	1	4	1.05	165-200	(35-65%)	10.9	5.4	11.06	6.52	21	6/30	2.18	3.17	9/30	1.63	1.62	YES
576	Int'l Flavors & Frag. (NDO)	IFF	120.43	-	1	-	.90	175-215	(45-80%)	20.5	2.6	5.88	3.12	61	6/30	1.36	1.61	12/31	▲.77	.75	YES
2359	Int'l Game Tech. PLC	IGT	11.44	4	4	4	1.65	17-30	(50-160%)	NMF	NIL	d.58	NIL	89	6/30	d.59	.26	9/30	NIL	.20	YES
1163	Int'l Paper	IP	41.04	3	3	5	1.15	60-90	(45-120%)	18.0	5.0	2.28	2.05	56	6/30	.67	.73	9/30	.513	.50	YES
2391	Interpublic Group	IPG	16.93	3	3	4	1.20	35-55	(105-225%)	13.3	6.0	1.27	1.02	76	6/30	d.12	.44	9/30	255	235	YES
2595	Intuit Inc. (NDO)	INTU	307.70	2	2	3	1.05	325-440	(5-45%)	33.5	0.8	9.19	2.36	3	7/31	1.81	d.09	12/31	▲.59	.53	YES
187	Intuitive Surgical (NDO)	ISRG	641.95	3	2	3	1.15	680-920	(5-45%)	84.7	NIL	7.58	NIL	53	6/30	.57	2.67	6/30	NIL	NIL	YES
221	Invacare Corp.	IVC	7.50	-	5	-	1.45	9-17	(20-125%)	NMF	NIL	d.46	NIL	25	6/30	d.21	d.31	9/30	▼.03	.013	YES
2561	Invesco Ltd.	IVZ	10.22	4	3	3	1.45	30-45	(240-390%)	9.6	6.1	1.07	.62	57	6/30	.09	.09	9/30	.155	.31	YES
1504	Investors Bancorp (NDO)	ISBC	7.29	4	3	4	1.05	11-17	(50-135%)	9.5	6.6	.77	.48	63	6/30	.18	.18	9/30	.12	.11	YES
837	Ionis Pharm. (NDO)	IONS	50.20	3	4	4	1.05	65-110	(30-120%)	NMF	NIL	d.20	NIL	15	6/30	d.23	d.01	6/30	NIL	NIL	YES
925	Iridium Communic. (NDO)	IRDM	25.52	3	3	2	1.10	40-60	(55-135%)	NMF	NIL	d.11	NIL	18	6/30	d.09	d.16	6/30	NIL	NIL	YES
1334	iRobot Corp. (NDO)	IRBT	76.06	2	3	3	.85	90-140	(20-85%)	27.0	NIL	2.82	NIL	65	6/30	1.06	.25	6/30	NIL	NIL	YES
391	Iron Mountain	IRM	27.27	3	3	3	.95	40-60	(45-120%)	27.8	9.1	.98	2.48	42	6/30	.22	.23	12/31	.619	.611	YES
1620	Ironwood Pharm. (NDO)	IRWD	9.70	3	4	3	.95	19-30	(95-210%)	16.7	NIL	▲.58	NIL	14	6/30	.16	.08	6/30	NIL	NIL	YES
600	Itron Inc. (NDO)	ITRI	56.03	4	3	3	1.10	85-125	(50-125%)	75.7	NIL	.74	NIL	39	6/30	d.14	.49	6/30	NIL	NIL	YES
1921	J&J Snack Foods (NDO)	JJSF	127.73	4	1	4	.90	175-215	(35-70%)	NMF	1.8	1.16	2.30	19	6/30	d.67	1.63	12/31	◆.575	.50	YES
2225	2517 JPMorgan Chase	JPM	95.31	3	1	4	1.10	105-125	(10-30%)	15.3	3.8	6.22	3.60	72	6/30	1.38	2.82	12/31	◆.90	.90	YES
455	926 j2 Global (NDO)	JCOM	68.41	2	3	4	1.05	100-150													

PAGE NUMBERS

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	
												Qtr. Ended	Earnings Per sh.	Year Ago							
1643 Kelly Services 'A' (NDO)	KELYA	16.59	4	3	3	1.15	30- 40 (80-140%)	11.4	NIL	▲1.45	NIL	71	6/30	.51	.72		9/30	.30	.075	YES	
2563 Kemper Corp.	KMPR	68.05	3	3	1	1.10	80- 115 (20- 70%)	10.6	1.8	6.42	1.20	57	6/30	1.20	1.38		9/30	NIL	.25	YES	
732 Kennametal Inc.	KMT	29.55	4	3	4	1.40	40- 60 (35-105%)	36.9	2.7	.80	.80	80	6/30	.15	.84		9/30	.20	.20	YES	
1975 Keurig Dr Pepper	KDP	27.86	-	3	-	NMF	40- 60 (45-115%)	34.8	2.2	.80	.62	29	6/30	.21	.22		12/31	◆.15	.15	YES	
2518 KeyCorp	KEY	12.05	4	3	4	1.40	20- 30 (65-150%)	13.7	6.1	.88	.74	72	6/30	.16	.40		9/30	.185	.185	YES	
451 123 Keysight Technologies	KEYS	97.80	3	2	2	.85	115- 160 (20- 65%)	22.2	NIL	4.41	NIL	35	7/31	1.19	1.25		6/30	NIL	NIL	YES	
1644 Kforce Inc. (NDO)	KFRC	32.37	3	3	3	.95	40- 60 (25- 85%)	14.2	2.5	▲2.28	.80	71	6/30	.47	.66		9/30	.20	.18	YES	
1152 Kimball Int'l (NDO)	KBAL	11.28	4	3	3	1.15	25- 35 (120-210%)	10.3	3.2	1.10	.36	81	6/30	.25	.30		12/31	.09	.09	YES	
1193 Kimberly-Clark	KMB	145.87	1	1	2	.75	175- 215 (20- 45%)	17.7	2.9	8.22	4.28	1	6/30	2.20	1.67		12/31	1.07	1.03	YES	
1532 Kimco Realty	KIM	11.55	4	3	5	1.10	25- 40 (115-245%)	5.1	3.5	▲2.27	.40	66	6/30	1.71	.20		9/30	▼.10	.28	YES	
612 Kinder Morgan Inc.	KMI	12.86	4	3	3	1.30	35- 50 (170-290%)	27.4	8.2	▲.47	1.05	86	6/30	d.28	.23		9/30	.263	.25	YES	
1573 Kinross Gold	KGC	9.23	2	4	3	.65	13- 20 (40-115%)	13.2	1.3	▲.70	.12	6	6/30	.15	.06		12/31	▲.03	NIL	YES	
334 Kirby Corp.	KEX	38.10	4	3	3	1.15	60- 90 (55-135%)	20.7	NIL	1.84	NIL	75	6/30	.42	.79		6/30	NIL	NIL	YES	
324 Knight-Swift Trans.	KNX	41.54	2	3	2	.85	45- 70 (10- 70%)	18.8	0.8	2.21	.32	32	6/30	.57	.58		9/30	.08	.06	YES	
1415 Knoll Inc.	KNL	13.46	4	3	4	1.35	25- 40 (85-195%)	33.7	1.8	.40	.24	88	6/30	d.20	.44		9/30	▲.06	.17	YES	
637 956 Knowles Corp.	KN	14.33	3	3	4	1.15	20- 30 (40-110%)	25.1	NIL	.57	NIL	34	6/30	d.01	.22		6/30	NIL	NIL	YES	
2145 Kohl's Corp.	KSS	21.50	5	4	5	1.65	40- 65 (85-200%)	NMF	NIL	d1.25	NIL	24	7/31	d.25	1.55		9/30	▼NIL	.67	YES	
423 Korea Fund	KF	29.83	-	3	-	1.10	45- 65 (50-120%)	NMF	0.2	NMF	.07	-	6/30	31.09(q)	32.78(q)		9/30	NIL	NIL	YES	
1645 Kom Ferry	KFY	29.00	4	3	3	1.15	40- 65 (40-125%)	58.0	1.4	▼.50	.40	71	7/31	d.19	.76		12/31	.10	.10	YES	
1923 Kraft Heinz Co. (NDO)	KHC	29.65	3	3	1	.90	40- 60 (35-100%)	12.6	5.4	2.36	1.60	19	6/30	.80	.78		9/30	.40	.40	YES	
577 Kraton Corp.	KRA	17.58	4	4	5	1.80	20- 35 (15-100%)	NMF	NIL	d.17	NIL	61	6/30	d.25	1.28		6/30	NIL	NIL	YES	
715 Kratos Defense & Sec. (NDO)	KTOS	19.76	3	4	3	1.40	25- 40 (25-100%)	46.0	NIL	.43	NIL	73	6/30	.08	.01		6/30	NIL	NIL	YES	
1953 Kroger Co.	KR	33.46	1	3	2	.55	35- 55 (5- 65%)	13.5	2.2	2.48	.72	23	7/31	.73	.44		12/31	◆.18	.16	YES	
578 Kronos Worldwide	KRO	12.72	3	4	4	1.20	15- 25 (20- 95%)	34.4	5.7	.37	.72	61	6/30	.16	.25		9/30	.18	.18	YES	
1391 Kullicke & Soffa (NDO)	KLIC	22.77	2	3	2	1.00	35- 55 (55-140%)	24.2	2.4	.94	.54	2	6/30	.21	.06		12/31	.12	.12	YES	
2202 L Brands	LB	29.45	3	4	3	1.50	25- 40 (N- 35%)	51.7	NIL	.57	NIL	79	7/31	d.18	.14		9/30	NIL	.30	YES	
716 L3Harris Technologies	LHX	177.58	-	2	-	NMF	265- 360 (50-105%)	22.9	1.9	7.76	3.40	73	6/30	1.30	NA		9/30	.85	.75	YES	
987 LCI Industries	LCII	104.14	3	3	1	1.20	145- 215 (40-105%)	17.6	2.9	5.93	3.00	74	6/30	.52	1.89		9/30	▲.75	.65	YES	
803 LHC Group (NDO)	LHCG	200.54	3	3	3	.80	245- 370 (20- 85%)	36.8	NIL	5.45	NIL	28	6/30	1.43	.82		6/30	NIL	NIL	YES	
988 LKQ Corp.	LKQ	28.92	3	3	3	1.45	50- 75 (75-100%)	14.2	NIL	2.03	NIL	74	6/30	.53	.66		6/30	NIL	NIL	YES	
1801 LPL Financial Hldgs. (NDO)	LPLA	76.53	3	3	2	1.30	145- 215 (90-180%)	14.8	1.3	5.18	1.00	7	6/30	1.27	1.72		9/30	.25	.25	YES	
1153 La-Z-Boy Inc.	LZB	30.49	3	3	3	1.10	50- 75 (65-145%)	14.9	0.9	2.05	.28	81	7/31	.18	.42		9/30	▲.07	.13	YES	
804 Laboratory Corp.	LH	184.33	3	2	2	1.20	215- 295 (15- 60%)	14.9	NIL	12.38	NIL	28	6/30	2.57	2.93		6/30	NIL	NIL	YES	
1392 Lam Research (NDO)	LRCX	314.96	1	3	2	1.30	330- 495 (5- 55%)	15.6	1.7	20.23	5.20	2	6/30	4.78	3.62		12/31	▲1.30	1.15	YES	
2392 Lamar Advertising (NDO)	LAMR	66.34	4	3	4	1.50	95- 145 (100-70%)	30.9	3.0	2.15	2.00-1.00	76	6/30	.31	1.19		9/30	.50	.96	YES	
1924 Lamb Weston Holdings	LW	65.01	4	3	4	1.15	70- 105 (10- 60%)	35.0	1.4	1.86	.92	19	5/31	d.01	.75		12/31	◆.23	.20	YES	
1925 Lancaster Colony (NDO)	LANC	175.67	3	2	3	.70	135- 180 (N- N%)	34.4	1.6	5.10	2.80	19	6/30	1.10	1.20		9/30	.70	.65	YES	
2360 Las Vegas Sands	LVS	46.44	4	4	5	1.10	70- 120 (50-160%)	NMF	NIL	.03	NIL	89	6/30	d1.05	.72		9/30	NIL	.77	YES	
1361 Lattice Semiconductor (NDO)	LSCC	27.81	3	3	3	1.10	30- 50 (10- 80%)	42.8	NIL	.65	NIL	12	6/30	.17	.15		6/30	NIL	NIL	YES	
1005 Lauder (Estee)	EL	207.83	3	2	2	.90	180- 245 (N- 20%)	58.5	1.0	3.55	2.12	52	6/30	d.50	.64		9/30	▲.48	.43	YES	
1427 2002 Laureate Education (NDO)	LAUR	12.63	-	3	-	1.35	20- 30 (60-140%)	54.9	NIL	.23	NIL	41	6/30	1.47	.46		6/30	NIL	NIL	YES	
2564 Lazard Ltd.	LAZ	32.61	3	3	5	1.30	50- 75 (55-130%)	19.5	5.8	1.67	1.88	57	6/30	.67	.73		9/30	.47	.47	YES	
989 Lear Corp.	LEA	111.08	3	3	3	1.15	145- 215 (30- 95%)	27.4	NIL	4.05	NIL	74	6/30	d4.14	3.78		9/30	NIL	.75	YES	
1154 Leggett & Platt	LEG	41.47	4	3	4	1.25	60- 85 (45-105%)	21.9	3.9	1.89	1.60	81	6/30	.16	.64		12/31	.40	.40	YES	
2565 Legg Mason	LM		SEE FINAL REPORT																		
393 Leidos Hldgs.	LDOS	88.43	1	3	2	1.15	100- 155 (15- 75%)	15.6	1.5	5.66	1.36	42	6/30	1.55	1.16		9/30	.34	.34	YES	
1129 Lennar Corp.	LEN	76.75	2	3	3	1.35	75- 110 (N- 45%)	12.6	0.7	6.08	.50	13	8/31	2.12	1.59		9/30	.125	.04	YES	
1717 Lennox Int'l	LII	266.96	3	3	2	1.00	235- 350 (N- 35%)	29.5	1.2	9.04	3.08	54	6/30	2.97	3.74		12/31	◆.77	.77	YES	
2110 Levi Strauss & Co.	LEVI	12.00	-	3	-	NMF	18- 25 (50-110%)	NMF	NIL	d.67	NIL	93	5/31	d.91	.07		9/30	▼NIL	NIL	YES	
1204 Liberty All-Star	USA	5.91	-	3	-	1.20	6- 8 (N- 35%)	NMF	10.8	NMF	.64	-	6/30	6.18(q)	6.66(q)		9/30	.16	.17	YES	
1018 Liberty Global plc (NDO)	LBTYA	21.02	3	3	3	.90	25- 35 (20- 65%)	NMF	NIL	d1.60	NIL	9	6/30	d.86	d.50		6/30	NIL	NIL	YES	
927 Liberty Latin Amer. (NDO)	LILA	8.18	4	3	3	1.05	18- 25 (120-205%)	NMF	NIL	d2.04	NIL	18	6/30	d2.15	d.64		6/30	NIL	NIL	YES	
1621 Lilly (Eli)	LLY	151.18	2	1	3	.75	160- 200 (5- 30%)	20.3	2.0	7.44	2.96	14	6/30	1.89	1.50		9/30	.74	.645	YES	
990 Linamar Corp. (TSE)	LNR.TO	38.39b	3	3	3	1.05	75- 115 (95-200%)	12.8	0.6	3.00	.24	74	6/30	d.58(b)	2.28(b)		9/30	.06	.12	YES	
1718 Lincoln Elec Hldgs. (NDO)	LECO	88.70	3	2	2	1.10	90- 125 (N- 40%)	29.6	2.2	3.00	1.96	54	6/30	.80	1.28		12/31	.49	.47	YES	
1559 Lincoln Nat'l Corp.	LNC	31.54	3	3	3	1.90	50- 80 (60-155%)	6.2	5.4	▼5.06	1.69	51	6/30	.97	2.36		12/31	.40	.37	YES	
579 Linde plc	LIN	238.44	-	3	-	.95	250- 375 (5- 55%)	30.0	1.7	7.96	4.17	61	6/30	1.90	1.83		9/30	.963	.875	YES	
1719 Lindsay Corp.	LNN	92.85	2	3	1	.85	80- 120 (N- 30%)	36.4	1.4	2.55	1.28	54	5/31	.93	.50		9/30	.32	.31	YES	
2335 Lions Gate 'A'	LGFA	9.78	3	3	5	.85	15- 25 (55-155%)	NMF	NIL	d.25	NIL	58	6/30	.23							

PAGE NUMBERS

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS											
												Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago						
1533	MGM Growth Properties	MGP	27.85	4	3	3	1.20	40- 60	(45-115%)	22.3	7.0	▲1.25	1.95	66	6/30	.30	.24	12/31	.488	.47	YES		
451	2361	MGM Resorts Int'l	MGM	21.09	5	3	4	1.75	40- 65	(90-210%)	NMF	NIL	▲1.60	.01	89	6/30	d1.52	.08	9/30	.003	.13	YES	
	1976	MGP Ingredients	(NDQ) MGPI	38.86	2	3	4	.80	55- 85	(40-120%)	17.3	1.2	2.24	.48	29	6/30	.54	.46	9/30	.12	.10	YES	
	1393	MKS Instruments	(NDQ) MKSI	108.32	2	3	2	1.15	120- 180	(10- 65%)	16.3	0.7	6.66	.80	2	6/30	1.62	1.09	9/30	.20	.20	YES	
	625	MPLX LP	MPLX	17.20	4	3	4	1.15	35- 50	(105-190%)	7.1	16.0	2.43	2.75-1.75	92	6/30	.58	.55	9/30	.688	.668	YES	
	2421	MRC Global	MRC	5.58	-	5	-	1.35	15- 25	(170-350%)	NMF	NIL	d.84	NIL	96	6/30	d.10	.21	6/30	NIL	NIL	YES	
	1720	MSA Safety	MSA	129.57	3	3	3	1.00	110- 165	(N- 25%)	29.3	1.3	4.42	1.73	54	6/30	1.11	1.22	9/30	.43	.42	YES	
	1721	MSC Industrial Direct	MSM	61.43	3	2	3	.95	120- 165	(95-170%)	13.2	4.9	4.65	3.00	54	5/31	1.40	1.45	9/30	.75	.63	YES	
	440	MSCI Inc.	MSCI	351.73	1	3	3	.95	260- 390	(N- 10%)	47.5	0.9	7.40	3.12	10	6/30	1.77	1.54	9/30	▲.78	.68	YES	
	2337	MSG Networks	MSGN	9.66	4	3	4	.80	25- 40	(160-315%)	4.3	NIL	2.25	NIL	58	6/30	.97	.54	6/30	NIL	NIL	YES	
	125	MTS Systems	(NDQ) MTSC	19.47	5	4	3	1.65	55- 85	(180-335%)	11.7	NIL	1.66	NIL	35	6/30	.44	.70	9/30	NIL	.30	YES	
	1534	Macerich Comp. (The)	MAC	6.87	5	4	3	1.45	20- 35	(190-410%)	38.2	8.7	▲1.18	.60	66	6/30	d.18	.11	9/30	▼.15	.75	YES	
	1535	Mack-Cali R'lty	CLI	13.10	-	3	-	.95	20- 30	(55-130%)	NMF	6.1	▼d.92	.80	66	6/30	d.41	d.45	9/30	.20	.20	YES	
	1362	MACOM Tech. Solutions(NDQ)	MTSI	32.59	2	3	2	1.25	45- 65	(40-100%)	23.8	NIL	1.97	NIL	12	6/30	.33	d.42	6/30	NIL	NIL	YES	
	394	Macquarie Infra.	MIC	27.08	4	3	3	1.50	40- 60	(50-120%)	79.6	NIL	.34	NIL	42	6/30	d.09	.07	9/30	NIL	1.00	YES	
	2146	Macy's Inc.	M	6.31	5	4	4	1.55	20- 35	(215-455%)	NMF	NIL	d3.32	NIL	24	7/31	d.81	.28	9/30	▼NIL	.378	YES	
	1750	Madden (Steven) Ltd. (NDQ)	SHOO	19.63	4	3	4	1.10	35- 55	(80-180%)	27.3	NIL	.72	NIL	85	6/30	d.21	.44	9/30	NIL	.14	YES	
	2338	Madison Sq. Garden Sport	MSGS	147.90	-	3	-	NMF	190- 290	(30- 95%)	NMF	NIL	.29	NIL	58	6/30	d3.27	d3.08	6/30	NIL	NIL	YES	
	626	Magellan Midstream	MMP	36.81	4	4	3	1.20	65- 110	(75-200%)	11.3	11.4	3.27	4.18-3.00	92	6/30	.59	1.11	9/30	1.028	1.013	YES	
	991	Magna Int'l 'A'	MGA	43.58	3	3	3	1.40	80- 120	(85-175%)	16.2	3.7	2.69	1.60(h)	74	6/30	d1.71	1.59	9/30	.40	.365	YES	
	2407	Magnolia Oil & Gas	MGY	5.55	-	5	-	NMF	12- 18	(115-225%)	NMF	NIL	d1.01	NIL	94	6/30	d.11	.12	6/30	NIL	NIL	YES	
	2630	Manhattan Assoc. (NDQ)	MANH	94.76	3	3	2	1.25	85- 125	(N- 30%)	79.0	NIL	1.20	NIL	16	6/30	.30	.32	6/30	NIL	NIL	YES	
	162	Manitowoc Co.	MTW	8.41	4	4	3	1.15	14- 25	(65-195%)	NMF	NIL	d.52	NIL	64	6/30	d.47	.94	6/30	NIL	NIL	YES	
	1646	ManpowerGroup Inc.	MAN	71.40	3	3	3	1.15	95- 145	(35-105%)	70.0	3.1	1.02	2.23	71	6/30	d1.11	2.11	9/30	NIL	NIL	YES	
	2631	ManTech Int'l 'A' (NDQ)	MANT	70.03	2	3	2	.85	85- 125	(80-150%)	26.0	1.8	2.69	1.28	16	6/30	.74	.60	9/30	.32	.27	YES	
	1560	Manulife Fin'l	MFC	13.91	▲2	3	3	1.40	▲ 25- 35	(80-150%)	6.5	6.0	▲2.14	.84	51	6/30	.57	.55	9/30	.21	.192	YES	
	1926	Maple Leaf Foods	(TSE) MFLTO	26.99	2	3	1	.60	40- 55	(50-105%)	26.2	2.4	1.03	.64	19	6/30	.21	d.05	9/30	.16	.145	YES	
	2408	Marathon Oil Corp.	MRO	4.56	5	3	2	1.65	12- 18	(165-295%)	NMF	NIL	d1.54	NIL	94	6/30	d.60	.23	9/30	NIL	.05	YES	
	237	512	Marathon Petroleum	MPC	31.25	-	3	-	1.75	60- 90	(90-190%)	NMF	7.4	.25	2.32	95	6/30	.01	1.73	9/30	.58	.53	YES
★★	2362	Marcus Corp.	MCS	9.35	5	4	4	1.35	25- 45	(165-380%)	NMF	NIL	d1.16	NIL	89	6/30	d1.37	.58	9/30	NIL	.16	YES	
	2175	MarineMax	HZO	25.02	▲2	4	1	1.40	30- 50	(20-100%)	11.0	NIL	2.28	NIL	69	6/30	1.58	.84	6/30	NIL	NIL	YES	
	765	Markel Corp.	MKL	966.59	2	2	3	1.10	1380-1870	(45- 95%)	9.7	NIL	99.25	NIL	36	6/30	65.75	36.07	6/30	NIL	NIL	YES	
	1802	MarketAxess Holdings (NDQ)	MKTX	443.00	1	3	2	.80	360- 540	(N- 20%)	54.4	0.5	8.15	2.40	7	6/30	2.20	1.27	9/30	.60	.51	YES	
	2363	Marriott Int'l (NDQ)	MAR	93.92	4	3	5	1.25	120- 180	(30- 95%)	46.5	NIL	2.00	NIL	89	6/30	d.64	.69	9/30	NIL	.48	YES	
	2364	Marriott Vacations	VAC	86.02	4	3	4	1.65	145- 220	(65-155%)	56.1	NIL	1.55	NIL	89	6/30	d1.76	.99	9/30	NIL	NIL	YES	
	2568	Marsh & McLennan	MMC	116.27	2	1	2	.95	110- 135	(N- 15%)	25.7	1.6	4.52	1.86	57	6/30	1.12	.65	9/30	▲.465	.455	YES	
	1115	Martin Marietta	MLM	218.31	3	3	4	1.15	240- 365	(10- 65%)	22.4	1.1	9.74	2.30	45	6/30	3.49	3.01	9/30	▲.57	.55	YES	
	957	Marvell Technology (NDQ)	MRVL	38.38	2	3	3	1.05	35- 55	(N- 45%)	37.6	0.6	1.02	.24	34	7/31	.20	.16	9/30	.06	.06	YES	
	1116	Masco Corp.	MAS	55.89	2	3	3	1.20	50- 75	(N- 35%)	20.4	1.0	2.74	.57	45	6/30	.84	.74	12/31	▲.14	.135	YES	
	223	Masimo Corp. (NDQ)	MASI	219.79	2	3	3	.85	105- 155	(N- N%)	63.3	NIL	3.47	NIL	25	6/30	.96	.79	6/30	NIL	NIL	YES	
	1155	Masonite Int'l	DOOR	86.65	3	3	2	1.15	100- 150	(15- 75%)	27.0	NIL	3.21	NIL	81	6/30	1.38	.96	6/30	NIL	NIL	YES	
	1233	MasTec	MTZ	40.59	4	3	3	1.40	80- 125	(95-210%)	8.1	NIL	5.00	NIL	55	6/30	.95	1.58	6/30	NIL	NIL	YES	
	2569	MasterCard Inc.	MA	327.85	3	1	3	1.05	270- 335	(N- N%)	38.9	0.5	8.42	1.60	57	6/30	1.36	1.89	9/30	.40	.33	YES	
2028	2652	Match Group (NDQ)	MTCH	106.85	▼3	4	2	1.05	55- 95	(N- N%)	50.6	NIL	2.11	NIL	27	6/30	.51	.43	6/30	NIL	NIL	YES	
	1590	Materion Corp.	MTRN	51.10	3	3	1	1.15	65- 100	(25- 95%)	24.7	0.9	2.07	.46	77	6/30	.49	.88	9/30	.115	.11	YES	
	2226	335	Matson, Inc.	MATX	37.94	3	3	3	.90	40- 60	(5- 60%)	16.4	2.4	2.31	.92	75	6/30	.76	.43	9/30	▲.23	.22	YES
	2312	Mattel, Inc. (NDQ)	MAT	11.60	3	4	3	1.20	14- 25	(20-115%)	NMF	NIL	.05	NIL	83	6/30	d.26	d.31	6/30	NIL	NIL	YES	
	1844	Matthews Int'l (NDQ)	MATW	22.43	4	3	3	1.05	40- 60	(80-165%)	8.5	3.7	2.65	.84	20	6/30	.80	.90	9/30	.21	.20	YES	
451	718	Maxar Technologies	MAXR	28.08	3	5	2	1.30	14- 25	(N- N%)	NMF	0.1	d.32	.04	73	6/30	NIL	2.32	9/30	.01	.01	YES	
2227	1363	Maxim Integrated (NDQ)	MXIM	65.15	-	3	-	.95	55- 85	(N- 30%)	27.4	2.9	2.38	1.92	12	6/30	.58	.57	9/30	.48	.46	YES	
	395	MAXIMUS Inc.	MMS	68.33	2	2	1	.80	100- 140	(45-105%)	19.2	1.7	3.56	1.16	42	6/30	1.04	.97	9/30	.28	.25	YES	
2028	1364	MaxLinear, Inc.	MXL	23.45	3	3	2	1.20	30- 45	(30- 90%)	30.5	NIL	.77	NIL	12	6/30	.09	.22	6/30	NIL	NIL	YES	
	1927	McCormick & Co.	MKC	190.40	1	1	3	.85	165- 200	(N- 5%)	33.8	1.3	5.64	2.50	19	5/31	1.47	1.16	9/30	.62	.57	YES	
2665	363	McDonald's Corp.	MCD	216.41	3	1	3	.95	225- 275	(5- 25%)	35.6	2.3	6.08	5.00	78	6/30	.66	2.05	9/30	1.25	1.16	YES	
	224	McKesson Corp.	MCK	148.23	3	2	2	1.00	315- 430	(115-190%)	10.0	1.1	14.80	1.68	25	6/30	2.77	3.43	12/31	▲			

PAGE NUMBERS

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R A N K S

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?				
												Qtr. Ended	Earns. Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago	
★★ 1156 Miller (Herman) (NDO)	MLHR	31.77	4	3	4	1.25	40- 65 (25-105%)	21.0	NIL	1.51	NIL	81	8/31	♦1.25	.84	12/31	NIL	.21	YES
928 Millicom Int'l Cellular (NDO)	TIGO	30.35	-	3	-	NMF	45- 70 (50-130%)	NMF	NIL	d.99	NIL	18	6/30	d1.14	d.27	9/30	NIL	NIL	YES
582 Minerals Techn. (NDO)	MTX	47.29	3	3	3	1.25	80- 120 (70-155%)	21.7	0.4	2.18	.20	61	6/30	.42	.75	9/30	.05	.05	YES
1623 Mirati Therapeutics (NDO)	MRTX	162.15	3	4	5	1.05	135- 200 (N- 25%)	NMF	NIL	d8.33	NIL	14	6/30	d1.89	d1.26	6/30	NIL	NIL	YES
2027 Mobile Mini	MINI						SEE FINAL SUPPLEMENT												
839 Moderna, Inc. (NDO)	MRNA	69.26	-	4	-	NMF	50- 90 (N- 30%)	NMF	NIL	d1.15	NIL	15	6/30	d.31	d.41	6/30	NIL	NIL	YES
993 Modine Mfg. (NDO)	MOD						SEE FINAL REPORT												
2226 1157 Mohawk Inds. (NDO)	MHK	95.88	4	3	4	1.40	160- 240 (65-150%)	15.7	NIL	6.09	NIL	81	6/30	.37	2.89	6/30	NIL	NIL	YES
807 Molina Healthcare (NDO)	MOH	168.88	2	3	1	1.05	205- 305 (20- 80%)	13.7	NIL	12.33	NIL	28	6/30	4.79	2.96	6/30	NIL	NIL	YES
1977 Molson Coors Beverage (NDO)	TAP	33.59	3	3	3	1.00	65- 95 (95-185%)	10.7	NIL	3.14	NIL	29	6/30	.90	1.52	9/30	NIL	.57	YES
2366 Monarch Casino (NDO)	MCRI	44.21	4	3	4	1.40	50- 75 (15- 70%)	NMF	NIL	.25	NIL	89	6/30	d.24	.50	6/30	NIL	NIL	YES
1929 Mondelez Int'l (NDO)	MDLZ	55.85	3	2	3	0.90	65- 85 (15- 50%)	21.0	2.3	2.66	1.26	19	6/30	.63	.57	12/31	▲.315	.285	YES
1367 Monolithic Power Sys. (NDO)	MPWR	255.97	2	3	2	1.00	175- 260 (N- N%)	55.2	0.8	4.64	2.00	12	6/30	1.08	.45	12/31	♦.50	.40	YES
2129 Monro, Inc. (NDO)	MNRO	41.40	3	3	3	.80	75- 110 (80-165%)	48.7	2.1	.85	.88	48	6/30	.15	.67	9/30	.22	.22	YES
1978 Monster Beverage (NDO)	MNST	78.38	2	3	3	.85	80- 115 (N- 45%)	38.2	NIL	2.05	NIL	29	6/30	.59	.53	6/30	NIL	NIL	YES
441 Moody's Corp. (NDO)	MCO	280.04	1	3	3	1.15	235- 350 (N- 25%)	32.3	0.8	8.67	2.24	10	6/30	2.81	2.07	9/30	.56	.50	YES
719 Moog Inc. 'A' (NDO)	MOGA	62.69	4	3	4	1.40	80- 120 (30- 90%)	14.6	1.6	4.28	1.00	73	6/30	.93	1.35	9/30	▲.25	.25	YES
1810 Morgan Stanley (NDO)	MS	48.36	3	3	2	1.30	75- 115 (55-140%)	9.0	2.9	5.39	1.40	49	6/30	1.96	1.23	9/30	.35	.35	YES
1603 Mosaic Company (NDO)	MOS	17.81	4	3	4	1.30	20- 35 (10- 95%)	30.2	1.3	▼.59	.24	59	6/30	.11	.13	9/30	.05	.05	YES
994 Motorcar Parts Of Amer.(NDO)	MPAA	16.09	3	3	3	1.00	25- 35 (55-120%)	10.7	NIL	1.50	NIL	74	6/30	.03	.09	6/30	NIL	NIL	YES
958 Motorola Solutions (NDO)	MSI	152.57	3	2	5	0.90	180- 240 (20- 55%)	20.6	1.7	7.41	2.60	34	6/30	1.39	1.69	12/31	.64	.57	YES
2177 Movado Group (NDO)	MOV	11.34	5	3	5	1.30	35- 55 (210-385%)	13.2	NIL	.86	NIL	69	7/31	d.07	.36	9/30	NIL	.20	YES
733 Mueller Inds. (NDO)	MLI	26.94	3	3	2	1.20	40- 60 (50-125%)	15.1	1.5	1.78	.40	80	6/30	.50	.50	9/30	.10	.10	YES
1723 Mueller Water Prod. (NDO)	MWA	10.67	3	3	3	1.15	17- 25 (60-135%)	23.2	2.0	.46	.21	54	6/30	.11	.24	9/30	.053	.05	YES
513 Murphy Oil Corp. (NDO)	MUR	9.26	5	4	3	1.80	25- 45 (170-385%)	NMF	5.4	d3.82	.50	95	6/30	d2.05	.40	9/30	.125	.25	YES
2178 Murphy USA Inc. (NDO)	MUSA	135.17	3	3	3	.75	120- 185 (N- 35%)	20.5	NIL	6.58	NIL	69	6/30	5.73	1.01	6/30	NIL	NIL	YES
1767 Myers Inds. (NDO)	MYE	13.50	3	3	2	1.15	19- 30 (40-120%)	58.7	4.0	.23	.54	67	6/30	.23	.18	12/31	.135	.135	YES
1624 Mylan N.V. (NDO)	MYL	14.78	-	3	-	.90	25- 35 (70-135%)	26.4	NIL	.56	NIL	14	6/30	.08	d.33	6/30	NIL	NIL	YES
1625 MyoKardia, Inc. (NDO)	MYOK	126.35	3	5	4	1.05	105- 160 (N- 25%)	NMF	NIL	d5.75	NIL	14	6/30	d1.27	d.83	6/30	NIL	NIL	YES
840 Myriad Genetics (NDO)	MYGN	12.58	5	3	3	.95	14- 20 (10- 60%)	NMF	NIL	d.11	NIL	15	6/30	d.31	.41	6/30	NIL	NIL	YES
1337 NCR Corp. (NDO)	NCR	19.04	5	3	4	1.55	45- 65 (135-240%)	11.6	NIL	1.64	NIL	65	6/30	.27	.76	6/30	NIL	NIL	YES
767 NMI Holdings (NDO)	NMIH	16.68	3	3	5	1.55	40- 60 (140-260%)	10.4	NIL	1.61	NIL	36	6/30	.36	.56	6/30	NIL	NIL	YES
2663 NN Inc. (NDO)	NNBR						SEE FINAL SUPPLEMENT												
1219 NRG Energy (NDO)	NRG	29.15	3	3	3	1.25	40- 60 (35-105%)	8.0	4.1	3.66	1.20	30	6/30	1.27	.75	9/30	.30	.03	YES
1132 NVR, Inc. (NDO)	NVR	3931.29	3	3	2	1.10	2880-4320 (N- 10%)	19.5	NIL	202.03	NIL	13	6/30	42.50	53.09	6/30	NIL	NIL	YES
1369 NXP Semiconductors NV(NDO)	NXPI	121.35	3	3	3	1.10	175- 260 (45-115%)	24.7	1.2	4.92	1.50	12	6/30	.94	1.81	12/31	.375	.375	YES
2422 Nabors Inds. (NDO)	NBR	26.57	-	5	-	1.75	45- 80 (70-200%)	NMF	NIL	NMF	NIL	96	6/30	d22.13	d20.50	9/30	▼NIL	.50	YES
1803 Nasdaq, Inc. (NDO)	NDAQ	122.05	2	3	3	1.05	100- 130 (N- 5%)	21.2	1.6	5.75	1.96	7	6/30	1.54	1.22	9/30	.49	.47	YES
2520 Nat'l Bank of Canada (TSE)	NA.TO	68.31b	3	2	4	1.10	80- 110 (15- 60%)	15.7	4.2	4.35	2.86	72	7/31	1.66(b)	1.66(b)	12/31	.71(b)	.68(b)	YES
1979 National Beverage (NDO)	FIZZ	71.65	2	3	3	.75	70- 105 (N- 45%)	27.0	NIL	2.65	NIL	29	7/31	1.09	.74	6/30	NIL	NIL	YES
2393 National CineMedia (NDO)	NCMI						SEE FINAL REPORT												
537 National Fuel Gas (NDO)	NFG	41.03	3	3	3	.90	85- 130 (105-215%)	15.0	4.3	2.73	1.78	90	6/30	.47	.73	12/31	.445	.435	YES
127 National Instruments (NDO)	NATI	34.72	3	3	4	1.15	45- 65 (30- 85%)	64.3	3.0	.54	1.04	35	6/30	.08	.22	9/30	.26	.25	YES
2423 National Oilwell Varco (NDO)	NOV	10.84	5	4	3	1.25	19- 30 (75-175%)	NMF	NIL	d1.16	NIL	96	6/30	d.24	d14.11	9/30	NIL	.05	YES
1768 National Presto Ind. (NDO)	NPK	83.36	2	3	3	.65	85- 125 (N- 50%)	16.4	7.2	5.08	6.00	67	6/30	1.80	1.16	9/30	NIL	NIL	YES
2179 National Vision Holdings(NDO)	EYE	37.35	3	3	2	1.80	25- 35 (N- N%)	NMF	NIL	d.02	NIL	69	6/30	d.55	.13	6/30	NIL	NIL	YES
1591 Natural Resource (NDO)	NRP	11.80	4	4	5	1.05	▼ 17- 30 (45-155%)	NMF	15.3	▼d9.17	1.80-90	77	6/30	10.64	.85	9/30	▲.45	.45	YES
226 Natus Medical (NDO)	NTUS	17.24	4	3	4	.85	35- 50 (105-190%)	82.1	NIL	.21	NIL	25	6/30	d.26	.10	6/30	NIL	NIL	YES
2570 Navient Corp. (NDO)	NAVI	7.94	4	3	3	1.55	14- 20 (75-150%)	3.6	8.1	2.22	.64	57	6/30	.64	.64	9/30	.16	.16	YES
1427 163 Navistar Int'l (NDO)	NAV	42.78	-	5	-	1.70	35- 60 (N- 40%)	NMF	NIL	d.02	NIL	64	7/31	d.37	1.47	6/30	NIL	NIL	YES
1165 Neenah, Inc. (NDO)	NP	37.50	3	3	3	1.15	60- 90 (60-140%)	38.3	5.0	.98	1.88	56	6/30	d.08	.80	9/30	.47	.45	YES
1626 Nektar Therapeutics (NDO)	NKTR	19.41	2	5	3	1.00	20- 40 (5-105%)	NMF	NIL	d2.27	NIL	14	6/30	d.45	d.63	6/30	NIL	NIL	YES
227 Neogen Corp. (NDO)	NEOG	74.57	▲2	3	2	.85	75- 110 (N- 50%)	62.7	NIL	1.19	NIL	25	8/31	♦.30	.28	12/31	NIL	NIL	YES
1930 Nestle SA ADS (PNK)	NSRGY	119.17	2	1	3	.65	120- 145 (N- 20%)	27.4	2.3	4.35	2.77	19	6/30	2.13(p)	1.68(p)	9/30	NIL	NIL	YES
1405 NetApp, Inc. (NDO)	NTAP	41.39	2	3	4	1.10	70- 105 (70-155%)	12.2	4.8	3.40	2.00	21	7/31	.73	.65	12/31	.48	.48	YES
2339 Nefflix, Inc. (NDO)	NFLX	487.35	1	3	2	.80	470- 710 (N- 45%)	72.4	NIL	6.73	NIL	58	6/30	1.59	.60	6/30	NIL	NIL	YES
959 NETGEAR (NDO)	NTGR	29.99	-	3	-	NMF	35- 55 (15- 85%)	13.8	NIL	2.17	NIL	34	6/30	.54	.28	6/30	NIL	NIL	YES
841 Neurocrine Biosci. (NDO)	NBIX	99.30	2	3	2	1.00	180- 270 (80-170%)	38.0	NIL	2.61	NIL	15	6/30	.81	.54	6/30	NIL	NIL	YES
190 Nevro Corp. (NDO)	NVRO	140.00	3	4	2	1.25	85- 145 (N- 5%)	NMF	NIL	d3.12	NIL	53	6/30	d1.21	d.91	6/30	NIL	NIL	YES
2029 538 New Fortress Energy LLC(NDO)	NFE	37.58	-	3	-	NMF	25- 40 (N- 5%)	NMF	1.1	d2.43	.40	90	6/30	d2.40	d.28	9/30	▲.10	NIL	YES
425 New Germany Fund (NDO)	GF	16.56	-	3	-	1.00	17- 25 (5- 50%)	NMF	1.5	NMF	.25	-	6/30	17.86					

PAGE NUMBERS

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Technical			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?							
			Timeliness	Safety	Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago				
																		Qtr. Ended	Earnings Per sh.	Year Ago	
783 Northern Trust Corp. (NDQ)	NTRS	79.50	3	3	4	1.10	95-140	(20-75%)	14.1	3.5	5.65	2.80	87	6/30	1.46	1.75	12/31	.70	.70	YES	
1220 Northland Power (TSE)	NPL.TO	38.91b	2	3	2	.90	45-65	(15-65%)	26.7	3.1	1.46	1.20	30	6/30	2.26(b)	1.28(b)	9/30	.30(b)	.30(b)	YES	
720 Northrop Grumman	NOC	325.89	1	1	3	.85	480-590	(45-80%)	14.0	1.8	23.25	5.80	73	6/30	6.01	5.06	9/30	1.45	1.32	YES	
1506 Northwest Bancshares (NDQ)	NWBI	9.35	3	3	4	.90	12-18	(30-95%)	16.4	8.1	▼.57	.76	63	6/30	d.05	.25	9/30	.19	.18	YES	
551 Northwest Natural	NWN	45.06	4	1	3	.80	70-85	(55-90%)	19.0	4.2	2.37	1.91	37	6/30	d.17	.07	9/30	.478	.475	YES	
2219 NorthWestern Corp.	NWE	48.92	4	2	3	.90	65-85	(35-75%)	14.2	5.0	3.45	2.45	17	6/30	d.43	.49	9/30	.60	.575	YES	
2598 NortonLifeLock Inc. (NDQ)	NLOK	20.59	-	3	-	NMF	25-35	(20-70%)	17.9	2.4	1.15	.50	3	6/30	d.31	.21	9/30	.125	.125	YES	
2313 Norwegian Cruise Line	NCLH	14.99	5	5	5	1.65	35-60	(135-300%)	NMF	NIL	d5.61	NIL	83	6/30	d2.99	1.11	6/30	NIL	NIL	YES	
128 Novanta Inc. (NDQ)	NOVT	101.75	3	3	1	.95	70-105	(N-5%)	NMF	NIL	.71	NIL	35	6/30	d.33	.29	6/30	NIL	NIL	YES	
1627 Novartis AG ADR	NVS	89.50	3	1	4	.80	110-135	(25-50%)	24.9	3.5	3.59	3.09	14	6/30	.82	.91	9/30	NIL	NIL	YES	
1628 Novo Nordisk ADR(g)	NVO	68.99	2	1	2	.80	75-90	(10-30%)	25.9	1.9	2.66	1.30	14	6/30	.68	.61	9/30	.518	.445	YES	
228 NovoCure Limited (NDQ)	NVCR	105.11	2	4	4	1.15	80-135	(N-30%)	NMF	NIL	3.6	NIL	25	6/30	d.02	d.01	6/30	NIL	NIL	YES	
2034 1006 Nu Skin Enterprises	NUS	52.32	3	3	3	1.10	65-100	(25-90%)	16.4	2.9	3.19	1.52	52	6/30	.81	.83	9/30	.375	.37	YES	
2599 Nuance Communic. (NDQ)	NUAN	32.87	3	3	3	1.05	25-40	(N-20%)	NMF	NIL	.07	NIL	3	6/30	d.06	.03	6/30	NIL	NIL	YES	
744 Nucor Corp.	NUE	45.80	3	3	4	1.20	75-115	(65-150%)	28.4	3.5	1.61	1.61	70	6/30	.36	1.26	12/31	.403	.403	YES	
1029 627 NuStar Energy L.P.	NS	11.62	5	4	3	1.30	30-50	(160-330%)	25.8	13.8	.45	1.60-1.20	92	6/30	d.06	.11	9/30	.40	.60	YES	
1828 Nutanix, Inc. (NDQ)	NTNX	21.64	3	4	3	1.15	55-95	(155-340%)	NMF	NIL	d3.83	NIL	22	7/31	d.93	d1.04	6/30	NIL	NIL	YES	
1604 Nutrien Ltd.	NTR	40.00	-	3	-	1.15	50-75	(25-90%)	19.0	4.7	2.10	1.86	59	6/30	1.37	1.50	12/31	.45	.45	YES	
191 NuVasive, Inc. (NDQ)	NUVA	49.50	4	3	4	1.05	85-130	(70-165%)	NMF	NIL	.40	NIL	53	6/30	d.98	.29	6/30	NIL	NIL	YES	
1206 Nuveen Muni Value Fund	NUV	10.62	-	1	-	.60	9-12	(N-15%)	NMF	3.5	NMF	.37	-	4/30	10.03(g)	10.29(g)	9/30	.093	.093	YES	
1313 nVent Electric plc	NVT	17.30	4	3	3	1.30	25-40	(45-130%)	17.5	4.0	.99	.70	62	6/30	.29	.35	9/30	.175	.175	YES	
1368 NVIDIA Corp. (NDQ)	NVDA	500.69	1	3	3	1.10	190-280	(N-N%)	76.9	0.1	6.51	.64	12	7/31	.99	.90	9/30	.16	.16	YES	
1179 O-I Glass	OI	9.64	4	4	3	1.40	13-20	(35-105%)	20.1	NIL	.48	NIL	46	6/30	d.64	.42	9/30	NIL	.05	YES	
1416 ODP Corp. (NDQ)	ODP	20.58	4	5	3	1.25	30-60	(45-190%)	11.1	NIL	1.85	NIL	88	6/30	d.07	.70	9/30	NIL	.25	YES	
913 OGE Energy	OGE	28.69	3	2	3	1.05	40-55	(40-90%)	13.5	5.7	2.12	1.64	47	6/30	.51	.50	9/30	.388	.365	YES	
129 OSI Systems (NDQ)	OSIS	78.32	3	3	5	.90	110-165	(40-110%)	17.9	NIL	4.37	NIL	35	6/30	.76	.89	6/30	NIL	NIL	YES	
514 Occidental Petroleum	OXY	11.29	5	4	3	1.55	35-60	(210-430%)	NMF	0.4	d4.88	.04	95	6/30	d1.76	.97	12/31	.01	.79	YES	
2424 Oceanair Int'l	OIL	3.92	-	5	-	1.85	11-20	(180-410%)	NMF	NIL	d1.14	NIL	96	6/30	d.14	d.36	6/30	NIL	NIL	YES	
2425 Oil States Int'l	OIS						SEE FINAL REPORT														
2600 Okta, Inc. (NDQ)	OKTA	206.47	3	3	3	.65	100-150	(N-N%)	NMF	NIL	d1.08	NIL	3	7/31	d.48	d.37	6/30	NIL	NIL	YES	
325 Old Dominion Freight (NDQ)	ODFL	178.61	3	1	3	.95	120-165	(N-N%)	36.5	0.3	4.89	.61	32	6/30	1.25	1.44	9/30	.15	.113	YES	
784 Old Nat'l Bancorp (NDQ)	ONB	12.64	3	3	3	.95	20-30	(60-135%)	10.4	4.4	1.22	.56	87	6/30	.32	.36	9/30	.14	.13	YES	
768 Old Republic	ORI	14.70	3	3	3	1.10	40-60	(170-310%)	9.4	5.7	1.57	.84	36	6/30	.42	.45	9/30	.21	.20	YES	
1605 Olin Corp.	OLN	12.95	4	3	5	1.30	11-17	(N-30%)	NMF	6.2	▼d1.42	.80	59	6/30	d.73	d.10	9/30	.20	.20	YES	
2148 Ollie's Bargain Outlet (NDQ)	OLLI	85.88	2	3	1	1.05	100-150	(15-75%)	35.9	NIL	2.39	NIL	24	7/31	1.04	.38	6/30	NIL	NIL	YES	
229 Omnicell, Inc. (NDQ)	OMCL	73.63	3	3	4	.95	100-150	(35-105%)	35.2	NIL	2.09	NIL	25	6/30	.37	.37	6/30	NIL	NIL	YES	
2394 Omnicom Group	OMC	49.25	3	3	4	.95	110-150	(125-205%)	11.6	5.3	4.26	2.60	76	6/30	d.11	1.68	12/31	.65	.65	YES	
1370 ON Semiconductor (NDQ)	ON	20.61	3	3	2	1.40	30-45	(45-120%)	25.8	NIL	.80	NIL	12	6/30	.12	.42	6/30	NIL	NIL	YES	
552 ONE Gas, Inc.	OGS	66.80	3	2	3	.80	105-145	(55-115%)	18.7	3.4	3.58	2.28	37	6/30	.48	.46	9/30	.54	.50	YES	
2653 1-800-FLOWERS.COM (NDQ)	FLWS	23.54	2	3	2	.90	19-30	(N-25%)	27.7	NIL	.85	NIL	27	6/30	.15	d.13	6/30	NIL	NIL	YES	
823 1Life Healthcare (NDQ)	ONEM	27.22	-	3	-	NMF	40-65	(45-140%)	NMF	NIL	d.86	NIL	33	6/30	d.24	NA	9/30	NIL	NIL	YES	
613 ONEOK Inc.	OKE	26.44	5	3	4	1.60	70-110	(165-315%)	9.1	14.4	2.90	3.82-1.91	86	6/30	.32	.75	9/30	.935	.89	YES	
1394 ONO Innovation	ONTO	29.01	2	3	1	1.10	60-90	(105-210%)	16.5	NIL	1.76	NIL	2	6/30	.42	.22	9/30	NIL	NIL	YES	
929 Ooma, Inc.	OOMA	12.94	2	4	1	1.15	11-19	(N-45%)	NMF	NIL	d.20	NIL	18	7/31	d.02	d.24	6/30	NIL	NIL	YES	
1829 Open Text Corp. (NDQ)	OTEX	41.54	3	3	2	.95	45-70	(10-70%)	30.1	1.7	1.38	.70	22	6/30	.10	.27	9/30	.175	.175	YES	
2458 1629 Opko Health (NDQ)	OPK	3.25	3	5	3	1.05	2-4	(N-25%)	NMF	NIL	d.31	NIL	14	6/30	.05	d.10	6/30	NIL	NIL	YES	
1428 2601 Oracle Corp.	ORCL	60.82	1	1	3	.85	85-100	(40-65%)	14.7	1.6	4.15	.96	3	8/31	.93	.81	12/31	.24	.24	YES	
2130 O'Reilly Automotive (NDQ)	ORLY	453.96	3	3	3	.95	415-625	(N-40%)	27.5	NIL	16.53	NIL	48	6/30	7.10	4.51	6/30	NIL	NIL	YES	
1221 Ormat Technologies	ORA	54.86	3	3	3	.65	80-120	(45-120%)	29.8	0.8	1.84	.44	30	6/30	.45	.66	9/30	.11	.11	YES	
164 Oshkosh Corp.	OSK	72.83	3	3	3	1.25	105-160	(45-120%)	15.2	1.6	4.80	1.20	64	6/30	1.29	2.72	9/30	.30	.27	YES	
1725 Otis Worldwide	OTIS	59.41	-	3	-	NMF	50-75	(N-25%)	31.3	1.3	1.90	.80	54	6/30	.56	NA	9/30	.20	NIL	YES	
914 Otter Tail Corp. (NDQ)	OTTR	36.28	4	2	3	.85	45-60	(25-65%)	16.3	4.2	2.23	1.54	47	6/30	.42	.39	9/30	.37	.35	YES	
2395 OUTFRONT Media	OUT	14.87	5	4	4	1.70	30-45	(100-205%)	NMF	NIL	d.44	NIL	76	6/30	d.44	.35	9/30	NIL	.36	YES	
539 Oviniv Inc.	OVV	9.23	5	4	3	1.75	11-18	(20-95%)	NMF	4.1	d.70	.38	90	6/30	d.43	1.05	9/30	.094	.094	YES	
1117 Owens Corning	OC	66.29	3	3	3	1.30	70-100	(5-50%)	19.0	1.4	3.48	.96	45	6/30	.88	1.26	12/31	◆.24	.22	YES	
2111 Oxford Inds.	OXM	41.35	4	3	3	1.30	70-110	(70-165%)	72.5	2.4	.57	1.00	93	7/31	d.38	1.84	12/31	.25	.37	YES	
515 PBF Energy	PBF	6.82	5	4	3	1.90	30-50	(340-635%)	2.0	NIL	3.38	NIL	95	6/30	3.23	d.27	9/30	NIL	.30	YES	
2180 PC Connection (NDQ)	CNXX	40.27	3	3	2	.85	50-75	(25-85%)	13.7	NIL	2.95	NIL	69	6/30	.29	.89	6/30	NIL	NIL	YES	
540 PDC Energy (NDQ)	PDCE	12.09	5	4	4	1.40	30-50	(150-315%)	NMF	NIL	d2.76	NIL	90	6/30	d2.23	1.04	6/30	NIL	NIL	YES	

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Industry Rank

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			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago				
																		Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended
721 Parsons Corp.	PSN	35.09	-	3	-	NMF	40- 55	(15- 55%)	23.9	NIL	1.47	NIL	73	6/30	.23	.43	6/30	NIL	NIL	YES	
230 Patterson Cos.	(NDQ) PDCO	24.65	3	3	2	.95	25- 35	(N- 40%)	30.8	4.2	.80	1.04	25	7/31	.25	.32	12/31	♦.26	.26	YES	
2426 Patterson-UTI Energy	(NDQ) PTEN	3.17	-	5	-	1.55	5- 9	(60-185%)	NMF	2.5	d2.76	.08	96	6/30	d.56	d.17	9/30	.02	.04	YES	
2632 Paychex, Inc.	(NDQ) PAYX	76.75	3	2	4	1.15	85- 115	(10- 50%)	27.8	3.3	2.76	2.52	16	5/31	.61	.64	9/30	.62	.62	YES	
2604 Paycom Software	PAYC	274.32	2	3	2	1.15	270- 410	(N- 50%)	73.7	NIL	3.72	NIL	3	6/30	.62	.75	6/30	NIL	NIL	YES	
1830 Paylocity Holding	(NDQ) PCTY	146.45	3	3	3	1.15	95- 145	(N- N%)	99.0	NIL	1.48	NIL	22	6/30	.09	.18	6/30	NIL	NIL	YES	
2571 PayPal Holdings	(NDQ) PYPL	183.21	3	2	3	.95	100- 150	(N- N%)	NMF	NIL	1.80	NIL	57	6/30	1.29	.69	6/30	NIL	NIL	YES	
635 Peabody Energy	BTU																				
1240 2314 Peloton Interactive	(NDQ) PTON	94.80	-	3	-	NMF	70- 100	(N- 5%)	NMF	NIL	d.45	NIL	83	6/30	.27	NA	6/30	NIL	NIL	YES	
614 Pembina Pipeline	(TSE) PPL.TO	29.55b	4	3	2	1.15	65- 100	(120-240%)	12.3	8.5	2.40	2.52	86	6/30	.39(b)	1.23(b)	9/30	.63(b)	.60(b)	YES	
2367 Penn Nat'l Gaming	(NDQ) PENN	70.08	3	4	3	1.65	25- 45	(N- N%)	NMF	NIL	d3.71	NIL	89	6/30	d1.69	.44	6/30	NIL	NIL	YES	
2131 Penske Auto	PAG	46.65	3	3	3	1.50	55- 85	(20- 80%)	15.5	NIL	3.01	NIL	48	6/30	.56	1.42	9/30	NIL	.40	YES	
1771 Pentair plc	PNR	44.64	-	3	-	NMF	50- 75	(10- 70%)	21.6	1.7	2.07	.76	67	6/30	.44	.69	9/30	.19	.18	YES	
192 Penumra Inc.	PEN	202.45	3	3	1	1.15	180- 270	(N- 35%)	NMF	NIL	.10	NIL	53	6/30	d.30	.27	6/30	NIL	NIL	YES	
1507 People's United Fin'l	(NDQ) PBCT	10.20	3	3	4	1.00	16- 25	(55-145%)	10.2	7.1	1.00	.72	63	6/30	.21	.33	9/30	.18	.178	YES	
1980 PepsiCo, Inc.	(NDQ) PEP	131.24	3	1	3	80	140- 175	(5- 35%)	25.1	3.1	5.22	4.09	29	6/30	1.32	1.54	9/30	1.023	.955	YES	
2004 Perdoceo Education	(NDQ) PRDO	12.08	3	4	2	1.15	25- 45	(105-275%)	8.2	NIL	1.48	NIL	41	6/30	.41	.39	6/30	NIL	NIL	YES	
1956 Performance Food	PFGC	35.01	3	3	4	1.50	35- 60	(N- 70%)	NMF	NIL	.27	NIL	23	6/30	d.86	.70	6/30	NIL	NIL	YES	
130 PerkinElmer Inc.	PKI	118.25	1	2	2	1.00	150- 200	(25- 70%)	22.2	0.2	5.33	.28	35	6/30	1.57	1.00	12/31	.07	.07	YES	
1630 Perrigo Co. plc	PRGO	45.92	1	3	3	1.00	75- 110	(65-140%)	11.3	2.1	4.06	.98	14	6/30	1.03	.86	9/30	.225	.21	YES	
2453 968 PetMed Express	(NDQ) PETS	30.63	2	3	2	6.5	35- 50	(15- 65%)	20.4	3.7	1.50	1.12	4	6/30	.39	.26	9/30	.28	.27	YES	
517 Petroleo Brasileiro ADR	PBR	7.89	5	5	3	1.65	14- 25	(75-215%)	NMF	NIL	NIL	NIL	95	6/30	d.06	.72	6/30	NIL	NIL	YES	
2667 1631 Pfizer, Inc.	PFE	36.02	-	1	-	.85	45- 55	(25- 55%)	15.1	4.2	2.38	1.52	14	6/30	.61	.89	9/30	.38	.36	YES	
1931 Phibro Animal Health	(NDQ) PAHC	17.66	3	3	3	.90	40- 60	(125-240%)	17.3	2.7	1.02	.48	19	6/30	.14	.22	9/30	.12	.12	YES	
1987 Phillips Electronics NV(g)	PHG	45.90	3	3	1	1.00	50- 75	(10- 65%)	NMF	NIL	.31	NIL	40	6/30	.26	.31	9/30	NIL	NIL	YES	
1993 Philip Morris Int'l	PM	77.83	3	3	4	.95	85- 125	(10- 60%)	15.4	6.2	5.04	4.80	26	6/30	1.29	1.46	12/31	▲1.20	1.17	YES	
518 Phillips 66	PSX	55.92	4	3	4	1.30	100- 150	(80-170%)	NMF	6.6	d.19	3.70	95	6/30	d.33	3.12	9/30	.90	.90	YES	
628 Phillips 66 Partners	PSXP	23.87	2	3	3	1.05	65- 100	(170-320%)	6.2	14.7	3.82	3.50	92	6/30	1.05	1.15	9/30	.875	.855	YES	
1395 Photonics Inc.	(NDQ) PLAB	9.85	2	3	3	.85	18- 25	(85-155%)	13.3	NIL	.74	NIL	2	7/31	.17	.10	6/30	NIL	NIL	YES	
1932 Pilgrim's Pride Corp.	(NDQ) PPC	15.23	4	3	4	.80	30- 50	(95-230%)	9.3	NIL	1.63	NIL	19	6/30	d.02	.68	6/30	NIL	NIL	YES	
2221 Pinnacle West Capital	PNW	70.81	1	1	3	.85	95- 115	(35- 60%)	15.5	4.6	4.58	3.27	17	6/30	1.71	1.28	9/30	.783	.738	YES	
2654 Pinterest, Inc.	PINS	36.87	-	4	-	NMF	19- 30	(N- N%)	NMF	NIL	d.82	NIL	27	6/30	d.17	d2.62	6/30	NIL	NIL	YES	
2411 Pioneer Natural Res.	PXD	91.92	4	3	3	1.35	165- 250	(80-170%)	68.1	2.4	1.35	2.20	94	6/30	d.32	2.01	12/31	.55	.44	YES	
1811 Piper Sandler Cos.	PIPR	68.31	2	3	3	1.30	75- 110	(10- 60%)	20.6	2.3	3.32	1.55	49	6/30	1.93	1.32	9/30	.30	.375	YES	
1417 Pitney Bowes	PBI	5.21	-	5	-	1.30	5- 10	(N- 90%)	20.8	3.8	.25	.20	88	6/30	.04	.21	9/30	.05	.05	YES	
629 Plains All Amer. Pipe.	PAA	6.34	5	4	3	1.55	25- 40	(295-530%)	6.5	11.4	.98	.72-.36	92	6/30	.13	.54	9/30	.18	.36	YES	
630 Plains GP Holdings L.P.	PAGP	6.52	5	4	3	1.50	25- 40	(285-515%)	7.0	11.0	.93	.72-.36	92	6/30	.09	.40	9/30	.18	.36	YES	
2315 Planet Fitness	PLNT	56.10	4	3	4	1.30	95- 145	(70-160%)	63.0	NIL	.89	NIL	83	6/30	d.32	.45	6/30	NIL	NIL	YES	
1029 1338 Plantronics Inc.	PLT	13.02	4	4	2	1.20	35- 55	(170-320%)	6.7	NIL	1.95	NIL	65	6/30	.33	1.32	9/30	NIL	.15	YES	
1339 Plexus Corp.	(NDQ) PLXS	69.32	3	3	1	1.05	70- 105	(N- 50%)	15.8	NIL	4.39	NIL	65	6/30	1.20	.81	6/30	NIL	NIL	YES	
2316 Polaris Inc.	PII	87.87	3	3	1	1.35	150- 220	(70-150%)	22.4	2.8	3.93	2.48	83	6/30	1.30	1.73	9/30	.62	.61	YES	
2317 Pool Corp.	(NDQ) POOL	300.49	2	2	3	90	185- 250	(N- N%)	41.4	0.8	7.25	2.32	83	6/30	3.87	3.22	9/30	.58	.55	YES	
2522 Popular Inc.	(NDQ) BPOP	36.93	4	3	4	1.35	80- 120	(115-225%)	6.9	4.3	5.38	1.60	72	6/30	1.49	1.76	12/31	.40	.30	YES	
850 2222 Portland General	POR	34.24	2	3	3	.85	45- 60	(30- 75%)	42.3	4.8	.81	1.63	17	6/30	.43	.28	12/31	▲.408	.385	YES	
745 POSCO ADR(g)	PKX	39.76	3	3	3	1.20	65- 95	(65-140%)	13.3	4.5	3.00	1.80	70	6/30	1.13(p)	3.65(p)	9/30	.105	.411	YES	
1933 Post Holdings	POST	84.47	3	3	4	.95	115- 175	(35-105%)	23.0	NIL	3.67	NIL	19	6/30	.75	1.19	6/30	NIL	NIL	YES	
1166 PottlatchDeltic Corp.	(NDQ) PCH	39.35	3	3	2	1.10	50- 75	(25- 90%)	21.5	4.1	1.83	1.60	56	6/30	.04	.25	9/30	.40	.40	YES	
1371 Power Integrations	(NDQ) POWI	52.26	2	3	1	.85	40- 60	(N- 15%)	39.0	0.8	1.34	.44	12	6/30	.22	.19	9/30	▲.11	.085	YES	
824 Premier, Inc.	(NDQ) PINC	31.13	3	3	3	.75	40- 60	(30- 95%)	13.2	2.4	2.35	.76	33	6/30	.58	.68	9/30	▲.19	NIL	YES	
452 1576 Pretium Resources	PVG	13.25	2	5	3	.60	20- 40	(50-200%)	14.9	NIL	▲.89	NIL	6	6/30	.18	.06	6/30	NIL	NIL	YES	
2572 Price (T. Rowe) Group	(NDQ) TROW	124.74	3	1	2	1.05	145- 175	(15- 40%)	17.1	3.0	7.29	3.70	57	6/30	2.55	2.15	9/30	.90	.76	YES	
2149 PriceSmart	(NDQ) PSMT	64.07	3	3	3	.70	85- 125	(35- 95%)	27.1	1.1	2.36	.70	24	5/31	.41	.46	9/30	.35	.35	YES	
1562 Primerica, Inc.	PRI	112.85	2	3	1	1.30	130- 195	(15- 75%)	11.6	1.4	9.70	1.60	51	6/30	2.51	2.28	9/30	.40	.34	YES	
1981 Primo Water Corp.	PRMW	14.25	3	3	2	1.10	12- 18	(N- 25%)	89.1	1.7	.16	.24	29	6/30	d.85	.03	9/30	.06	.06	YES	
1234 Primoris Services	(NDQ) PRIM	17.28	2	3	3	1.20	30- 45	(75-160%)	9.0	1.4	1.93	.24	55	6/30	.68	.35	12/31	.06	.06	YES	
2573 Principal Fin'l Group	(NDQ) PFG	39.00	4	3	3	1.45	60- 90	(55-130%)	7.5	5.7	5.20	2.24	57	6/30	1.46	1.52	9/30	.56	.55	YES	
235 1195 Procter & Gamble	PG	136.71	1	1	3	.75	120- 150	(N- 10%)	25.5	2.3	5.36	3.16	1	6/30	1.16	1.10	9/30	.791	.746	YES	
769 Progressive Corp.	PGR	97.36	1	1	4	.80	100- 125	(5- 30%)	16.4	0.4	5.93	.40	36	6/30	1.84	1.42	12/31	.10	.10	YES	
153																					

PAGE NUMBERS

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The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?					
			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago		
																		Qtr. Ended	Earnings Per sh.
586 RPM Int'l	RPM	79.21	3	3	3	85-130	30.6	1.8	2.59	1.44	61	5/31	.84	1.24	9/30	.36	.35	YES	
2113 Ralph Lauren	RL	71.17	4	3	5	125-190	31.6	NIL	2.25	NIL	93	6/30	d1.82	1.77	9/30	▼NIL	.688	YES	
1373 Rambus Inc.	(NDQ) RMBS	13.45	3	3	2	13-19	NMF	NIL	d.08	NIL	12	6/30	d.09	.22	6/30	NIL	NIL	YES	
2412 Range Resources	RRC	7.70	3	4	2	10-16	NMF	NIL	d.22	NIL	94	6/30	d.10	.02	9/30	NIL	.02	YES	
631 Rattler Midstream LP	(NDQ) RTRLR	6.88	-	4	-	19-30	9.6	16.9	.72	1.16	NIL	92	6/30	.05	.11	9/30	.29	NIL	YES
1772 Raven Inds.	(NDQ) RAVN	22.27	4	3	3	40-60	57.1	2.3	.39	.52	67	7/31	.16	.24	9/30	.13	.13	YES	
1812 Raymond James Fin'l	RJF	70.40	3	3	4	100-155	14.8	2.1	4.76	1.48	49	6/30	1.23	1.80	9/30	.37	.34	YES	
1167 Rayonier Inc.	RYN	25.93	3	3	3	25-35	92.6	4.2	.28	1.08	56	6/30	.11	.14	9/30	.27	.27	YES	
2668 722 Raytheon Technologies	RTX	60.02	-	1	-	105-130	NMF	3.2	d.53	1.92	73	6/30	d2.55	2.20	9/30	4.75	.735	YES	
1773 Realogy Holdings	RLGY	10.01	▲3	4	3	11-18	66.7	NIL	.15	NIL	67	6/30	.47	.59	9/30	NIL	.09	YES	
2204 RealReal (The)	(NDQ) REAL	15.86	-	4	-	17-25	NMF	NIL	d1.06	NIL	79	6/30	d.42	d.28	6/30	NIL	NIL	YES	
1540 Realty Income Corp.	O	60.09	1	3	4	70-110	40.3	4.8	1.49	2.88	66	6/30	.31	.31	9/30	▲.701	.68	YES	
365 Red Robin Gourmet	(NDQ) RRGB	13.21	5	5	4	20-35	NMF	NIL	d6.44	NIL	78	6/30	d3.31	1.03	6/30	NIL	NIL	YES	
2368 Red Rock Resorts	(NDQ) RRR	16.20	5	4	4	16-25	NMF	NIL	d1.89	NIL	89	6/30	d1.01	.13	9/30	NIL	.10	YES	
1727 Regal Beloit	RBC	93.17	3	3	2	125-185	24.0	1.3	3.89	1.20	54	6/30	.95	1.52	9/30	.30	.30	YES	
1541 Regency Centers Corp.	REG	37.21	4	3	3	55-85	24.2	6.4	1.54	2.38	66	6/30	.11	.31	9/30	.595	.585	YES	
843 Regeneron Pharmac.	(NDQ) REGN	555.70	1	3	2	645-970	20.5	NIL	27.07	NIL	15	6/30	7.61	5.23	6/30	NIL	NIL	YES	
2523 Regions Financial	RF	11.31	4	3	5	19-30	21.3	5.5	.53	62-40	72	6/30	d.25	.37	12/31	.155	.155	YES	
1007 Regis Corp.	RGS	5.51	-	4	-	15-25	NMF	NIL	d.61	NIL	52	6/30	d1.01	.62	6/30	NIL	NIL	YES	
1564 Reinsurance Group	RGA	99.73	4	3	5	105-155	16.5	2.9	6.04	2.90	51	6/30	1.36	3.31	9/30	.70	.70	YES	
2668 746 Reliance Steel	RS	101.25	3	3	2	130-195	18.4	2.5	5.50	2.50	70	6/30	1.24	2.69	9/30	.625	.55	YES	
2025 RenaissanceRe Hldgs.	RNR	164.93	3	2	1	160-215	13.6	0.8	12.14	1.40	68	6/30	4.06	4.78	9/30	.35	.34	YES	
2150 Rent-A-Center	(NDQ) RCIL	29.13	2	4	1	30-55	12.2	4.0	2.38	1.16	24	6/30	.80	.60	9/30	.29	NIL	YES	
409 Republic Services	RSG	94.04	3	2	3	95-125	28.9	1.8	3.25	1.70	44	6/30	.81	.79	12/31	▲.425	.405	YES	
1340 Resideo Technologies	REZI	11.13	3	4	2	14-25	23.2	NIL	.48	NIL	65	6/30	d.62	d.09	6/30	NIL	NIL	YES	
232 ResMed Inc.	RMD	171.51	1	3	2	110-165	38.2	0.9	4.49	1.56	25	6/30	1.22	.48	9/30	.39	.39	YES	
396 Resources Connection (NDQ)	RGP	11.63	3	3	3	25-40	12.5	4.8	.93	.56	42	5/31	.13	.29	9/30	.14	.14	YES	
366 Restaurant Brands Int'l	QSR	54.61	3	3	3	95-140	31.6	3.9	1.73	2.14	78	6/30	.33	.71	12/31	.52	.50	YES	
1008 Revlon Inc.	REV	17.37	-	4	-	17-30	NMF	NIL	d2.99	NIL	52	6/30	d1.56	d.99	6/30	NIL	NIL	YES	
638 2205 Revolve Group	RVLV	6.46	-	3	-	20-30	54.6	NIL	.32	NIL	79	6/30	.20	.18	6/30	NIL	NIL	YES	
1728 Rexnord Corp.	RXN	28.84	3	3	2	50-75	19.2	1.1	1.50	.32	54	6/30	.29	.38	9/30	.08	NIL	YES	
1181 Reynolds Consumer	(NDQ) REYN	31.14	-	3	-	35-50	15.2	2.8	2.05	.88	46	6/30	.53	NA	9/30	▲.22	NIL	YES	
962 Ribbon Communications(NDQ)	RBBN	4.01	-	5	-	6-10	NMF	NIL	d.13	NIL	34	6/30	d.06	.45	6/30	NIL	NIL	YES	
2605 RingCentral, Inc.	RNG	267.40	2	3	2	295-445	NMF	NIL	1.12	NIL	3	6/30	.24	.41	6/30	NIL	NIL	YES	
1592 Rio Tinto plc	RIO	61.60	3	3	3	80-120	9.9	6.4	6.25	3.96	77	6/30	2.94(p)	3.02(p)	9/30	1.55	1.51	YES	
397 Ritchie Brothers	RBA	57.01	3	3	2	50-75	38.8	1.5	1.47	.88	42	6/30	.49	.49	9/30	▲.22	.20	YES	
1849 969 Rite Aid Corp.	RAD	13.67	2	5	1	14-25	45.6	NIL	.30	NIL	4	5/31	d.04	d.14	6/30	NIL	NIL	YES	
1647 Robert Half Int'l	RHI	51.97	3	2	3	75-100	23.0	2.7	2.26	1.42	71	6/30	.41	.98	9/30	.34	.31	YES	
1314 Rockwell Automation	ROK	209.08	3	2	2	215-290	31.6	2.0	6.61	4.08	62	6/30	1.27	2.40	9/30	1.02	.97	YES	
1774 Rogers Communications(TSE)	RCIB.TO	51.31b	3	2	3	75-100	14.5	4.1	3.54	2.10	67	6/30	6.0(b)	1.16(b)	12/31	.50(b)	.50(b)	YES	
1341 Rogers Corp.	ROG	100.15	3	3	2	120-185	22.4	NIL	4.48	NIL	65	6/30	1.13	1.64	6/30	NIL	NIL	YES	
★ 2341 Roku, Inc.	(NDQ) ROKU	188.82	3	4	3	150-250	NMF	NIL	d1.15	NIL	58	6/30	d.35	d.08	6/30	NIL	NIL	YES	
398 Rollins, Inc.	ROL	52.34	1	2	3	55-70	68.0	0.6	.77	.32	42	6/30	.23	.20	9/30	.08	.105	YES	
1729 Roper Tech.	ROP	392.25	3	1	1	380-465	31.4	0.5	12.50	2.05	54	6/30	2.94	3.07	12/31	◆513	.463	YES	
2453 2005 Rosetta Stone	RST	29.91	3	4	3	18-30	NMF	NIL	d.89	NIL	41	6/30	d.15	d.13	6/30	NIL	NIL	YES	
2206 Ross Stores	(NDQ) ROST	90.42	3	3	4	110-165	39.0	NIL	2.32	NIL	79	7/31	.06	1.14	9/30	NIL	.255	YES	
2524 Royal Bank of Canada (TSE)	RY.TO	94.35b	3	1	3	120-145	20.5	4.8	4.60	4.50	72	7/31	2.20(b)	2.22(b)	12/31	1.08(b)	1.05(b)	YES	
2318 Royal Caribbean	RCL	60.71	5	5	5	90-165	NMF	NIL	d7.72	NIL	83	6/30	d7.83	2.25	9/30	▼NIL	.70	YES	
519 Royal Dutch Shell 'B'	RDSB	24.94	4	3	3	65-100	NMF	5.1	d4.80	1.28	95	6/30	d4.66	.74	9/30	.32	.94	YES	
1577 Royal Gold	(NDQ) RGLD	122.64	2	3	1	165-245	39.1	1.0	▲3.14	1.20	6	6/30	.53	.40	12/31	.28	.265	YES	
1207 Royce Value Trust	RVT	12.54	-	3	-	16-25	NMF	1.0	NMF	.13	-	6/30	14.33(q)	17.35(q)	12/31	NIL	NIL	YES	
2132 Rush Enterprises 'A'	(NDQ) RUSHA	48.51	3	3	2	45-70	34.9	1.2	1.39	.56	48	6/30	.46	1.10	9/30	▲.14	.13	YES	
747 Russel Metals	(TSE) RUS.TO	17.20b	3	3	3	30-45	23.6	8.8	.73	1.52-76	70	6/30	.07(b)	.50(b)	9/30	.38(b)	.38(b)	YES	
311 Ryanair Hldgs plc ADS (NYSE)	RYAAY	80.93	3	4	3	80-135	NMF	NIL	d3.85	NIL	91	6/30	d.94	1.16	6/30	NIL	NIL	YES	
326 Ryder System	R	42.75	4	4	4	55-85	NMF	5.2	d.83	2.24	32	6/30	d.95	1.40	9/30	.56	.56	YES	
1542 Ryman Hospitality	RHP	36.45	5	3	4	70-105	NMF	NIL	▼d8.35	NIL	66	6/30	d3.16	.95	9/30	▼NIL	.90	YES	
443 S&P Global	SPGI	350.89	1	2	3	270-365	32.3	0.8	10.87	2.85	10	6/30	3.40	2.43	9/30	.67	.57	YES	
2606 SAP SE	SAP	155.88	2	2	2	145-195	35.4	1.1	4.40	1.77	3	6/30	.82	.67	9/30	NIL	NIL	YES	
601 SBA Communications (NDQ)	SBAC	305.06	2	3	3	255-385	NMF	0.7	1.79	2.18	39	6/30	.20	.28	9/30	465	.37	YES	
2633 SEI Investments	(NDQ) SEIC	50.44	3	2	4	75-105	16.9	1.5	2.98	.74	16	6/30	.68	.82	9/30	NIL	NIL	YES	
336 SFL Corp. Ltd	SFL	8.18	4	4	4	13-20	9.0	12.2	.91	1.00-50	75	6/30	.11	.26	9/30	.25	.35	YES	
1792 S&W Group	SJW	60.62	-	3	-	65-95	29.3	2.1	2.07	1.28	11	6/30	.69	.47	9/30	.32	.30	YES	
1543 SL Green Realty	SLG	46.41	4	3	4	85-125	24.4	2.5	1.90	1.18	66	6/30	.74	1.94	9/30	.885	.85	YES	
2574 SLM Corporation	(NDQ) SLM	8.01	3	3	5	17-25	21.1	1.5	.38	.12	57	6/30	.23	.34	9/30	.03	.03	YES	
1236 SNC-Lavalin Group	(TSE) SNC.TO	22.47b	4	3	3	30-50	10.9	0.4	2.06	.08	55	6/30	d.22(b)	d12.07(b)	9/30	.02(b)	.02(b)	YES	
1775 SPX Corp.	SPXC	42.29	3	3	2														

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?						
			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago			
																		Qtr. Ended	Earnings Per sh.	Year Ago
233 Schein (Henry) (NDO)	HSIC	59.80	-	3	-	NMF	85-125	(40-110%)	27.6	NIL	2.17	NIL	25	6/30	d.08	.78	6/30	NIL	NIL	YES
2429 Schlumberger Ltd.	SLB	17.27	5	3	3	1.30	30-45	(75-160%)	NMF	2.9	NIL	.50	96	6/30	0.05	.35	12/31	1.125	.50	YES
327 Schneider National	SNDR	25.31	2	3	2	.80	25-35	(N-40%)	22.0	1.0	1.15	.26	32	6/30	.26	.19	9/30	.065	.06	YES
748 Schnitzer Steel (NDO)	SCHN	19.48	3	3	4	1.10	35-55	(80-180%)	NMF	3.9	.11	.75	70	5/31	d.18	.56	9/30	.188	.188	YES
2379 Scholastic Corp. (NDO)	SCHL	20.76	3	3	3	.95	35-50	(70-140%)	NMF	2.9	d4.38	.60	84	5/31	d.23	.84	9/30	.15	.15	YES
1804 Schwab (Charles) (NDO)	SCHW	35.24	3	3	5	1.15	50-75	(40-115%)	18.4	2.1	1.92	.74	7	6/30	.48	.66	9/30	.18	.17	YES
1994 Schweitzer-Mauduit Int'l	SWM	27.58	3	3	3	1.05	35-55	(25-100%)	9.3	6.4	2.95	1.76	26	6/30	.68	.66	9/30	.44	.44	YES
399 Science Applications	SAIC	76.46	2	3	3	1.20	130-195	(70-155%)	12.0	1.9	6.37	1.48	42	7/31	1.63	1.35	12/31	.37	.37	YES
1434 2369 Scientific Games (NDO)	SGMS	33.95	4	5	4	1.90	25-45	(N-35%)	NMF	NIL	d2.65	NIL	89	6/30	d2.15	d.09	6/30	NIL	NIL	YES
2014 SciPlay Corp. (NDO)	SCPL	16.00	-	3	-	NMF	18-25	(15-55%)	16.7	NIL	.96	NIL	5	6/30	.27	.54	6/30	NIL	NIL	YES
1196 Scotts Miracle-Gro	SMG	147.88	2	3	2	1.05	115-175	(N-20%)	21.5	1.7	6.87	2.48	1	6/30	3.80	3.15	9/30	.62	.58	YES
2227 2342 Scripps (E.W.) 'A' (NDO)	SSP	10.77	4	3	3	1.25	25-40	(130-270%)	NMF	1.9	d.05	.20	58	6/30	d.27	d.01	9/30	.05	.05	YES
638 1988 Sea Limited ADS	SE	150.70	3	4	3	.90	65-105	(N-N%)	NMF	NIL	d2.21	NIL	40	6/30	d.68	d.49	6/30	NIL	NIL	YES
1408 Seagate Technology (NDO)	STX	48.23	1	3	5	1.10	45-70	(N-45%)	10.7	5.5	4.50	2.65	21	6/30	1.20	.86	12/31	.65	.63	YES
1182 Sealed Air	SEE	37.51	2	3	3	1.05	60-90	(60-140%)	12.9	1.7	2.91	.64	46	6/30	.64	.16	9/30	.16	.16	YES
845 Seattle Genetics (NDO)	SGEN	178.83	2	4	3	.90	155-265	(N-50%)	NMF	NIL	d1.42	NIL	15	6/30	d.12	d.49	6/30	NIL	NIL	YES
2319 SeaWorld Entertainment	SEAS	19.29	3	4	5	1.30	30-50	(55-160%)	NMF	NIL	d1.33	NIL	83	6/30	d1.68	.64	6/30	NIL	NIL	YES
811 Select Med. Hldgs.	SEM	19.04	4	3	3	1.45	25-35	(30-85%)	14.9	NIL	1.28	NIL	28	6/30	.38	.33	6/30	NIL	NIL	YES
771 Selective Ins. Group (NDO)	SIGI	49.55	3	3	4	.85	55-85	(10-70%)	13.4	1.9	3.71	.92	36	6/30	.40	1.16	9/30	.23	.20	YES
2223 Sempra Energy	SRE	116.66	1	2	3	.95	140-190	(20-65%)	16.3	3.7	7.15	4.34	17	6/30	1.57	.85	12/31	1.045	.968	YES
1374 Semtech Corp. (NDO)	SMTC	51.17	2	3	1	1.00	60-85	(15-65%)	28.9	NIL	1.77	NIL	12	7/31	.43	.38	6/30	NIL	NIL	YES
131 Sensata Techn. plc	ST	41.67	3	3	4	1.30	65-95	(55-130%)	22.9	NIL	1.82	NIL	35	6/30	.18	.93	6/30	NIL	NIL	YES
1937 Sensata Techn.	SXT	56.72	3	3	4	.90	55-85	(N-50%)	19.7	2.8	2.88	1.60	19	6/30	.72	.81	9/30	.39	.36	YES
1845 Service Corp. Int'l	SCI	40.27	2	3	2	1.00	55-80	(35-100%)	21.0	1.9	1.92	.76	20	6/30	.58	.47	9/30	.19	.18	YES
1544 Service Properties (NDO)	SVC	7.40	5	3	4	1.90	20-30	(170-305%)	NMF	0.5	d1.90	.04	66	6/30	d.23	.05	9/30	.01	.54	YES
400 ServiceMaster Global	SERV	38.97	-	3	-	NMF	40-60	(5-55%)	43.8	NIL	.89	NIL	42	6/30	.30	.43	6/30	NIL	NIL	YES
2634 ServiceNow, Inc.	NOW	461.88	1	3	3	.95	280-420	(N-N%)	NMF	NIL	1.20	NIL	16	6/30	.20	d.06	6/30	NIL	NIL	YES
367 Shake Shack	SHAK	66.30	4	4	5	1.15	55-90	(N-35%)	NMF	NIL	d.67	NIL	78	6/30	d.45	.29	6/30	NIL	NIL	YES
1019 Shaw Commun. 'B' (TSE)	SJRB.T	24.01b	3	2	3	.80	25-35	(5-45%)	18.2	5.0	1.32	1.20	9	5/31	.35(b)	.44(b)	9/30	.296(b)	.296(b)	YES
632 Shell Midstream L.P.	SHLX	9.74	▼	4	2	1.15	25-40	(155-310%)	7.6	18.9	1.29	1.84-.92	92	6/30	.32	.38	9/30	.46	.43	YES
930 Shenandoah Telecom. (NDO)	SHEN	44.62	2	3	1	.75	60-85	(35-90%)	26.2	0.7	1.70	.32	18	6/30	.58	.26	9/30	NIL	NIL	YES
1143 Sherwin-Williams	SHW	682.83	2	2	3	1.00	605-820	(N-20%)	29.3	0.8	23.27	5.54	8	6/30	7.10	6.57	9/30	1.34	1.13	YES
1833 Shopify Inc.	SHOP	927.89	2	3	2	1.00	575-865	(N-20%)	NMF	NIL	.36	NIL	22	6/30	.29	.14	6/30	1.34	1.13	YES
166 Shyft Group (NDO)	SHYF	18.78	3	3	3	.90	25-35	(35-85%)	16.6	0.5	1.13	.10	64	6/30	d.03	.15	9/30	.025	NIL	YES
1776 Siemens AG (ADS) (PNK)	SIEGY	66.17	-	2	-	1.05	60-85	(N-30%)	25.0	3.2	2.65	2.12	67	6/30	.68	.75	9/30	NIL	NIL	YES
2672 602 Sierra Wireless (NDO)	SWIR	10.41	3	4	1	1.25	16-25	(55-140%)	NMF	NIL	d1.28	NIL	39	6/30	d.43	d.78	6/30	NIL	NIL	YES
2526 Signature Bank (NDO)	SBNY	85.01	4	3	3	1.00	175-265	(105-210%)	8.7	2.6	9.72	2.24	72	6/30	2.21	2.72	9/30	.56	.56	YES
2182 Signet Jewelers Ltd.	SIG	17.32	5	4	5	1.85	35-60	(100-245%)	NMF	NIL	d.06	NIL	69	7/31	d1.13	.51	9/30	NIL	.37	YES
1183 Silgan Holdings (NDO)	SLGN	35.50	2	3	3	.85	45-60	(25-70%)	13.0	1.4	2.73	.48	46	6/30	.70	.28	9/30	.12	.11	YES
1375 Silicon Labs. (NDO)	SLAB	94.76	2	3	3	1.00	90-135	(N-40%)	NMF	NIL	.60	NIL	12	6/30	d.04	d.37	6/30	NIL	NIL	YES
193 Silk Road Medical (NDO)	SILK	67.17	-	3	-	NMF	20-30	(N-N%)	NMF	NIL	d.63	NIL	53	6/30	d.32	d.38	6/30	NIL	NIL	YES
1545 Simon Property Group	SPG	64.87	5	3	5	1.40	120-180	(85-175%)	17.0	8.0	3.82	5.20	66	6/30	.83	1.60	9/30	▼.30	2.10	YES
1938 Simply Good Foods (NDO)	SMPL	21.71	-	3	-	NMF	15-25	(N-15%)	25.8	NIL	.84	NIL	19	5/31	.17	.16	6/30	NIL	NIL	YES
1119 Simpson Manufacturing	SSD	91.73	2	3	2	1.10	90-130	(N-40%)	23.7	1.0	3.87	.92	45	6/30	1.22	.88	12/31	.23	.23	YES
2343 Sinclair Broadcast (NDO)	SBCI	20.19	2	3	4	1.25	35-55	(75-170%)	8.2	4.0	2.45	.80	58	6/30	3.12	.45	9/30	.20	.20	YES
2344 Sirius XM Holdings (NDO)	SIRI	5.11	3	4	3	.95	18-30	(250-485%)	13.4	1.0	.38	.05	58	6/30	.05	.06	9/30	.013	.012	YES
1546 SITE Centers	SITC	7.20	5	4	4	1.20	7-12	(N-65%)	NMF	NIL	▼d.09	NIL	66	6/30	d.05	.05	9/30	▼NIL	.20	YES
2183 SiteOne Landscape	SITE	112.32	2	3	2	1.25	105-155	(N-40%)	61.7	NIL	1.82	NIL	69	6/30	1.83	1.52	6/30	NIL	NIL	YES
2320 Six Flags Entertainment	SIX	22.03	5	4	4	1.25	35-60	(60-170%)	NMF	NIL	d1.75	NIL	83	6/30	d1.62	.94	9/30	NIL	.82	YES
2161 Skechers U.S.A.	SKX	29.34	3	3	4	1.25	55-80	(85-175%)	26.2	NIL	1.12	NIL	85	6/30	d.44	.49	6/30	NIL	NIL	YES
312 SkyWest (NDO)	SKYW	31.54	5	3	5	1.60	50-75	(60-140%)	61.8	NIL	.51	NIL	91	6/30	d.51	1.71	9/30	▼NIL	.12	YES
1376 Skyworks Solutions (NDO)	SWKS	134.25	3	3	3	1.10	145-220	(10-65%)	21.7	1.5	6.18	2.00	12	6/30	1.25	1.35	9/30	▲.50	.44	YES
1834 Slack Technologies	WORK	26.67	-	3	-	NMF	30-45	(10-70%)	NMF	NIL	d.48	NIL	22	7/31	NIL	d.65	6/30	NIL	NIL	YES
2184 Sleep Number Corp. (NDO)	SNBR	47.62	3	3	3	1.15	65-95	(35-100%)	25.1	NIL	1.90	NIL	69	6/30	d.45	.14	6/30	NIL	NIL	YES
1241 1835 Smartshelt Inc.	SMAR	47.91	-	4	-	NMF	55-90	(15-90%)	NMF	NIL	d.67	NIL	22	7/31	d.22	d.17	6/30	NIL	NIL	YES
849 2321 Smith & Wesson Brands(NDO)	SWBI	15.22	-	3	-	.45	13-20	(N-30%)	13.8	1.3	1.10	.20	83	7/31	.86	d.04	12/31	▲.05	NIL	YES
1731 Smith (A.O.)	AOS	51.88	3	3	3	.95	50-75	(N-45%)	29.6	1.9	1.75	.96	54	6/30	.45	.61	9/30	.24	.22	YES
1939 Smucker (J.M.)	SJM	109.79	▲	2	2	.65	120-160	(10-45%)	16.3	3.3	6.75	3.60	19	7/31	2.08	1.36	9/30	▲.90	.88	YES
2655 Snap Inc.	SNAP	23.88	3	4	3	.95	11-18	(N-N%)	NMF	NIL	d.59	NIL	27	6/30	d.23	d.19	6/30			

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Industry Rank

Do Options Trade?

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			Timeliness	Safety	Technical						Beta	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago					
																		Options				
1778	Standex Int'l	SXI	56.58	4	3	3	1.05	85- 125	(50-120%)	13.8	1.6	4.09	.88	67	6/30	.65	1.16	9/30	.22	.20	YES	
1733	Stanley Black & Decker	SWK	154.43	3	3	3	1.45	145- 220	(N- 40%)	25.7	1.8	6.00	2.85	54	6/30	1.60	2.66	9/30	▲.70	.69	YES	
1238	Stantec Inc.	(TSE) STN.TO	40.24b	2	2	2	.75	50- 65	(25- 60%)	19.5	1.5	2.06	.62	55	6/30	.52(b)	.50(b)	12/31	.155(b)	.145(b)	YES	
368	Starbucks Corp.	(NDQ) SBUX	83.89	3	1	4	1.00	120- 145	(45- 75%)	77.0	2.1	1.09	1.80	78	6/30	d.46	.78	9/30	.41	.36	YES	
2527	State Street Corp.	STT	59.92	1	3	3	1.20	80- 120	(35-100%)	9.9	3.5	6.03	2.08	72	6/30	1.86	1.42	12/31	◆.52	.52	YES	
749	Steel Dynamics	(NDQ) STLD	29.35	3	3	3	1.25	50- 80	(70-175%)	18.1	3.4	1.62	1.00	70	6/30	.36	.88	12/31	.25	.24	YES	
1159	Steelcase, Inc. 'A'	SCS	11.83	4	3	4	1.15	20- 30	(70-155%)	21.5	3.4	.55	.40	81	8/31	◆.55	.50	9/30	▲.10	.145	YES	
587	Stegan Company	SCL	109.39	3	3	3	.85	105- 160	(N- 45%)	22.9	1.1	4.77	1.15	61	6/30	1.54	1.30	9/30	.275	.25	YES	
410	Stericycle Inc.	(NDQ) SRCL	60.48	3	3	2	1.10	60- 85	(N- 40%)	27.5	NIL	2.20	NIL	44	6/30	.46	.56	6/30	NIL	NIL	YES	
194	STERIS plc	STE	172.05	3	2	3	1.05	160- 215	(N- 25%)	32.8	0.9	5.25	1.60	53	6/30	1.31	1.23	9/30	▲.40	.37	YES	
1813	Stifel Financial Corp.	SF	49.30	4	3	4	1.35	70- 100	(40-105%)	12.5	1.4	3.95	.70	49	6/30	1.55	1.41	9/30	.17	.15	YES	
1377	STMicroelectronics	STM	30.00	3	3	3	1.15	40- 60	(35-100%)	35.7	0.6	.84	.17	12	6/30	.10	.18	9/30	.042	.06	YES	
996	Stoneridge, Inc.	SRI	17.71	4	3	3	1.10	20- 30	(15- 70%)	NMF	NIL	d.68	NIL	74	6/30	d.81	1.41	6/30	NIL	NIL	YES	
1344	Stratagis Ltd.	(NDQ) SSYS	13.32	4	4	3	.85	17- 30	(30-125%)	NMF	NIL	d1.05	NIL	65	6/30	d.51	.02	6/30	NIL	NIL	YES	
2006	Strategic Education	(NDQ) STRA	90.43	-	3	-	NMF	165- 245	(80-170%)	12.3	2.7	7.34	2.40	41	6/30	2.06	1.59	9/30	.60	.50	YES	
195	Stryker Corp.	SYK	202.91	3	1	4	1.10	230- 285	(15- 40%)	33.2	1.1	6.11	2.30	53	6/30	.64	1.98	12/31	.575	.52	YES	
2322	Sturm, Ruger & Co.	RGR	62.08	2	3	1	.70	55- 85	(N- 35%)	16.9	2.5	3.68	1.54	83	6/30	1.05	.35	9/30	.42	.14	YES	
633	Suburban Propane	SPH	14.02	4	3	4	1.20	25- 35	(80-150%)	11.7	8.6	1.20	1.20-1.55	92	6/30	d.25	d.47	9/30	▼.30	.60	YES	
1120	Summit Materials	SUM	15.33	3	3	3	1.65	30- 45	(95-195%)	13.3	NIL	1.15	NIL	45	6/30	.50	.32	6/30	NIL	NIL	YES	
2576	Sun Life Fin'l Svcs.	(TSE) SLF.TO	53.72b	2	2	3	1.05	60- 80	(10- 50%)	10.7	4.1	5.04	2.20	57	6/30	1.26(b)	1.00(b)	9/30	.55(b)	.525(b)	YES	
520	Suncor Energy	(TSE) SU.TO	16.89b	4	3	2	1.30	60- 85	(255-405%)	NMF	5.0	d.44	.84	95	6/30	d.40(b)	1.74(b)	9/30	.21(b)	.42(b)	YES	
2185	Sunoco LP	SUN	25.09	4	3	3	1.25	30- 50	(20-100%)	10.1	13.2	2.48	3.30	69	6/30	1.64	.43	9/30	.826	.826	YES	
1030	1223 SunPower Corp.	(NDQ) SPWR	10.03	-	5	-	1.05	14- 25	(40-150%)	NMF	NIL	d.79	NIL	30	6/30	.11	.75	6/30	NIL	NIL	YES	
196	SurModics, Inc.	(NDQ) SRDX	38.60	2	3	1	.95	35- 55	(N- 40%)	NMF	NIL	d.09	NIL	53	6/30	.18	.11	6/30	NIL	NIL	YES	
963	Switch, Inc.	SWCH	15.59	2	4	2	.85	20- 35	(30-125%)	57.7	1.3	.27	.20	34	6/30	.06	.02	9/30	▲.05	.029	YES	
2453	964 Synaptics	(NDQ) SYNA	80.89	3	3	3	1.15	70- 105	(N- 30%)	25.4	NIL	3.19	NIL	34	6/30	.34	d.39	6/30	NIL	NIL	YES	
2577	Synchrony Financial	SYF	25.90	4	3	5	1.50	40- 65	(55-150%)	13.6	3.4	1.90	.88	57	6/30	.06	1.24	9/30	.22	.22	YES	
812	Syneos Health	(NDQ) SYNH	54.00	3	4	3	1.25	75- 130	(40-140%)	16.3	NIL	3.32	NIL	28	6/30	.58	.74	6/30	NIL	NIL	YES	
1848	401 SYNnex Corp.	(NDQ) SNX	129.38	-	3	-	1.05	170- 255	(30- 95%)	11.9	NIL	10.89	NIL	42	5/31	1.83	2.86	9/30	NIL	.375	YES	
2610	Synopsis, Inc.	(NDQ) SNPS	201.98	1	1	3	1.00	170- 205	(N- 30%)	36.3	NIL	5.57	NIL	3	7/31	1.74	1.18	6/30	NIL	NIL	YES	
2528	Synovus Financial	SNV	21.36	5	3	4	1.50	60- 95	(180-345%)	10.7	6.2	2.00	1.32-66	72	6/30	.57	.96	12/31	.33	.30	YES	
1959	Sycso Corp.	SYC	64.05	4	3	5	1.15	75- 100	(15- 55%)	73.6	2.8	.87	1.80	23	6/30	d.29	1.10	12/31	.45	.39	YES	
453	931 T-Mobile US	(NDQ) TMUS	110.57	-	3	-	.80	110- 165	(N- 50%)	32.5	NIL	3.40	NIL	18	6/30	.64	1.09	6/30	NIL	NIL	YES	
615	TC Energy Corp.	TRP	44.66	3	3	3	1.10	65- 90	(45-115%)	13.2	5.5	3.38	2.44	86	6/30	1.01	.93	9/30	.611	.576	YES	
786	TCF Financial	(NDQ) TCF	23.56	-	3	-	NMF	50- 70	(110-195%)	11.2	5.9	2.10	1.40	87	6/30	.14	1.07	9/30	.35	.35	YES	
1805	TD Ameritrade Holding	(NDQ) AMTD	38.14	-	3	-	1.15	55- 85	(45-125%)	10.5	3.3	3.63	1.24	7	6/30	1.05	1.00	9/30	.31	.30	YES	
1345	TE Connectivity	TEL	96.37	3	2	3	1.15	110- 145	(15- 50%)	25.4	2.0	3.80	1.92	65	6/30	.59	1.50	9/30	.48	.46	YES	
2207	TJX Companies	TJX	54.17	3	3	4	1.10	75- 110	(40-105%)	31.9	NIL	1.70	NIL	79	7/31	d.18	.62	9/30	NIL	.23	YES	
1224	TPI Composites	(NDQ) TPIC	26.33	3	4	1	1.40	35- 55	(35-110%)	NMF	NIL	d.94	NIL	30	6/30	d1.87	.05	6/30	NIL	NIL	YES	
1134	TRI Pointe Group	TPH	17.07	2	3	2	1.50	30- 45	(75-165%)	7.4	NIL	2.31	NIL	13	6/30	.51	.18	6/30	NIL	NIL	YES	
402	TTEC Holdings	(NDQ) TTEC	52.58	2	3	1	1.05	70- 110	(35-110%)	19.8	1.3	2.66	.68	42	6/30	.75	.34	9/30	NIL	NIL	YES	
1378	TTM Technologies	(NDQ) TTMI	11.43	3	3	4	1.10	25- 35	(120-205%)	11.2	NIL	1.02	NIL	12	6/30	.31	.20	6/30	NIL	NIL	YES	
426	Taiwan Fund	TWN	23.66	-	4	-	.95	30- 45	(25- 90%)	NMF	NIL	NMF	NIL	-	2/28	22.68(q)	19.58(q)	6/30	NIL	NIL	YES	
1379	Taiwan Semic. ADR	TSM	80.59	2	1	3	.80	55- 70	(N- N%)	26.9	2.1	3.00	1.68	12	6/30	.78	.41	9/30	.424	1.29	YES	
2015	Take-Two Interactive	(NDQ) TTWO	164.34	1	3	2	.65	125- 185	(N- 15%)	55.3	NIL	2.97	NIL	5	6/30	.77	.41	6/30	NIL	NIL	YES	
197	Tandem Diabetes Care	(NDQ) TNDM	105.32	3	4	3	1.15	110- 185	(5- 75%)	NMF	NIL	d.60	NIL	53	6/30	d.45	d.03	6/30	NIL	NIL	YES	
2186	Tapestry Inc.	TPR	16.51	5	3	4	1.45	25- 35	(50-110%)	26.6	NIL	.62	NIL	69	6/30	d.25	.61	9/30	NIL	.338	YES	
544	Targa Resources	TRGP	14.69	5	4	3	1.85	40- 65	(170-340%)	NMF	2.7	d.10	.40	90	6/30	.21	d.18	9/30	.10	.91	YES	
2151	Target Corp.	TGT	149.86	1	2	3	.70	120- 160	(N- 5%)	24.8	1.8	6.04	2.72	24	7/31	3.35	1.82	9/30	▲.68	.66	YES	
109	Tata Motors ADR	TTM	9.33	4	4	4	1.35	15- 25	(60-170%)	NMF	NIL	d3.25	NIL	43	6/30	d1.52	d.79	6/30	NIL	NIL	YES	
1135	Taylor Morrison Home	TMHC	23.59	3	3	2	1.60	40- 60	(70-155%)	7.0	NIL	3.38	NIL	13	6/30	.80	.76	6/30	NIL	NIL	YES	
1846	Tech Data	TECD						SEE FINAL SUPPLEMENT														
1594	Teck Resources 'B'	(TSE) TECKB.TO	18.96b	4	3	5	1.15	25- 35	(30- 85%)	NMF	1.1	▲d.18	.20	77	6/30	d.28(b)	.41(b)	9/30	.05(b)	.05(b)	YES	
2225	Teekay Corp.	TK						SEE FINAL SUPPLEMENT														
2346	TEGNA Inc.	TGNA	11.85	3	4	4	.85	25- 40	(110-240%)	7.4	2.4	1.61	.28	58	6/30	.09	.37	12/31	.07	.07	YES	
825	Teladoc Health	TDOC	202.66	2	4	3	1.60	215- 355	(5- 75%)	NMF	NIL	d1.25	NIL	33	6/30	d.34	d.41	6/30	NIL	NIL	YES	
724	Teledyne Technologies	TDY	312.59	3	3	3	1.10	300- 455	(N- 45%)	32.5	NIL	9.63	NIL	73	6/30	2.48	2.80	6/30				

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-year Target Price Range and % appreciation potential			Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?		
		Timeliness	Safety	Beta	Technical	Target	Price	Range	and % appreciation potential	Qtr. Ended					Earnings Per sh.	Year Ago	Qtr. Ended		Latest Div'd	Year Ago
1346 3D Systems	DDD	5.01	4 5 3	1.35		7- 13	(40-160%)	NMF	NIL	d1.08	NIL	65	6/30	d.33	d.21	6/30	NIL	NIL	YES	
2666 1780 3M Company	MMM	161.36	3 1 3	.95		200- 245	(25- 50%)	19.9	3.6	8.09	5.88	67	6/30	1.78	2.20	9/30	1.47	1.44	YES	
2187 Tiffany & Co.	TIF	115.21	- 3 -	.80		125- 185	(10- 60%)	40.0	2.0	2.88	2.32	69	7/31	.32	1.12	12/31	.58	.58	YES	
2208 Tilly's, Inc.	TLYS	6.64	- 4 -	1.10		16- 25	(140-275%)	NMF	NIL	d.21	NIL	79	7/31	.18	.31	6/30	NIL	NIL	YES	
453 1425 Tilray, Inc.	(NDQ) TLR	5.00	5 4 1	2.10		12- 20	(140-300%)	NMF	NIL	d1.42	NIL	82	6/30	d.65	d.37	6/30	NIL	NIL	YES	
736 Timken Co.	TKR	53.67	3 3 2	1.45		55- 85	(N- 60%)	14.7	2.1	3.64	1.12	80	6/30	1.02	1.27	9/30	.28	.28	YES	
2663 TimkenSteel Corp.	TMST						SEE FINAL SUPPLEMENT													
454 814 Tivity Health	(NDQ) TVTY	14.23	4 4 2	1.70		18- 30	(25-110%)	10.4	NIL	1.37	NIL	28	6/30	.58	.37	6/30	NIL	NIL	YES	
1136 Toll Brothers	TOL	47.03	3 3 3	1.65		45- 70	(N- 50%)	13.4	0.9	3.50	.44	13	7/31	.90	1.00	9/30	.11	.11	YES	
1940 Tootsie Roll	TR	29.71	2 1 3	.50		35- 45	(20- 50%)	30.3	1.2	.98	.37	19	6/30	.11	.18	9/30	.09	.087	YES	
1121 TopBuild Corp.	BLD	157.70	3 3 3	1.10		155- 235	(N- 50%)	26.8	NIL	5.89	NIL	45	6/30	1.67	1.51	6/30	NIL	NIL	YES	
1736 Toro Co.	TTC	81.65	2 2 4	1.00		70- 95	(N- 15%)	30.7	1.3	2.66	1.05	54	7/31	.82	.56	12/31	.25	.225	YES	
168 Toromont Inds.	(TSE) TH.TO	73.71	2 2 3	.80		75- 100	(N- 35%)	24.2	1.7	3.04	1.24	64	6/30	62	.94	12/31	.31	.27	YES	
2529 Toronto-Dominion	(TSE) TD.TO	60.80b	3 1 3	.85		90- 115	(50- 90%)	18.2	5.3	3.34	3.22	72	7/31	1.21(b)	1.74(b)	12/31	.79(b)	.74(b)	YES	
521 Total S.A. ADR	TOT	35.21	4 3 3	1.15		60- 90	(70-155%)	NMF	8.5	d3.99	3.00	95	6/30	d3.27	1.00	9/30	.775	.722	YES	
1381 Tower Semiconductor	(NDQ) TSEM	18.68	3 3 2	1.05		35- 55	(85-195%)	18.9	NIL	.99	NIL	12	6/30	.22	.24	6/30	NIL	NIL	YES	
111 Toyota Motor ADR(g)	TM	131.22	2 2 3	.85		170- 230	(30- 75%)	20.7	3.1	6.35	4.05	43	6/30	1.05	4.43	9/30	NIL	NIL	YES	
1144 Tractor Supply	(NDQ) TSCO	137.56	1 2 2	.85		130- 175	(N- 25%)	21.7	1.2	6.34	1.60	8	6/30	2.90	1.80	9/30	.40	.35	YES	
2396 Trade Desk (The)	(NDQ) TTD	461.55	3 3 3	1.20		200- 300	(N- N%)	NMF	NIL	2.75	NIL	76	6/30	.52	.58	6/30	NIL	NIL	YES	
1225 TransAlta Corp.	(TSE) TA.TO	7.81b	3 4 2	1.10		11- 18	(40-130%)	NMF	2.2	d.90	.17	30	6/30	d.22(b)	NIL(b)	12/31	.043(b)	.04(b)	YES	
725 TransDigm Group	TDG	487.81	4 3 4	1.15		400- 595	(N- 20%)	73.7	NIL	6.62	NIL	73	6/30	d.10	2.57	6/30	NIL	NIL	YES	
1240 2430 Transocean Ltd.	RIG						SEE FINAL SUPPLEMENT													
445 TransUnion	TRU	81.34	3 3 2	1.10		85- 125	(5- 55%)	28.8	0.4	2.82	.30	10	6/30	.66	.69	9/30	.075	.075	YES	
2669 772 Travelers Cos.	TRV	109.45	3 1 3	1.00		200- 240	(85-120%)	12.7	3.1	8.63	3.40	36	6/30	d.20	2.02	9/30	.85	.82	YES	
588 Tredegar Corp.	TG	14.96	3 3 3	1.10		25- 40	(65-165%)	12.3	3.3	1.22	.50	61	6/30	.33	.44	12/31	.12	.12	YES	
1941 TreeHouse Foods	THS	40.28	2 3 3	1.70		50- 80	(25-100%)	16.0	NIL	2.51	NIL	19	6/30	.58	.36	6/30	NIL	NIL	YES	
1122 Trex Co.	TREX	66.36	2 3 3	1.15		55- 85	(N- 30%)	45.8	NIL	1.45	NIL	45	6/30	.41	.31	6/30	NIL	NIL	YES	
1208 Tri-Continental	TY	25.24	- 2 -	1.00		35- 45	(40- 80%)	NMF	4.0	NMF	1.02	-	6/30	24.71(q)	30.03(q)	9/30	.262	.26	YES	
2385 Tribune Publishing Co.	(NDQ) TPCC	12.33	- 4 -	1.25		12- 20	(N- 60%)	NMF	NIL	NIL	NIL	-	6/30	d.02	.10	9/30	NIL	NIL	YES	
1781 TriMas Corp.	(NDQ) TRS	22.79	3 3 3	.90		35- 50	(55-120%)	18.8	NIL	1.21	NIL	67	6/30	.43	.42	6/30	NIL	NIL	YES	
2669 1315 Trimble Inc.	(NDQ) TRMB	47.80	3 3 3	1.20		50- 70	(5- 45%)	37.3	NIL	1.28	NIL	62	6/30	.25	.37	6/30	NIL	NIL	YES	
1648 TriNet Group	TNET	59.32	2 3 1	1.20		70- 105	(20- 75%)	19.8	NIL	▲2.99	NIL	71	6/30	1.87	.64	6/30	NIL	NIL	YES	
345 Trinity Inds.	TRN	19.03	- 4 -	NMF		25- 40	(30-110%)	NMF	4.0	.14	.76	31	6/30	.02	.29	12/31	.19	.17	YES	
2440 Trinseo S.A.	TSE	26.87	4 3 4	1.15		55- 80	(105-200%)	NMF	6.0	d.81	1.60	60	6/30	d2.95	.68	9/30	.40	.40	YES	
2656 Trip.com Ltd. ADS	(NDQ) TCOM	28.23	3 4 4	1.05		40- 65	(40-130%)	NMF	NIL	.07	NIL	27	3/31	d1.12	1.11	6/30	NIL	NIL	YES	
2657 TripAdvisor, Inc.	(NDQ) TRIP	19.47	4 4 3	1.00		30- 50	(55-155%)	NMF	NIL	d.48	NIL	27	6/30	d1.14	.24	6/30	NIL	NIL	YES	
726 Triumph Group	TGI	7.31	- 5 -	2.10		20- 35	(175-380%)	NMF	NIL	d.35	NIL	73	6/30	d.19	.46	9/30	NIL	.04	YES	
589 Tronox Holding plc	TROX	8.71	4 5 4	1.85		11- 20	(25-130%)	NMF	3.2	d.38	.28	61	6/30	d.03	d.41	9/30	.07	.045	YES	
2673 1649 TrueBlue, Inc.	TBI	16.03	4 3 3	.85		20- 30	(25- 85%)	51.7	NIL	▲.31	NIL	71	6/30	d.23	.49	6/30	NIL	NIL	YES	
2530 Truist Fin'l	TFC	37.34	2 3 4	1.30		50- 75	(35-100%)	11.8	4.8	3.17	1.80	72	6/30	.82	1.12	9/30	.45	.45	YES	
1995 Turning Point Brands	TPB	29.02	2 4 3	1.00		30- 50	(5- 70%)	15.4	0.7	1.89	.20	26	6/30	.71	.53	12/31	.05	.045	YES	
1239 Tutor Perini	TPC	11.19	3 4 3	1.30		25- 40	(125-255%)	5.6	NIL	2.01	NIL	55	6/30	.37	d6.38	6/30	NIL	NIL	YES	
1837 Twilio Inc.	TWLO	238.30	3 3 2	.95		175- 265	(N- 10%)	NMF	NIL	d.01	NIL	22	6/30	.09	.03	6/30	NIL	NIL	YES	
2658 Twitter Inc.	TWTR	39.90	3 4 3	1.10		35- 55	(N- 40%)	NMF	NIL	.26	NIL	27	6/30	d.16	.05	6/30	NIL	NIL	YES	
2635 Tyler Technologies	TYL	328.96	2 3 2	.75		305- 460	(N- 40%)	60.9	NIL	5.40	NIL	16	6/30	1.38	1.30	6/30	NIL	NIL	YES	
1942 Tyson Foods 'A'	TSN	59.85	3 3 4	.75		90- 130	(50-115%)	14.4	2.9	4.17	1.74	19	6/30	1.40	1.47	12/31	.42	.42	YES	
1547 UDR, Inc.	UDR	32.15	1 3 4	1.00	▲	40- 65	(25-100%)	NMF	4.6	▲.29	1.49	66	6/30	.19	.12	12/31	.36	.343	YES	
1123 UFP Industries	(NDQ) UFPI	52.65	2 3 1	1.10		65- 100	(25- 90%)	15.3	0.9	3.45	.50	45	6/30	1.08	.88	9/30	.125	NIL	YES	
556 UGI Corp.	UGI	31.85	3 2 3	1.00		45- 65	(40-105%)	11.5	4.1	2.77	1.32	37	6/30	.08	.13	12/31	.33	.325	YES	
412 US Ecology	(NDQ) ECOL	31.50	4 3 3	1.00		50- 75	(60-140%)	43.2	NIL	.73	NIL	44	6/30	d.08	.66	9/30	NIL	.18	YES	
1960 US Foods Hldg.	USFD	23.68	3 3 4	1.60		40- 60	(70-155%)	20.6	NIL	1.15	NIL	23	6/30	d.25	.67	6/30	NIL	NIL	YES	
1943 USANA Health Sciences	USNA	75.70	2 3 1	.95		65- 95	(N- 25%)	14.4	NIL	5.26	NIL	19	6/30	1.32	.91	6/30	NIL	NIL	YES	
2029 2612 Uber Technologies	UBER	36.49	- 4 -	NMF		40- 70	(10- 90%)	NMF	NIL	d2.46	NIL	3	6/30	d.80	d3.05	6/30	NIL	NIL	YES	
603 Ubiquiti Inc.	UI	157.66	2 3 2	.75		195- 290	(25- 85%)	27.0	1.0	5.85	1.60	39	6/30	1.45	1.01	9/30	.40	.30	YES	
2188 Ulta Beauty	(NDQ) ULTA	225.88	4 3 4	1.25		265- 400	(15- 75%)	26.4	NIL	8.54	NIL	69	7/31	.14	2.76	6/30	NIL	NIL	YES	
2114 Under Armour 'A'	UA	10.69	5 4 5	1.30		13- 20	(20- 85%)	NMF	NIL	d.46	NIL	93	6/30	d.31	d.04	6/30	NIL	NIL	YES	
2115 Unifi, Inc.	UFI	12.28	5 3 4	1.40		19- 30	(55-145%)	NMF	NIL	d.19	NIL	93	6/30	d1.10	.05	6/30	NIL	NIL	YES	
403 UniFirst Corp.	UNF	180.68	3 2 2	.95		210- 285	(15- 60%)	27.5	0.6	6.56	1.00	42	5/31	1.12	2.46	9/30	.25	.45	YES	
2670 1944 Unilever PLC ADR(g)	UL	59.90	2 1 2	.80		70- 85	(15- 40%)	21.4	3.1	2.80	1.83	19	6/30	1.40(p)	1.31(p)	9/30	.469	.459	YES	
346 Union Pacific	UNP	194.00	3 1 3	1.10		230- 280	(20- 45%)	26.4	2.0	7.35	3.88	31	6/30	1.67	2.22	9/30	.97	.97	YES	

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RANKS

Industry Rank

Do Options Trade?

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			Qtr. Ended	Earnings Per sh.	Year Ago									Qtr. Ended	Latest Div'd	Year Ago				
																		Qtr. Ended	Earnings Per sh.	Year Ago
1782 Valmont Inds.	VMI	119.54	3	2	3	2	1.05	170- 230 (40- 90%)	16.8	1.5	7.11	1.80	67	6/30	2.00	1.90	12/31	.45	.375	YES
998 Valvoline Inc.	VVV	19.39	3	3	2	1.40	30- 45 (55-130%)	13.7	2.5	1.42	.48	74	74	6/30	.28	.37	9/30	.113	.106	YES
199 Varian Medical Sys.	VAR	172.74	-	2	-	1.05	150- 200 (N- 15%)	56.3	NIL	3.07	NIL	53	53	6/30	.67	.32	6/30	NIL	NIL	YES
133 Veeco Instruments	(NDQ) VECO	12.08	2	4	2	1.30	20- 35 (65-190%)	NMF	NIL	d.55	NIL	35	35	6/30	d.17	d.33	6/30	NIL	NIL	YES
826 Veeva Systems	VEEV	271.55	2	3	3	.95	190- 285 (N- 5%)	NMF	NIL	2.59	NIL	33	33	7/31	.72	.55	6/30	NIL	NIL	YES
1548 Ventas, Inc.	VTR	40.84	4	3	5	1.20	50- 70 (20- 70%)	NMF	4.4	d.01	1.80	66	66	6/30	d.43	.58	12/31	d.45	.793	YES
2210 Vera Bradley Inc.	VRA							SEE FINAL REPORT												
2659 VeriSign Inc.	(NDQ) VRSN	202.89	1	3	3	.95	150- 225 (N- 10%)	36.7	NIL	5.53	NIL	27	27	6/30	1.32	1.24	6/30	NIL	NIL	YES
446 Verisk Analytics	(NDQ) VRSK	178.68	1	2	2	.90	145- 200 (N- 10%)	41.0	0.6	4.36	1.10	10	10	6/30	1.08	.90	9/30	.27	.25	YES
2670 935 Verizon Communic.	VZ	59.61	1	1	4	.65	85- 105 (45- 75%)	12.2	4.2	4.88	2.51	18	18	6/30	1.18	1.23	12/31	d.628	.615	YES
847 Vertex Pharm.	(NDQ) VRTX	264.00	1	3	3	.90	345- 520 (30- 95%)	27.2	NIL	9.71	NIL	15	15	6/30	3.18	1.03	6/30	NIL	NIL	YES
2347 ViacomCBS Inc.	(NDQ) VIAC	28.99	4	3	5	1.45	65- 100 (125-245%)	7.7	3.3	3.77	.96	58	58	6/30	1.25	1.16	12/31	.24	.18	YES
1783 Viad Corp.	VVI	20.78	5	3	4	1.75	40- 60 (90-190%)	NMF	NIL	d1.38	NIL	67	67	6/30	d2.59	1.44	9/30	NIL	.10	YES
604 ViaSat, Inc.	(NDQ) VSAT	34.88	4	3	3	1.35	60- 90 (70-160%)	NMF	NIL	d.40	NIL	39	39	6/30	d.20	d.19	6/30	NIL	NIL	YES
1347 Viavi Solutions	(NDQ) VIAV	11.83	3	3	3	.95	15- 25 (25-110%)	16.0	NIL	.74	NIL	65	65	6/30	.18	.17	6/30	NIL	NIL	YES
1549 VICI Properties	VICI	23.01	-	3	-	1.40	30- 40 (30- 75%)	13.1	5.7	▲ 1.75	1.32	66	66	6/30	.47	.37	12/31	▲.33	.298	YES
1317 Vicor Corp.	(NDQ) VICR	74.64	2	3	2	1.15	75- 115 (N- 55%)	NMF	NIL	.39	NIL	62	62	6/30	.06	.06	6/30	NIL	NIL	YES
1962 Village Super Market	(NDQ) VLGEA	24.93	2	3	2	.50	35- 50 (40-100%)	13.4	4.0	1.86	1.00	23	23	4/30	.77	.35	12/31	.25	.25	YES
2324 Virgin Galactic	SPCE	16.48	-	4	-	NMF	25- 40 (50-145%)	NMF	NIL	d.90	NIL	83	83	6/30	d.30	d.23	6/30	NIL	NIL	YES
2578 Visa Inc.	V	197.45	3	1	3	1.00	225- 275 (15- 40%)	36.3	0.6	5.44	1.23	57	57	6/30	1.06	1.37	9/30	.30	.25	YES
1348 Vishay Intertechnology	VSH	15.04	3	3	3	1.20	35- 50 (135-230%)	16.0	2.5	.94	.38	65	65	6/30	.18	.36	9/30	.095	.095	YES
999 Visteon Corp.	VC	67.91	3	3	3	1.10	120- 180 (75-165%)	NMF	NIL	.05	NIL	74	74	6/30	d1.62	.25	6/30	NIL	NIL	YES
1226 Vistra Corp.	VST	17.89	3	3	4	1.15	40- 60 (125-235%)	12.9	3.0	1.39	.54	30	30	6/30	.34	.70	9/30	.135	.125	YES
2613 VMware, Inc.	VMW	140.27	2	3	4	.90	160- 240 (15- 70%)	23.1	NIL	6.08	NIL	3	3	7/31	1.81	1.53	6/30	NIL	NIL	YES
2672 965 Vocera Communications	VCRA	27.37	2	3	2	.75	30- 50 (10- 85%)	NMF	NIL	d.52	NIL	34	34	6/30	1.11	d.16	6/30	NIL	NIL	YES
936 Vodafone Group ADR(g)(NDQ)	VOD	13.45	2	3	3	.95	25- 40 (85-195%)	29.9	8.2	▲ 4.5	1.10	18	18	3/31	.53(p)	.18(p)	9/30	.53	.464	YES
937 Vonage Holdings	VG	10.34	3	3	1	1.05	10- 15 (N- 45%)	68.9	NIL	.15	NIL	18	18	6/30	.04	.08	6/30	NIL	NIL	YES
240 1550 Vornado R'ty Trust	VNO	33.33	4	3	4	1.25	60- 90 (80-170%)	NMF	6.4	▼ d.63	2.12	66	66	6/30	d1.03	12.56	6/30	▼.53	.66	YES
2579 Voya Financial	VOYA	46.67	3	3	3	1.45	75- 115 (60-145%)	16.6	1.3	2.81	.60	57	57	6/30	d.55	1.51	9/30	.15	.15	YES
1124 Vulcan Materials	VMC	126.78	3	3	3	1.15	145- 220 (15- 75%)	26.1	1.1	4.85	1.36	45	45	6/30	1.58	1.48	9/30	.34	.31	YES
1197 WD-40 Co.	(NDQ) WDFC	193.78	▼ 3	1	2	.45	110- 130 (N- N%)	46.9	1.4	4.13	2.68	1	1	5/31	1.06	1.30	9/30	.67	.61	YES
915 WEC Energy Group	WEC	94.86	3	1	3	.80	85- 105 (N- 10%)	24.8	2.8	3.82	2.66	47	47	6/30	.76	.74	9/30	.633	.59	YES
1551 W.P. Carey Inc.	WPC	63.15	4	3	3	1.10	75- 110 (20- 75%)	31.9	6.6	▲ 1.98	4.18	66	66	6/30	.61	.38	12/31	▲ 1.044	1.036	YES
2397 WPP PLC ADR	WPP	36.14	4	3	3	1.20	100- 150 (175-315%)	14.5	1.8	2.50	.66	76	76	6/30	d14.16(p)	1.56(p)	9/30	NIL	2.50	YES
545 WPX Energy	WPX	4.51	3	4	3	1.75	17- 30 (275-565%)	10.5	NIL	.43	NIL	90	90	6/30	.12	.09	6/30	NIL	NIL	YES
2189 WW International	(NDQ) WW	19.71	4	4	3	1.25	40- 65 (105-230%)	10.4	NIL	1.89	NIL	69	69	6/30	.20	.78	6/30	NIL	NIL	YES
169 Wabash National	WNC	11.04	3	3	3	1.15	20- 35 (80-215%)	28.3	2.9	.39	.32	64	64	6/30	NIL	.55	12/31	.08	.08	YES
347 Wabtec Corp.	WAB	62.97	3	3	3	1.25	100- 150 (60-140%)	16.9	0.8	3.73	.48	31	31	6/30	.87	1.06	9/30	.12	.12	YES
2227 970 Walgreens Boots	(NDQ) WBA	35.79	3	3	3	.80	70- 90 (95-150%)	8.4	5.2	4.26	1.87	4	4	5/31	.83	1.47	9/30	▲.468	.44	YES
638 2152 Walmart Inc.	WMT	137.07	1	1	3	.55	145- 175 (5- 30%)	27.3	1.6	5.02	2.18	24	24	7/31	1.56	1.27	9/30	.54	.53	YES
1509 Washington Federal	(NDQ) WAFD	20.88	4	3	3	1.00	30- 45 (45-115%)	13.0	4.2	1.61	.88	63	63	6/30	.46	.67	9/30	.22	.21	YES
1552 Washington R.E.I.T.	WRE	19.38	3	3	3	.95	25- 35 (30- 80%)	NMF	6.2	▼ 1.14	1.20	66	66	6/30	d.07	d.08	12/31	.30	.30	YES
413 Waste Connections	WCN	101.25	2	2	3	.80	105- 145 (5- 45%)	NMF	0.7	.76	.74	44	44	6/30	d.86	.56	9/30	.185	.16	YES
414 Waste Management	WM	114.30	3	1	3	.80	110- 130 (N- 15%)	29.9	1.9	3.82	2.18	44	44	6/30	.88	1.11	9/30	.545	.513	YES
134 Waters Corp.	WAT	194.36	3	2	3	.95	265- 350 (35- 85%)	22.0	NIL	8.83	NIL	35	35	6/30	1.98	2.08	6/30	NIL	NIL	YES
2671 1145 Watsco, Inc.	WSO	230.29	3	1	2	.90	195- 260 (N- 15%)	35.8	3.1	6.43	7.18	8	8	6/30	2.26	2.40	9/30	1.775	1.60	YES
1738 Watts Water Techn.	WTS	97.19	3	2	4	1.00	95- 125 (N- 30%)	34.7	1.0	2.80	.96	54	54	6/30	.74	1.09	9/30	.23	.23	YES
2660 Wayfair Inc.	W	302.38	3	4	2	1.60	155- 260 (N- N%)	NMF	NIL	d7.00	NIL	27	27	6/30	2.54	d1.98	6/30	NIL	NIL	YES
2531 Webster Fin'l	WBS	25.46	4	3	3	1.40	55- 85 (115-235%)	11.3	6.3	2.26	1.60	72	72	6/30	.57	1.05	9/30	.40	.40	YES
1553 Weingarten Realty	WRI	16.69	4	3	4	1.15	30- 45 (80-170%)	23.5	4.3	▼ 7.1	.72	66	66	6/30	.09	.66	12/31	.18	.395	YES
1963 Weis Markets	WMK	47.58	2	3	1	.55	45- 70 (N- 45%)	13.8	2.6	3.46	1.24	23	23	6/30	1.54	.76	9/30	.31	.31	YES
1739 Welbilt, Inc.	WBT	6.03	5	5	4	1.50	10- 16 (65-165%)	NMF	NIL	d.08	NIL	54	54	6/30	d.07	.22	6/30	NIL	NIL	YES
2228 2532 Wells Fargo	WFC	24.04	4	3	4	1.15	45- 70 (85-190%)	32.9	1.7	.73	.40	72	72	6/30	d.66	1.30	9/30	▼.10	.51	YES
1554 Welltower Inc.	WELL	54.19	4	3	4	.95	60- 90 (10- 65%)	37.4	4.5	▼ 1.45	2.44	66	66	6/30	.42	.34	9/30	.61	.87	YES
370 Wendy's Company	(NDQ) WEN	20.66	3	3	1	1.20	25- 35 (20- 70%)	36.2	1.0	.57	.20	78	78	6/30	.12	.18	9/30	.05	.10	YES
328 Werner Enterprises	(NDQ) WERN	42.62	2	3	2	.80	45- 70 (5- 65%)	17.8	0.8	2.40	.36	32	32	6/30	.62	.63	12/31	.09	.09	YES
638 1318 WESCO Int'l	WCC	42.80	4	3	3	1.45	65- 95 (50-120%)	10.6	NIL	4.04	NIL	62	62	6/30	1.04	1.45	6/30	NIL	NIL	YES
1168 West Fraser Timber	(TSE) WFT.T	66.75b	3	3	3	1.35	90- 135 (35-100%)													

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price				RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 3-31-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS						Do Options Trade?
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago				
																	Qtr. Ended	Earnings Per sh.	Year Ago	
751 Worthington Inds.	WOR	36.85	3	3	1	1.30	55- 80 (50-115%)	17.5	2.7	2.10	1.00	70	5/31	.40	.66	9/30	▲.25	.24	YES	
200 Wright Medical N.V. (NDQ)	WMGI	30.55	-	3	-	.80	14- 20 (N- N%)	NMF	NIL	d.79	NIL	53	6/30	d.41	d.15	6/30	NIL	NIL	YES	
2371 Wyndham Destinations	WYND	30.62	-	4	-	NMF	50- 85 (65-180%)	45.0	3.9	.68	1.20	89	6/30	d1.11	1.45	9/30	▼.30	.45	YES	
2372 Wyndham Hotels	WH	49.99	-	3	-	NMF	55- 80 (10- 60%)	34.0	0.6	1.47	.32	89	6/30	d1.86	.27	9/30	.08	.29	YES	
2373 Wynn Resorts (NDQ)	WYNN	72.30	4	5	4	1.50	95- 180 (30-150%)	NMF	NIL	d7.03	NIL	89	6/30	d6.14	.88	9/30	NIL	1.00	YES	
329 XPO Logistics	XPO	83.80	3	3	2	1.45	115- 175 (35-110%)	54.4	NIL	1.54	NIL	32	6/30	.63	1.28	6/30	NIL	NIL	YES	
2224 Xcel Energy Inc. (NDQ)	XEL	66.64	3	1	2	.80	55- 65 (N- N%)	23.5	2.7	2.84	1.77	17	6/30	.54	.46	12/31	.43	.405	YES	
1418 Xerox Holdings	XRX	18.07	4	3	5	1.35	30- 45 (65-150%)	12.1	5.5	1.49	1.00	88	6/30	.15	.79	12/31	.25	.25	YES	
1382 Xilinx Inc. (NDQ)	XLNX	99.41	3	3	2	.90	115- 170 (15- 70%)	35.5	1.5	2.80	1.52	12	6/30	.65	.97	9/30	.38	.37	YES	
1383 Xperi Holding (NDQ)	XPER	12.71	-	4	-	.95	18- 25 (40- 95%)	79.4	1.6	.16	.20	12	6/30	d.33	.68	9/30	▼.05	.20	YES	
1740 Xylem Inc.	XYL	83.46	3	2	4	1.05	80- 110 (N- 30%)	45.4	1.2	1.84	1.04	54	6/30	.40	.79	9/30	.26	.24	YES	
1579 Yamana Gold	AUY	5.85	3	5	2	.80	6- 10 (5- 70%)	26.6	1.2	▲.22	.07	6	6/30	NIL	.01	12/31	▲.018	.01	YES	
2661 Yelp, Inc.	YELP	20.34	4	3	3	1.10	25- 35 (25- 70%)	NMF	NIL	d.61	NIL	27	6/30	d.33	.16	6/30	NIL	NIL	YES	
2326 YETI Holdings	YETI	45.19	-	3	-	NMF	45- 70 (N- 55%)	43.0	NIL	1.05	NIL	83	6/30	.38	.33	6/30	NIL	NIL	YES	
1793 York Water Co. (The) (NDQ)	YORW	42.32	2	3	2	.80	30- 50 (N- 20%)	35.6	1.7	1.19	.72	11	6/30	.32	.28	9/30	.18	.173	YES	
372 Yum! Brands	YUM	89.34	3	3	3	1.05	105- 155 (20- 75%)	27.9	2.1	3.20	1.88	78	6/30	.61	.87	9/30	.47	.42	YES	
373 Yum China Holdings	YUMC	50.72	2	3	3	.75	65- 95 (30- 85%)	30.0	NIL	1.69	NIL	78	6/30	.35	.46	9/30	NIL	.12	YES	
605 Zebra Techn. 'A' (NDQ)	ZBRA	248.73	3	3	2	1.05	225- 340 (N- 35%)	21.3	NIL	11.68	NIL	39	6/30	2.41	3.02	6/30	NIL	NIL	YES	
1839 Zendesk Inc.	ZEN	97.08	3	3	3	1.05	80- 135 (N- 40%)	NMF	NIL	d1.27	NIL	22	6/30	d.56	d.50	6/30	NIL	NIL	YES	
455 2662 Zillow Group 'C' (NDQ)	Z	95.71	3	3	4	1.10	30- 50 (N- N%)	NMF	NIL	d1.33	NIL	27	6/30	d.38	d.35	6/30	NIL	NIL	YES	
201 Zimmer Biomet Hldgs.	ZBH	134.00	3	2	2	1.10	140- 190 (5- 40%)	27.9	0.7	4.80	.96	53	6/30	.05	1.93	12/31	.24	.24	YES	
2533 Zions Bancorp. (NDQ)	ZION	29.81	3	3	4	1.20	55- 80 (85-170%)	12.1	4.6	2.46	1.36	72	6/30	.34	.99	9/30	.34	.34	YES	
1635 Zoetis Inc.	ZTS	160.97	2	2	3	1.05	155- 205 (N- 25%)	43.6	0.5	3.69	.80	14	6/30	.89	.90	9/30	.20	.164	YES	
938 Zoom Video Communic. (NDQ)	ZM	468.47	-	4	-	NMF	485- 805 (5- 70%)	NMF	NIL	2.36	NIL	18	7/31	.63	.02	6/30	NIL	NIL	YES	
1840 Zscaler, Inc. (NDQ)	ZS	134.93	-	4	-	NMF	75- 125 (N- N%)	NMF	NIL	d.44	NIL	22	7/31	d.38	d.04	6/30	NIL	NIL	YES	
2211 Zumiez Inc. (NDQ)	ZUMZ	28.52	2	3	4	1.05	35- 55 (25- 95%)	13.0	NIL	2.19	NIL	79	7/31	1.01	.36	6/30	NIL	NIL	YES	
2017 Zynga Inc. (NDQ)	ZNGA	8.63	2	3	2	.75	5- 8 (N- N%)	28.8	NIL	.30	NIL	5	6/30	d.16	d.06	6/30	NIL	NIL	YES	

(●) All data adjusted for announced stock split or stock dividend. See back page of Ratings & Reports.  
 ◆ New figure this week.  
 (b) Canadian Dollars.  
 (d) Deficit.

(f) The estimate may reflect a probable increase or decrease. If a dividend boost or cut is possible but not probable, two figures are shown, the first is the more likely.  
 (g) Dividends subject to foreign withholding tax for U.S. residents.

(h) Est'd Earnings & Est'd Dividends after conversion to U.S. dollars at Value Line estimated translation rate.  
 (j) All Index data expressed in hundreds.  
 (p) 6 months (q) Asset Value  
 N=Negative figure NA=Not available NMF=No meaningful figure

**INDUSTRIES, IN ORDER OF TIMELINESS RANK\***

Arrow (▲▼) before name indicates that a **significant change in Rank** has occurred since the preceding week.

1 Household Products	26 Tobacco	51 Insurance (Life)	76 Advertising
2 Semiconductor Equip	27 Internet	52 Toiletries/Cosmetics	77 Metals & Mining (Div.)
3 Computer Software	28 Medical Services	53 Med Supp Invasive	78 Restaurant
4 Pharmacy Services	29 Beverage	54 Machinery	79 Retail (Softlines)
5 Entertainment Tech	30▲ Power	55▼ Engineering & Const	80 Metal Fabricating
6 Precious Metals	31 Railroad	56 Paper/Forest Products	81 Furn/Home Furnishings
7 Brokers & Exchanges	32 Trucking	57 Financial Svcs. (Div.)	82 Cannabis
8 Retail Building Supply	33 Healthcare Information	58 Entertainment	83 Recreation
9 Cable TV	34 Telecom. Equipment	59 Chemical (Basic)	84 Publishing
10 Information Services	35 Precision Instrument	60 Chemical (Diversified)	85 Shoe
11 Water Utility	36 Insurance (Prop/Cas.)	61 Chemical (Specialty)	86 Oil/Gas Distribution
12 Semiconductor	37 Natural Gas Utility	62 Electrical Equipment	87 Bank (Midwest)
13 Homebuilding	38 Telecom. Utility	63 Thrift	88 Office Equip/Supplies
14 Drug	39 Wireless Networking	64 Heavy Truck & Equip	89 Hotel/Gaming
15 Biotechnology	40 Foreign Electronics	65 Electronics	90 Natural Gas (Div.)
16 IT Services	41 Educational Services	66 R.E.I.T.	91 Air Transport
17 Electric Utility (West)	42 Industrial Services	67 Diversified Co.	92 Pipeline MLPs
18 Telecom. Services	43 Automotive	68 Reinsurance	93 Apparel
19 Food Processing	44 Environmental	69▲ Retail (Hardlines)	94 Petroleum (Producing)
20 Funeral Services	45 Building Materials	70 Steel	95 Petroleum (Integrated)
21 Computers/Peripherals	46 Packaging & Container	71 Human Resources	96 Oilfield Svcs/Equip.
22 E-Commerce	47 Electric Util. (Central)	72 Bank	
23 Retail/Wholesale Food	48 Retail Automotive	73 Aerospace/Defense	
24 Retail Store	49 Investment Banking	74 Auto Parts	
25 Med Supp Non-Invasive	50 Electric Utility (East)	75 Maritime	

\*Based on the Timeliness™ ranks of the stocks in the industry

**Noteworthy Rank Changes**

Listed below are some of the stocks whose Timeliness ranks have changed this week. We include mostly rank changes caused by fundamentals such as new earnings reports. Even when a significant change in earnings momentum has been forecast, the stock's rank will not be affected until the actual results, confirming that forecast, are reported. In most cases, we omit stocks that have been bumped up or down in rank by the dynamism of the ranking system.

**STOCKS MOVING UP IN TIMELINESS RANK**

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 3-31-21
AutoZone Inc.	3	2	Surprise factor, earnings turnaround. Aug. period \$30.93 vs. year ago \$22.59. Our estimate was \$22.62.	Under Review
Neogen Corp.	3	2	Greater than average gain. Aug. quarter 30¢ vs. year ago 28¢. Our estimate was 28¢.	\$1.19
Smucker (J.M.)	2	1	Dynamism of the ranking system.	

**STOCKS MOVING DOWN IN TIMELINESS RANK**

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 3-31-21
Cigna Corp.	1	2	Dynamism of the ranking system.	

TIMELY STOCKS IN TIMELY INDUSTRIES

Page No.	Industry (Industry Rank)	Recent Price	RANKS			Current P/E Ratio	% Est'd Yield	Est'd. 3-5 Year Price Apprec.	Page No.	Industry (Industry Rank)	Recent Price	RANKS			Current P/E Ratio	% Est'd Yield	Est'd. 3-5 Year Price Apprec.		
			Timeliness	Safety	Technical							Timeliness	Safety	Technical					
<b>Household Products (INDUSTRY RANK 1)</b>								<b>Information Services (INDUSTRY RANK 10)</b>											
1187	Central Garden & Pet	37.22	2	3	1	0.75	18.2	NIL	60-130%	430	Broadridge Fin'l	130.91	1	2	2	0.85	24.2	1.8	10- 50%
1188	Church & Dwight	89.64	1	1	2	0.65	30.6	1.1	N- N%	433	CoStar Group	824.00	2	2	3	0.95	84.9	NIL	N- 30%
1189	Clorox Co.	208.53	1	1	2	0.50	27.6	2.1	N- N%	434	Equifax, Inc.	155.10	1	3	2	1.05	26.5	1.0	15- 70%
1190	Colgate-Palmolive	75.19	1	1	3	0.70	25.3	2.3	N- 5%	436	FactSet Research	336.84	2	2	2	1.05	32.6	0.9	N- N%
1192	Emergizer Holdings	39.51	2	3	2	1.05	14.7	3.0	75-165%	438	Gartner Inc.	126.41	2	3	4	1.15	52.7	NIL	45-120%
1193	Kimberly-Clark	145.87	1	1	2	0.75	17.7	2.9	20- 45%	440	MSCI Inc.	351.73	1	3	3	0.95	47.5	0.9	N- 10%
1195	Procter & Gamble	136.71	1	1	3	0.75	25.5	2.3	N- 10%	441	Moody's Corp.	280.04	1	3	3	1.15	32.3	0.8	N- 25%
1196	Scotts Miracle-Gro	147.88	2	3	2	1.05	21.5	1.7	N- 20%	443	S&P Global	350.89	1	2	3	1.05	32.3	0.8	N- 5%
<b>Semiconductor Equip (INDUSTRY RANK 2)</b>								<b>Water Utility (INDUSTRY RANK 11)</b>											
1385	Amkor Technology	11.16	2	4	2	1.20	12.3	NIL	25-125%	1786	Amer. States Water	74.37	2	2	3	0.65	31.6	1.8	N- 10%
1386	Applied Materials	57.32	1	3	2	1.20	12.9	1.6	15- 75%	1787	Amer. Water Works	139.72	1	3	2	0.85	35.7	1.6	N- N%
1387	Axcelis Technologies	22.64	2	3	2	1.25	21.2	NIL	10- 55%	1790	Essential Utilities	39.31	2	2	1	0.90	38.5	2.5	N- 40%
1388	Entegris, Inc.	66.60	2	3	2	1.10	27.2	0.5	N- 35%	1791	Middlesex Water	62.09	2	2	1	0.70	29.4	1.7	N- 5%
1389	FormFactor, Inc.	24.50	2	3	2	1.20	19.6	NIL	65-145%	1793	York Water Co. (The)	42.32	2	3	2	0.80	35.6	1.7	N- 20%
1391	Kulicke & Soffa	22.77	2	3	2	1.00	24.2	2.4	55-140%	<b>Semiconductor (INDUSTRY RANK 12)</b>									
1392	Lam Research	314.96	1	3	2	1.30	15.6	1.7	5- 55%	1350	Advanced Energy	58.70	2	3	1	1.30	12.9	NIL	60-140%
1393	MKS Instruments	108.32	2	3	2	1.15	16.3	0.7	10- 65%	1351	Advanced Micro Dev.	77.94	1	4	3	1.20	76.4	NIL	N- N%
1394	Onto Innovation	29.01	2	3	1	1.10	16.5	NIL	105-210%	1353	Analog Devices	113.93	1	2	2	0.95	21.6	2.2	5- 45%
1395	Photronics Inc.	9.85	2	3	3	0.85	13.3	NIL	85-155%	1355	CEVA, Inc.	37.19	2	3	2	1.05	NMF	NIL	50-130%
<b>Computer Software (INDUSTRY RANK 3)</b>								<b>Homebuilding (INDUSTRY RANK 13)</b>											
2584	Adobe Inc.	475.64	1	2	3	0.80	56.7	NIL	5- 45%	1127	Horton D.R.	72.12	2	3	3	1.20	11.8	1.0	N- 40%
2585	Alteryx, Inc.	110.31	2	3	2	0.90	NMF	NIL	55-125%	1129	Lennar Corp.	76.75	2	3	3	1.35	12.6	0.7	N- 45%
2587	Autodesk, Inc.	227.64	1	3	3	1.00	96.9	NIL	N- 5%	1130	M.D.C. Holdings	44.74	2	3	2	1.30	8.9	3.0	25- 90%
2588	Cadence Design Sys.	102.10	1	2	3	0.95	39.9	NIL	N- 5%	1131	Meritage Homes	101.73	2	3	3	1.40	11.1	NIL	5- 50%
2589	Citrix Sys.	134.22	1	3	3	0.75	24.8	1.0	35-100%	1133	PulteGroup, Inc.	44.61	2	3	2	1.40	10.5	1.1	N- 55%
2592	FireEye Inc.	12.50	2	4	3	1.20	NMF	NIL	35-140%	1134	TRI Pointe Group	17.07	2	3	2	1.50	7.4	NIL	75-165%
2593	Fortinet Inc.	117.83	1	3	3	0.90	51.0	NIL	30-100%	<b>Drug (INDUSTRY RANK 14)</b>									
2594	Guidewire Software	104.93	2	3	2	0.90	NMF	NIL	20- 80%	1607	AbbVie Inc.	89.09	1	3	2	1.00	8.2	5.3	45-125%
2595	Intuit Inc.	307.70	2	2	3	1.05	33.5	0.8	5- 45%	1609	AstraZeneca PLC (ADS)	55.91	2	2	3	0.80	47.0	2.5	15- 50%
2597	Microsoft Corp.	202.54	1	1	3	0.90	32.7	1.0	10- 30%	1612	Biogen	268.30	1	3	3	0.90	8.0	NIL	35-105%
2601	Oracle Corp.	60.82	1	1	3	0.85	14.7	1.6	40- 65%	1615	Emergent BioSolutions	100.00	2	4	3	0.85	16.6	NIL	10- 80%
2602	PTC Inc.	85.33	2	3	2	1.10	85.3	NIL	N- 5%	1617	Gilead Sciences	64.21	1	2	3	0.65	40.6	4.2	15- 65%
2604	Paycom Software	274.32	2	3	2	1.15	73.7	NIL	N- 50%	1618	GlaxoSmithKline ADR	38.21	2	1	3	0.85	11.9	4.9	45- 85%
2605	RingCentral, Inc.	267.40	2	3	2	0.95	NMF	NIL	10- 65%	1621	Lilly (Eli)	151.18	2	1	3	0.75	20.3	2.0	5- 30%
2606	SAP SE	155.88	2	2	2	0.90	35.4	1.1	N- 25%	1626	Nektar Therapeutics	19.41	2	5	3	1.00	NMF	NIL	5-105%
2609	Square, Inc.	151.12	2	4	3	1.50	NMF	NIL	N- N%	1628	Novo Nordisk ADR	68.99	2	1	2	0.80	25.9	1.9	10- 30%
2610	Synopsys, Inc.	201.98	1	1	3	1.00	36.3	NIL	N- N%	1630	Perrigo Co. plc	45.92	1	3	3	1.00	11.3	2.1	65-140%
2613	VMware, Inc.	140.27	2	3	4	0.90	23.1	NIL	15- 70%	1632	Sage Therapeutics	59.88	2	4	5	1.40	NMF	NIL	35-125%
<b>Pharmacy Services (INDUSTRY RANK 4)</b>								<b>Biotechnology (INDUSTRY RANK 15)</b>											
967	CVS Health	58.87	1	2	3	0.90	8.2	3.4	60- 95%	829	Alynam Pharmac.	130.92	2	4	2	1.05	NMF	NIL	5- 70%
968	PetMed Express	30.63	2	3	2	0.65	20.4	3.7	15- 65%	830	Amgen	243.19	1	1	3	0.85	15.5	2.8	20- 50%
969	Rite Aid Corp.	13.67	2	5	1	0.70	45.6	NIL	N- 85%	831	Bio-Techne Corp.	237.70	2	2	1	0.80	56.9	0.6	N- 15%
<b>Entertainment Tech (INDUSTRY RANK 5)</b>								<b>IT Services (INDUSTRY RANK 16)</b>											
2008	Activision Blizzard	81.41	1	3	2	0.70	32.6	0.6	N- 5%	2615	ACI Worldwide	25.08	2	3	3	1.00	25.1	NIL	20- 80%
2011	Electronic Arts	128.29	1	3	2	0.65	29.2	NIL	5- 55%	2616	Accenture Plc	233.91	2	1	3	0.95	30.8	1.4	5- 25%
2015	Take-Two Interactive	164.34	1	3	2	0.65	55.3	NIL	N- 15%	2619	CACI Int'l	215.44	2	3	2	0.95	15.8	NIL	30- 90%
2017	Zynga Inc.	8.63	2	3	2	0.75	28.8	NIL	N- N%	2621	CSG Systems Int'l	40.15	2	3	3	0.75	16.1	2.3	10- 75%
<b>Precious Metals (INDUSTRY RANK 6)</b>								<b>Brokers &amp; Exchanges (INDUSTRY RANK 7)</b>											
1568	Agnico Eagle Mines	78.51	2	3	3	0.55	32.6	1.0	45-125%	1796	Cboe Global Markets	90.00	1	2	5	0.90	22.3	1.9	55-110%
1569	AngloGold Ashanti ADS	26.17	2	4	3	0.55	11.0	0.5	35-130%	1800	Intercontinental Exch.	99.27	1	2	3	0.90	22.5	1.2	N- 40%
1570	Barrick Gold	28.19	2	3	2	0.60	23.7	1.1	5- 40%	1802	MarketAxess Holdings	443.00	1	3	2	0.80	54.4	0.5	N- 20%
1571	Franco-Nevada Corp.	141.36	2	3	2	0.45	51.8	0.7	N- 20%	1803	Nasdaq, Inc.	122.05	2	3	3	1.05	21.2	1.6	N- 5%
1572	Hecla Mining	5.24	2	4	1	0.95	34.9	0.4	90-205%	<b>Retail Building Supply (INDUSTRY RANK 8)</b>									
1573	Kinross Gold	9.23	2	4	3	0.65	13.2	1.3	40-115%	1138	Fastenal Co.	43.72	1	2	2	0.95	32.4	2.3	N- 15%
1574	Newmont Corp.	63.67	1	3	2	0.60	20.5	1.6	N- 50%	1141	Lowe's Cos.	159.60	2	2	3	1.15	18.8	1.5	N- 30%
1576	Pretium Resources	13.25	2	5	3	0.60	14.9	NIL	50-200%	1143	Sherwin-Williams	682.83	2	2	3	1.00	29.3	0.8	N- 20%
1577	Royal Gold	122.64	2	3	1	0.75	39.1	1.0	35-100%	1144	Tractor Supply	137.56	1	2	2	0.85	21.7	1.2	N- 25%
1578	Wheaton Precious Met.	49.48	2	3	2	0.65	39.9	0.8	N- 20%	<b>Cable TV (INDUSTRY RANK 9)</b>									
<b>Brokers &amp; Exchanges (INDUSTRY RANK 7)</b>								<b>IT Services (INDUSTRY RANK 16)</b>											
1796	Cboe Global Markets	90.00	1	2	5	0.90	22.3	1.9	55-110%	2622	Fiserv Inc.	99.61	1	2	3	1.00	20.1	NIL	5- 45%
1800	Intercontinental Exch.	99.27	1	2	3	0.90	22.5	1.2	N- 40%	2628	Henry (Jack) & Assoc.	159.21	1	1	2	0.85	37.5	1.1	N- 15%
1802	MarketAxess Holdings	443.00	1	3	2	0.80	54.4	0.5	N- 20%	2631	ManTech Int'l 'A'	70.03	2	3	2	0.85	26.0	1.8	20- 80%
1803	Nasdaq, Inc.	122.05	2	3	3	1.05	21.2	1.6	N- 5%	2634	ServiceNow, Inc.	461.88	1	3	3	0.95	NMF	NIL	N- N%
<b>Retail Building Supply (INDUSTRY RANK 8)</b>								<b>IT Services (INDUSTRY RANK 16)</b>											
1138	Fastenal Co.	43.72	1	2	2	0.95	32.4	2.3	N- 15%	2635	Tyler Technologies	328.96	2	3	2	0.75	60.9	NIL	N- 40%
1141	Lowe's Cos.	159.60	2	2	3	1.15	18.8	1.5	N- 30%	<b>IT Services (INDUSTRY RANK 16)</b>									
1143	Sherwin-Williams	682.83	2	2	3	1.00	29.3	0.8	N- 20%	2615	ACI Worldwide	25.08	2	3	3	1.00	25.1	NIL	20- 80%
1144	Tractor Supply	137.56	1	2	2	0.85	21.7	1.2	N- 25%	2616	Accenture Plc	233.91	2	1	3	0.95	30.8	1.4	5- 25%
<b>Cable TV (INDUSTRY RANK 9)</b>								<b>IT Services (INDUSTRY RANK 16)</b>											
1011	Altice USA	25.94	2	3	2	1.05	34.6	NIL	15- 95%	2619	CACI Int'l	215.44	2	3	2	0.95	15.8	NIL	30- 90%
1012	Cable One	1726.45	2	2	1	0.90	38.2	0.6	N- 30%	2621	CSG Systems Int'l	40.15	2	3	3	0.75	16.1	2.3	10- 75%
1013	Charter Commun.	614.34	1	3	3	0.95	40.8	NIL	N- 5%	2624	EPAM Systems	314.30	2	3	3	1.00	62.5	NIL	5- 60%
1015	Comcast Corp.	44.68	1	1	3	0.80	19.1	2.1	55- 90%	2627	Fiserv Inc.	99.61	1	2	3	1.00	20.1	NIL	5- 45%

TIMELY STOCKS IN TIMELY INDUSTRIES

Page No.	Industry (Industry Rank)	RANKS					Current P/E Ratio	% Est'd Yield	Est'd. 3-5 Year Price Apprec.	Page No.	Industry (Industry Rank)	RANKS					Current P/E Ratio	% Est'd Yield	Est'd. 3-5 Year Price Apprec.		
		Recent Price	Timeliness	Technical Safety	Beta	Current P/E Ratio						Recent Price	Timeliness	Technical Safety	Beta	Current P/E Ratio					
<b>Electric Utility (West) (INDUSTRY RANK 17)</b>																					
2218	IDACORP, Inc.	80.37	2	2	3	0.80	17.2	3.5	5-	45%	2137	Big Lots Inc.	46.02	2	3	2	1.15	7.4	2.7	10-	75%
2220	PNM Resources	39.91	2	3	3	0.95	17.6	3.2	N-	40%	2140	Costco Wholesale	339.57	1	1	3	0.65	38.5	0.8	10-	35%
2221	Pinnacle West Capital	70.81	1	1	3	0.85	15.5	4.6	35-	60%	2142	Dollar General	202.94	1	3	3	0.70	25.9	0.7	N-	35%
2222	Portland General	34.24	2	3	3	0.85	42.3	4.8	30-	75%	2143	Dollar Tree, Inc.	85.97	2	3	3	0.75	16.7	NIL	45-	115%
2223	Sempra Energy	116.66	1	2	3	0.95	16.3	3.7	20-	65%	2144	Five Below, Inc.	129.30	2	3	4	1.20	48.6	NIL	5-	55%
<b>Telecom. Services (INDUSTRY RANK 18)</b>																					
918	ATN International	50.70	2	3	3	0.75	66.7	1.3	10-	70%	2148	Ollie's Bargain Outlet	85.88	2	3	1	1.05	35.9	NIL	15-	75%
920	Bandwidth Inc.	163.61	2	3	3	0.70	NMF	NIL	N-	35%	2150	Rent-A-Center	29.13	2	4	1	1.20	12.2	4.0	5-	90%
926	j2 Global	68.41	2	3	4	1.05	23.0	NIL	45-	120%	2151	Target Corp.	149.86	1	2	3	0.70	24.8	1.8	N-	5%
929	Ooma, Inc.	12.94	2	4	1	1.15	NMF	NIL	N-	45%	2152	Walmart Inc.	137.07	1	1	3	0.55	27.3	1.6	5-	30%
930	Shenandoah Telecom.	44.62	2	3	1	0.75	26.2	0.7	35-	90%	<b>Med Supp Non-Invasive (INDUSTRY RANK 25)</b>										
932	Telephone & Data	19.39	2	3	2	1.00	13.8	3.6	80-	160%	203	Abbott Labs.	105.95	2	1	3	1.00	31.1	1.4	5-	25%
933	TELUS Corporation	23.26	2	2	3	0.70	22.8	5.2	50-	95%	206	AmerisourceBergen	95.82	1	2	2	0.90	12.0	1.8	30-	100%
935	Verizon Commun.	59.61	1	1	4	0.65	12.2	4.2	45-	75%	208	Bio-Rad Labs. 'A'	517.91	2	2	3	0.80	62.1	NIL	N-	N%
936	Vodafone Group ADR	13.45	2	3	3	0.95	29.9	8.2	85-	195%	211	Charles River	217.93	2	3	3	1.20	42.1	NIL	N-	N%
<b>Food Processing (INDUSTRY RANK 19)</b>																					
1903	B&G Foods	27.80	2	3	3	0.50	14.3	6.8	45-	115%	214	DexCom Inc.	391.69	2	4	2	0.95	NMF	NIL	N-	15%
1906	Cal-Maine Foods	38.14	2	3	1	0.60	20.2	NIL	20-	85%	216	Hill-Rom Hldgs.	84.46	2	3	3	1.00	14.7	1.0	35-	105%
1908	Campbell Soup	46.07	1	2	2	0.60	15.8	3.0	N-	30%	218	IDEXX Labs.	364.70	1	3	2	1.00	61.8	NIL	5-	60%
1909	Conagra Brands	35.04	1	3	2	0.75	14.0	2.5	N-	55%	223	Masimo Corp.	219.79	2	3	3	0.85	63.3	NIL	N-	N%
1911	Flowers Foods	23.45	2	3	2	0.60	22.5	3.5	5-	50%	227	Neogen Corp.	74.57	2	3	2	0.85	62.7	NIL	N-	50%
1913	Freshpet, Inc.	105.20	2	4	3	1.00	NMF	NIL	N-	N%	228	NovoCure Limited	105.11	2	4	4	1.15	NMF	NIL	N-	30%
1914	Gen'l Mills	57.87	1	1	2	0.65	15.6	3.5	5-	20%	232	ResMed Inc.	171.51	1	3	2	0.95	38.2	0.9	N-	N%
1916	Herbalife Nutrition	47.71	2	3	2	1.00	18.1	NIL	15-	80%	234	West Pharm. Svcs.	276.84	1	2	3	0.80	63.5	0.2	N-	10%
1918	Hormel Foods	48.47	1	1	2	0.55	28.7	2.1	5-	35%	<b>Tobacco (INDUSTRY RANK 26)</b>										
1919	Hostess Brands	12.59	2	3	3	0.75	18.8	NIL	35-	100%	1995	Turning Point Brands	29.02	2	4	3	1.00	15.4	0.7	5-	70%
1926	Maple Leaf Foods	26.99	2	3	1	0.60	26.2	2.4	50-	105%	1996	Universal Corp.	42.51	2	3	3	0.75	12.1	7.2	5-	65%
1927	McCormick & Co.	190.40	1	1	3	0.85	33.8	1.3	N-	5%	<b>Internet (INDUSTRY RANK 27)</b>										
1928	Medifast, Inc.	172.16	2	3	1	1.05	23.5	2.6	N-	25%	2637	ANGI Homeservices	10.32	2	3	1	0.90	NMF	NIL	N-	45%
1930	Nestle SA ADS	119.17	2	1	3	0.65	27.4	2.3	N-	20%	2638	Alibaba Group ADS	273.82	2	3	3	0.90	32.8	NIL	N-	30%
1935	Sanfilippo (John B.)	74.49	2	3	1	0.55	17.7	0.9	N-	50%	2639	Alphabet Inc.	1431.16	1	1	2	0.90	26.3	NIL	60-	95%
1936	Saputo Inc.	32.56	2	1	3	0.60	23.3	2.1	25-	55%	2640	Amazon.com	2960.47	1	2	3	0.80	78.2	NIL	5-	40%
1939	Smucker (J.M.)	109.79	1	2	2	0.65	16.3	3.3	10-	45%	2645	eBay Inc.	50.14	1	3	2	1.00	13.5	1.3	50-	130%
1940	Tootsie Roll	29.71	2	1	3	0.50	30.3	1.2	20-	50%	2646	Etsy, Inc.	116.01	2	3	1	1.20	NMF	NIL	N-	5%
1941	TreeHouse Foods	40.28	2	3	3	0.70	16.0	NIL	25-	100%	2653	1-800-FLOWERS.COM	23.54	2	3	2	0.90	27.7	NIL	N-	25%
1943	USANA Health Sciences	75.70	2	3	1	0.95	14.4	NIL	N-	25%	2659	VeriSign Inc.	202.89	1	3	3	0.95	36.7	NIL	N-	10%
1944	Unilever PLC ADR	59.90	2	1	2	0.80	21.4	3.1	15-	40%	<b>Medical Services (INDUSTRY RANK 28)</b>										
<b>Funeral Services (INDUSTRY RANK 20)</b>																					
1842	Carriage Services	20.88	2	3	3	0.95	14.1	1.7	90-	165%	791	Anthem, Inc.	257.71	1	3	2	1.15	10.9	1.6	55-	135%
1843	Hillenbrand, Inc.	26.94	2	3	3	1.15	8.7	3.2	50-	140%	792	Centene Corp.	55.99	1	3	2	1.05	10.3	NIL	50-	130%
1845	Service Corp. Int'l	40.27	2	3	2	1.00	21.0	1.9	35-	100%	793	Cigna Corp.	164.96	2	3	3	1.20	8.7	NIL	70-	155%
<b>Computers/Peripherals (INDUSTRY RANK 21)</b>																					
1403	Logitech Int'l	73.26	2	2	3	0.70	28.7	1.2	15-	55%	794	DaVita Inc.	85.12	1	3	3	1.00	12.5	NIL	15-	75%
1404	Mercury Systems	76.20	2	3	2	1.00	33.0	NIL	10-	70%	797	Fresenius Medical ADR	41.37	2	2	2	0.90	15.4	1.7	45-	105%
1405	NetApp, Inc.	41.39	2	3	4	1.10	12.2	4.8	70-	155%	800	Humana Inc.	394.51	2	3	2	1.20	20.9	0.7	N-	50%
1406	Pure Storage	14.69	2	4	3	1.15	NMF	NIL	70-	205%	801	ICON plc	177.08	2	2	2	0.90	27.9	NIL	15-	50%
1408	Seagate Technology	48.23	1	3	5	1.10	10.7	5.5	N-	45%	807	Molina Healthcare	168.88	2	3	1	1.05	13.7	NIL	20-	80%
1410	Western Digital	36.09	2	3	5	1.40	11.1	NIL	95-	205%	815	UnitedHealth Group	299.19	2	1	2	1.05	17.2	1.7	20-	45%
<b>E-Commerce (INDUSTRY RANK 22)</b>																					
1815	Akamai Technologies	110.16	1	3	3	0.75	33.6	NIL	10-	65%	<b>Beverage (INDUSTRY RANK 29)</b>										
1818	Black Knight, Inc.	84.57	2	3	3	0.85	42.7	NIL	N-	30%	1967	Boston Beer 'A'	879.27	2	3	3	0.70	83.7	NIL	N-	N%
1819	Check Point Software	116.88	2	1	2	0.75	19.2	NIL	10-	35%	1976	MGP Ingredients	38.86	2	3	4	0.80	17.3	1.2	40-	120%
1820	Cornerstone OnDemand	34.53	2	3	3	1.30	26.2	NIL	45-	115%	1978	Monster Beverage	78.38	2	3	3	0.85	38.2	NIL	N-	45%
1822	GoDaddy Inc.	73.51	2	3	1	1.05	66.2	NIL	10-	65%	1979	National Beverage	71.65	2	3	3	0.75	27.0	NIL	N-	45%
1826	Mercadolibre Inc.	1011.99	2	3	2	1.00	NMF	NIL	N-	45%	<b>Power (INDUSTRY RANK 30)</b>										
1827	New Relic, Inc.	55.68	2	3	3	1.00	NMF	NIL	55-	135%	1211	BWX Technologies	57.96	2	3	3	0.90	20.3	1.3	20-	75%
1832	salesforce.com	245.05	2	3	3	0.85	NMF	NIL	N-	N%	1216	First Solar, Inc.	61.67	2	3	2	1.10	24.7	NIL	45-	125%
1833	Shopify Inc.	927.89	2	3	2	1.00	NMF	NIL	N-	N%	1217	Generac Holdings	181.23	2	3	3	1.05	32.2	NIL	30-	100%
1838	Workday, Inc.	203.55	2	3	2	1.00	NMF	NIL	N-	35%	1220	Northland Power	38.91	2	3	2	0.90	26.7	3.1	15-	65%
<b>Retail/Wholesale Food (INDUSTRY RANK 23)</b>																					
1946	Ali. Couche-Tard	44.86	2	3	2	0.75	18.3	0.7	45-	110%	1222	SolarEdge Tech.	190.41	2	3	2	1.15	52.3	NIL	N-	30%
1950	Empire Company Ltd.	37.06	2	3	2	0.55	16.5	1.4	N-	35%	<b>Railroad (INDUSTRY RANK 31)</b>										
1952	Ingles Markets	35.44	2	3	1	0.50	7.2	1.9	15-	70%	339	Can. National Railway	103.31	2	1	3	0.90	26.2	1.7	25-	55%
1953	Kroger Co.	33.46	1	3	2	0.55	13.5	2.2	5-	65%	340	Can. Pacific Railway	296.79	2	2	3	1.05	22.5	1.0	10-	60%
1955	Metro Inc.	60.48	2	2	3	0.50	17.5	1.5	N-	25%	<b>Trucking (INDUSTRY RANK 32)</b>										
1957	SpartanNash Co.	17.32	2	4	1	0.60	16.2	4.4	15-	100%	321	Heartland Express	18.66	2	2	1	0.75	21.0	0.4	5-	60%
1958	Sprouts Farmers Market	20.61	2	3	1	0.65	14.3	NIL	45-	120%	324	Knight-Swift Trans.	41.54	2	3	2	0.85	18.8	0.8	10-	70%
1962	Village Super Market	24.93	2	3	2	0.50	13.4	4.0	40-	100%	327	Schneider National	25.31	2	3	2	0.80	22.0	1.0	N-	40%
1963	Weis Markets	47.58	2</																		

# Timely Stocks

## Stocks Ranked 1 (Highest) for Relative Price Performance (Next 12 Months)

Page No.	Stock Name	Recent Price Ticker	Technical Safety	R a n k s	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price Ticker	Technical Safety	R a n k s	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank		
1607	AbbVie Inc.	ABBV	89.09	3	2	8.2	5.3	Drug	14	1918	Hormel Foods	HRL	48.47	1	2	28.7	2.1	Food Processing	19
2008	Activision Blizzard	ATVI	81.41	3	2	32.6	0.6	Entertainment Tech	5	218	IDEXX Labs.	IDXX	364.70	3	2	61.8	NIL	Med Supp Non-Invasive	25
2584	Adobe Inc.	ADBE	475.64	2	3	56.7	NIL	Computer Software	3	1360	Intel Corp.	INTC	49.72	1	5	10.9	2.7	Semiconductor	12
1351	Advanced Micro Dev.	AMD	77.94	4	3	76.4	NIL	Semiconductor	12	1800	Intercontinental Exch.	ICE	99.27	2	3	22.5	1.2	Brokers & Exchanges	7
1815	Akamai Technologies	AKAM	110.16	3	3	33.6	NIL	E-Commerce	22	122	KLA Corp.	KLAC	181.10	3	3	15.6	2.0	Precision Instrument	35
1511	Alexandria Real Estate	ARE	155.89	3	2	42.6	2.7	R.E.I.T.	66	1193	Kimberly-Clark	KMB	145.87	1	2	17.7	2.9	Household Products	1
754	Allstate Corp.	ALL	92.03	1	4	7.7	2.3	Insurance (Prop/Cas.)	36	1953	Kroger Co.	KR	33.46	3	2	13.5	2.2	Retail/Wholesale Food	23
2639	Alphabet Inc.	GOOG	1431.16	1	2	26.3	NIL	Internet	27	1392	Lam Research	LRCX	314.96	3	2	15.6	1.7	Semiconductor Equip	2
2640	Amazon.com	AMZN	2960.47	2	3	78.2	NIL	Internet	27	393	Leidos Hldgs.	LDOS	88.43	3	2	15.6	1.5	Industrial Services	42
904	Ameren Corp.	AEE	76.62	2	2	21.5	2.7	Electric Util. (Central)	47	717	Lockheed Martin	LMT	379.61	1	3	16.0	2.7	Aerospace/Defense	73
592	Amer. Tower 'A'	AMT	240.97	2	3	57.8	2.0	Wireless Networking	39	1141	Lowe's Cos.	LOW	159.60	2	3	18.8	1.5	Retail Building Supply	10
1787	Amer. Water Works	AWK	139.72	3	2	35.7	1.6	Water Utility	11	440	MSCI Inc.	MSCI	351.73	3	3	47.5	0.9	Information Services	8
206	AmerisourceBergen	ABC	95.82	2	2	12.0	1.8	Med Supp Non-Invasive	25	1802	MarketAxess Holdings	MKTX	443.00	3	2	54.4	0.5	Brokers & Exchanges	7
830	Amgen	AMGN	243.19	1	3	15.5	2.8	Biotechnology	15	1927	McCormick & Co.	MKC	190.40	1	3	33.8	1.3	Food Processing	19
1353	Analog Devices	ADI	113.93	2	2	21.6	2.2	Semiconductor	12	2597	Microsoft Corp.	MSFT	202.54	1	3	32.7	1.0	Computer Software	3
791	Anthem, Inc.	ANTM	257.71	3	2	10.9	1.6	Medical Services	28	441	Moody's Corp.	MCO	280.04	3	3	32.3	0.8	Information Services	10
1386	Applied Materials	AMAT	57.32	3	2	12.9	1.6	Semiconductor Equip	2	2339	Netflix, Inc.	NFLX	487.35	2	2	72.4	NIL	Entertainment	58
2542	Assurant Inc.	AIZ	120.07	2	3	13.5	2.1	Financial Svcs. (Div.)	57	1574	Newmont Corp.	NEM	63.67	3	2	20.5	1.6	Precious Metals	6
547	Atmos Energy	ATO	92.27	1	3	19.0	2.7	Natural Gas Utility	37	720	Northrop Grumman	NOC	325.89	1	3	14.0	1.8	Aerospace/Defense	73
2587	Autodesk, Inc.	ADSK	227.64	3	3	96.9	NIL	Computer Software	3	1368	NVIDIA Corp.	NVDA	500.69	3	3	76.9	0.1	Semiconductor	12
1612	Biogen	BIIB	268.30	3	3	8.0	NIL	Drug	14	2601	Oracle Corp.	ORCL	60.82	1	3	14.7	1.6	Computer Software	3
430	Broadridge Fin'l	BR	130.91	2	2	24.2	1.8	Information Services	10	130	PerkinElmer Inc.	PKI	118.25	2	2	22.2	0.2	Precision Instrument	35
1796	Choe Global Markets	CBOE	90.00	2	5	22.3	1.9	Brokers & Exchanges	7	1630	Perrigo Co. plc	PRGO	45.92	3	3	11.3	2.1	Drug	14
380	C.H. Robinson	CHRW	101.95	2	3	27.3	2.0	Industrial Services	42	2221	Pinnacle West Capital	PNW	70.81	1	3	15.5	4.6	Electric Utility (West)	17
967	CVS Health	CVS	58.87	2	3	8.2	3.4	Pharmacy Services	4	1195	Procter & Gamble	PG	136.71	1	3	25.5	2.3	Household Products	1
2588	Cadence Design Sys.	CDNS	102.10	2	3	39.9	NIL	Computer Software	3	769	Progressive Corp.	PGR	97.36	1	4	16.4	0.4	Insurance (Prop/Cas.)	36
1908	Campbell Soup	CPB	46.07	2	2	15.8	3.0	Food Processing	19	1538	Prologis	PLD	96.55	2	2	42.2	2.5	R.E.I.T.	66
792	Centene Corp.	CNC	55.99	3	2	10.3	NIL	Medical Services	28	1540	Realty Income Corp.	O	60.09	3	4	40.3	4.8	R.E.I.T.	66
1013	Charter Commun.	CHTR	614.34	3	3	40.8	NIL	Cable TV	9	843	Regeneron Pharm.	REGN	555.70	3	2	20.5	NIL	Biotechnology	15
1188	Church & Dwight	CHD	89.64	1	2	30.6	1.1	Household Products	1	232	ResMed Inc.	RMD	171.51	3	2	38.2	0.9	Med Supp Non-Invasive	25
2589	Citrix Sys.	CTXS	134.22	3	3	24.8	1.0	Computer Software	3	398	Rollins, Inc.	ROL	52.34	2	3	68.0	0.6	Industrial Services	42
1189	Clorox Co.	CLX	208.53	1	2	27.6	2.1	Household Products	1	443	S&P Global	SPGI	350.89	2	3	32.3	0.8	Information Services	10
1190	Colgate-Palmolive	CL	75.19	1	3	25.3	2.3	Household Products	1	1408	Seagate Technology	STX	48.23	3	5	10.7	5.5	Computers/Peripherals	21
1015	Comcast Corp.	CMCSA	44.68	1	3	19.1	2.1	Cable TV	9	2223	Sempra Energy	SRE	116.66	2	3	16.3	3.7	Electric Utility (West)	17
1909	Conagra Brands	CAG	35.04	3	2	14.0	2.5	Food Processing	19	2634	ServiceNow, Inc.	NOW	461.88	3	3	NMF	NIL	IT Services	16
2140	Costco Wholesale	COST	339.57	1	3	38.5	0.8	Retail Store	24	1939	Smucker (J.M.)	SJM	109.79	2	2	16.3	3.3	Food Processing	19
794	DaVita Inc.	DVA	85.12	3	3	12.5	NIL	Medical Services	28	2527	State Street Corp.	STT	59.92	3	3	9.9	3.5	Bank	72
2142	Dollar General	DG	202.94	3	3	25.9	0.7	Retail Store	24	2610	Synopsys, Inc.	SNPS	201.98	1	3	36.3	NIL	Computer Software	3
359	Domino's Pizza	DPZ	404.97	2	2	32.6	0.8	Restaurant	78	2015	Take-Two Interactive	TTWO	164.34	3	2	55.3	NIL	Entertainment Tech	5
2645	eBay Inc.	EBAY	50.14	3	2	13.5	1.3	Internet	27	2151	Target Corp.	TGT	149.86	2	3	24.8	1.8	Retail Store	24
2011	Electronic Arts	EA	128.29	3	2	29.2	NIL	Entertainment Tech	5	1380	Texas Instruments	TXN	136.98	1	3	25.3	3.0	Semiconductor	12
434	Equifax, Inc.	EFX	155.10	3	2	26.5	1.0	Information Services	10	132	Thermo Fisher Sci.	TMO	425.47	1	3	40.0	0.2	Precision Instrument	35
1138	Fastenal Co.	FAST	43.72	2	2	32.4	2.3	Retail Building Supply	8	1144	Tractor Supply	TSCO	137.56	2	2	21.7	1.2	Retail Building Supply	8
2515	First Republic Bank	FRC	105.86	3	1	20.5	0.8	Bank	72	1547	UDR, Inc.	UDR	32.15	3	4	NMF	4.6	R.E.I.T.	66
2627	Fiserv Inc.	FISV	99.61	2	3	20.1	NIL	IT Services	16	2659	VeriSign Inc.	VRSN	202.89	3	3	36.7	NIL	Internet	27
2593	Fortinet Inc.	FTNT	117.83	3	3	51.0	NIL	Computer Software	3	446	Verisk Analytics	VRSK	178.68	2	2	41.0	0.6	Information Services	10
1914	Gen'l Mills	GIS	57.87	1	2	15.6	3.5	Food Processing	19	935	Verizon Commun.	VZ	59.61	1	4	12.2	4.2	Telecom. Services	18
1617	Gilead Sciences	GILD	64.21	2	3	40.6	4.2	Drug	14	847	Vertex Pharm.	VRTX	264.00	3	3	27.2	NIL	Biotechnology	15
1530	Healthpeak Properties	PEAK	26.29	3	4	NMF	5.6	R.E.I.T.	66	2152	Walmart Inc.	WMT	137.07	1	3	27.3	1.6	Retail Store	24
2628	Henry (Jack) & Assoc.	JKHY	159.21	1	2	37.5	1.1	IT Services	16	234	West Pharm. Svcs.	WST	276.84	2	3	63.5	0.2	Med Supp Non-Invasive	25

■ Newly added this week.

Rank 1 Deletions:  
Cigna Corp.

Rank removed—see supplement or report:  
None.

Continued from preceding page

TIMELY STOCKS

Stocks Ranked 2 (Above Average) for Relative Price Performance in the Next 12 Months

Page No.	Stock Name	Ticker	Recent Price		R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Ticker	Recent Price		R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
			Technical Safety	↓	↓	↓								Technical Safety	↓	↓	↓				
1702	AAON, Inc.	AAON	56.05	3	2	39.2	0.7	Machinery	54	709	Elbit Systems	ESLT	122.97	2	3	17.6	1.4	Aerospace/Defense	73		
2615	ACI Worldwide	ACIW	25.08	3	3	25.1	NIL	IT Services	16	1615	Emergent BioSolutions	EBS	100.00	4	3	16.6	NIL	Drug	14		
2637	ANGI Homeservices	ANGI	10.32	3	1	NMF	NIL	Internet	27	1950	Empire Company Ltd.	EMPA.TO	37.06	3	2	16.5	1.4	Retail/Wholesale Food	23		
918	ATN International	ATNI	50.70	3	3	66.7	1.3	Telecom. Services	18	1192	Entegris Holdings	ENR	39.51	3	2	14.7	3.0	Household Products	1		
203	Abbott Labs.	ABT	105.95	1	3	31.1	1.4	Med Supp Non-Invasive	25	1388	Entegris, Inc.	ENTG	66.60	3	2	27.2	0.5	Semiconductor Equip	2		
2616	Accenture Plc	ACN	233.91	1	3	30.8	1.4	IT Services	16	1522	Equinix, Inc.	EQIX	745.55	3	2	NMF	1.5	R.E.I.T.	66		
2118	Advance Auto Parts	AAP	148.43	3	3	18.5	0.7	Retail Automotive	48	951	Ericsson ADR	ERIC	10.75	3	1	20.3	1.5	Telecom. Equipment	34		
1350	Advanced Energy	AEIS	58.70	3	1	12.9	NIL	Semiconductor	12	1790	Essential Utilities	WTRG	39.31	2	1	38.5	2.5	Water Utility	11		
113	Agilent Technologies	A	98.13	2	3	30.3	0.7	Precision Instrument	35	1524	Essex Property Trust	ESS	204.31	3	4	37.9	4.2	R.E.I.T.	66		
1568	Agnico Eagle Mines	AEM	78.51	3	3	32.6	1.0	Precious Metals	6	2646	Etsy, Inc.	ETSY	116.01	3	1	NMF	NIL	Internet	27		
2432	Air Products & Chem.	APD	290.78	1	3	33.4	1.8	Chemical (Diversified)	60	331	Euronav NV	EURN	9.43	4	3	4.7	11.7	Maritime	75		
2638	Alibaba Group ADS	BABA	273.82	3	3	32.8	NIL	Internet	27	141	Eversource Energy	ES	78.02	1	2	21.4	3.0	Electric Utility (East)	50		
1946	Ali. Couche-Tard	ATDB.TO	44.86	3	2	18.3	0.7	Retail/Wholesale Food	23	1525	Extra Space Storage	EXR	107.56	3	5	31.8	3.3	R.E.I.T.	66		
753	Allegheny Corp.	Y	504.33	1	4	11.7	NIL	Insurance (Prop/Cas.)	36	1602	FMC Corp.	FMC	106.45	3	2	16.1	1.8	Chemical (Basic)	59		
829	Alnylam Pharmac.	ALNY	130.92	4	2	NMF	NIL	Biotechnology	15	436	FactSet Research	FDS	336.84	2	2	32.6	0.9	Information Services	10		
2585	Alteryx, Inc. ▲	AYX	110.31	3	2	NMF	NIL	Computer Software	3	308	FedEx Corp.	FDX	238.74	3	3	26.3	1.1	Air Transport	91		
1011	Alice USA	ATUS	25.94	3	2	34.6	NIL	Cable TV	9	103	Ferrari N.V.	RACE	184.10	3	3	56.8	0.7	Automotive	43		
1786	Amer. States Water	AWR	74.37	2	3	31.6	1.8	Water Utility	11	2553	Fidelity Nat'l Fin'l	FNF	32.10	3	4	10.8	4.1	Financial Svcs. (Div.)	57		
1385	Amkor Technology	AMKR	11.16	4	2	12.3	NIL	Semiconductor Equip	2	2592	FireEye Inc.	FEYE	12.50	4	3	NMF	NIL	Computer Software	3		
1569	AngloGold Ashanti ADS	AU	26.17	4	3	11.0	0.5	Precious Metals	6	1216	First Solar, Inc.	FSLR	61.67	3	2	24.7	NIL	Power	30		
1609	AstraZeneca PLC (ADS)	AZN	55.91	2	3	47.0	2.5	Drug	14	2144	Five Below, Inc.	FIVE	129.30	3	4	48.6	NIL	Retail Store	24		
305	Atlas Air Worldwide	AAWW	59.05	3	2	4.9	NIL	Air Transport	91	1911	Flowers Foods	FLO	23.45	3	2	22.5	3.5	Food Processing	19		
943	AudioCodes Ltd.	AUDC	31.25	3	2	25.4	0.9	Telecom. Equipment	34	1503	Flushing Financial	FFIC	10.81	3	4	6.4	7.8	Thrift	63		
2121	AutoZone Inc. ▲	AZO	1186.01	3	3	18.5	NIL	Retail Automotive	48	1389	FormFactor, Inc.	FORM	24.50	3	2	19.6	NIL	Semiconductor Equip	2		
1387	Axcelis Technologies	ACLS	22.64	3	2	21.2	NIL	Semiconductor Equip	2	911	Fortis Inc.	FTS.TO	52.24	2	2	20.5	3.9	Electric Util. (Central)	47		
1903	B&G Foods	BGS	27.80	3	3	14.3	6.8	Food Processing	19	1571	Franco-Nevada Corp.	FNV	141.36	3	2	51.8	0.7	Precious Metals	6		
1211	BWX Technologies	BWXT	57.96	3	3	20.3	1.3	Power	30	197	Fresenius Medical ADR	FMS	41.37	2	2	15.4	1.7	Medical Services	28		
565	Balchem Corp.	BCPC	95.24	3	1	34.8	0.5	Chemical (Specialty)	61	1913	Freshpet, Inc.	FRPT	105.20	4	3	NMF	NIL	Food Processing	19		
2503	BancorpSouth Bank	BXS	19.22	3	3	10.1	3.9	Bank	72	1309	Garmin Ltd.	GRMN	94.26	2	2	23.2	2.7	Electrical Equipment	62		
920	Bandwidth Inc.	BAND	163.61	3	3	NMF	NIL	Telecom. Services	18	438	Gartner Inc.	IT	126.41	3	4	52.7	NIL	Information Services	10		
1570	Barrick Gold	GOLD	28.19	3	2	23.7	1.1	Precious Metals	6	1217	Generac Holdings	GNRC	181.23	3	3	32.2	NIL	Power	30		
1174	Berry Global Group	BERY	48.07	3	1	10.1	NIL	Packaging & Container	46	386	Genpact Limited	G	37.63	2	2	17.3	1.0	Industrial Services	42		
2167	Best Buy Co.	BBY	105.97	3	2	16.2	2.1	Retail (Hardlines)	69	742	Gibraltar Inds.	ROCK	61.81	3	2	19.5	NIL	Steel	70		
2137	Big Lots Inc. ▲	BIG	46.02	3	2	7.4	2.7	Retail Store	24	1618	GlaxoSmithKline ADR	GSK	38.21	3	3	11.9	4.9	Drug	14		
208	Bio-Rad Labs. 'A'	BIO	517.91	2	3	62.1	NIL	Med Supp Non-Invasive	25	1822	GoDaddy Inc.	GGDY	73.51	3	1	66.2	NIL	E-Commerce	22		
831	Bio-Techne Corp.	TECH	237.70	2	1	56.9	0.6	Biotechnology	15	1758	Griffon Corp.	GFF	18.79	3	2	25.1	1.6	Diversified Co.	67		
832	BioMarin Pharmac.	BMRN	77.28	3	3	NMF	NIL	Biotechnology	15	2594	Guidewire Software	GWRE	104.93	3	2	NMF	NIL	Computer Software	3		
1818	Black Knight, Inc.	BKI	84.57	3	3	42.7	NIL	E-Commerce	22	1529	Healthcare R'ty Trust	HR	28.12	3	5	37.0	4.3	R.E.I.T.	66		
2543	BlackRock, Inc.	BLK	552.59	2	3	19.4	2.6	Financial Svcs. (Div.)	57	821	HealthEquity, Inc.	HQY	48.38	3	3	30.8	NIL	Healthcare Information	33		
1107	Boise Cascade	BCC	38.07	3	2	13.4	1.1	Building Materials	45	321	Heartland Express	HTLD	18.66	2	1	21.0	0.4	Trucking	32		
376	Booz Allen Hamilton	BAH	85.66	3	3	23.8	1.5	Industrial Services	42	1572	Hecla Mining	HL	5.24	4	1	34.9	0.4	Precious Metals	6		
1967	Boston Beer 'A'	SAM	879.27	3	3	83.7	NIL	Beverage	29	1003	Helen of Troy Ltd.	HELE	192.06	3	2	18.9	NIL	Toiletries/Cosmetics	52		
2387	Boston Omaha	BOMN	15.22	3	4	27.7	NIL	Advertising	76	1916	Herbalife Nutrition	HLF	47.71	3	2	18.1	NIL	Food Processing	19		
1707	Brooks Automation	BRKS	45.33	3	1	46.7	0.9	Machinery	54	216	Hill-Rom Hldgs.	HRC	84.46	3	3	14.7	1.0	Med Supp Non-Invasive	25		
2545	Brown & Brown	BRO	44.02	1	2	29.7	0.8	Financial Svcs. (Div.)	57	1843	Hillenbrand, Inc.	HI	26.94	3	3	8.7	3.2	Food Services	20		
1108	Builders FirstSource	BLDR	30.05	4	2	13.6	NIL	Building Materials	45	1127	Horton D.R.	DHI	72.12	3	3	11.8	1.0	Homebuilding	13		
2619	CACI Int'l	CACI	215.44	3	2	15.8	NIL	IT Services	16	1919	Hostess Brands	TWNB	12.59	3	3	18.8	NIL	Food Processing	19		
1355	CEVA, Inc.	CEVA	37.19	3	2	NMF	NIL	Semiconductor	12	1809	Houlihan Lokey	HLI	56.61	2	3	27.0	2.3	Investment Banking	49		
2621	CSG Systems Int'l	CSGS	40.15	3	3	16.1	2.3	IT Services	16	800	Humana Inc.	HUM	394.51	3	2	20.9	0.7	Medical Services	28		
1012	Cable One	CABO	1726.45	2	1	38.2	0.6	Cable TV	9	801	ICON plc	ICLR	177.08	2	2	27.9	NIL	Medical Services	28		
566	Cabot Microelectr's	CCMP	135.21	3	1	26.6	1.3	Chemical (Specialty)	61	121	II-VI Inc.	IIVI	38.52	3	2	23.9	NIL	Precision Instrument	35		
1906	Cal-Maine Foods	CALM	38.14	3	1	20.2	NIL	Food Processing	19	2218	IDACORP, Inc.	IDA	80.37	2	3	17.2	3.5	Electric Utility (West)	17		
945	Calix, Inc.	CALX	18.73	4	2	31.7	NIL	Telecom. Equipment	34	954	INFN Corp.	INFN	6.20	5	1	NMF	NIL	Telecom. Equipment	34		
339	Can. National Railway	CNI	103.31	1	3	26.2	1.7	Railroad	31	1952	Ingles Markets	IMKTA	35.44	3	1	7.2	1.9	Retail/Wholesale Food	23		
340	Can. Pacific Railway	CP	296.79	2	3	22.5	1.0	Railroad	31	1359	Inphi Corp.	IPHI	106.31	3	2	30.1	NIL	Semiconductor	12		
1422	Canopy Growth Corp.	CGC	15.74	4	3	NMF	NIL	Cannabis	82	185	Insulet Corp.	PODD	224.57	3	3	NMF	NIL	Med Supp Invasive	53		
1842	Carriage Services	CSV	20.88	3	3	14.1	1.7	Funeral Services	20	599	InterDigital Inc.	IDCC	57.35	3	1	35.8	2.4	Wireless Networking	39		
406	Casella Waste Sys.	CWST	53.88	3	3	79.2	NIL	Environmental	44	2595	Intuit Inc.	INTU	307.70	2	3	33.5	0.8	Computer Software	3		
176	Catalent, Inc.	CTLT	85.55	3	3	96.1	NIL	Med Supp Invasive	53	1334	iRobot Corp.	IRBT	76.06	3	3	27.0	NIL	Electronics	65		
1327	Celestica Inc.	CLS	7.21	3	1	8.1	NIL	Electronics	65	926	j2 Global	JCOM	68.41	3	4	23.0	NIL	Telecom. Services	18		
1187	Central Garden & Pet	CENT	37.22	3	1	18.2	NIL	Household Products	1	1766	Kaman Corp.	KAMN	40.04	3	3	24.0	2.0	Diversified Co.	67		
211	Charles River	CRL	217.93	3	3	42.1	NIL	Med Supp Non-Invasive	25	1573	Kinross Gold	KGC	9.23	4	3	13.2	1.3	Precious Metals	6		
1819	Check Point Software	CHKP	116.88	1	2	19.2	NIL	E-Commerce	22	324	Knight-Swift Trans.	KNX	41.54	3	2	18.8	0.8	Trucking	32		
2000	Chegg, Inc.	CHGG	68.05	3	2	57.7	NIL	Educational Services	41	1391	Kulicke & Soffa	KLIC	22.77	3	2	24.2	2.4	Semiconductor Equip	1		
1750	Chemed Corp.	CHE	479.52	2	2	29.2	0.3	Diversified Co.	67	1129	Lennar Corp.	LEN	76.75	3	3	12.6	0.7	Homebuilding	13		
608	Cheniere Energy Inc.	LNG	49.64	3																	

Continued from preceding page

**TIMELY STOCKS**

**Stocks Ranked 2 (Above Average) for Relative Price Performance in the Next 12 Months**

Page No.	Stock Name	Ticker	Recent Price		R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Ticker	Recent Price		R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
			Technical Safety	Technical Safety	Technical Safety	Technical Safety															
1826	Mercadolibre Inc.	MELI	1011.99	3	2	NMF	NIL	E-Commerce	22	930	Shenandoah Telecom.	SHEN	44.62	3	1	26.2	0.7	Telecom. Services	18		
1404	Mercury Systems	MRCY	76.20	3	2	33.0	NIL	Computers/Peripherals	21	1143	Sherwin-Williams	SHW	682.83	2	3	29.3	0.8	Retail Building Supply	8		
1131	Meritage Homes	MTH	101.73	3	3	11.1	NIL	Homebuilding	13	1833	Shopify Inc.	SHOP	927.89	3	2	NMF	NIL	E-Commerce	22		
1955	Metro Inc.	MRU.TO	60.48	2	3	17.5	1.5	Retail/Wholesale Food	23	1183	Silgan Holdings	SLGN	35.50	3	3	13.0	1.4	Packaging & Container	46		
1791	Middlesex Water	MSEX	62.09	2	1	29.4	1.7	Water Utility	11	1375	Silicon Labs.	SLAB	94.76	3	3	NMF	NIL	Semiconductor	12		
807	Molina Healthcare	MOH	168.88	3	1	13.7	NIL	Medical Services	28	1119	Simpson Manufacturing	SSD	91.73	3	2	23.7	1.0	Building Materials	45		
1367	Monolithic Power Sys.	MPWR	255.97	3	2	55.2	0.8	Semiconductor	12	2343	Sinclair Broadcast	SBGI	20.19	3	4	8.2	4.0	Entertainment	58		
1978	Monster Beverage	MNST	78.38	3	3	38.2	NIL	Beverage	29	2183	SiteOne Landscape	SITE	112.32	3	2	61.7	NIL	Retail (Hardlines)	69		
1803	Nasdaq, Inc.	NDAQ	122.05	3	3	21.2	1.6	Brokers & Exchanges	7	1222	SolarEdge Tech.	SEDG	190.41	3	2	52.3	NIL	Power	30		
1979	National Beverage	FIZZ	71.65	3	3	27.0	NIL	Beverage	29	1989	Sony Corp. ADR	SNE	78.27	3	2	36.4	0.4	Foreign Electronics	40		
1768	National Presto Ind.	NPK	83.36	3	3	16.4	7.2	Diversified Co.	67	554	Southwest Gas	SWX	62.32	3	3	14.5	3.7	Natural Gas Utility	37		
1626	Nektar Therapeutics	NKTR	19.41	5	3	NMF	NIL	Drug	14	1957	SpartanNash Co.	SPTN	17.32	4	1	16.2	4.4	Retail/Wholesale Food	23		
227	Neogen Corp. ▲	NEOG	74.57	3	2	62.7	NIL	Med Supp Non-Invasive	25	1958	Sprouts Farmers Market	SFM	20.61	3	1	14.3	NIL	Retail/Wholesale Food	23		
1930	Nestle SA ADS	NSRGY	119.17	1	3	27.4	2.3	Food Processing	19	2609	Square, Inc.	SQ	151.12	4	3	NMF	NIL	Computer Software	3		
1405	NetApp, Inc.	NTAP	41.39	3	4	12.2	4.8	Computers/Peripherals	21	1238	Stantec Inc.	STN.TO	40.24	2	1	19.9	1.5	Engineering & Const	55		
841	Neurocrine Biosci.	NBIX	99.30	3	2	38.0	NIL	Biotechnology	15	2322	Sturm, Ruger & Co.	RGR	62.08	3	1	16.9	2.5	Recreation	83		
2003	New Orient. Ed. ADS	EDU	154.07	3	3	45.0	NIL	Educational Services	41	2576	Sun Life Fin'l Svcs.	SLF.TO	53.72	2	3	10.7	4.1	Financial Svcs. (Div.)	57		
1827	New Relic, Inc.	NEWR	55.68	3	3	NMF	NIL	E-Commerce	22	196	SurModics, Inc.	SRDX	38.60	3	1	NMF	NIL	Med Supp Invasive	53		
2383	New York Times	NYT	42.23	3	2	44.5	0.6	Newspaper	-	963	Switch, Inc.	SWCH	15.59	4	1	57.7	1.3	Telecom. Equipment	34		
2340	Nexstar Media Group	NXST	95.13	3	4	6.5	2.4	Entertainment	58	1134	TRI Pointe Group	TPH	17.07	3	2	7.4	NIL	Homebuilding	13		
1220	Northland Power	NPL.TO	38.91	3	2	26.7	3.1	Power	30	404	TTEC Holdings	TTEC	52.58	3	1	19.8	1.3	Industrial Services	42		
1628	Novo Nordisk ADR	NVO	68.99	1	2	25.9	1.9	Drug	14	1379	Taiwan Semic. ADR	TSM	80.59	1	3	26.9	2.1	Semiconductor	12		
228	NovoCure Limited	NVCR	105.11	4	4	NMF	NIL	Med Supp Non-Invasive	25	825	Teladoc Health	TDOC	202.66	4	3	NMF	NIL	Healthcare Information	33		
2148	Ollie's Bargain Outlet	OLLI	85.88	3	1	35.9	NIL	Retail Store	24	198	Telexflex Inc.	TFX	326.70	3	2	52.5	0.4	Med Supp Invasive	53		
2653	1-800-FLOWERS.COM	FLWS	23.54	3	2	27.7	NIL	Internet	27	932	Telephone & Data	TDS	19.39	3	2	13.8	3.6	Telecom. Services	18		
1394	Onto Innovation	ONTO	29.01	3	1	16.5	NIL	Semiconductor Equip	2	933	TELUS Corporation	T.TO	23.26	2	3	22.8	5.2	Telecom. Services	18		
929	Ooma, Inc.	OOMA	12.94	4	1	NMF	NIL	Telecom. Services	18	110	Tesla, Inc.	TSLA	449.39	3	3	NMF	NIL	Automotive	43		
2220	PNM Resources	PNM	39.91	3	3	17.6	3.2	Electric Utility (West)	17	1940	Tootsie Roll	TR	29.71	1	3	30.3	1.2	Food Processing	19		
2602	PTC Inc.	PTC	85.33	3	2	85.3	NIL	Computer Software	3	1736	Toro Co.	TTC	81.65	2	4	30.7	1.3	Machinery	54		
364	Papa John's Int'l	PZZA	84.47	3	2	51.2	1.1	Restaurant	78	168	Toromont Inds.	TIH.TO	73.71	2	3	24.2	1.7	Heavy Truck & Equip	64		
785	Park National	PRK	85.74	3	4	14.1	4.8	Bank (Midwest)	87	111	Toyota Motor ADR	TM	131.22	2	3	20.7	3.1	Automotive	43		
2604	Paycom Software	PAYC	274.32	3	2	73.7	NIL	Computer Software	3	1941	TreeHouse Foods	THS	40.28	3	3	16.0	NIL	Food Processing	19		
968	PetMed Express	PETS	30.63	3	2	20.4	3.7	Pharmacy Services	4	1122	Trex Co.	TREX	66.36	3	3	45.8	NIL	Building Materials	45		
628	Phillips 66 Partners	PSXP	23.87	3	3	6.2	14.7	Pipeline MLPs	92	1648	TriNet Group	TNET	59.32	3	1	19.8	NIL	Human Resources	71		
1395	Photronics Inc.	PLAB	9.85	3	3	13.3	NIL	Semiconductor Equip	2	2530	Truist Fin'l	TFC	37.34	3	4	11.8	4.8	Bank	72		
1811	Piper Sandler Cos.	PIPR	68.31	3	3	20.6	2.3	Investment Banking	49	1995	Turning Point Brands	TPB	29.02	4	3	15.4	0.7	Tobacco	26		
1339	Plexus Corp.	PLXS	69.32	3	1	15.8	NIL	Electronics	65	2635	Tyler Technologies	TYL	328.96	3	2	60.9	NIL	IT Services	16		
2317	Pool Corp.	POOL	300.49	2	3	41.4	0.8	Recreation	83	1123	UPF Industries	UFPI	52.65	3	1	15.3	0.9	Building Materials	45		
2222	Portland General	POR	34.24	3	3	42.3	4.8	Electric Utility (West)	17	1943	USANA Health Sciences	USNA	75.70	3	1	14.4	NIL	Food Processing	19		
1371	Power Integrations	POWI	52.26	3	1	39.0	0.8	Semiconductor	12	603	Ubiquiti Inc.	UI	157.66	3	2	27.0	1.0	Wireless Networking	39		
1576	Pretium Resources	PVG	13.25	5	3	14.9	NIL	Precious Metals	6	1944	Unilever PLC ADR	UL	59.90	1	2	21.4	3.1	Food Processing	19		
1562	Primerica, Inc.	PRI	112.85	3	1	11.6	1.4	Insurance (Life)	51	815	UnitedHealth Group ▲	UNH	299.19	1	2	17.2	1.7	Medical Services	28		
1234	Primoris Services	PRIM	17.28	3	3	9.0	1.4	Engineering & Const	55	1996	Universal Corp.	UVV	42.51	3	3	12.1	7.2	Tobacco	26		
1133	PulteGroup, Inc.	PHM	44.61	3	2	10.5	1.1	Homebuilding	13	133	Veeco Instruments	VECO	12.08	4	2	NMF	NIL	Precision Instrument	35		
1406	Pure Storage	PSTG	14.69	4	3	NMF	NIL	Computers/Peripherals	21	826	Veeva Systems	VEEV	271.55	3	3	NMF	NIL	Healthcare Information	33		
770	RLI Corp.	RLI	83.18	2	2	32.4	1.2	Insurance (Prop/Cas.)	36	1317	Vicor Corp.	VICR	74.64	3	2	NMF	NIL	Electrical Equipment	62		
2150	Rent-A-Center	RCII	29.13	4	1	12.2	4.0	Retail Store	24	1962	Village Super Market	VLGEA	24.93	3	2	13.4	4.0	Retail/Wholesale Food	23		
2605	RingCentral, Inc.	RNG	267.40	3	2	NMF	NIL	Computer Software	3	2613	VMware, Inc.	VMW	140.27	3	4	23.1	NIL	Computer Software	3		
969	Rite Aid Corp.	RAD	13.67	5	1	45.6	NIL	Pharmacy Services	4	965	Vocera Communications	VCRA	27.37	3	2	NMF	NIL	Telecom. Equipment	34		
1577	Royal Gold	RGLD	122.64	3	1	39.1	1.0	Precious Metals	6	1936	Vodafone Group ADR	VOD	13.45	3	3	29.9	8.2	Telecom. Services	18		
2606	SAP SE	SAP	155.88	2	2	35.4	1.1	Computer Software	3	413	Waste Connections	WCN	101.25	2	3	NMF	0.7	Environmental	44		
601	SBA Communications	SBAC	305.06	3	3	NMF	0.7	Wireless Networking	39	1963	Weis Markets	WMK	47.58	3	1	13.8	2.6	Retail/Wholesale Food	23		
1632	Sage Therapeutics	SAGE	59.88	4	5	NMF	NIL	Drug	14	328	Werner Enterprises	WERN	42.62	3	2	17.8	0.8	Trucking	32		
1832	salesforce.com	CRM	245.05	3	3	NMF	NIL	E-Commerce	22	1410	Western Digital	WDC	36.09	3	5	11.1	NIL	Computers/Peripherals	21		
1935	Sanfilippo (John B.)	JBSS	74.49	3	1	17.7	0.9	Food Processing	19	1964	Weston (George)	WN.TO	96.40	2	3	12.1	2.2	Retail/Wholesale Food	23		
1633	Sanofi ADR	SNY	50.85	1	3	10.3	3.4	Drug	14	1578	Wheaton Precious Met.	WPM	49.48	3	2	39.9	0.8	Precious Metals	6		
1936	Saputo Inc.	SAP.TO	32.56	1	3	23.3	2.1	Food Processing	19	2380	Wiley (John) & Sons	JWA	33.04	3	3	12.6	4.1	Publishing	84		
844	Sarepta Therapeutics	SRPT	142.84	4	2	NMF	NIL	Biotechnology	15	1910	Williams-Sonoma	WSM	86.11	3	2	19.9	2.2	Retail (Hardlines)	69		
327	Schneider National	SNDR	25.31	3	2	22.0	1.0	Trucking	32	371	Wingstop Inc.	WING	137.73	3	2	NMF	0.4	Restaurant	78		
399	Science Applications	SAIC	76.46	3	3	12.0	1.9	Industrial Services	42	1838	Workday, Inc.	WDAY	203.55	3	2	NMF	NIL	E-Commerce	22		
1196	Scotts Miracle-Gro	SMG	147.88	3	2	21.5	1.7	Household Products	1	1793	York Water Co. (The)	YORW	42.32	3	2	35.6	1.7	Water Utility	11		
1182	Sealed Air	SEE	37.51	3	3	12.9	1.7	Packaging & Container	46	373	Yum China Holdings	YUMC	50.72	3	3	30.0	NIL	Restaurant	78		
845	Seattle Genetics	SGEN	178.83	4	3	NMF	NIL	Biotechnology	15	1635	Zoetis Inc.	ZTS	160.97	2	3	43.6	0.5	Drug	14		
1374	Semtech Corp.	SMTC	51.17	3	1	28.9	NIL	Semiconductor	12	211	Zumiez Inc.	ZUMZ	28.52	3	4	13.0	NIL	Retail (Softlines)	79		
1845	Service Corp. Int'l	SCI	40.27	3	2	21.0	1.9	Funeral Services	20	2017	Zynga Inc.	ZNGA	8.63	3	2	28.8	NIL	Entertainment Tech	5		

▲ Arrow indicates the direction of a change in Timeliness. ■ Newly added this week.

Stocks Ranked 1 (Highest) for Relative Safety

Page No.	Stock Name	Rank Current					Industry Group	Industry Rank	Page No.	Stock Name	Rank Current					Industry Group	Industry Rank
		Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield					Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield		
917	AT&T Inc.	28.63	3	3	8.5	7.4	Telecom. Services	18	189	Medtronic plc	104.80	3	4	21.8	2.2	Med Supp Invasive	53
203	Abbott Labs.	105.95	2	3	31.1	1.4	Med Supp Non-Invasive	25	1622	Merck & Co.	83.13	3	3	14.6	2.9	Drug	14
2616	Accenture Plc	233.91	2	3	30.8	1.4	IT Services	16	2597	Microsoft Corp.	(NDQ) 202.54	1	3	32.7	1.0	Computer Software	3
2432	Air Products & Chem.	290.78	2	3	33.4	1.8	Chemical (Diversified)	60	1930	Nestle SA ADS	(PNK) 119.17	2	3	27.4	2.3	Food Processing	19
753	Allstate Corp.	504.33	2	4	11.7	NIL	Insurance (Prop/Cas.)	36	583	NewMarket Corp.	350.30	3	4	23.6	2.2	Chemical (Specialty)	61
754	Allstate Corp.	92.03	1	4	7.7	2.3	Insurance (Prop/Cas.)	36	144	NextEra Energy	276.20	3	2	29.6	2.1	Electric Utility (East)	50
2639	Alphabet Inc.	(NDQ) 1431.16	1	2	26.3	NIL	Internet	27	2160	NIKE, Inc. 'B'	113.37	3	4	95.3	0.9	Shoe	85
2617	Amdocs Ltd.	(NDQ) 58.32	3	4	15.3	2.2	IT Services	16	720	Northrop Grumman	325.89	1	3	14.0	1.8	Aerospace/Defense	73
905	Amer. Elec. Power	79.36	3	4	18.0	3.7	Electric Util. (Central)	47	551	Northwest Natural	45.06	4	3	19.0	4.2	Natural Gas Utility	37
2538	Amer. Express	98.17	3	5	25.6	1.8	Financial Svcs. (Div.)	57	1627	Novartis AG ADR	89.50	3	4	24.9	3.5	Drug	14
830	Amgen	(NDQ) 243.19	1	3	15.5	2.8	Biotechnology	15	1628	Novo Nordisk ADR	68.99	2	2	25.9	1.9	Drug	14
1322	Amphenol Corp.	103.49	3	2	29.5	1.0	Electronics	65	1206	Nuveen Multi Value Fund	10.62	-	-	NMF	3.5	Investment Co.	-
2541	Aon plc	199.20	3	2	20.0	0.9	Financial Svcs. (Div.)	57	325	Old Dominion Freight (NDQ)	178.61	3	3	36.5	0.3	Trucking	32
1398	Apple Inc.	(NDQ) 110.08	3	3	31.4	0.8	Computers/Peripherals	21	2601	Oracle Corp.	60.82	1	3	14.7	1.6	Computer Software	3
547	Atmos Energy	92.27	1	3	19.0	2.7	Natural Gas Utility	37	2439	PPG Inds.	120.08	3	4	34.0	1.8	Chemical (Diversified)	60
2618	Automatic Data Proc. (NDQ)	131.03	3	4	22.0	2.8	IT Services	16	1980	PepsiCo, Inc.	(NDQ) 131.24	3	3	25.1	3.1	Beverage	29
173	Baxter Int'l Inc.	80.25	3	3	25.1	2.2	Med Supp Invasive	53	1631	Pfizer, Inc.	36.02	-	-	15.1	4.2	Drug	14
174	Becton, Dickinson	228.44	3	1	20.1	1.4	Med Supp Invasive	53	2221	Pinnacle West Capital	70.81	1	3	15.5	4.6	Electric Utility (West)	17
757	Berkley (W.R.)	61.14	3	3	26.5	0.8	Insurance (Prop/Cas.)	36	2572	Price (T. Rowe) Group (NDQ)	124.74	3	2	17.1	3.0	Financial Svcs. (Div.)	57
758	Berkshire Hathaway 'B'	213.02	3	4	23.4	NIL	Insurance (Prop/Cas.)	36	1195	Procter & Gamble	136.71	1	3	25.5	2.3	Household Products	1
1613	Bristol-Myers Squibb	57.77	3	2	20.3	3.1	Drug	14	769	Progressive Corp.	97.36	1	4	16.4	0.4	Insurance (Prop/Cas.)	56
2545	Brown & Brown	44.02	2	2	29.7	0.8	Financial Svcs. (Div.)	57	146	Public Serv. Enterprise	51.17	3	3	13.9	3.9	Electric Utility (East)	30
1968	Brown-Forman 'B'	75.84	3	3	42.1	0.9	Beverage	29	739	Public Storage	216.29	3	5	28.8	3.7	R.E.I.T.	66
339	Can. National Railway	103.31	2	3	26.2	1.7	Railroad	31	1522	Raytheon Technologies	60.02	-	-	NMF	3.2	Aerospace/Defense	73
1819	Check Point Software (NDQ)	116.88	2	2	19.2	NIL	E-Commerce	22	1729	Roper Tech.	392.25	3	1	31.4	0.5	Machinery	54
760	Chubb Ltd.	115.99	3	3	15.4	2.7	Insurance (Prop/Cas.)	36	2524	Royal Bank of Canada (TSE)	94.35	3	3	20.5	4.8	Bank	72
1188	Church & Dwight	89.64	1	2	30.6	1.1	Household Products	1	1633	Sanofi ADR	(NDQ) 50.85	2	3	10.3	3.4	Drug	14
948	Cisco Systems	(NDQ) 39.04	3	3	12.6	3.7	Telecom. Equipment	34	1936	Saputo Inc.	(TSE) 32.56	2	3	23.3	2.1	Food Processing	19
1189	Clorox Co.	208.53	1	2	27.6	2.1	Household Products	1	368	Starbucks Corp.	(NDQ) 83.89	3	4	77.0	2.1	Restaurant	78
1969	Coca-Cola	49.09	3	5	28.9	3.4	Beverage	29	195	Stryker Corp.	202.91	3	4	33.2	1.1	Med Supp Invasive	53
1190	Colgate-Palmolive	75.19	1	3	25.3	2.3	Household Products	1	2610	Synopsys, Inc.	(NDQ) 201.98	1	3	36.3	NIL	Computer Software	3
1015	Comcast Corp.	(NDQ) 44.68	1	3	19.1	2.1	Cable TV	9	1379	Taiwan Semic. ADR	(NDQ) 80.59	2	3	26.9	2.1	Semiconductor	12
777	Commerce Bancshs.	(NDQ) 54.39	3	4	20.8	2.0	Bank (Midwest)	87	1380	Texas Instruments	(NDQ) 136.98	1	3	25.3	3.0	Semiconductor	12
138	Consol. Edison	72.84	3	5	17.1	4.3	Electric Utility (East)	50	132	Thermo Fisher Sci.	425.47	1	3	40.0	0.2	Precision Instrument	35
2140	Costco Wholesale (NDQ)	339.57	1	3	38.5	0.8	Retail Store	24	1780	3M Company	161.36	3	3	19.9	3.6	Diversified Co.	67
1753	Danaher Corp.	205.81	-	-	39.7	0.3	Diversified Co.	67	1940	Tootsie Roll	29.71	2	3	30.3	1.2	Food Processing	72
155	Deere & Co.	214.21	3	3	32.9	1.4	Heavy Truck & Equip	64	2529	Toronto-Dominion (TSE)	60.80	3	3	18.2	5.3	Bank	19
1974	Diageo plc	128.33	3	3	20.7	2.7	Beverage	29	772	Travelers Cos.	109.45	3	3	12.7	3.1	Insurance (Prop/Cas.)	36
568	Ecolab Inc.	198.47	3	3	NMF	0.9	Chemical (Specialty)	61	1944	Unilever PLC ADR	59.90	2	2	21.4	3.1	Food Processing	19
1306	Emerson Electric	64.98	3	3	21.4	3.1	Electrical Equipment	62	346	Union Pacific	194.00	3	3	26.4	2.0	Railroad	31
2023	Everest Re Group Ltd.	202.31	3	3	15.5	3.1	Reinsurance	68	316	United Parcel Serv.	161.06	3	3	21.9	2.5	Air Transport	91
141	Eversource Energy	78.02	2	2	21.4	3.0	Electric Utility (East)	50	815	UnitedHealth Group	299.19	2	2	17.2	1.7	Medical Services	28
383	Expeditors Int'l	(NDQ) 88.33	3	3	24.6	1.2	Industrial Services	42	935	Verizon Communic.	59.61	1	4	12.2	4.2	Telecom. Services	18
1526	Federal Rlty. Inv. Trust	73.28	4	4	48.2	5.8	R.E.I.T.	66	2578	Visa Inc.	197.45	3	3	36.3	0.6	Financial Svcs. (Div.)	57
2558	Gallagher (Arthur J.)	104.11	3	3	25.6	1.7	Financial Svcs. (Div.)	57	1197	WD-40 Co.	(NDQ) 193.78	3	2	46.9	1.4	Household Products	1
711	Gen'l Dynamics	138.33	3	3	12.2	3.2	Aerospace/Defense	73	915	WEC Energy Group	94.86	3	3	24.8	2.8	Electric Util. (Central)	47
1914	Gen'l Mills	57.87	1	2	15.6	3.5	Food Processing	19	2152	Walmart Inc.	137.07	1	3	27.3	1.6	Retail Store	24
1618	GlaxoSmithKline ADR	38.21	2	3	11.9	4.9	Drug	14	414	Waste Management	114.30	3	3	29.9	1.9	Environmental	44
1558	Globe Life Inc.	79.29	3	4	11.4	0.9	Insurance (Life)	51	1145	Watsco, Inc.	230.29	3	2	35.8	3.1	Retail Building Supply	8
2628	Henry (Jack) & Assoc. (NDQ)	159.21	1	2	37.5	1.1	IT Services	16	2224	Xcel Energy Inc.	(NDQ) 66.64	3	2	23.5	2.7	Electric Utility (West)	17
1140	Home Depot	272.35	3	3	22.9	2.3	Retail Building Supply	8									
1760	Honeywell Int'l	161.37	3	4	24.5	2.2	Diversified Co.	67									
1918	Hormel Foods	48.47	1	2	28.7	2.1	Food Processing	19									
731	Illinois Tool Works	191.51	3	3	34.9	2.4	Metal Fabricating	80									
2629	Infosys Ltd. ADR	136.13	3	3	22.7	1.8	IT Services	16									
1360	Intel Corp.	(NDQ) 49.72	1	5	10.9	2.7	Semiconductor	12									
1402	Int'l Business Mach.	120.25	3	4	10.9	5.4	Computers/Peripherals	21									
576	Int'l Flavors & Frag.	120.43	-	-	20.5	2.6	Chemical (Specialty)	61									
1921	J&J Snack Foods	(NDQ) 127.73	4	4	NMF	1.8	Food Processing	19									
2517	JPMorgan Chase	95.31	3	4	15.3	3.8	Bank	72									
222	Johnson & Johnson	145.10	3	3	18.4	2.8	Med Supp Non-Invasive	25									
1922	Kellogg	62.72	3	2	16.2	3.7	Food Processing	19									
1193	Kimberly-Clark	145.87	1	2	17.7	2.9	Household Products	1									
1621	Lilly (Eli)	151.18	2	3	20.3	2.0	Drug	14									
717	Lockheed Martin	379.61	1	3	16.0	2.7	Aerospace/Defense	73									
912	MGE Energy	(NDQ) 61.07	3	3	22.8	2.5	Electric Util. (Central)	47									
2568	Marsh & McLennan	116.27	2	2	25.7	1.6	Financial Svcs. (Div.)	57									
2569	MasterCard Inc.	327.85	3	3	38.9	0.5	Financial Svcs. (Div.)	57									
1927	McCormick & Co.	190.40	1	3	33.8	1.3	Food Processing	19									
363	McDonald's Corp.	216.41	3	3	35.6	2.3	Restaurant	78									

Stocks Ranked 2 (Above Average) for Relative Safety

Page No.	Stock Name	Rank Current					Industry Group	Industry Rank	Page No.	Stock Name	Rank Current					Industry Group	Industry Rank
		Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield					Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield		
1966	AB InBev ADR	54.46	3	4	17.7	1.8	Beverage	29	2022	AXIS Capital Hldgs.	44.48	3	4	9.8	3.7	Reinsurance	68
1742	ABB Ltd. ADR	25.22	-	-	33.6	3.3	Diversified Co.	67	1022	BCE Inc.	41.27	3	4	17.7	6.0	Telecom. Utility	38
1200	Adams Divers. Equity Fd	15.81	-	-	NMF	1.3	Investment Co.	-	1173	Ball Corp.	81.03	3	4	43.1	0.7	Packaging & Container	46

Continued from preceding page

Stocks Ranked 2 (Above Average) for Relative Safety

Page No.	Stock Name	Recent Price	Rank Time- liness	Current Tech- nical	P/E	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Rank Time- liness	Current Tech- nical	P/E	% Est'd Yield	Industry Group	Industry Rank	
340	Can. Pacific Railway	296.79	2	3	22.5	1.0	Railroad	31	2632	Paychex, Inc.	(NDQ)	76.75	3	4	27.8	3.3	IT Services	16
2139	Canadian Tire 'A'	(TSE)	124.55	3	14.6	3.7	Retail Store	24	2571	PayPal Holdings	(NDQ)	183.21	3	3	NMF	NIL	Financial Svcs. (Div.)	57
1983	Canon Inc. ADR	16.20	3	3	11.5	8.5	Foreign Electronics	40	130	PerkinElmer Inc.	118.25	1	2	22.2	0.2	Precision Instrument	35	
1749	Carlisle Cos.	118.73	3	4	21.1	1.8	Diversified Co.	67	2317	Pool Corp.	(NDQ)	300.49	2	3	41.4	0.8	Recreation	83
153	Caterpillar Inc.	145.33	3	3	25.5	2.8	Heavy Truck & Equip	64	1538	Prologis	96.55	1	2	42.2	2.5	R.E.I.T.	66	
819	Cerner Corp.	(NDQ)	68.70	3	23.8	1.0	Healthcare Information	33	810	Quest Diagnostics	118.15	3	2	16.1	1.9	Medical Services	28	
1750	Chemed Corp.	479.52	2	2	29.2	0.3	Diversified Co.	67	770	RLI Corp.	83.18	2	2	32.4	1.2	Insurance (Prop/Cas.)	36	
548	Chesapeake Utilities	75.13	2	3	19.0	2.4	Natural Gas Utility	37	2025	RenaissanceRe Hldgs.	164.93	3	1	13.6	0.8	Reinsurance	68	
921	China Mobile (ADR)	33.50	3	3	8.3	6.3	Telecom. Services	18	409	Republic Services	94.04	3	3	28.9	1.8	Environmental	44	
381	Cintas Corp.	(NDQ)	316.59	3	40.6	0.9	Industrial Services	42	1647	Robert Half Int'l	51.97	3	3	23.0	2.7	Human Resources	71	
1014	Cogeco Communic.	(TSE)	108.60	-	15.2	2.1	Cable TV	9	1314	Rockwell Automation	209.08	3	2	31.6	2.0	Electrical Equipment	62	
2622	Cognizant Technology	(NDQ)	67.39	3	18.0	1.3	IT Services	16	770	Rogers Communications(TSE)	51.31	3	3	14.5	4.1	Diversified Co.	67	
1972	Constellation Brands	185.06	3	5	20.9	1.7	Beverage	29	398	Rollins, Inc.	52.34	1	3	68.0	0.6	Industrial Services	42	
212	Cooper Cos.	341.86	3	5	35.4	NIL	Med Supp Non-Invasive	25	443	S&P Global	350.89	1	3	32.3	0.8	Information Services	10	
2125	Copart, Inc.	(NDQ)	102.63	3	44.2	NIL	Retail Automotive	48	2606	SAP SE	155.88	2	2	35.4	1.1	Computer Software	3	
433	CoStar Group	(NDQ)	824.00	2	84.9	NIL	Information Services	10	2633	SEI Investments	(NDQ)	50.44	3	4	16.9	1.5	IT Services	16
154	Cummins Inc.	203.87	2	2	22.2	2.6	Heavy Truck & Equip	64	2223	Smpra Energy	116.66	1	3	16.3	3.7	Electric Utility (West)	17	
1201	DNP Select Inc. Fund	10.22	-	-	NMF	2.5	Investment Co.	-	1919	Shaw Commun. 'B'	(TSE)	24.01	3	3	18.2	5.0	Cable TV	9
908	DTE Energy	111.30	3	4	16.0	3.9	Electric Util. (Central)	47	1143	Sherwin-Williams	682.83	2	3	29.3	0.8	Retail Building Supply	8	
2010	Dolby Labs.	65.45	3	2	43.1	1.3	Entertainment Tech	5	1776	Siemens AG (ADS)	66.17	-	-	25.0	3.2	Diversified Co.	67	
139	Dominion Energy	77.97	3	3	21.4	3.6	Electric Utility (East)	50	1939	Smucker (J.M.)	109.79	1	2	16.3	3.3	Food Processing	19	
359	Domino's Pizza	404.97	1	2	32.6	0.8	Restaurant	78	1732	Snap-on Inc.	140.92	3	3	11.2	3.4	Machinery	54	
1711	Donaldson Co.	46.55	3	3	24.6	1.8	Machinery	54	1184	Sonoco Products	50.29	3	3	15.9	3.4	Packaging & Container	46	
1712	Dover Corp.	107.45	3	2	22.2	1.8	Machinery	54	147	Southern Co.	53.03	3	4	16.9	4.9	Electric Utility (East)	50	
1600	Dow Inc.	47.91	-	-	47.4	6.2	Chemical (Basic)	59	555	Spire Inc.	51.65	3	3	43.0	5.0	Natural Gas Utility	37	
140	Duke Energy	82.57	3	4	15.8	4.7	Electric Utility (East)	50	1238	Stantec Inc.	(TSE)	40.24	2	2	19.5	1.5	Engineering & Const	55
1601	DuPont de Nemours	56.18	-	-	18.7	2.2	Chemical (Basic)	59	194	STERIS plc	172.05	3	3	32.8	0.9	Med Supp Invasive	53	
180	Edwards Lifesciences	81.45	3	3	45.3	NIL	Med Supp Invasive	53	2576	Sun Life Fin'l Svcs.	(TSE)	53.72	2	3	10.7	4.1	Financial Svcs. (Div.)	57
709	Elbit Systems	(NDQ)	122.97	3	17.6	1.4	Aerospace/Defense	73	1345	TE Connectivity	96.37	3	3	25.4	2.0	Electronics	65	
1213	Emera Inc.	(TSE)	53.88	3	22.8	4.5	Power	30	2151	Target Corp.	149.86	1	3	24.8	1.8	Retail Store	24	
909	Entergy Corp.	94.83	3	3	17.1	4.0	Electric Util. (Central)	47	933	TELUS Corporation	(TSE)	23.26	3	3	22.8	5.2	Telecom. Services	18
762	Erie Indemnity	(NDQ)	213.36	2	37.6	1.8	Insurance (Prop/Cas.)	36	444	Thomson Reuters	(TSE)	102.35	3	3	53.3	1.5	Information Services	10
1790	Essential Utilities	39.31	2	1	38.5	2.5	Water Utility	11	1736	Toro Co.	81.65	2	4	30.7	1.3	Machinery	54	
910	Evergy, Inc.	50.01	3	3	17.3	4.3	Electric Util. (Central)	47	168	Toromont Inds.	(TSE)	73.71	2	3	24.2	1.7	Heavy Truck & Equip	64
2648	Facebook Inc.	(NDQ)	248.15	3	29.2	NIL	Internet	27	111	Toyota Motor ADR	131.22	2	3	20.7	3.1	Automotive	43	
436	FactSet Research	336.84	2	2	32.6	0.9	Information Services	10	1144	Tractor Supply	(NDQ)	137.56	1	2	21.7	1.2	Retail Building Supply	8
1138	Fastenal Co.	(NDQ)	43.72	1	32.4	2.3	Retail Building Supply	8	1208	Tri-Continental	25.24	-	-	NMF	4.0	Investment Co.	-	
308	FedEX Corp.	238.74	2	3	26.3	1.1	Air Transport	91	556	UGI Corp.	31.85	3	3	11.5	4.1	Natural Gas Utility	37	
2554	Fidelity Nat'l Info.	144.02	-	-	NMF	1.0	Financial Svcs. (Div.)	57	403	UniFirst Corp.	180.68	3	2	27.5	0.6	Industrial Services	42	
2627	Fiserv Inc.	(NDQ)	99.61	1	20.1	NIL	IT Services	16	787	U.S. Bancorp	36.16	4	4	15.3	4.6	Bank (Midwest)	87	
911	Fortis Inc.	(TSE)	52.24	2	20.5	3.9	Electric Util. (Central)	47	1782	Valmont Inds.	119.54	3	3	16.8	1.5	Diversified Co.	67	
2557	Franklin Resources	20.10	3	3	14.2	5.5	Financial Svcs. (Div.)	57	199	Varian Medical Sys.	172.74	-	-	56.3	NIL	Med Supp Invasive	53	
797	Fresenius Medical ADR	41.37	2	2	15.4	1.7	Medical Services	28	446	Verisk Analytics	(NDQ)	178.68	1	2	41.0	0.6	Information Services	10
1984	FUJIFILM Hldgs. ADR	(PNK)	47.05	3	47.1	1.7	Foreign Electronics	40	413	Waste Connections	101.25	2	3	NMF	0.7	Environmental	44	
1309	Garmin Ltd.	(NDQ)	94.26	2	23.2	2.7	Electrical Equipment	62	134	Waters Corp.	194.36	3	3	22.0	NIL	Precision Instrument	35	
386	Genpact Limited	37.63	2	2	17.3	1.0	Industrial Services	42	1738	Watts Water Techn.	97.19	3	4	34.7	1.0	Machinery	54	
1617	Gilead Sciences	(NDQ)	64.21	1	40.6	4.2	Drug	14	234	West Pharm. Svcs.	276.84	1	3	63.5	0.2	Med Supp Non-Invasive	25	
1807	Goldman Sachs	194.00	3	3	8.9	2.6	Investment Banking	49	1964	Weston (George)	(TSE)	96.40	2	3	12.1	2.2	Retail/Wholesale Food	23
1715	Graco Inc.	59.48	3	4	39.9	1.2	Machinery	54	2582	Willis Towers Wat. plc	(NDQ)	202.53	-	-	18.1	1.3	Financial Svcs. (Div.)	57
1310	Granger (W.W.)	341.57	3	2	21.3	1.8	Electrical Equipment	62	1740	Xylem Inc.	83.46	3	4	45.4	1.2	Machinery	54	
764	Hanover Insurance	92.94	3	3	11.4	2.8	Insurance (Prop/Cas.)	36	201	Zimmer Biomet Hldgs.	134.00	3	2	27.9	0.7	Med Supp Invasive	53	
2560	Hartford Fin'l Svcs.	36.24	4	3	7.5	3.6	Financial Svcs. (Div.)	57	1635	Zoetis Inc.	160.97	2	3	43.6	0.5	Drug	14	
2217	Hawaiian Elec.	32.44	3	3	18.8	4.1	Electric Utility (West)	17										
321	Heartland Express	(NDQ)	18.66	2	21.0	0.4	Trucking	32										
1917	Hershey Co.	137.00	3	2	23.4	2.4	Food Processing	19										
107	Honda Motor ADR	24.22	3	3	15.1	2.3	Automotive	43										
1809	Houlihan Lokey	56.61	2	3	27.0	2.3	Investment Banking	49										
1311	Hubbell Inc.	134.34	3	2	18.5	2.8	Electrical Equipment	62										
323	Hunt (J.B.)	(NDQ)	131.22	2	26.4	0.8	Trucking	32										
801	ICON plc	(NDQ)	177.08	2	27.9	NIL	Medical Services	28										
2218	IDACORP, Inc.	80.37	2	3	17.2	3.5	Electric Utility (West)	17										
1716	IDEX Corp.	178.25	3	3	37.9	1.1	Machinery	54										
1800	Intercontinental Exch.	99.27	1	3	22.5	1.2	Brokers & Exchanges	7										
2595	Intuit Inc.	(NDQ)	307.70	2	3	33.5	0.8	Computer Software	3									
187	Intuitive Surgical	(NDQ)	641.95	3	84.7	NIL	Med Supp Invasive	53										
838	Jazz Pharm. plc	(NDQ)	138.98	3	5	8.9	NIL	Biotechnology	15									
123	Keysight Technologies	97.80	3	2	22.2	NIL	Precision Instrument	35										
716	L3Harris Technologies	177.58	-	-	22.9	1.9	Aerospace/Defense	73										
804	Laboratory Corp.	184.33	3	2	14.9	NIL	Medical Services	28										
1925	Lancaster Colony	(NDQ)	175.67	3	34.4	1.6	Food Processing	19										
1005	Lauder (Estee)	207.83	3	2	58.5	1.0	Toiletries/Cosmetics	52										
1718	Lincoln Elec Hldgs.	(NDQ)	88.70	3	29.6	2.2	Machinery	54										
1954	Loblaw Cos. Ltd.	(TSE)	67.76	3	25.5	1.9	Retail/Wholesale Food	23										
2566	Loews Corp.	34.82	4	4	11.2	0.7	Financial Svcs. (Div.)	57										
1403	Logitech Int'l	(NDQ)	73.26	2	28.7	1.2	Computers/Peripherals	21										
1141	Lowe's Cos.	159.60																

**HIGHEST DIVIDEND YIELDING STOCKS (Based upon estimated year-ahead dividends per share)**

Page No.	Stock Name	Recent Price	Time-liness	Safety Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-liness	Safety Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
628	Phillips 66 Partners	23.87	2	3	6.2	14.7	Pipeline MLPs	92	1903	B&G Foods	27.80	2	3	14.3	6.8	Food Processing	19
2444	Apollo Investment	8.72	4	3	8.7	14.2	Public/Private Equity	-	505	Chevron Corp.	76.30	4	3	NMF	6.8	Petroleum (Integrated)	95
1845	Sunoco LP	25.09	4	3	10.1	13.2	Retail (Hardlines)	69	509	HollyFrontier Corp.	21.21	4	3	NMF	6.8	Petroleum (Integrated)	95
1027	Telefonica SA ADR	3.56	3	4	8.1	12.9	Telecom. Utility	38	1563	Prudential Fin'l	64.73	4	3	6.6	6.8	Insurance (Life)	51
1527	GE Group (The)	10.75	4	3	10.3	12.7	R.E.I.T.	66	1565	Unum Group	17.12	4	3	6.3	6.7	Insurance (Life)	51
331	Euronav NV	9.43	2	4	4.7	11.7	Maritime	75	2508	Bank of Nova Scotia	54.58	3	2	10.4	6.6	Bank	72
623	Enterprise Products	16.31	4	3	8.6	10.9	Pipeline MLPs	92	779	First Horizon National	9.11	4	3	8.7	6.6	Bank (Midwest)	87
624	Holly Energy Part.	12.81	4	4	8.3	10.9	Pipeline MLPs	92	1528	Gaming and Leisure	36.10	4	3	17.2	6.6	R.E.I.T.	66
1204	Liberty All-Star	5.91	-	3	NMF	10.8	Investment Co.	-	782	Huntington Bancshs.	9.16	4	3	11.6	6.6	Bank (Midwest)	87
506	Delek US Holdings	11.89	-	3	NMF	10.4	Petroleum (Integrated)	95	1504	Investors Bancorp	7.29	4	3	9.5	6.6	Thrift	63
2448	Gladstone Capital	7.72	-	3	7.6	10.1	Public/Private Equity	-	518	Phillips 66	55.92	4	3	NMF	6.6	Petroleum (Integrated)	95
2400	Black Stone Minerals	6.05	4	3	NMF	9.9	Petroleum (Producing)	94	1551	W.P. Carey Inc.	63.15	4	3	31.9	6.6	R.E.I.T.	66
1023	CenturyLink, Inc.	10.26	3	3	7.4	9.7	Telecom. Utility	38	2420	Helmerich & Payne	15.32	5	3	NMF	6.5	Oilfield Svcs/Equip.	96
507	Exxon Mobil Corp.	36.43	3	3	NMF	9.6	Petroleum (Integrated)	95	553	South Jersey Inds.	18.99	3	3	12.3	6.5	Natural Gas Utility	37
391	Iron Mountain	27.27	3	3	27.8	9.1	Industrial Services	42	145	PPL Corp.	26.23	3	2	11.3	6.4	Electric Utility (East)	50
1991	Altria Group	38.82	3	3	8.9	8.9	Tobacco	26	1541	Regency Centers Corp.	37.21	4	3	24.2	6.4	R.E.I.T.	66
1199	Aberdeen Asia-Pac. Fd.	4.00	-	4	NMF	8.8	Investment Co.	-	1592	Rio Tinto plc	61.60	3	3	9.9	6.4	Metals & Mining (Div.)	77
1534	Macerich Comp. (The)	6.87	5	4	38.2	8.7	R.E.I.T.	66	1994	Schweitzer-Mauduit Int'l	27.58	3	3	9.3	6.4	Tobacco	26
633	Suburban Propane	14.02	4	3	11.7	8.6	Pipeline MLPs	92	1550	Vornado Rlty Trust	33.33	4	3	NMF	6.4	R.E.I.T.	66
2537	AllianceBernstein Hldg.	27.14	3	3	12.0	8.5	Financial Svcs. (Div.)	57	921	China Mobile (ADR)	33.50	3	2	8.3	6.3	Telecom. Services	18
1992	Brit. Am. Tobacco ADR	33.82	3	3	7.6	8.5	Tobacco	26	2531	Webster Fin'l	25.46	4	3	11.3	6.3	Bank	72
1983	Canon Inc. ADR	16.20	3	2	11.5	8.5	Foreign Electronics	40	1600	Dow Inc.	47.91	-	2	47.4	6.2	Chemical (Basic)	59
2447	Compass Diversified	16.95	3	3	NMF	8.5	Public/Private Equity	-	1605	Olin Corp.	12.95	4	3	NMF	6.2	Chemical (Basic)	59
614	Pembina Pipeline	29.55	4	3	12.3	8.5	Oil/Gas Distribution	86	1993	Philip Morris Int'l	77.83	3	3	15.4	6.2	Tobacco	26
521	Total S.A. ADR	35.21	4	3	NMF	8.5	Petroleum (Integrated)	95	1552	Washington R.E.I.T.	19.38	3	3	NMF	6.2	R.E.I.T.	66
522	Valero Energy	47.36	4	3	NMF	8.3	Petroleum (Integrated)	95	2561	Invesco Ltd.	10.22	4	3	9.6	6.1	Petroleum Svcs. (Div.)	57
2546	CIT Group	17.01	5	3	68.0	8.2	Financial Svcs. (Div.)	57	2518	KeyCorp	12.05	4	3	13.7	6.1	Bank	72
612	Kinder Morgan Inc.	12.86	4	3	27.4	8.2	Oil/Gas Distribution	86	1535	Mack-Cali R'lty	13.10	-	3	NMF	6.1	R.E.I.T.	66
936	Vodafone Group ADR	13.45	2	3	29.9	8.2	Telecom. Services	18	1022	BCE Inc.	41.27	3	2	17.7	6.0	Telecom. Utility	38
610	Enbridge Inc.	39.97	3	3	14.7	8.1	Oil/Gas Distribution	86	525	Brigham Minerals	9.34	-	4	NMF	6.0	Natural Gas (Div.)	90
1205	MFS Multimarket	5.90	-	4	NMF	8.1	Investment Co.	-	2511	Citizens Fin'l Group	25.83	4	3	12.1	6.0	Bank	72
2570	Navient Corp.	7.94	4	3	3.6	8.1	Financial Svcs. (Div.)	57	2514	First Commonwealth	7.30	4	3	7.6	6.0	Bank	72
1506	Northwest Bancshares	9.35	3	3	16.4	8.1	Thrift	63	2391	Interpublic Group	16.93	3	3	13.3	6.0	Advertising	76
619	Cheniere Energy Part.	32.93	3	3	11.3	8.0	Pipeline MLPs	92	1560	Manulife Fin'l	13.91	2	3	6.5	6.0	Insurance (Life)	51
1545	Simon Property Group	64.87	5	3	17.0	8.0	R.E.I.T.	66	2440	Trinseo S.A.	26.87	4	3	NMF	6.0	Chemical (Diversified)	60
1503	Flushing Financial	10.81	2	3	6.4	7.8	Thrift	63	2194	Buckle (The), Inc.	20.39	3	3	11.1	5.9	Retail (Softlines)	79
1505	New York Community	8.73	3	3	10.0	7.8	Thrift	63	1148	Ethan Allen Interiors	14.34	4	3	47.8	5.9	Furn/Home Furnishings	81
2402	Can. Natural Res.	22.09	4	3	NMF	7.7	Petroleum (Producing)	94	766	Mercury General	42.73	3	3	9.8	5.9	Insurance (Prop/Cas.)	36
616	Williams Cos.	20.67	3	4	19.0	7.7	Oil/Gas Distribution	86	786	TCF Financial	23.56	-	3	11.2	5.9	Bank (Midwest)	87
2562	Janus Henderson plc	19.14	3	3	9.8	7.5	Financial Svcs. (Div.)	57	1526	Federal Rlty. Inv. Trust	73.28	4	1	48.2	5.8	R.E.I.T.	66
1508	Provident Fin'l Svcs.	12.34	4	3	12.2	7.5	Thrift	63	781	Hancock Whitney Corp.	18.68	5	3	29.7	5.8	Bank (Midwest)	87
917	AT&T Inc.	28.63	3	1	8.5	7.4	Telecom. Services	18	2564	Lazard Ltd.	32.61	3	3	19.5	5.8	Financial Svcs. (Div.)	57
2544	Block (H&R)	14.18	3	3	38.3	7.4	Financial Svcs. (Div.)	57	774	Assoc. Banc-Corp	12.66	4	3	11.2	5.7	Bank (Midwest)	87
512	Marathon Petroleum	31.25	-	3	NMF	7.4	Petroleum (Integrated)	95	2509	Can. Imperial Bank	101.82	3	2	18.4	5.7	Bank	72
1768	National Presto Ind.	83.36	2	3	16.4	7.2	Diversified Co.	67	578	Kronos Worldwide	12.72	3	4	34.4	5.7	Chemical (Specialty)	61
1996	Universal Corp.	42.51	2	3	12.1	7.2	Tobacco	26	580	LyondellBasell Inds.	73.50	4	3	15.7	5.7	Chemical (Specialty)	61
1507	People's United Fin'l	10.20	3	3	10.2	7.1	Thrift	63	913	GE Energy	28.69	3	2	13.5	5.7	Electric Util. (Central)	47
776	Comerica Inc.	38.66	4	3	11.3	7.0	Bank (Midwest)	87	768	Old Republic	14.70	3	3	9.4	5.7	Insurance (Prop/Cas.)	36
1533	MGM Growth Properties	27.85	4	3	22.3	7.0	R.E.I.T.	66	2573	Principal Fin'l Group	39.00	4	3	7.5	5.7	Financial Svcs. (Div.)	57
502	BP PLC ADR	18.32	4	3	NMF	6.9	Petroleum (Integrated)	95	1549	VICI Properties	23.01	-	3	13.1	5.7	R.E.I.T.	66

**STOCKS WITH HIGH 3- TO 5-YEAR PRICE APPRECIATION POTENTIAL**

Some of the stocks tabulated below are very risky and appreciation potentialities tentative. Please read the full-page reports in Ratings & Reports to gain an understanding of the risks entailed. Some of these stocks may not be timely investment commitments. (See the Performance Ranks below.)

Page No.	Stock Name	Recent Price	3-to 5-year Potential	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	3-to 5-year Potential	Time-liness	Safety Rank	Industry Group	Industry Rank
1151	Interface Inc. 'A'	6.36	490%	3	4	Furn/Home Furnishings	81	1828	Nutanix, Inc.	21.64	245%	3	4	E-Commerce	22
515	PBF Energy	6.82	485%	5	4	Petroleum (Integrated)	92	628	Phillips 66 Partners	23.87	245%	2	4	Pipeline MLPs	92
1831	Sabre Corp.	6.31	455%	5	4	E-Commerce	25	1338	Plantronics Inc.	13.02	245%	4	3	Electronics	65
2623	DXC Technology	17.32	450%	5	3	IT Services	16	2397	WPP PLC ADR	36.14	245%	4	3	Advertising	76
545	WPX Energy	4.51	420%	3	4	Natural Gas (Div.)	90	1795	BGC Partners	2.36	240%	-	4	Brokers & Exchanges	7
629	Plains All Amer. Pipe.	6.34	415%	5	4	Pipeline MLPs	92	768	Old Republic	14.70	240%	3	3	Insurance (Prop/Cas.)	36
630	Plains GP Holdings L.P.	6.52	400%	5	4	Pipeline MLPs	92	613	ONEOK Inc.	26.44	240%	5	3	Oil/Gas Distribution	86
828	Alkermes plc	17.20	395%	3	3	Biotechnology	15	1544	Service Properties	7.40	240%	5	3	R.E.I.T.	66
2377	Meredith Corp.	12.61	395%	5	4	Publishing	84	151	Blue Bird Corp.	11.95	235%	4	3	Heavy Truck & Equip	64
503	CVR Energy	12.75	390%	5	3	Petroleum (Integrated)	95	1992	Brit. Am. Tobacco ADR	33.82	235%	3	3	Tobacco	26
543	Southwestern Energy	2.48	385%	3	5	Natural Gas (Div.)	90	620	DCP Midstream LP	10.49	235%	5	5	Pipeline MLPs	92
2344	Sirius XM Holdings	5.11	370%	3	4	Entertainment	58	2348	Deluxe Corp.	25.43	235%	4	3	Publishing	84
506	Delek US Holdings	11.89	365%	-	3	Petroleum (Integrated)	95	730	Haynes International	18.03	235%	4	3	Metal Fabricating	80
634	Western Midstream Part.	7.69	355%	5	4	Pipeline MLPs	92	2311	IMAX Corp.	12.73	235%	4	3	Recreation	83
2146	Macy's Inc.	6.31	335%	5	4	Retail Store	24	2337	MSG Networks	9.66	235%	4	3	Entertainment	58
520	Suncor Energy	16.89	330%	4	3	Petroleum (Integrated)	95	1194	Newell Brands	17.09	235%	3	3	Household Products	1
535	Enerplus Corp.	2.47	325%	5	4	Natural Gas (Div.)	90	632	Shell Midstream L.P.	9.74	235%	5	4	Pipeline MLPs	92
514	Occidental Petroleum	11.29	320%	5	4	Petroleum (Integrated)	95	1735	Thermon Group	11.23	235%	4	3	Machinery	54
2561	Invesco Ltd.	10.22	315%	4	3	Financial Svcs. (Div.)	57	502	BP PLC ADR	18.32	230%	4	3	Petroleum (Integrated)	95
2328	AMC Networks	24.51	310%	4	3	Entertainment	58	2305	Carnival Corp.	14.29	230%	5	5	Recreation	83
1534	Macerich Comp. (The)	6.87	300%	5	4	R.E.I.T.	66	612	Kinder Morgan Inc.	12.86	230%	4	3	Oil/Gas Distribution	86
2321	Enable Midstream Part.	4.28	295%	5	4	Pipeline MLPs	92	2408	Marathon Oil Corp.	4.56	230%	5	3	Petroleum (Producing)	94
220	Inogen, Inc.	28.51	295%	5											

### BIGGEST "FREE FLOW" CASH GENERATORS

Stocks of companies that have earned more "cash flow" in the last 5 years than was required to build plant and pay dividends

Page No.	Stock Name	Ratio "Cash Flow"				Industry Group	Industry Rank	Page No.	Stock Name	Ratio "Cash Flow"				Industry Group	Industry Rank
		Recent Price	To Cash Out	Time-liness	Safety Rank					Recent Price	To Cash Out	Time-liness	Safety Rank		
2339	Netflix, Inc.	487.35	44.80	1	3	Entertainment	58	790	Amedys, Inc.	240.24	8.55	3	3	Medical Services	28
1819	Check Point Software	116.88	34.69	2	1	E-Commerce	22	1315	Trimble Inc.	47.80	8.32	3	3	Electrical Equipment	62
2548	Credit Acceptance	308.95	34.68	3	3	Financial Svcs. (Div.)	57	1356	Cirrus Logic	60.51	8.03	2	3	Semiconductor	12
1132	NVR, Inc.	3931.29	30.30	3	3	Homebuilding	13	1136	Toll Brothers	47.03	7.96	3	3	Homebuilding	13
838	Jazz Pharmac. plc	138.98	28.08	3	2	Biotechnology	15	1128	KB Home	38.93	7.95	3	3	Homebuilding	13
1816	Arista Networks	195.10	24.37	3	3	E-Commerce	22	932	Shell Midstream L.P.	9.74	7.95	5	4	Pipeline MLPs	92
1619	Horizon Therapeutics PLC	78.84	22.79	3	3	Drug	14	664	Synaptics	80.89	7.75	3	3	Telecom. Equipment	34
1135	Taylor Morrison Home	23.59	21.72	3	3	Homebuilding	13	818	Allscripts Healthcare	7.93	7.74	3	3	Healthcare Information	33
1352	Ambarella, Inc.	50.76	21.24	3	3	Semiconductor	12	801	ICON plc	177.08	7.70	2	2	Medical Services	28
1611	Bausch Health	16.52	20.89	4	5	Drug	14	793	Cigna Corp.	164.96	7.53	2	3	Medical Services	28
826	Veeva Systems	271.55	19.43	2	3	Healthcare Information	33	846	United Therapeutics	101.01	7.51	3	3	Biotechnology	15
2586	ANSYS, Inc.	309.19	18.89	3	2	Computer Software	3	1612	Biogen	268.30	7.44	1	3	Drug	14
840	Myriad Genetics	12.58	17.42	5	3	Biotechnology	15	2619	CACI Int'l	215.44	7.35	2	3	IT Services	16
1134	TRI Pointe Group	17.07	16.43	2	3	Homebuilding	13	952	F5 Networks	117.77	7.30	3	3	Telecom. Equipment	34
821	HealthEquity, Inc.	48.38	15.73	2	3	Healthcare Information	33	1624	Mylan N.V.	14.78	7.28	-	3	Drug	14
2556	FleetCor Technologies	235.44	15.17	3	3	Financial Svcs. (Div.)	57	1394	Onto Innovation	29.01	7.27	2	3	Semiconductor Equip	2
2659	VeriSign Inc.	202.89	14.13	1	3	Internet	27	1638	ASGN Inc.	64.39	7.17	3	3	Human Resources	71
2642	Booking Holdings	1652.39	13.55	3	3	Internet	27	123	Keysight Technologies	97.80	6.99	3	2	Precision Instrument	35
2189	WW International	19.71	13.40	4	4	Retail (Hardlines)	69	226	Natus Medical	17.24	6.92	4	3	Med Supp Non-Invasive	25
2329	Discovery, Inc.	22.42	13.31	3	3	Entertainment	58	1369	NXP Semiconductors NV	121.35	6.85	3	3	Semiconductor	12
1003	Helen of Troy Ltd.	192.06	12.96	2	3	Toiletries/Cosmetics	52	432	CoreLogic	67.48	6.79	-	3	Information Services	10
2579	Voya Financial	46.78	12.56	3	3	Financial Svcs. (Div.)	57	128	Novanta Inc.	101.75	6.79	3	3	Precision Instrument	35
2630	Manhattan Assoc.	94.76	12.37	3	3	IT Services	16	220	Inogen, Inc.	28.51	6.77	5	3	Med Supp Non-Invasive	25
725	TransDigm Group	487.81	12.18	4	3	Aerospace/Defense	73	217	Hologic, Inc.	65.12	6.74	3	3	Med Supp Non-Invasive	25
1373	Rambus Inc.	13.45	12.11	3	3	Semiconductor	12	2610	Synopsys, Inc.	201.98	6.71	1	1	Computer Software	3
1978	Monster Beverage	78.38	11.72	2	3	Beverage	29	2328	AMC Networks	24.51	6.64	4	3	Entertainment	58
593	BlackBerry	4.76	11.70	4	4	Wireless Networking	39	937	Vonage Holdings	10.34	6.57	3	3	Telecom. Services	18
1407	ScanSource	19.30	11.61	4	3	Computers/Peripherals	21	712	HEICO Corp.	106.80	6.56	3	3	Aerospace/Defense	73
1364	MaxLinear, Inc.	23.45	11.21	3	3	Semiconductor	12	2626	Fair Isaac	424.24	6.50	3	3	IT Services	16
1350	Advanced Energy	58.70	11.04	2	3	Semiconductor	12	379	CBRE Group	46.45	6.47	4	3	Industrial Services	42
2011	Electronic Arts	128.29	10.92	1	3	Entertainment Tech	5	742	Gibraltar Inds.	61.81	6.40	2	3	Steel	70
1616	Endo Int'l plc	3.14	10.80	3	5	Drug	14	1112	HD Supply Holdings	38.87	6.30	3	3	Building Materials	45
805	MEDNAX, Inc.	17.39	10.68	4	3	Medical Services	28	175	Boston Scientific	38.55	6.29	3	3	Med Supp Invasive	53
949	CommScope Holding	9.29	10.45	4	3	Telecom. Equipment	34	1943	USANA Health Sciences	75.70	6.07	2	3	Food Processing	19
2165	Avis Budget Group	28.81	10.26	4	4	Retail (Hardlines)	69	2589	Citrix Sys.	134.22	6.04	1	3	Computer Software	3
1722	Middleby Corp. (The)	88.21	10.20	4	3	Machinery	54	2615	ACI Worldwide	25.08	6.02	2	3	IT Services	16
833	Exelixis, Inc.	25.81	10.06	3	4	Biotechnology	15	2174	Insight Enterprises	56.39	6.02	3	3	Retail (Hardlines)	69
2613	VMware, Inc.	140.27	9.96	2	3	Computer Software	3	2607	SS&C Techn. Hldgs	60.44	6.00	3	3	Computer Software	3
603	Ubiquiti Inc.	157.66	9.90	2	3	Wireless Networking	39	2623	DXC Technology	17.32	5.99	5	3	IT Services	16
2652	Match Group	106.85	9.72	3	4	Internet	27	2157	Deckers Outdoor	207.05	5.98	2	3	Shoe	85
1318	WESCO Int'l	42.80	9.60	4	3	Electrical Equipment	62	812	Syneos Health	54.00	5.98	3	4	Medical Services	28
605	Zebra Techn. 'A'	248.73	9.33	3	3	Wireless Networking	39	1299	Varian Medical Sys.	172.74	5.97	-	2	Med Supp Invasive	53
1131	Meritage Homes	101.73	9.21	2	3	Homebuilding	13	1928	AECOM	38.04	5.89	-	3	Engineering & Const	55
1129	Lennar Corp.	76.75	9.18	2	3	Homebuilding	13	1374	Semtech Corp.	51.17	5.89	2	3	Semiconductor	12
423	CoStar Group	824.00	9.11	2	2	Information Services	10	1729	Roper Tech.	392.25	5.87	3	1	Machinery	54
2584	Adobe Inc.	475.64	9.05	1	2	Computer Software	3	730	PerkinElmer Inc.	118.25	5.81	1	2	Precision Instrument	35
2004	Perdoceo Education	12.08	8.89	3	4	Educational Services	41	126	Triumph Group	7.31	5.79	-	5	Aerospace/Defense	73
2588	Cadence Design Sys.	102.10	8.67	1	2	Computer Software	3	1630	Perrigo Co. plc	45.92	5.72	1	3	Drug	14
2638	Alibaba Group ADS	273.82	8.66	2	3	Internet	27	134	Waterra Co.	194.36	5.70	3	2	Precision Instrument	35
1387	Axcelis Technologies	22.64	8.60	2	3	Semiconductor Equip	2	187	Intuitive Surgical	641.95	5.65	3	2	Med Supp Invasive	53

### BEST PERFORMING STOCKS

(Measured by Price Change in the Last 13 Weeks)

Page No.	Stock Name	Ticker	Recent Price	Percent Change In Price	Time-liness	Safety Rank
538	New Fortress Energy LLC	NFE	37.58	189.1%	-	3
834	Immunomedics, Inc.	IMMU	85.41	134.9%	-	4
110	Tesla, Inc.	TLSE	449.39	126.0%	2	3
2367	Penn Nat'l Gaming	PENN	70.08	123.0%	3	4
2369	Scientific Games	SGMS	33.95	108.8%	4	5
1417	Pitney Bowes	PBI	5.21	104.3%	-	5
2202	L Brands	LB	29.45	101.0%	3	4
351	Brinker Int'l	EAT	44.63	95.5%	4	3
2164	At Home Group	HOME	14.65	93.3%	-	4
938	Zoom Video Commun.	ZM	468.47	86.4%	-	4
2173	Hibbett Sports	HIBB	38.77	84.7%	3	4
2314	Peloton Interactive	PTON	94.80	78.8%	-	3
2005	Rosetta Stone	RST	29.91	78.6%	3	4
718	Maxar Technologies	MAXR	28.08	77.9%	3	5
308	FedEx Corp.	FDX	238.74	73.8%	2	2
1572	Hecla Mining	HL	5.24	72.9%	2	4
228	NovoCure Limited	NVCR	105.11	66.9%	2	4
1967	Boston Beer 'A'	SAM	879.27	64.1%	2	3
193	Silk Road Medical	SILK	67.17	62.0%	-	3
728	Chart Industries	GTLS	67.00	59.5%	3	3
1142	Lumber Liquidators	LL	20.30	59.2%	3	5
2662	Zillow Group 'C'	Z	95.71	57.8%	3	3
163	Navistar Int'l	NAV	42.78	57.4%	-	5
349	BJ's Restaurants	BJRI	32.38	57.0%	5	4
361	Fiesta Restaurant	FRGI	9.76	56.2%	-	4
1215	Enphase Energy	ENPH	70.72	55.2%	3	3
1217	Generac Holdings	GNRC	181.23	54.9%	2	3
2654	Pinterest, Inc.	PINS	36.87	53.9%	-	4
333	Golar LNG Ltd.	GLNG	11.84	53.6%	4	5
1576	Pretium Resources	PVG	13.25	53.5%	2	5
1147	Culp Inc.	CULP	11.96	51.2%	3	3
316	United Parcel Serv.	UPS	161.06	50.7%	3	1
1619	Horizon Therapeutics PLC	HZNP	78.84	50.1%	3	3
2128	Lithia Motors	LAD	222.68	49.5%	3	3
2629	Infosys Ltd. ADR	INFY	131.61	48.7%	3	1
1168	West Fraser Timber	WFT.TO	66.75	47.6%	3	3
213	Cutera, Inc.	CUTR	19.44	47.2%	5	4
1158	RH	RH	371.97	46.3%	3	4
305	Atlas Air Worldwide	AAWW	59.05	45.9%	2	3
2341	Roku, Inc.	ROKU	188.82	45.5%	3	4
199	Varian Medical Sys.	VAR	172.74	45.5%	-	2

### WORST PERFORMING STOCKS

(Measured by Price Change in the Last 13 Weeks)

Page No.	Stock Name	Ticker	Recent Price	Percent Change In Price	Time-liness	Safety Rank
1421	Aurora Cannabis	ACB	6.32	-53.9%	-	4
836	Intercept Pharmac.	ICPT	40.21	-50.2%	3	4
515	PBF Energy	PBF	6.82	-46.2%	5	4
514	Occidental Petroleum	OXY	11.29	-43.3%	5	4
2422	Nabors Inds.	NBR	26.57	-42.6%	-	5
503	CVR Energy	CVI	12.75	-42.5%	5	3
2424	Oceanenergy Int'l	OII	3.92	-41.6%	-	5
1008	Revlon Inc.	REV	6.37	-41.1%	-	4
2006	Strategic Education	STRA	90.43	-41.0%	-	3
1425	Tilray, Inc.	TLRY	5.00	-40.5%	5	4
628	Phillips 66 Partners	PSXP	23.87	-39.0%	2	3
535	Enerplus Corp.	ERF.TO	2.47	-37.2%	5	4
634	Western Midstream Part.	WES	7.69	-37.2%	5	4
513	Murphy Oil Corp.	MUR	9.26	-37.1%	5	4
832	BioMarin Pharmac.	BMRN	77.28	-36.8%	2	3
506	Delek US Holdings	DK	11.89	-36.5%	-	3
1229	Fluor Corp.	FLR	8.68	-36.0%	-	4
1001	Coty Inc.	COTY	3.02	-34.6%	-	5
1007	Regis Corp.	RGS	5.51	-34.2%	-	4

### WIDEST DISCOUNTS FROM BOOK VALUE

Stocks whose ratios of recent price to book value are lowest

Page No.	Stock Name	Ticker	Recent Price	Book Value Per sh.*	Percent Price-to-Book Value	Time-liness	Safety Rank	Beta	P/E Ratio	Est'd Yield	Industry Group	Industry Rank
1557	Genworth Fin'l	GNW	3.18	28.14	11%	-	5	1.40	31.8	NIL	Insurance (Life)	51
524	Antero Resources	AR	3.02	23.55	13%	3	5	1.30	NMF	NIL	Natural Gas (Div.)	90
2405	Crescent Point Energy	CPG.TO	1.75	10.09	17%	5	5	1.75	NMF	0.6	Petroleum (Producing)	94
510	Husky Energy	HSE.TO	3.26	16.32	20%	5	3	1.30	NMF	1.5	Petroleum (Integrated)	95
2426	Patterson-UTI Energy	PTEN	3.17	14.76	21%	-	5	1.55	NMF	2.5	Oilfield Svcs/Equip.	96
710	Embraer SA	ERJ	4.67	19.12	24%	-	4	1.40	NMF	NIL	Aerospace/Defense	73
2419	Helix Energy Solutions	HLX	2.79	11.42	24%	-	5	2.15	69.8	NIL	Oilfield Svcs/Equip.	96
539	Ovintiv Inc.	OVV	9.23	38.22	24%	5	4	1.75	NMF	4.1	Natural Gas (Div.)	90
513	Murphy Oil Corp.	MUR	9.26	35.75	26%	5	4	1.80	NMF	5.4	Petroleum (Integrated)	95
2020	Assured Guaranty	AGO	19.20	71.18	27%	3	3	1.45	8.0	4.2	Reinsurance	68
621	Enable Midstream Part.	ENBL	4.28	16.11	27%	5	4	1.80	9.7	15.4	Pipeline MLPs	92
515	PBF Energy	PBF	6.82	25.37	27%	5	4	1.90	2.0	NIL	Petroleum (Integrated)	95
2546	CIT Group	CIT	17.01	61.37	28%	5	3	1.70	68.0	8.2	Financial Svcs. (Div.)	57
979	Cooper-Standard	CPS	14.35	50.83	28%	5	4	1.25	NMF	NIL	Auto Parts	74
2408	Marathon Oil Corp.	MRO	4.56	15.27	30%	5	3	1.65	NMF	NIL	Petroleum (Producing)	94
2146	Macy's Inc.	M	6.31	20.64	31%	5	4	1.55	NMF	NIL	Retail Store	24
540	PDC Energy	PDCE	12.09	37.90	32%	5	4	1.40	NMF	NIL	Natural Gas (Div.)	90
738	ArcelorMittal	MT	12.66	38.06	33%	4	4	1.55	NMF	NIL	Steel	70
750	U.S. Steel Corp.	X	7.96	24.06	33%	4	5	1.50	NMF	0.5	Steel	70
504	Cenovus Energy	CVE.TO	5.26	15.63	34%	5	5	1.50	NMF	NIL	Petroleum (Integrated)	95
2535	AerCap Hldgs. NV	AER	24.92	70.79	35%	3	4	1.90	3.8	NIL	Financial Svcs. (Div.)	57
1565	Unum Group	UNM	17.12	49.10	35%	4	3	1.60	3.3	6.7	Insurance (Life)	51
2539	Amer. Int'l Group	AIG	26.98	74.93	36%	4	3	1.45	6.6	4.7	Financial Svcs. (Div.)	57
2424	Oceaneering Int'l	OII	3.92	10.81	36%	-	5	1.85	NMF	NIL	Oilfield Svcs/Equip.	96
620	DCP Midstream LP	DCP	10.49	28.06	37%	5	5	1.65	10.9	14.9	Pipeline MLPs	92
535	Enerplus Corp.	ERF.TO	2.47	6.64	37%	5	4	1.60	NMF	4.9	Natural Gas (Div.)	90
108	Nissan Motor ADR	NSANY	7.10	19.42	37%	3	3	0.90	NMF	NIL	Automotive	43
2406	Diamondback Energy	FANG	32.08	83.33	38%	5	3	1.50	NMF	4.7	Petroleum (Producing)	94
2305	Carnival Corp.	CCL	14.29	37.08	39%	5	5	1.50	NMF	NIL	Recreation	83
1239	Tutor Perini	TPC	11.19	28.64	39%	3	4	1.30	5.6	NIL	Engineering & Const	55
997	Tenneco Inc.	TEN	6.99	17.61	40%	4	4	1.90	NMF	NIL	Auto Parts	74
2516	HSBC Holdings PLC	HSBC	18.64	45.52	41%	3	4	0.85	NMF	NIL	Bank	72
2420	Helmerich & Payne	HP	15.32	37.00	41%	5	3	1.55	NMF	6.5	Oilfield Svcs/Equip.	96
514	Occidental Petroleum	OXY	11.29	27.37	41%	5	4	1.55	NMF	0.4	Petroleum (Integrated)	95
543	Southwestern Energy	SWN	2.48	6.00	41%	3	5	0.80	11.3	NIL	Natural Gas (Div.)	90
545	WPX Energy	WPX	4.51	10.83	42%	3	4	1.75	10.5	NIL	Natural Gas (Div.)	90
986	Goodyear Tire	GT	8.02	18.70	43%	4	4	1.40	NMF	NIL	Auto Parts	74
1591	Natural Resource	NRP	11.80	27.65	43%	4	4	1.05	NMF	15.3	Metals & Mining (Div.)	77
629	Plains All Amer. Pipe.	PAA	6.34	14.79	43%	5	4	1.55	6.5	11.4	Pipeline MLPs	92
2427	ProPetro Holding	PUMP	4.36	9.63	45%	-	5	1.90	NMF	NIL	Oilfield Svcs/Equip.	96
2168	Conn's, Inc.	CONN	10.14	21.90	46%	-	4	1.55	29.0	NIL	Retail (Hardlines)	69
162	Manitowoc Co.	MTW	8.41	18.26	46%	4	4	1.15	NMF	NIL	Heavy Truck & Equip	64
781	Hancock Whitney Corp.	HWC	18.68	39.62	47%	5	3	1.45	29.7	5.8	Bank (Midwest)	87
2561	Invesco Ltd.	IVZ	10.22	21.73	47%	4	3	1.45	9.6	6.1	Financial Svcs. (Div.)	57
927	Liberty Latin Amer.	LILA	8.18	17.28	47%	4	3	1.05	NMF	NIL	Telecom. Services	18
2362	Marcus Corp.	MCS	9.35	20.08	47%	5	4	1.35	NMF	NIL	Hotel/Gaming	89
365	Red Robin Gourmet	RRGB	13.21	27.90	47%	5	5	1.40	NMF	NIL	Restaurant	78
932	Telephone & Data	TDS	19.39	40.46	48%	2	3	1.00	13.8	3.6	Telecom. Services	18
2141	Dillard's, Inc.	DDS	33.11	67.11	49%	3	4	1.15	NMF	1.8	Retail Store	24
2313	Norwegian Cruise Line	NCLH	14.99	30.58	49%	5	5	1.65	NMF	NIL	Recreation	83
314	Spirit Airlines	SAVE	16.23	33.03	49%	5	4	1.75	NMF	NIL	Air Transport	91
1594	Teck Resources 'B'	TECKB.TO	18.96	38.93	49%	4	3	1.15	NMF	1.1	Metals & Mining (Div.)	77
2026	Third Point Reinsurance	TPRE	7.32	15.01	49%	-	3	1.10	7.0	NIL	Reinsurance	68
1001	Coty Inc.	COTY	3.02	6.08	50%	-	5	1.25	NMF	NIL	Toiletries/Cosmetics	52
2177	Movado Group	MOV	11.34	22.87	50%	5	3	1.30	13.2	NIL	Retail (Hardlines)	69
526	CNX Resources	CNX	11.38	22.29	51%	3	4	1.00	NMF	NIL	Natural Gas (Div.)	90
531	Concho Resources	CXO	46.25	89.95	51%	4	3	1.40	15.8	1.7	Natural Gas (Div.)	90
2024	Greenlight Capital Re	GLRE	6.57	12.90	51%	4	4	1.00	NMF	NIL	Reinsurance	68
1643	Kelly Services 'A'	KELYA	16.59	32.34	51%	4	3	1.15	11.4	NIL	Human Resources	71
2570	Navient Corp.	NAVI	7.94	15.48	51%	4	3	1.55	3.6	8.1	Financial Svcs. (Div.)	57
1416	ODP Corp.	ODP	20.58	40.60	51%	4	5	1.25	11.1	NIL	Office Equip/Supplies	88
735	Tenaris S.A. ADS	TS	10.28	20.31	51%	4	3	1.20	NMF	NIL	Metal Fabricating	80
2021	Athene Holding Ltd.	ATH	33.73	65.48	52%	3	3	1.85	4.7	NIL	Reinsurance	68
506	Delek US Holdings	DK	11.89	22.68	52%	-	3	1.35	NMF	10.4	Petroleum (Integrated)	95
780	First Midwest Bancorp	FMBI	11.25	21.56	52%	4	3	1.15	13.7	5.0	Bank (Midwest)	87
1561	MetLife Inc.	MET	37.43	72.26	52%	3	3	1.40	7.0	4.9	Insurance (Life)	51
2409	Noble Energy	NBL	8.99	17.34	52%	-	3	1.85	NMF	0.9	Petroleum (Producing)	94
2410	Parsley Energy	PE	9.52	18.18	52%	4	4	1.40	NMF	2.1	Petroleum (Producing)	94
2510	Citigroup Inc.	C	43.93	82.90	53%	4	3	1.40	12.6	4.6	Bank	72
1503	Flushing Financial	FFIC	10.81	20.59	53%	2	3	1.10	6.4	7.8	Thrift	63
2106	G-III Apparel Group	GIII	14.22	26.88	53%	5	5	2.00	13.9	NIL	Apparel	93
511	Imperial Oil Ltd.	IMO	13.24	25.19	53%	4	3	1.45	NMF	4.8	Petroleum (Integrated)	95
1762	Jefferies Fin'l Group	JEF	17.33	32.85	53%	3	3	1.20	22.8	3.5	Diversified Co.	67
2566	Loews Corp.	L	34.82	65.70	53%	4	2	1.10	11.2	0.7	Financial Svcs. (Div.)	57
519	Royal Dutch Shell 'B'	RDSB	24.94	47.32	53%	4	3	1.30	NMF	5.1	Petroleum (Integrated)	95
774	Assoc. Banc-Corp	ASB	12.66	23.27	54%	4	3	1.15	11.2	5.7	Bank (Midwest)	87
2511	Citizens Fin'l Group	CFG	25.83	47.63	54%	4	3	1.40	12.1	6.0	Bank	72
1977	Molson Coors Beverage	TAP	33.59	62.04	54%	3	3	1.00	10.7	NIL	Beverage	29
2423	National Oilwell Varco	NOV	10.84	20.18	54%	5	4	1.25	NMF	NIL	Oilfield Svcs/Equip.	96
936	Vodafone Group ADR	VOD	13.45	24.81	54%	2	3	0.95	29.9	8.2	Telecom. Services	18
630	Plains GP Holdings L.P.	PAGP	6.52	11.83	55%	5	4	1.50	7.0	11.0	Pipeline MLPs	92
1773	Realogy Holdings	RLGY	10.01	18.29	55%	3	4	1.55	66.7	NIL	Diversified Co.	67
1581	Alcoa Corp.	AA	12.30	22.16	56%	4	4	1.50	NMF	NIL	Metals & Mining (Div.)	77
2444	Apollo Investment	AINV	8.72	15.70	56%	4	3	1.35	8.7	14.2	Public/Private Equity	-
309	Hawaiian Hldgs.	HA	13.11	23.46	56%	5	3	1.55	NMF	NIL	Air Transport	91
107	Honda Motor ADR	HMC	24.22	43.37	56%	3	2	1.00	15.1	2.3	Automotive	43
1582	Allegheny Techn.	ATI	9.38	16.58	57%	5	5	2.10	NMF	NIL	Metals & Mining (Div.)	77
2199	Designer Brands	DBI	5.73	10.01	57%	-	4	1.55	NMF	NIL	Retail (Softlines)	79
509	HollyFrontier Corp.	HFC	21.21	36.94	57%	4	3	1.35	NMF	6.8	Petroleum (Integrated)	95
1508	Provident Fin'l Svcs.	PFS	12.34	21.49	57%	4	3	1.15	12.2	7.5	Thrift	63
739	Carpenter Technology	CRS	18.42	32.02	58%	5	3	1.50	NMF	4.3	Steel	70
611	EnLink Midstream LLC	ENLK	2.53	4.36	58%	5	5	1.70	NMF	15.0	Oil/Gas Distribution	86
104	Fiat Chrysler	FCAU	11.83	20.39	58%	-	3	1.40	NMF	NIL	Automotive	43
2158	Genesco Inc.	GCO	24.30	42.07	58%	5	3	1.65	11.3	NIL	Shoe	85
2377	Meredith Corp.	MDP	12.61	21.56	58%	5	4	1.25	5.0	NIL	Publishing	84
2115	Unifi, Inc.	UFI	12.28	21.28	58%	5	3	1.40	NMF	NIL	Apparel	93
1109	CEMEX ADS	CX	3.65	6.18	59%	3	4	1.45	60.8	NIL	Building Materials	45
1507	People's United Fin'l	PBCT	10.20	17.36	59%	3	3	1.00	10.2	7.1	Thrift	63
2522	Popular Inc.	BPOP	36.93	62.42	59%	4	3	1.35	6.9	4.3	Bank	72
1961	United Natural Foods	UNFI	17.00	28.62	59%	3	4	0.50	8.0	NIL	Retail/Wholesale Food	23

\*If fiscal 2020 Book Value not available, estimate used.

**LOWEST P/Es**  
Stocks with the lowest estimated current P/E ratios

Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank
515	PBF Energy	6.82	2.0	5	4	Petroleum (Integrated)	95	1134	TRI Pointe Group	17.07	7.4	2	3	Homebuilding	13
2623	DXC Technology	17.32	2.7	5	3	IT Services	16	2346	TEGNA Inc.	11.85	7.4	3	4	Entertainment	58
332	Frontline Ltd.	6.63	3.3	3	5	Maritime	75	607	Antero Midstream Corp.	5.35	7.5	-	4	Oil/Gas Distribution	86
1565	Unum Group	17.12	3.3	4	3	Insurance (Life)	51	2560	Hartford Fin'l Svcs.	36.24	7.5	4	2	Financial Svcs. (Div.)	57
2570	Navient Corp.	7.94	3.6	4	3	Financial Svcs. (Div.)	57	2573	Principal Fin'l Group	39.00	7.5	4	3	Financial Svcs. (Div.)	57
2535	AerCap Hldgs. NV	24.92	3.8	3	4	Financial Svcs. (Div.)	57	1992	Brit. Am. Tobacco ADR	33.82	7.6	3	3	Tobacco	26
1795	BGC Partners	2.36	3.9	-	4	Brokers & Exchanges	7	2514	First Commonwealth	7.30	7.6	4	3	Bank	72
2551	Equitable Holdings	17.64	3.9	-	3	Financial Svcs. (Div.)	57	2448	Gladstone Capital	7.72	7.6	-	3	Public/Private Equity	-
1634	Teva Pharm. ADR	8.95	3.9	3	4	Drug	14	632	Shell Midstream L.P.	9.74	7.6	5	4	Pipeline MLPs	92
2328	AMC Networks	24.51	4.1	4	3	Entertainment	58	754	Allstate Corp.	92.03	7.7	1	1	Insurance (Prop/Cas.)	36
634	Western Midstream Part.	7.69	4.2	5	4	Pipeline MLPs	92	622	Energy Transfer LP	5.90	7.7	4	4	Pipeline MLPs	92
2337	MSG Networks	9.66	4.3	4	3	Entertainment	58	2333	Gray Television	14.24	7.7	4	4	Entertainment	58
2567	MGIC Investment	8.88	4.4	4	3	Financial Svcs. (Div.)	57	2347	ViacomCBS Inc.	28.99	7.7	4	3	Entertainment	58
1611	Bausch Health	16.52	4.5	4	5	Drug	14	2020	Assured Guaranty	19.20	8.0	3	3	Reinsurance	68
2021	Athene Holding Ltd.	33.73	4.7	3	3	Reinsurance	68	1612	Biogen	268.30	8.0	1	3	Drug	14
331	Euronav NV	9.43	4.7	2	4	Maritime	75	1219	NRG Energy	29.15	8.0	3	3	Power	30
305	Atlas Air Worldwide	59.05	4.9	2	3	Air Transport	91	1961	United Natural Foods	17.00	8.0	3	4	Retail/Wholesale Food	23
2377	Meredith Corp.	12.61	5.0	5	4	Publishing	84	2502	Ally Financial	24.55	8.1	4	3	Bank	72
1532	Kimco Realty	11.55	5.1	4	3	R.E.I.T.	66	1327	Celestica Inc.	7.21	8.1	2	3	Electronics	65
429	Alliance Data Sys.	45.10	5.6	5	4	Information Services	10	1616	Endo Int'l plc	3.14	8.1	3	5	Drug	14
1151	Interface Inc. 'A'	6.36	5.6	3	4	Furn/Home Furnishings	81	1233	MasTec	40.59	8.1	4	3	Engineering & Const	55
1239	Tutor Perini	11.19	5.6	3	4	Engineering & Const	55	1027	Telefonica SA ADR	3.56	8.1	3	4	Telecom. Utility	38
1559	Lincoln Nat'l Corp.	31.54	6.2	3	3	Insurance (Life)	51	1412	ACCO Brands	5.68	8.2	-	3	Office Equip/Supplies	88
628	Phillips 66 Partners	23.87	6.2	2	3	Pipeline MLPs	92	1607	AbbVie Inc.	89.09	8.2	1	3	Drug	14
1503	Flushing Financial	10.81	6.4	2	3	Thrift	63	967	CVS Health	58.87	8.2	1	2	Pharmacy Services	4
1560	Manulife Fin'l	13.91	6.5	2	3	Insurance (Life)	51	2004	Perdoceo Education	12.08	8.2	3	4	Educational Services	41
2340	Nexstar Media Group	95.13	6.5	2	3	Entertainment	58	2343	Sinclair Broadcast	20.19	8.2	2	3	Entertainment	58
629	Plains All Amer. Pipe.	6.34	6.5	5	4	Pipeline MLPs	92	846	United Therapeutics	101.01	8.2	3	3	Biotechnology	15
2539	Amer. Int'l Group	26.98	6.6	4	3	Financial Svcs. (Div.)	57	921	China Mobile (ADR)	33.50	8.3	3	2	Telecom. Services	18
1563	Prudential Fin'l	64.73	6.6	4	3	Insurance (Life)	51	624	Holly Energy Part.	12.81	8.3	4	4	Pipeline MLPs	92
949	CommScope Holding	9.29	6.7	4	3	Telecom. Equipment	34	2575	Santander Consumer USA	17.25	8.4	4	3	Financial Svcs. (Div.)	57
1338	Platronics Inc.	13.02	6.7	4	4	Electronics	65	970	Walgreens Boots	35.79	8.4	3	3	Pharmacy Services	4
2181	Qurate Retail	7.05	6.7	-	3	Retail (Hardlines)	69	917	AT&T Inc.	28.63	8.5	3	1	Telecom. Services	18
2522	Popular Inc.	36.93	6.9	4	3	Bank	72	1844	Matthews Int'l	22.43	8.5	4	4	Funeral Services	20
1413	Diebold Nixdorf	7.26	7.0	-	5	Office Equip/Supplies	88	813	Tenet Healthcare	24.52	8.5	4	3	Medical Services	28
1561	MetLife Inc.	37.43	7.0	3	3	Insurance (Life)	51	623	Enterprise Products	16.31	8.6	4	3	Pipeline MLPs	92
630	Plains GP Holdings L.P.	6.52	7.0	5	4	Pipeline MLPs	92	2444	Apollo Investment	8.72	8.7	4	3	Public/Private Equity	-
1135	Taylor Morrison Home	23.59	7.0	3	3	Homebuilding	13	2507	Bank of New York Mellon	33.97	8.7	3	2	Bank	72
2026	Third Point Reinsurance	7.32	7.0	-	3	Reinsurance	68	793	Cigna Corp.	164.96	8.7	2	3	Medical Services	28
1513	Annaly Capital Mgmt.	7.37	7.1	4	4	R.E.I.T.	66	779	First Horizon National	9.11	8.7	4	3	Bank (Midwest)	87
1518	CoreCivic, Inc.	8.22	7.1	-	4	R.E.I.T.	66	1843	Hillenbrand, Inc.	26.94	8.7	2	3	Funeral Services	20
625	MPLX LP	17.20	7.1	4	3	Pipeline MLPs	92	2526	Signature Bank	85.01	8.7	4	3	Bank	72
2176	Michaels Cos. (The)	9.88	7.1	3	5	Retail (Hardlines)	69	2513	East West Bancorp	32.91	8.8	3	3	Bank	72
1025	Consol. Communic.	5.95	7.2	3	4	Telecom. Utility	38	1331	Flex Ltd.	10.60	8.8	3	3	Electronics	65
1401	Hewlett Packard Ent.	9.23	7.2	4	3	Computers/Peripherals	21	1342	Sanmina Corp.	26.61	8.8	3	3	Electronics	65
1952	Ingles Markets	35.44	7.2	2	3	Retail/Wholesale Food	23	1991	Altria Group	38.82	8.9	3	3	Tobacco	26
2446	Carlyle Group	24.53	7.3	-	3	Public/Private Equity	-	210	Cardinal Health	47.10	8.9	3	3	Med Supp Non-Invasive	25
1556	Aflac Inc.	36.41	7.4	3	2	Insurance (Life)	51	2552	Federated Hermes	21.19	8.9	3	3	Financial Svcs. (Div.)	57
2137	Big Lots Inc.	46.02	7.4	2	3	Retail Store	24	1807	Goldman Sachs	194.00	8.9	3	2	Investment Banking	49
1023	CenturyLink, Inc.	10.26	7.4	3	3	Telecom. Utility	38	838	Jazz Pharm. plc	138.98	8.9	3	2	Biotechnology	15

**HIGHEST P/Es**  
Stocks with the highest estimated current P/E ratios

Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank
1830	Paylocity Holding	146.45	99.0	3	3	E-Commerce	22	918	ATN International	50.70	66.7	2	3	Telecom. Services	18
2587	Autodesk, Inc.	227.64	96.9	1	3	Computer Software	3	1773	Realty Holdings	10.01	66.7	3	4	Diversified Co.	67
176	Catalent, Inc.	85.55	96.1	2	3	Med Supp Invasive	53	1822	GoDaddy Inc.	73.51	66.2	2	3	E-Commerce	22
708	CAE Inc.	19.11	95.6	4	3	Aerospace/Defense	73	980	Dana Inc.	11.88	66.0	4	4	Auto Parts	74
2160	NIKE, Inc. 'B'	113.37	95.3	3	1	Shoe	85	2356	Hilton Grand Vacations	20.24	65.3	4	3	Hotel/Gaming	89
992	Meritor, Inc.	20.61	93.7	3	4	Auto Parts	74	220	Inogen, Inc.	28.51	64.8	5	3	Med Supp Non-Invasive	25
1167	Rayonier Inc.	25.93	92.6	3	3	Paper/Forest Products	56	734	Proto Labs, Inc.	134.60	64.7	3	3	Metal Fabricating	80
205	Align Techn.	322.30	92.1	3	3	Med Supp Non-Invasive	25	127	National Instruments	34.72	64.3	3	3	Precision Instrument	35
2355	Extended Stay America	11.88	91.4	3	3	Hotel/Gaming	89	1521	Duke Realty Corp.	35.83	64.0	3	3	R.E.I.T.	66
2414	Baker Hughes	14.33	89.6	-	4	Oilfield Svcs/Equip.	96	234	West Pharm. Svcs.	276.84	63.5	1	2	Med Supp Non-Invasive	25
1981	Primo Water Corp.	14.25	89.1	3	3	Beverage	29	223	Masimo Corp.	219.79	63.3	2	3	Med Supp Non-Invasive	25
405	Advanced Disposal	30.23	88.9	-	3	Environmental	44	2642	Booking Holdings	1652.39	63.0	3	3	Internet	27
533	EOG Resources	38.81	86.2	4	3	Natural Gas (Div.)	90	2315	Planet Fitness	56.10	63.0	4	3	Recreation	83
2602	PTC Inc.	85.33	85.3	2	3	Computer Software	3	227	Neogen Corp.	74.57	62.7	2	3	Med Supp Non-Invasive	25
433	CoStar Group	824.00	84.9	2	2	Information Services	10	116	Cognex Corp.	61.25	62.5	3	3	Precision Instrument	35
187	Intuitive Surgical	641.95	84.7	3	2	Med Supp Invasive	53	2624	EPAM Systems	314.30	62.5	2	3	IT Services	16
1967	Boston Beer 'A'	879.27	83.7	2	3	Beverage	29	2116	V.F. Corp.	68.69	62.4	4	3	Apparel	93
157	Energap Tool Group	19.72	82.2	3	3	Heavy Truck & Equip	64	208	Bio-Rad Labs. 'A'	517.91	62.1	2	2	Med Supp Non-Invasive	25
226	Natus Medical	17.24	82.1	4	3	Med Supp Non-Invasive	25	218	IDEXX Labs.	364.70	61.8	1	3	Med Supp Non-Invasive	25
564	Axalta Coating	22.93	81.9	3	3	Chemical (Specialty)	61	312	SkyWest	31.54	61.8	5	3	Air Transport	91
975	Aptiv PLC	84.56	81.3	4	3	Auto Parts	74	1354	Broadcom Inc.	351.79	61.7	3	3	Semiconductor	12
2209	Urban Outfitters	21.02	80.8	4	3	Retail (Softlines)	79	1614	Elanco Animal Health	26.55	61.7	-	3	Drug	14
394	Macquarie Infra.	27.08	79.6	4	3	Industrial Services	42	2183	SiteOne Landscape	112.32	61.7	2	3	Retail (Hardlines)	69
1316	Universal Display	167.10	79.6	3	3	Electrical Equipment	62	2203	lululemon athletica	295.56	61.2	3	3	Retail (Softlines)	79
1383	Xperi Holding	12.71	79.4	-	4	Semiconductor	12	2635	Tyler Technologies	328.96	60.9	2	3	IT Services	16
406	Casella Waste Sys.	53.88	79.2	2	3	Environmental	44	1109	CEMEX ADS	3.65	60.8	3	4	Building Materials	45
2630	Manhattan Assoc.	94.76	79.0	3	3	IT Services	16	1730	SPX FLOW, Inc.	41.88	59.0	3	3	Machinery	54
2108	Guess?, Inc.	12.55	78.4	5	4	Apparel	93	2626	Fair Isaac	424.24	58.7	3	3	IT Services	16
2640	Amazon.com	2960.47	78.2	1	2	Internet	27	1767	Myers Inds.	13.50	58.7	3	3	Diversified Co.	67
2201	Gap (The), Inc.	16.40	78.1	4	4	Retail (Softlines)	79	1005	Lauder (Estee)	207.83	58.5	3	2	Toiletries/Cosmetics	52
368	Starbucks Corp.	83.89	77.0	3	1	Restaurant	78	1139	Floor & Decor Hldgs.	72.25	58.3	3	3	Retail Building Supply	8
1368	NVIDIA Corp.	500.69	76.9	1	3	Semiconductor	12	1645	Korn Ferry	29.00	58.0	4	3	Human Resources	71
1351	Advanced Micro Dev.	77.94	76.4	1	4	Semiconductor	12	592	Amer. Tower 'A'	240.97	57.8	1	2	Wireless Networking	39
171	ABIOMED Inc.	265.86	76.0	3	3	Med Supp Invasive	53	2000	Chegg, Inc.	68.05	57.7	2	3	Educational Services	41
600	Itron Inc.	56.03	75.7	4	3	Wireless Networking	39	963	Switch, Inc.	15.59	57.2	2	4	Telecom. Equipment	34
2604	Paycom Software	274.32	73.7	2	3	Computer Software	3	1328	CBIC Corp.	59.56	57.3	4	3	Electronics	65
725	TransDigm Group	487.81	73.7	4	3	Aerospace/Defense	73	942	ADTRAN, Inc.	10.30	57.2	3	3	Telecom. Equipment	34
1959	Sysco Corp.	64.05	73.6	4	3	Retail/Wholesale Food	23	407	Clean Harbors	53.80	57.2	4	3	Environmental	44
2111	Oxford Inds.	41.35	72.5	4	3	Apparel	93	1772	Raven Inds.	22.27	57.1	4	3	Diversified Co.	67
2339	Netflix, Inc.	487.35	72.4	1	3	Entertainment	58	944	Avaya Holdings	14.81	57.0	3	4	Telecom. Equipment	34
596	Crown Castle Int'l														

**STOCKS WITH HIGHEST ANNUAL TOTAL RETURNS (NEXT 3 TO 5 YEARS)**  
 (Estimated compound annual stock price appreciation plus estimated annual dividend income.)

Page No.	Stock Name	Recent Price	Est'd Total Return	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Est'd Total Return	Time-liness	Safety Rank	Industry Group	Industry Rank
704	Astronics Corp.	8.26	64%	5	5	Aerospace/Defense	73	612	Kinder Morgan Inc.	12.86	39%	4	3	Oil/Gas Distribution	86
1001	Coty Inc.	3.02	61%	5	5	Toiletries/Cosmetics	52	125	MTS Systems	19.47	39%	5	4	Precision Instrument	35
707	Bombardier Inc. 'B'	0.40	58%	5	5	Aerospace/Defense	73	1008	Revlon Inc.	6.37	39%	5	4	Toiletries/Cosmetics	52
515	PBF Energy	6.82	57%	5	4	Petroleum (Integrated)	95	726	Triumph Group	7.31	39%	5	5	Aerospace/Defense	73
629	Plains All Amer. Pipe.	6.34	57%	5	4	Pipeline MLPs	92	2397	WPP PLC ADR	36.14	39%	4	3	Advertising	76
1151	Interface Inc. 'A'	6.36	56%	3	4	Furn/Home Furnishings	81	607	Antero Midstream Corp.	5.35	38%	5	4	Oil/Gas Distribution	86
630	Plains GP Holdings L.P.	6.52	56%	5	4	Pipeline MLPs	92	502	BP PLC ADR	18.32	38%	4	3	Petroleum (Integrated)	95
2623	DXC Technology	17.32	54%	5	3	IT Services	16	2448	Gladstone Capital	7.72	38%	5	3	Public/Private Equity	—
634	Western Midstream Part.	7.69	54%	5	4	Pipeline MLPs	92	2421	MRC Global	5.58	38%	5	5	Oilfield Svcs/Equip.	96
1831	Sabre Corp.	6.31	53%	5	4	E-Commerce	22	805	MEDNAX, Inc.	17.39	38%	4	3	Medical Services	28
545	WPX Energy	4.51	52%	5	4	Natural Gas (Div.)	90	1194	Newell Brands	17.09	38%	3	3	Household Products	21
503	CVR Energy	12.75	50%	5	3	Petroleum (Integrated)	95	2147	Nordstrom, Inc.	13.24	38%	5	4	Retail Store	24
506	Delek US Holdings	11.89	50%	5	3	Petroleum (Integrated)	95	768	Old Republic	14.70	38%	3	3	Insurance (Prop/Cas.)	36
2377	Meredith Corp.	12.61	50%	5	3	Publishing	84	1007	Regis Corp.	5.51	38%	4	4	Toiletries/Cosmetics	52
628	Alkermes plc	17.20	49%	3	3	Biotechnology	15	517	Royal Dutch Shell 'B'	24.94	38%	5	4	Petroleum (Integrated)	95
621	Enable Midstream Part.	4.28	49%	5	4	Pipeline MLPs	92	429	Alliance Data Sys.	45.10	37%	5	4	Information Services	10
1534	Macerich Comp. (The)	6.87	49%	5	4	R.E.I.T.	66	1795	BGC Partners	2.36	37%	5	4	Brokers & Exchanges	7
2344	Sirius XM Holdings	5.11	48%	3	3	Entertainment	58	1983	Canon Inc. ADR	16.20	37%	3	2	Foreign Electronics	40
543	Southwestern Energy	2.48	48%	3	5	Natural Gas (Div.)	90	2376	Deluxe Corp.	25.43	37%	4	4	Publishing	84
2146	Macy's Inc.	6.31	47%	5	4	Retail Store	24	1527	GEO Group (The)	10.75	37%	4	3	R.E.I.T.	66
520	Suncor Energy	16.89	47%	4	3	Petroleum (Integrated)	95	2158	Genesco Inc.	24.30	37%	5	3	Shoe	85
514	Occidental Petroleum	11.29	46%	5	4	Petroleum (Integrated)	95	2516	HSBC Holdings PLC	18.64	37%	3	4	Bank	72
535	Enerplus Corp.	2.47	45%	5	4	Natural Gas (Div.)	90	730	Haynes International	18.03	37%	4	3	Metal Fabricating	80
2561	Invesco Ltd.	10.22	45%	4	3	Financial Svcs. (Div.)	57	1338	Cintronics Inc.	13.02	37%	4	4	Electronics	65
631	Rattler Midstream LP	6.88	45%	5	4	Pipeline MLPs	92	2307	Cinemark Hldgs.	11.16	36%	5	4	Recreation	83
620	DCP Midstream LP	10.49	43%	5	5	Pipeline MLPs	92	622	Energy Transfer LP	5.90	36%	4	4	Pipeline MLPs	92
2177	Movado Group	11.34	43%	5	3	Retail (Hardlines)	69	2408	Marathon Oil Corp.	4.56	36%	5	3	Petroleum (Producing)	94
627	NuStar Energy L.P.	11.62	43%	5	4	Pipeline MLPs	92	1828	Nutanix, Inc.	21.64	36%	3	4	E-Commerce	22
628	Phillips 66 Partners	23.87	43%	2	3	Pipeline MLPs	92	2539	Amer. Int'l Group	26.98	35%	4	3	Financial Svcs. (Div.)	57
1544	Service Properties	7.40	43%	5	3	R.E.I.T.	66	151	Blue Bird Corp.	11.95	35%	4	3	Heavy Truck & Equip	64
632	Shell Midstream L.P.	9.74	43%	5	4	Pipeline MLPs	92	525	Brigham Minerals	9.34	35%	5	4	Natural Gas (Div.)	90
2328	AMC Networks	24.51	42%	4	3	Entertainment	58	2155	Caleres Inc.	10.34	35%	5	4	Shoe	85
513	Murphy Oil Corp.	9.26	42%	5	4	Petroleum (Integrated)	95	2305	Carnival Corp.	14.29	35%	5	5	Recreation	83
613	ONEOK Inc.	26.44	42%	5	3	Oil/Gas Distribution	86	533	EOG Resources	38.81	35%	4	3	Natural Gas (Div.)	90
1537	Park Hotels & Resorts	9.93	42%	5	4	R.E.I.T.	66	623	Enterprise Products	16.31	35%	4	3	Pipeline MLPs	92
544	Targa Resources	14.69	42%	5	4	Natural Gas (Div.)	90	2311	IMAX Corp.	12.73	35%	4	3	Recreation	83
1412	ACCO Brands	5.68	41%	5	3	Office Equip/Supplies	85	2337	MSG Networks	9.66	35%	4	3	Entertainment	58
2195	Cato Corp.	8.02	41%	4	3	Retail (Softlines)	78	540	PDC Energy	12.09	35%	5	4	Natural Gas (Div.)	90
220	Inogen, Inc.	28.51	41%	5	3	Med Supp Non-Invasive	25	735	Tenaris S.A. ADS	10.28	35%	4	3	Metal Fabricating	80
2424	Oceaneering Int'l	3.92	41%	5	5	Oilfield Svcs/Equip.	96	1735	Thermon Group	11.23	35%	4	3	Machinery	54
1421	Aurora Cannabis	6.32	40%	5	4	Cannabis	82	2405	Crescent Point Energy	1.75	34%	5	5	Petroleum (Producing)	94
609	Clean Energy Fuels	2.61	40%	5	5	Oil/Gas Distribution	86	2514	First Commonwealth	7.30	34%	4	3	Bank	72
2309	Harley-Davidson	24.28	40%	4	3	Recreation	83	986	Goodyear Tire	8.02	34%	4	4	Auto Parts	74
2362	Marcus Corp.	9.35	40%	5	4	Hotel/Gaming	89	2419	Helix Energy Solutions	2.79	34%	5	5	Oilfield Svcs/Equip.	96
1769	Park-Ohio	15.78	40%	5	4	Diversified Co.	67	1425	Tilray, Inc.	5.00	34%	5	4	Cannabis	82
2528	Synovus Financial	21.36	40%	5	3	Bank	72	2535	AerCap Hldgs. NV	24.92	33%	3	4	Financial Svcs. (Div.)	57
974	Amer. Axle	5.39	39%	4	4	Auto Parts	74	2502	Ally Financial	24.55	33%	4	3	Bank	72
1992	Brit. Am. Tobacco ADR	33.82	39%	3	3	Tobacco	26	759	CNA Fin'l	30.49	33%	3	2	Insurance (Prop/Cas.)	36
979	Cooper-Standard	14.35	39%	5	4	Auto Parts	74	1423	Cronos Group	5.12	33%	4	4	Cannabis	82
2329	Discovery, Inc.	22.42	39%	3	3	Entertainment	58	2106	G-III Apparel Group	14.22	33%	5	5	Apparel	93

**STOCKS WITH HIGHEST PROJECTED 3- TO 5-YEAR DIVIDEND YIELD**  
 Based upon the projected dividend per share 3 to 5 years hence divided by the recent price

Page No.	Stock Name	Recent Price	Est'd Future Yield	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Est'd Future Yield	Time-liness	Safety Rank	Industry Group	Industry Rank
1534	Macerich Comp. (The)	6.87	35%	5	4	R.E.I.T.	66	1563	Prudential Fin'l	64.73	9%	4	3	Insurance (Life)	51
1544	Service Properties	7.40	25%	5	3	R.E.I.T.	66	1543	SL Green Realty	46.41	9%	4	3	R.E.I.T.	66
2444	Apollo Investment	8.72	21%	4	3	Public/Private Equity	—	1545	Simon Property Group	64.87	9%	5	3	R.E.I.T.	66
628	Phillips 66 Partners	23.87	21%	2	3	Pipeline MLPs	92	633	Suburban Propane	14.02	9%	4	3	Pipeline MLPs	92
544	Targa Resources	14.69	20%	5	4	Natural Gas (Div.)	90	2440	Trinseo S.A.	26.87	9%	4	3	Chemical (Diversified)	60
514	Occidental Petroleum	11.29	19%	5	4	Petroleum (Integrated)	95	1565	Unum Group	17.12	9%	4	3	Insurance (Life)	51
623	Enterprise Products	16.31	17%	4	3	Pipeline MLPs	92	2445	Blackstone Group	51.73	8%	3	3	Public/Private Equity	—
1527	GEO Group (The)	10.75	14%	4	3	R.E.I.T.	66	2447	Compass Diversified	16.95	8%	3	3	Public/Private Equity	—
1027	Telefonica SA ADR	3.56	14%	3	4	Telecom. Utility	38	532	Devon Energy	9.27	8%	5	3	Natural Gas (Div.)	90
525	Brigham Minerals	9.34	13%	5	4	Natural Gas (Div.)	90	1600	Dow Inc.	47.91	8%	5	2	Chemical (Basic)	59
1532	Kimco Realty	11.55	13%	4	3	R.E.I.T.	66	2514	First Commonwealth	7.30	8%	4	3	Bank	72
2185	Sunoco LP	25.09	13%	4	3	Retail (Hardlines)	69	779	First Horizon National	9.11	8%	4	3	Bank (Midwest)	87
2537	AllianceBernstein Hldg.	27.14	12%	3	3	Financial Svcs. (Div.)	57	1528	Gaming and Leisure	36.10	8%	4	4	R.E.I.T.	66
612	Kinder Morgan Inc.	12.86	12%	4	3	Oil/Gas Distribution	86	509	HollyFrontier Corp.	21.21	8%	4	3	Petroleum (Integrated)	95
520	Suncor Energy	16.89	12%	4	3	Petroleum (Integrated)	95	2391	Interpublic Group	16.93	8%	3	3	Advertising	76
936	Vodafone Group ADR	13.45	12%	2	3	Telecom. Services	18	1504	Investors Bancorp	7.29	8%	4	3	Thrift	63
1991	Altria Group	38.82	11%	3	3	Tobacco	26	512	Marathon Petroleum	31.25	8%	5	3	Petroleum (Integrated)	95
1992	Brit. Am. Tobacco ADR	33.82	11%	3	3	Tobacco	26	1768	National Presto Ind.	83.36	8%	2	3	Diversified Co.	67
1983	Canon Inc. ADR	16.20	11%	3	2	Foreign Electronics	40	2570	Navigent Corp.	7.94	8%	4	3	Financial Svcs. (Div.)	57
624	Holly Energy Part.	12.81	11%	4	4	Pipeline MLPs	92	1505	New York Community	8.73	8%	3	3	Thrift	63
513	Murphy Oil Corp.	9.26	11%	5	4	Petroleum (Integrated)	95	2394	Omnicom Group	49.25	8%	3	3	Advertising	76
519	Royal Dutch Shell 'B'	24.94	11%	4	3	Petroleum (Integrated)	95	745	POSCO ADR	39.76	8%	3	3	Steel	70
502	BP PLC ADR	18.32	10%	4	3	Petroleum (Integrated)	95	1508	Provident Fin'l Svcs.	12.34	8%	4	3	Thrift	63
2400	Black Stone Minerals	6.05	10%	4	3	Petroleum (Producing)	94	1541	Regency Centers Corp.	37.21	8%	4	3	R.E.I.T.	66
2544	Block (H&R)	14.18	10%	3	3	Financial Svcs. (Div.)	57	1592	Rio Tinto plc	61.60	8%	3	3	Metals & Mining (Div.)	77
1023	CenturyLink, Inc.	10.26	10%	3	3	Telecom. Utility	38	1996	Universal Corp.	42.51	8%	2	3	Tobacco	26
619	Cheniere Energy Part.	32.93	10%	3	3	Pipeline MLPs	92	522	Valero Energy	47.36	8%	4	3	Petroleum (Integrated)	95
506	Delek US Holdings	11.89	10%	5	3	Petroleum (Integrated)	95	1550	Vornado Rlty Trust	33.33	8%	4	3	R.E.I.T.	66
2355	Extended Stay America	11.88	10%	3	3	Hotel/Gaming	89	2539	Amer. Int'l Group	26.98	7%	4	3	Financial Svcs. (Div.)	57
507	Exxon Mobil Corp.	36.43	10%	3	3	Petroleum (Integrated)	95	2443	Apollo Global Mgmt	43.70	7%	5	3	Public/Private Equity	—
2448	Gladstone Capital	7.72	10%	5	3	Public/Private Equity	—	77							

**HIGH RETURNS EARNED ON TOTAL CAPITAL**

Stocks with high average returns on capital in last 5 years ranked by earnings retained to common equity

Page No.	Stock Name	Ticker	Recent Price	Avg. Retained to Com. Eq.	Avg. Return On Cap.	Time-liness	Safety Rank	Beta	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
706	Boeing	BA	156.35	882%	54%	5	3	1.65	NMF	NIL	Aerospace/Defense	73
1190	Colgate-Palmolive	CL	75.19	644%	35%	1	1	0.70	25.3	2.3	Household Products	1
1642	Insperty Inc.	NSP	64.78	541%	46%	4	4	1.35	18.7	2.5	Human Resources	71
1717	Lennox Int'l	LII	266.96	439%	52%	3	3	1.00	29.5	1.2	Machinery	54
443	S&P Global	SFGI	350.89	289%	45%	1	2	1.05	32.3	0.8	Information Services	10
218	IDEXX Labs.	IDXX	364.70	241%	52%	1	3	1.00	61.8	NIL	Med Supp Non-Invasive	25
316	United Parcel Serv.	UPS	161.06	233%	32%	3	1	0.80	21.9	2.5	Air Transport	91
441	Moody's Corp.	MCO	280.04	218%	34%	1	3	1.15	32.3	0.8	Information Services	10
1916	Herbalife Nutrition	HLF	47.71	213%	34%	2	3	1.00	18.1	NIL	Food Processing	19
2130	O'Reilly Automotive	ORLY	453.96	202%	32%	3	3	0.95	27.5	NIL	Retail Automotive	48
364	Papa John's Int'l	PZZA	84.47	201%	87%	2	3	0.65	51.2	1.1	Restaurant	78
2138	Burlington Stores	BURL	207.00	195%	28%	3	3	1.10	NMF	NIL	Retail Store	24
1140	Home Depot	HD	272.35	161%	38%	3	1	1.05	22.9	2.3	Retail Building Supply	8
1193	Kimberly-Clark	KMB	145.87	124%	34%	1	1	0.75	17.7	2.9	Household Products	1
717	Lockheed Martin	LMT	379.61	119%	33%	1	1	0.95	16.0	2.7	Aerospace/Defense	73
2613	VMware, Inc.	VMW	140.27	117%	28%	2	3	0.90	23.1	NIL	Computer Software	3
603	Ubiquiti Inc.	UI	157.66	96%	39%	2	3	0.75	27.0	1.0	Wireless Networking	39
1607	AbbVie Inc.	ABBV	89.09	94%	29%	1	3	1.00	8.2	5.3	Drug	14
126	Mettler-Toledo Int'l	MTD	974.50	90%	32%	3	2	0.95	43.1	NIL	Precision Instrument	35
992	Meritor, Inc.	MTOR	20.61	83%	32%	3	4	1.35	93.7	NIL	Auto Parts	74
2569	MasterCard Inc.	MA	327.85	80%	48%	3	1	1.05	38.9	0.5	Financial Svcs. (Div.)	57
372	Yum! Brands	YUM	89.34	75%	49%	3	3	1.05	27.9	2.1	Restaurant	78
2589	Citrix Sys.	CTXS	134.22	69%	38%	1	3	0.75	24.8	1.0	Computer Software	3
2630	Manhattan Assoc.	MANH	94.76	65%	65%	3	3	1.25	79.0	NIL	IT Services	16
1405	NetApp, Inc.	NTAP	41.39	64%	33%	2	3	1.10	12.2	4.8	Computers/Peripherals	21
1189	Clorox Co.	CLX	208.53	59%	32%	1	1	0.50	27.6	2.1	Household Products	1
368	Starbucks Corp.	SBUX	83.89	55%	40%	3	1	1.00	77.0	2.1	Restaurant	78
2363	Marriott Int'l	MAR	93.02	51%	98%	4	3	1.25	46.5	NIL	Hotel/Gaming	89
1314	Rockwell Automation	ROK	209.08	47%	30%	3	2	1.15	31.6	2.0	Electrical Equipment	62
1917	Hershey Co.	HSY	137.00	46%	31%	3	2	0.85	23.4	2.4	Food Processing	19
2595	Intuit Inc.	INTU	307.70	43%	50%	2	2	1.05	33.5	0.8	Computer Software	3
2184	Sleep Number Corp.	SNBR	47.62	43%	43%	3	3	1.15	25.1	NIL	Retail (Hardlines)	69
1122	Trex Co.	TREX	66.36	41%	41%	2	3	1.15	45.8	NIL	Building Materials	45
2604	Paycom Software	PAYC	274.32	39%	34%	2	3	1.15	73.7	NIL	Computer Software	3
2207	TJX Companies	TJX	54.17	39%	37%	3	3	1.10	31.9	NIL	Retail (Softlines)	79
1979	National Beverage	FIZZ	71.65	38%	38%	2	3	0.75	27.0	NIL	Beverage	29
1628	Novo Nordisk ADR	NVO	68.99	38%	75%	2	1	0.80	25.9	1.9	Drug	14
1398	Apple Inc.	AAPL	110.08	35%	28%	3	1	0.90	31.4	0.8	Computers/Peripherals	21
2206	Ross Stores	ROST	90.42	35%	40%	3	3	1.25	39.0	NIL	Retail (Softlines)	79
436	FactSet Research	FDS	336.84	34%	30%	2	2	1.05	32.6	0.9	Information Services	10
1943	USANA Health Sciences	USNA	75.70	31%	31%	2	3	0.95	14.4	NIL	Food Processing	19
952	F5 Networks	FFIV	117.77	30%	30%	3	3	0.90	22.3	NIL	Telecom. Equipment	34
2188	Ulta Beauty	ULTA	225.88	30%	30%	4	3	1.25	26.4	NIL	Retail (Hardlines)	69
846	United Therapeutics	UTHR	101.01	29%	28%	3	3	0.85	8.2	NIL	Biotechnology	15
2203	lululemon athletic	LULU	295.56	28%	28%	3	3	1.00	61.2	NIL	Retail (Softlines)	79
2616	Accenture Plc	ACN	233.91	25%	42%	2	1	0.95	30.8	1.4	IT Services	16
2160	NIKE, Inc. 'B'	NKE	113.37	25%	28%	3	1	1.10	95.3	0.9	Shoe	85
1639	Barrett Business Serv.	BBSI	50.39	24%	32%	4	3	1.30	12.9	2.4	Human Resources	71
1647	Robert Half Int'l	RHI	51.97	24%	35%	3	2	1.20	23.0	2.7	Human Resources	71
1376	Skyworks Solutions	SWKS	134.25	23%	28%	3	3	1.10	21.7	1.5	Semiconductor	12

**BARGAIN BASEMENT STOCKS**

Stocks with current price-earnings multiples and price-to-“net” working capital ratios that are in the bottom quartile of the Value Line universe (“Net” working capital equals current assets less all liabilities including long-term debt and preferred)

Page No.	Stock Name	Ticker	Recent Price	Percent Price-to "Net" Wkg. Capital	Current P/E Ratio	Percent Price-to Book Value	Time-liness	Safety Rank	Beta	% Est'd Yield	Industry Group	Industry Rank
1324	Avnet, Inc.	AVT	25.99	110%	16.3	65%	4	2	1.05	3.2	Electronics	65
1239	Tutor Perini	TPC	11.19	121%	5.6	39%	3	4	1.30	NIL	Engineering & Const	55
1134	TRI Pointe Group	TPH	17.07	126%	7.4	106%	2	3	1.50	NIL	Homebuilding	13
1135	Taylor Morrison Home	TMHC	23.59	144%	7.0	98%	3	3	1.60	NIL	Homebuilding	13
1126	Beazer Homes USA	BZH	11.44	148%	10.8	66%	-	5	1.65	NIL	Homebuilding	13
1807	Goldman Sachs	GS	194.00	153%	8.9	85%	3	2	1.15	2.6	Investment Banking	49
1996	Universal Corp.	UVV	42.51	154%	12.1	83%	2	3	0.75	7.2	Tobacco	26
1136	Toll Brothers	TOL	47.03	161%	13.4	131%	3	3	1.65	0.9	Homebuilding	13
2557	Franklin Resources	BEN	20.10	166%	14.2	101%	3	2	1.15	5.5	Financial Svcs. (Div.)	57
1128	KB Home	KBH	38.93	178%	14.1	146%	3	3	1.75	0.9	Homebuilding	13
2177	Movado Group	MOV	11.34	182%	13.2	50%	5	3	1.30	NIL	Retail (Hardlines)	69
1327	Celestica Inc.	CLS	7.21	188%	8.1	68%	2	3	1.35	NIL	Electronics	65
1130	M.D.C. Holdings	MDC	44.74	196%	8.9	157%	2	3	1.30	3.0	Homebuilding	13
1131	Meritage Homes	MTH	101.73	215%	11.1	197%	2	3	1.40	NIL	Homebuilding	13
1329	Encore Wire	WIRE	46.06	216%	16.4	124%	3	3	1.00	0.2	Electronics	65
2180	PC Connection	CNXN	40.27	243%	13.7	178%	3	3	0.85	NIL	Retail (Hardlines)	69
1342	Sanmina Corp.	SANM	26.61	282%	8.8	113%	3	3	1.00	NIL	Electronics	65
1133	PulteGroup, Inc.	PHM	44.61	295%	10.5	221%	2	3	1.40	1.1	Homebuilding	13
1643	Kelly Services 'A'	KELYA	16.59	342%	11.4	51%	4	3	1.15	NIL	Human Resources	71
2175	MarineMax	HZO	25.02	348%	11.0	145%	2	4	1.40	NIL	Retail (Hardlines)	69
1127	Horton D.R.	DHI	72.12	356%	11.8	265%	2	3	1.20	1.0	Homebuilding	13
1129	Lennar Corp.	LEN	76.75	360%	12.6	152%	2	3	1.35	0.7	Homebuilding	13
2004	Perdoceo Education	PRDO	12.08	440%	8.2	196%	3	4	1.15	NIL	Educational Services	41
1339	Plexus Corp.	PLXS	69.32	499%	15.8	232%	2	3	1.05	NIL	Electronics	65
978	Cooper Tire & Rubber	CTB	30.60	571%	16.3	121%	3	3	1.05	1.4	Auto Parts	74
1348	Vishay Intertechnology	VSH	15.04	584%	16.0	134%	3	3	1.20	2.5	Electronics	65
846	United Therapeutics	UTHR	101.01	606%	8.2	159%	3	3	0.85	NIL	Biotechnology	15
1323	Arrow Electronics	ARW	77.07	663%	11.2	129%	3	3	1.20	NIL	Electronics	65
995	Standard Motor Prod.	SMP	43.33	690%	16.2	193%	3	3	0.80	NIL	Auto Parts	74
1123	UFP Industries	UFPI	52.65	723%	15.3	260%	2	3	1.10	0.9	Building Materials	45
2106	G-III Apparel Group	GIII	14.22	725%	13.9	53%	5	5	2.00	NIL	Apparel	93
1395	Photronics Inc.	PLAB	9.85	820%	13.3	84%	2	3	0.85	NIL	Semiconductor Equip	2

UNTIMELY STOCKS

Stocks ranked 5 (Lowest) for Relative Price Performance in the next 12 months

Page No.	Stock Name	Recent Price	Rank Safety	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Rank Safety	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	
702	AAR Corp.	18.27	4	4	NMF	NIL	Aerospace/Defense	73	1534	Macerich Comp. (The)	6.87	4	3	38.2	8.7	R.E.I.T.
1582	Allegheny Techn.	9.38	5	5	NMF	NIL	Metals & Mining (Div.)	77	2146	Macy's Inc.	6.31	4	4	NMF	NIL	Retail Store
429	Alliance Data Sys.	45.10	4	4	5.6	1.9	Information Services	10	2408	Marathon Oil Corp.	4.56	3	2	NMF	NIL	Petroleum (Producing)
304	Amer. Airlines	12.21	5	4	NMF	NIL	Air Transport	91	2362	Marcus Corp.	9.35	4	4	NMF	NIL	Hotel/Gaming
2399	Apache Corp.	12.11	5	3	NMF	0.8	Petroleum (Producing)	94	2377	Meredit Corp.	12.61	4	4	5.0	NIL	Publishing
704	Astronics Corp.	8.26	5	3	NMF	NIL	Aerospace/Defense	73	2177	Movado Group	11.34	3	5	13.2	NIL	Retail (Hardlines)
349	BJ's Restaurants	32.38	4	5	NMF	NIL	Restaurant	78	513	Murphy Oil Corp.	9.26	4	3	NMF	5.4	Petroleum (Integrated)
350	Bloomin' Brands	14.56	4	5	NMF	NIL	Restaurant	78	840	Murphy Genetics	12.58	3	3	NMF	NIL	Biotechnology
706	Boeing	156.35	3	4	NMF	NIL	Aerospace/Defense	73	1337	NCR Corp.	19.04	3	4	11.6	NIL	Electronics
2154	Boot Barn Holdings	27.47	4	5	26.2	NIL	Shoe	85	2423	National Oilwell Varco	10.84	4	3	NMF	NIL	Oilfield Svcs/Equip.
2546	CIT Group	17.01	3	3	68.0	8.2	Financial Svcs. (Div.)	57	2147	Nordstrom, Inc.	13.24	4	3	NMF	NIL	Retail Store
503	CVR Energy	12.75	3	3	NMF	NIL	Petroleum (Integrated)	95	2313	Norwegian Cruise Line	14.99	5	5	NMF	NIL	Recreation
2103	Capri Holdings Ltd.	20.42	4	4	29.2	NIL	Apparel	93	627	NuStar Energy L.P.	11.62	4	3	25.8	13.8	Pipeline MLPs
2305	Carnival Corp.	14.29	5	4	NMF	NIL	Recreation	83	514	Occidental Petroleum	11.29	4	3	NMF	0.4	Petroleum (Integrated)
739	Carpenter Technology	18.42	3	4	NMF	4.3	Steel	70	613	ONEOK Inc.	26.44	3	4	9.1	14.4	Oil/Gas Distribution
504	Centus Energy	5.26	5	3	NMF	NIL	Petroleum (Integrated)	95	2395	OUTFRONT Media	14.87	4	4	NMF	NIL	Advertising
1948	Chefs' Warehouse	14.57	4	4	NMF	NIL	Retail/Wholesale Food	23	539	Outvint Inc.	9.23	4	3	NMF	4.1	Natural Gas (Div.)
2197	Children's Place	28.90	3	5	9.3	NIL	Retail (Softlines)	79	515	PBF Energy	6.82	4	3	2.0	NIL	Petroleum (Integrated)
350	Cimarex Energy	24.95	3	4	NMF	3.5	Natural Gas (Div.)	90	540	PDF Energy	12.09	4	4	NMF	NIL	Natural Gas (Div.)
2307	Cinemark Hldgs.	11.16	4	3	NMF	NIL	Recreation	83	2112	PVH Corp.	64.68	3	5	39.7	NIL	Apparel
950	Comtech Telecom.	14.99	4	3	36.6	2.7	Telecom. Equipment	34	1537	Park Hotels & Resorts	9.93	4	5	NMF	NIL	R.E.I.T.
2404	Continental Resources	13.82	4	3	NMF	NIL	Petroleum (Producing)	94	1769	Park-Ohio	15.78	4	3	NMF	NIL	Diversified Co.
979	Cooper-Standard	14.35	4	4	NMF	NIL	Auto Parts	74	517	Petroleo Brasileiro ADR	7.89	5	3	NMF	NIL	Petroleum (Integrated)
306	Copa Holdings, S.A.	56.33	4	5	NMF	NIL	Air Transport	91	629	Plains All Amer. Pipe.	6.34	4	3	6.5	11.4	Pipeline MLPs
2416	Core Laboratories	17.13	4	3	32.3	0.2	Oilfield Svcs/Equip.	96	630	Plains GP Holdings L.P.	6.52	4	3	7.0	11.0	Pipeline MLPs
2405	Crescent Point Energy	1.75	5	1	NMF	0.6	Petroleum (Producing)	94	365	Red Robin Gourmet	13.21	5	4	NMF	NIL	Restaurant
213	Cutera, Inc.	19.44	4	5	NMF	NIL	Med Supp Non-Invasive	25	2368	Red Rock Resorts	16.30	4	4	NMF	NIL	Hotel/Gaming
620	DCP Midstream LP	10.49	5	3	10.9	14.9	Pipeline MLPs	92	2318	Royal Caribbean	60.71	5	5	NMF	NIL	Recreation
2623	DXC Technology	17.32	3	3	2.7	NIL	IT Services	16	1542	Ryman Hospitality	36.45	3	4	NMF	NIL	R.E.I.T.
356	Dave & Buster's Ent.	16.28	5	4	NMF	NIL	Restaurant	78	1831	Sabre Corp.	6.31	4	3	NMF	NIL	E-Commerce
307	Delta Air Lines	29.22	3	5	NMF	NIL	Air Transport	91	2429	Schlumberger Ltd.	17.27	3	3	NMF	2.9	Oilfield Svcs/Equip.
532	Devon Energy	9.27	3	3	NMF	4.7	Natural Gas (Div.)	90	1544	Service Properties	7.40	3	4	NMF	0.5	R.E.I.T.
2406	Diamondback Energy	32.08	3	3	NMF	4.7	Petroleum (Producing)	94	632	Shell Midstream L.P.	9.74	4	2	7.6	18.9	Pipeline MLPs
358	Dine Brands Global	52.94	4	4	44.5	NIL	Restaurant	78	2182	Signet Jewelers Ltd.	17.32	4	5	NMF	NIL	Retail (Hardlines)
621	Enable Midstream Part.	4.28	4	2	9.7	15.4	Pipeline MLPs	92	1545	Simon Property Group	64.87	3	5	17.0	8.0	R.E.I.T.
535	Enerplus Corp.	2.47	4	1	NMF	4.9	Natural Gas (Div.)	90	1546	SITE Centers	7.20	4	4	NMF	NIL	R.E.I.T.
611	EnLink Midstream LLC	2.53	5	3	NMF	15.0	Oil/Gas Distribution	86	2320	Six Flags Entertainment	22.03	4	4	NMF	NIL	Recreation
2106	G-III Apparel Group	14.22	5	5	13.9	NIL	Apparel	93	312	Six Flags Entertainment	31.54	3	5	61.8	NIL	Air Transport
2158	Genesco Inc.	24.30	3	3	11.3	NIL	Shoe	85	723	Spirit AeroSystems	19.57	3	4	NMF	0.2	Aerospace/Defense
2649	Group, Inc.	25.36	5	3	NMF	NIL	Internet	27	314	Spirit Airlines	16.23	4	4	NMF	NIL	Air Transport
2108	Guess?, Inc.	12.55	4	4	78.4	3.6	Apparel	93	2128	Synovus Financial	21.36	3	4	10.7	6.2	Bank
781	Hancock Whitney Corp.	18.68	3	3	29.7	5.8	Bank (Midwest)	87	2186	Tapestry Inc.	16.51	3	4	26.6	NIL	Retail (Hardlines)
309	Hawaiian Hldgs.	13.11	3	4	NMF	NIL	Air Transport	91	544	Targa Resources	14.69	4	3	NMF	2.7	Natural Gas (Div.)
2420	Helmerich & Payne	15.32	3	3	NMF	6.5	Oilfield Svcs/Equip.	96	1425	Tilray, Inc.	5.00	4	1	NMF	NIL	Cannabis
389	Howard Hughes Corp.	56.19	3	4	NMF	NIL	Industrial Services	42	2114	Under Armour 'A'	10.69	4	5	NMF	NIL	Apparel
510	Husky Energy	3.26	3	1	NMF	1.5	Petroleum (Integrated)	95	2115	Unifi, Inc.	12.28	3	4	NMF	NIL	Apparel
220	Inogen, Inc.	28.51	3	3	64.8	NIL	Med Supp Non-Invasive	25	315	United Airlines Hldgs.	33.79	4	4	NMF	NIL	Air Transport
2145	Kohl's Corp.	21.50	4	5	NMF	NIL	Retail Store	24	1783	Viad Corp.	20.78	3	4	NMF	NIL	Diversified Co.
2361	MGM Resorts Int'l	21.09	3	4	NMF	NIL	Hotel/Gaming	89	1739	Welbilt, Inc.	6.03	5	4	NMF	NIL	Machinery
125	MTS Systems	19.47	4	3	11.7	NIL	Precision Instrument	35	624	Western Midstream Part.	7.69	4	3	4.2	16.1	Pipeline MLPs

■ Newly added this week.

HIGHEST DIVIDEND YIELDING NON-UTILITY STOCKS

Based upon estimated year-ahead dividends per share

Page No.	Stock Name	Recent Price	Time-liness	Current Rank	Safety	P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-liness	Current Rank	Safety	P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
332	Frontline Ltd.	6.63	3	5	3.3	30.2	8.0	Maritime	75	619	Cheniere Energy Part.	32.93	3	3	11.3	8.0	Pipeline MLPs	92	
607	Antero Midstream Corp.	5.35	-	4	7.5	23.0	8.0	Oil/Gas Distribution	86	1545	Simon Property Group	64.87	5	3	17.0	8.0	R.E.I.T.	66	
622	Energy Transfer LP	5.90	4	4	7.7	20.7	7.8	Pipeline MLPs	92	1503	Flushing Financial	10.81	2	3	6.4	7.8	Thrift	63	
632	Shell Midstream L.P.	9.74	5	4	7.6	18.9	7.8	Pipeline MLPs	92	1505	New York Community	8.73	3	3	10.0	7.8	Thrift	63	
631	Rattler Midstream LP	6.88	-	4	9.6	16.9	7.7	Pipeline MLPs	92	2402	Can. Natural Res.	22.09	4	3	NMF	7.7	Petroleum (Producing)	94	
634	Western Midstream Part.	7.69	5	4	4.2	16.1	7.7	Pipeline MLPs	92	616	Williams Cos.	20.67	3	4	19.0	7.7	Oil/Gas Distribution	86	
625	MPLX LP	17.20	4	3	7.1	16.0	7.5	Pipeline MLPs	92	2562	Janus Henderson plc	19.14	3	3	9.8	7.5	Financial Svcs. (Div.)	57	
621	Enable Midstream Part.	4.28	5	4	9.7	15.4	7.5	Pipeline MLPs	92	1508	Provident Fin'l Svcs.	12.34	4	3	12.2	7.5	Thrift	63	
1591	Natural Resource	11.80	4	4	NMF	15.3	7.4	Metals & Mining (Div.)	77	917	AT&T Inc.	28.63	3	1	8.5	7.4	Telecom. Services	18	
611	EnLink Midstream LLC	2.53	5	5	NMF	15.0	7.4	Oil/Gas Distribution	86	2544	Block (H&R)	14.18	3	3	38.3	7.4	Financial Svcs. (Div.)	57	
620	DCP Midstream LP	10.49	5	5	10.9	14.9	7.4	Pipeline MLPs	92	512	Marathon Petroleum	31.25	-	3	NMF	7.4	Petroleum (Integrated)	95	
628	Phillips 66 Partners	23.87	2	3	6.2	14.7	7.2	Pipeline MLPs	92	1768	National Presto Ind.	83.36	2	3	16.4	7.2	Diversified Co.	67	
613	ONEOK Inc.	26.44	5	3	9.1	14.4	7.2	Oil/Gas Distribution	86	1996	Universal Corp.	42.51	2	3	12.1	7.2	Tobacco	63	
2444	Apollo Investment	8.72	4	3	8.7	14.2	7.1	Public/Private Equity	-	1507	People's United Fin'l	10.20	3	3	10.2	7.1	Thrift	26	
627	NuStar Energy L.P.	11.62	5	4	25.8	13.8	7.0	Pipeline MLPs	92	776	Comerica Inc.	38.66	4	3	11.3	7.0	Bank (Midwest)	87	
2185	Sunoco LP	25.09	4	3	10.1	13.2	7.0	Retail (Hardlines)	69	1533	MGM Growth Properties	27.85	4	3	22.3	7.0	R.E.I.T.	66	
1527	GEO Group (The)	10.75	4	3	10.3	12.7	6.9	R.E.I.T.	66	502	BP PLC ADR	18.32	4	3	NMF	6.9	Petroleum (Integrated)	95	
336	SFL Corp. Ltd	8.18	4	4	9.0	12.2	6.8	Maritime	75	1903	B&G Foods	27.80	2	3	14.3	6.8	Food Processing	19	
1513	Annaly Capital Mgmt.	7.37	4	4	7.1	11.9	6.8	R.E.I.T.	66	505	Chevron Corp.	76.30	4	3	NMF	6.8	Petroleum (Integrated)	95	
331	Euronav NV	9.43	2	4	4.7	11.7	6.8	Maritime	75	509	HollyFrontier Corp.	21.21	4	3	NMF	6.8	Petroleum (Integrated)	95	
626	Magellan Midstream	36.81	4	4	11.3	11.4	6.8	Pipeline MLPs	92	1563	Prudential Fin'l	64.73	4	3	6.6	6.8	Insurance (Life)	51	
629	Plains All Amer. Pipe.	6.34	5	4	6.5	11.4	6.7	Pipeline MLPs	92	1565	Unum Group	17.12	4	3	3.3	6.7	Insurance (Life)	51	
630	Plains GP Holdings L.P.	6.52	5	4	7.0	11.0	6.6	Pipeline MLPs	92	2508	Bank of Nova Scotia	54.58							

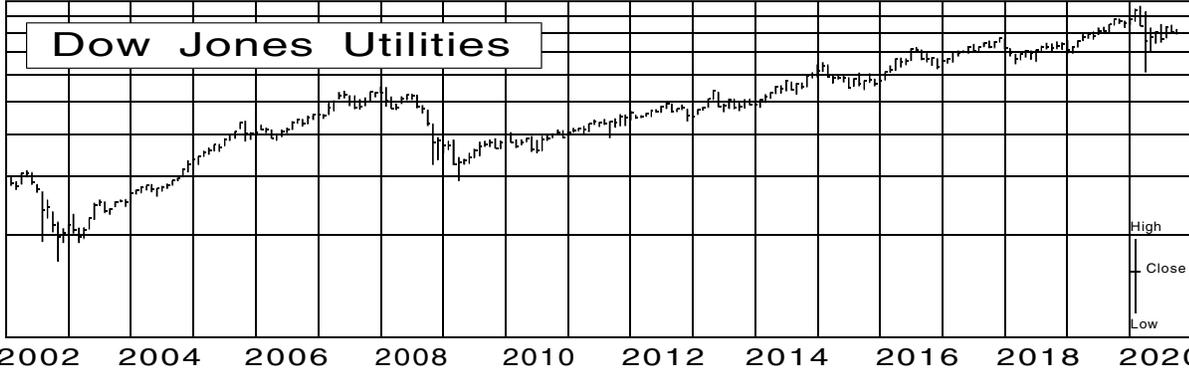
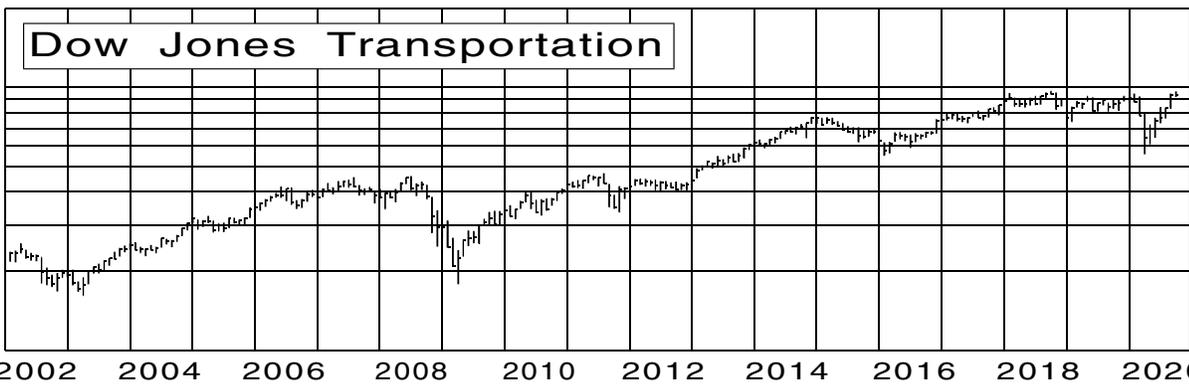
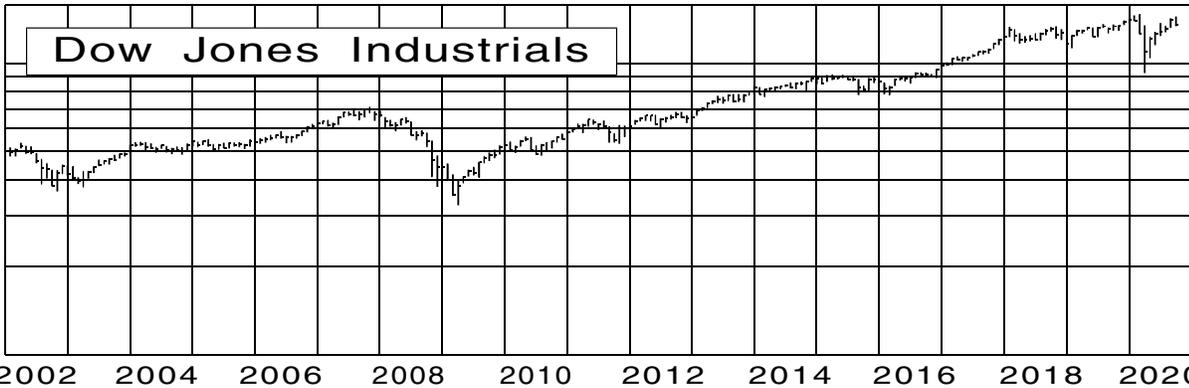
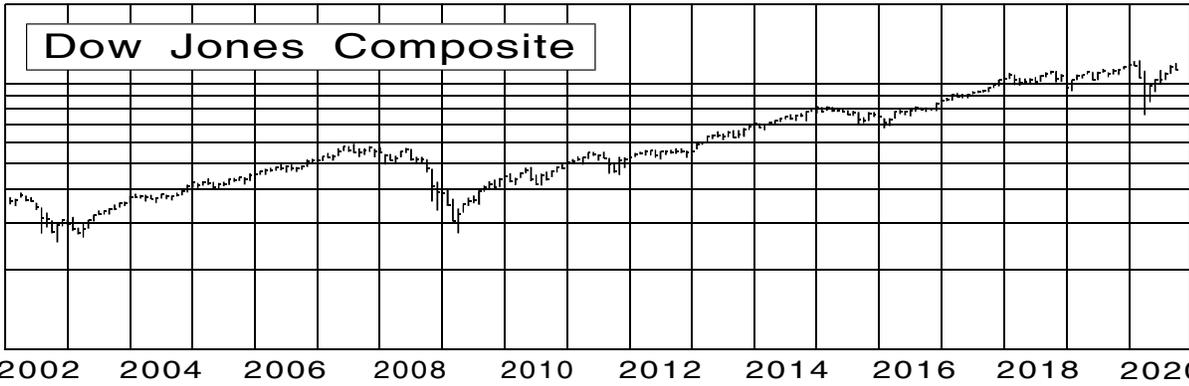
HIGHEST GROWTH STOCKS

(To be included, a company's annual growth of sales, cash flow, earnings, dividends and book value must together have averaged 9% or more over the past 10 years and be expected to average at least 9% in the coming 3-5 years.)

Page No.	Stock Name	Ticker	Recent Price	Growth Past 10 Years	Est'd Growth 3-5 Years	Time-liness	Safety Rank	Beta	Current P/E Ratio	% Est'd Yield	Estimated 3-5 Year Appreciation	Industry Group	Industry Rank
1702	AAON, Inc.	AAON	56.05	9%	14%	2	3	0.90	39.2	0.7	N- 15%	Machinery	54
2615	ACI Worldwide	ACIW	25.08	11%	11%	2	3	1.00	25.1	NIL	20- 80%	IT Services	16
2584	Adobe Inc.	ADBE	475.64	13%	19%	1	2	0.80	56.7	NIL	5- 45%	Computer Software	3
1815	Akamai Technologies	AKAM	110.16	12%	10%	1	3	0.75	33.6	NIL	10- 65%	E-Commerce	22
1703	Alamo Group	ALG	100.02	10%	10%	3	3	1.00	21.3	0.5	35-100%	Machinery	54
205	Align Techn.	ALGN	322.30	22%	19%	3	3	1.30	92.1	NIL	N- 30%	Med Supp Non-Invasive	25
1946	Ali. Couche-Tard	ATDB.TO	44.86	24%	12%	2	3	0.75	18.3	0.7	45-110%	Retail/Wholesale Food	23
2639	Alphabet Inc.	GOOG	1431.16	19%	15%	1	1	0.90	26.3	NIL	60- 95%	Internet	27
2640	Amazon.com	AMZN	2960.47	28%	24%	1	2	0.80	78.2	NIL	5- 40%	Internet	27
2540	Ameriprise Fin'l	AMP	150.39	13%	10%	3	3	1.40	9.3	2.8	25- 85%	Financial Svcs. (Div.)	57
1744	AMETEK, Inc.	AME	96.24	13%	10%	3	2	1.15	29.3	0.7	5- 40%	Diversified Co.	67
2586	ANSYS, Inc.	ANSS	309.19	12%	10%	3	2	0.90	49.7	NIL	N- N%	Computer Software	3
791	Anthem, Inc.	ANTM	257.71	12%	12%	1	3	1.15	10.9	1.6	55-135%	Medical Services	28
1398	Apple Inc.	AAPL	110.08	29%	15%	3	1	0.90	31.4	0.8	5- 30%	Computers/Peripherals	21
705	Axon Enterprise	AXAX	83.18	18%	18%	3	4	0.95	NMF	NIL	N- 10%	Aerospace/Defense	73
2641	Baidu, Inc.	BIDU	124.55	37%	11%	3	3	1.05	18.1	NIL	75-165%	Internet	27
565	Balchem Corp.	BCPC	95.24	15%	11%	2	3	0.75	34.8	0.5	25- 90%	Chemical (Specialty)	61
1967	Boston Beer 'A'	SAM	879.27	16%	17%	2	3	0.70	83.7	NIL	N- N%	Beverage	29
115	Brucker Corp.	BRKR	38.35	10%	14%	3	3	1.10	27.8	0.4	70-160%	Precision Instrument	35
2619	CACI Int'l	CACI	215.44	11%	11%	2	3	0.95	15.8	NIL	30- 90%	IT Services	16
209	Cantel Medical Corp.	CMD	43.01	14%	12%	4	3	1.65	28.9	NIL	100-190%	Med Supp Non-Invasive	25
1749	Carlisle Cos.	CSL	118.73	10%	10%	3	2	1.10	21.1	1.8	40- 90%	Diversified Co.	67
792	Centene Corp.	CNC	55.99	24%	11%	1	3	1.05	10.3	NIL	50-130%	Medical Services	28
1750	Chemed Corp.	CHE	479.52	12%	11%	2	2	0.85	29.2	0.3	N- 20%	Diversified Co.	67
353	Chipotle Mex. Grill	CMG	1206.52	14%	11%	3	3	0.90	NMF	NIL	N- N%	Restaurant	78
793	Cigna Corp.	CI	164.96	14%	14%	2	3	1.20	8.7	NIL	70-155%	Medical Services	28
381	Cintas Corp.	CTAS	316.59	13%	11%	3	2	1.15	40.6	0.9	N- 5%	Industrial Services	42
2589	Citrix Sys.	CTXS	134.22	14%	10%	1	3	0.75	24.8	1.0	35-100%	Computer Software	3
116	Cognex Corp.	CGNX	61.25	16%	12%	3	3	1.05	62.5	0.4	N- 15%	Precision Instrument	35
2125	Copart, Inc.	CPRT	102.63	14%	10%	3	2	1.05	44.2	NIL	N- 5%	Retail Automotive	48
433	CoStar Group	CSGP	824.00	19%	15%	2	2	0.95	84.9	NIL	N- 30%	Information Services	10
2548	Credit Acceptance	CACC	308.95	25%	12%	3	3	1.25	12.1	NIL	100-200%	Financial Svcs. (Div.)	57
794	DaVita Inc.	DVA	85.12	10%	10%	1	3	1.00	12.5	NIL	15- 75%	Medical Services	28
2329	Discovery, Inc.	DISCA	22.42	13%	9%	3	3	1.10	10.4	NIL	190-345%	Entertainment	58
2142	Dollar General	DG	202.94	15%	10%	1	3	0.70	25.9	0.7	N- 35%	Retail Store	24
180	Edwards Lifesciences	EW	81.45	17%	10%	3	2	1.00	45.3	NIL	5- 40%	Med Supp Invasive	53
1615	Emergent BioSolutions	EBS	100.00	10%	19%	2	4	0.85	16.6	NIL	10- 80%	Drug	14
435	Exponent, Inc.	EXPO	72.55	11%	9%	3	3	0.85	49.7	1.0	N- 40%	Information Services	10
1602	FMC Corp.	FMC	106.45	10%	12%	2	3	1.25	16.1	1.8	10- 60%	Chemical (Basic)	59
436	FactSet Research	FDS	336.84	11%	9%	2	2	1.05	32.6	0.9	N- N%	Information Services	10
2626	Fair Isaac	FICO	424.24	10%	13%	3	3	1.15	58.7	NIL	N- 20%	IT Services	16
2627	Fiserv Inc.	FISV	99.61	15%	13%	1	2	1.00	20.1	NIL	5- 45%	IT Services	16
386	Genpact Limited	G	37.63	12%	12%	2	2	1.05	17.3	1.0	45- 85%	Industrial Services	42
984	Gentherm Inc.	THRM	40.20	25%	10%	3	3	1.15	45.2	NIL	35-100%	Auto Parts	74
2559	Global Payments	GP	175.50	12%	13%	-	3	1.20	NMF	0.4	N- 45%	Financial Svcs. (Div.)	57
712	HEICO Corp.	HEI	106.80	17%	9%	3	3	1.05	70.7	0.1	N- 45%	Aerospace/Defense	73
800	Humana Inc.	HUM	394.51	11%	10%	2	3	1.20	20.9	0.7	N- 50%	Medical Services	28
801	ICON plc	ICLR	177.08	14%	9%	2	2	0.90	27.9	NIL	15- 50%	Medical Services	28
121	II-VI Inc.	IIVI	38.52	13%	13%	2	3	1.00	23.9	NIL	55-135%	Precision Instrument	35
219	Illumina Inc.	ILMN	270.13	21%	11%	3	3	0.85	44.8	NIL	35-100%	Med Supp Non-Invasive	25
2174	Insight Enterprises	NSIT	56.39	10%	11%	3	3	1.10	13.4	NIL	35-105%	Retail (Hardlines)	69
2595	Intuit Inc.	INTU	307.70	11%	12%	2	2	1.05	33.5	0.8	5- 45%	Computer Software	3
187	Intuitive Surgical	ISRG	641.95	19%	12%	3	2	1.15	84.7	NIL	5- 45%	Med Supp Invasive	53
122	KLA Corp.	KLAC	181.10	11%	15%	1	3	1.10	15.6	2.0	15- 75%	Precision Instrument	35
987	LCI Industries	LCII	104.14	18%	10%	3	3	1.20	17.6	2.9	40-105%	Auto Parts	74
1392	Lam Research	LCRX	314.96	20%	11%	1	3	1.30	15.6	1.7	5- 55%	Semiconductor Equip	2
1005	Lauder (Estee)	EL	207.83	14%	9%	3	2	0.90	58.5	1.0	N- 20%	Toiletries/Cosmetics	52
1141	Lowe's Cos.	LOW	159.60	11%	10%	1	2	1.15	18.8	1.5	N- 30%	Retail Building Supply	8
2203	lululemon athletica	LULU	295.56	27%	15%	3	3	1.00	61.2	NIL	N- 20%	Retail (Softlines)	79
1802	MarketAxess Holdings	MKTX	443.00	21%	16%	1	3	0.80	54.4	0.5	N- 20%	Brokers & Exchanges	7
2569	MasterCard Inc.	MA	327.85	19%	12%	3	1	1.05	38.9	0.5	N- N%	Financial Svcs. (Div.)	57
395	MAXIMUS Inc.	MMS	68.33	18%	10%	2	2	0.80	19.2	1.7	45-105%	Industrial Services	42
1928	Medifast, Inc.	MED	172.16	19%	14%	2	3	1.05	23.5	2.6	N- 25%	Food Processing	19
2597	Microsoft Corp.	MSFT	202.54	11%	14%	1	1	0.90	32.7	1.0	10- 30%	Computer Software	3
807	Molina Healthcare	MOH	168.88	16%	10%	2	3	1.05	13.7	NIL	20- 80%	Medical Services	28
1367	Monolithic Power Sys.	MPWR	255.97	13%	15%	2	3	1.00	55.2	0.8	N- N%	Semiconductor	12
1978	Monster Beverage	MNST	78.38	20%	10%	2	3	0.85	38.2	NIL	N- 45%	Beverage	29
2339	Netflix, Inc.	NFLX	487.35	31%	18%	1	3	0.80	72.4	NIL	N- 45%	Entertainment	58
2003	New Orient. Ed. ADS	EDU	154.07	22%	14%	2	3	0.95	45.0	NIL	N- 25%	Educational Services	41
2160	NIKE, Inc. 'B'	NKE	113.37	11%	11%	3	1	1.10	95.3	0.9	N- 15%	Shoe	85
720	Northrop Grumman	NOC	325.89	9%	10%	1	1	0.85	14.0	1.8	45- 80%	Aerospace/Defense	73
1368	NVIDIA Corp.	NVDA	500.69	16%	11%	1	3	1.10	76.9	0.1	N- N%	Semiconductor	12
229	Omniceil, Inc.	OMCL	73.63	12%	11%	3	3	0.95	35.2	NIL	35-105%	Med Supp Non-Invasive	25
1829	Open Text Corp.	OTEX	41.54	13%	11%	3	3	0.95	30.1	1.7	10- 70%	E-Commerce	22
2601	Oracle Corp.	ORCL	60.82	10%	10%	1	1	0.85	14.7	1.6	40- 65%	Computer Software	3
2411	Pioneer Natural Res.	PXD	91.92	9%	9%	4	3	1.35	68.1	2.4	80-170%	Petroleum (Producing)	94
2316	Polaris Inc.	PII	87.87	14%	9%	3	3	1.35	22.4	2.8	70-150%	Recreation	83
1235	Quanta Services	PWR	49.22	14%	10%	3	3	1.25	15.0	0.4	30-105%	Engineering & Const	55
231	Quidel Corp.	QDEL	200.00	10%	21%	3	3	0.75	32.4	NIL	25- 90%	Med Supp Non-Invasive	25
232	ResMed Inc.	RMD	171.51	12%	12%	1	3	0.95	38.2	0.9	N- N%	Med Supp Non-Invasive	25
398	Rollins, Inc.	ROL	52.34	11%	10%	1	2	0.85	68.0	0.6	5- 35%	Industrial Services	42
1577	Royal Gold	ROGLD	122.64	13%	10%	2	3	0.75	39.1	1.0	35-100%	Precious Metals	6
1832	salesforce.com	CRM	245.05	26%	14%	2	3	0.85	NMF	NIL	N- N%	E-Commerce	22
1143	Sherwin-Williams	SHW	682.83	12%	10%	2	2	1.00	29.3	0.8	N- 20%	Retail Building Supply	8
2161	Skechers U.S.A.	SKX	29.34	14%	10%	3	3	1.25	26.2	NIL	85-175%	Shoe	85
1376	Skyworks Solutions	SKWS	134.25	21%	12%	3	3	1.10	21.7	1.5	10- 65%	Semiconductor	12
195	Stryker Corp.	SYK	202.91	9%	10%	3	1	1.10	33.2	1.1	15- 40%	Med Supp Invasive	53
2322	Sturm, Ruger & Co.	RGR	62.08	14%	9%	2	3	0.70	16.9	2.5	N- 35%	Recreation	83
2610	Synopsys, Inc.	SNPS	201.98	10%	9%	1	1	1.00	36.3	NIL	N- N%	Computer Software	3
2207	TJX Companies	TJX	54.17	14%	11%	3	3	1.10	31.9	NIL	40-105%	Retail (Softlines)	79
1160	Tempur Sealy Int'l	TPX	86.76	11%	11%	3	4	1.50	25.0	NIL	N- 55%	Furn/Home Furnishings	81
1396	Teradyne Inc.	TER	76.92	13%	12%	3	3	1.10	20.5	0.5	N- 30%	Semiconductor Equip	2
369	Texas Roadhouse	TXRH	61.07	12%	10%	3	3	0.90	NMF	NIL	40-105%	Restaurant	78
2635	Tyler Technologies	TYL	328.96	22%	10%	2	3	0.75	60.9	NIL	N- 40%	IT Services	16
1123	UFP Industries	UFPI	52.65	13%	10%	2	3	1.10	15.3	0.9	25- 90%	Building Materials	45
815	UnitedHealth Group	UNH	299.19	14%	11%	2	1	1.05	17.2	1.7	20- 45%	Medical Services	28
816	Universal Health 'B'	UHS	107.84	13%	10%	4	3	1.25	10.1	NIL	75-165%	Medical Services	28
2613	VMware, Inc.	VMW	140.27	20%	10%	2	3	0.90	23.1	NIL	15- 70%	Computer Software	3
347	Wabtec Corp.	WAB	62.97	14%	10%	3	3	1.25	16.9	0.8	60-140%	Railroad	31
1578	Wheaton Precious Met.	WPM	49.48	9%	12%	2	3	0.65	39.9	0.8	N- 20%	Precious Metals	6

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# ALLETE NYSE-ALE

RECENT PRICE **53.96** P/E RATIO **17.9** (Trailing: 16.9 Median: 18.0) RELATIVE P/E RATIO **0.84** DIV'D YLD **4.7%**

**VALUE LINE**

**TIMELINESS** 3 Lowered 4/5/19  
**SAFETY** 2 New 10/1/04  
**TECHNICAL** 3 Raised 9/11/20  
**BETA** .85 (1.00 = Market)

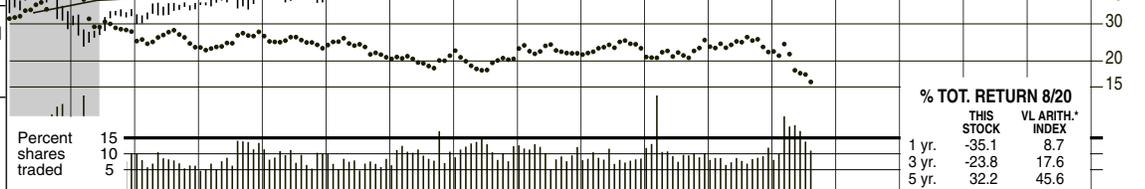
High: 35.3 37.9 42.5 42.7 54.1 58.0 59.7 66.9 81.2 82.8 88.6 84.7  
 Low: 23.3 30.0 35.1 37.7 41.4 44.2 45.3 48.3 61.6 66.6 72.5 48.2

**LEGENDS**  
 0.73 x Dividends p sh divided by Interest Rate  
 Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$47-\$104 \$76 (40%)

**2023-25 PROJECTIONS**  
 Price Gain Ann'l Total  
 High 90 (+65%) 17%  
 Low 65 (+20%) 9%

**Institutional Decisions**  
 4Q2019 1Q2020 2Q2020  
 to Buy 158 124 141  
 to Sell 120 154 136  
 Hld's(000) 38235 38410 37540



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
25.30	24.50	25.23	27.33	24.57	21.57	25.34	24.75	24.40	24.60	24.77	30.27	27.01	27.78	29.10	23.99	<b>21.05</b>	<b>22.35</b>	Revenues per sh	<b>25.00</b>
2.97	3.85	4.14	4.42	4.23	3.57	4.35	4.91	5.01	5.35	5.68	6.79	7.08	6.59	7.37	7.24	<b>7.10</b>	<b>7.70</b>	"Cash Flow" per sh	<b>9.25</b>
1.35	2.48	2.77	3.08	2.82	1.89	2.19	2.65	2.58	2.63	2.90	3.38	3.14	3.13	3.38	3.33	<b>3.10</b>	<b>3.50</b>	Earnings per sh <sup>A</sup>	<b>4.25</b>
.30	1.25	1.45	1.64	1.72	1.76	1.76	1.78	1.84	1.90	1.96	2.02	2.08	2.14	2.24	2.35	<b>2.47</b>	<b>2.58</b>	Div'd Decl'd per sh <sup>B</sup> + †	<b>2.90</b>
2.12	1.95	3.37	6.82	9.24	9.05	6.95	6.38	10.30	7.93	12.48	5.84	5.35	4.08	6.07	11.55	<b>14.80</b>	<b>11.20</b>	Cap'l Spending per sh	<b>3.25</b>
21.23	20.03	21.90	24.11	25.37	26.41	27.26	28.78	30.48	32.44	35.06	37.07	38.17	40.47	41.86	43.17	<b>46.35</b>	<b>47.75</b>	Book Value per sh <sup>C</sup>	<b>51.75</b>
29.70	30.10	30.40	30.80	32.60	35.20	35.80	37.50	39.40	41.40	45.90	49.10	49.60	51.10	51.50	51.70	<b>52.75</b>	<b>53.50</b>	Common Shs Outst'g <sup>D</sup>	<b>54.25</b>
25.2	17.9	16.5	14.8	13.9	16.1	16.0	14.7	15.9	18.6	17.2	15.1	18.6	23.0	22.2	24.7	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	<b>18.5</b>
1.33	.95	.89	.79	.84	1.07	1.02	.92	1.01	1.05	.91	.76	.98	1.16	1.20	1.32			Relative P/E Ratio	<b>1.05</b>
.9%	2.8%	3.2%	3.6%	4.4%	5.8%	5.0%	4.6%	4.5%	3.9%	3.9%	4.0%	3.6%	3.0%	3.0%	2.9%			Avg Ann'l Div'd Yield	<b>3.7%</b>

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$1890.7 mill. Due in 5 Yrs \$562.6 mill.  
 LT Debt \$1381.0 mill. LT Interest \$60.1 mill.  
 (LT interest earned: 3.4x)

Leases, Uncapitalized Annual rentals \$6.6 mill.

Pension Assets-12/19 \$699.6 mill. Oblig \$854.0 mill.

Pfd Stock None

Common Stock 51,880,664 shs.

**MARKET CAP: \$2.8 billion (Mid Cap)**

907.0	928.2	961.2	1018.4	1136.8	1486.4	1339.7	1419.3	1498.6	1240.5	<b>1110</b>	<b>1195</b>	Revenues (\$mill)	<b>1350</b>
75.3	93.8	97.1	104.7	124.8	163.4	155.3	159.2	174.1	172.4	<b>165</b>	<b>190</b>	Net Profit (\$mill)	<b>230</b>
37.2%	27.6%	28.1%	21.5%	22.6%	19.4%	11.3%	14.8%	14.8%	NMF	<b>NMF</b>	<b>NMF</b>	Income Tax Rate	<b>NMF</b>
8.9%	2.7%	5.3%	4.4%	6.3%	2.0%	1.4%	.8%	.7%	1.3%	<b>2.0%</b>	<b>2.0%</b>	AFUDC % to Net Profit	<b>1.0%</b>
44.2%	44.3%	43.7%	44.6%	44.2%	46.3%	42.0%	41.0%	39.9%	38.6%	<b>41.0%</b>	<b>40.0%</b>	Long-Term Debt Ratio	<b>41.0%</b>
55.8%	55.7%	56.3%	55.4%	55.8%	53.7%	58.0%	59.0%	60.1%	61.4%	<b>59.0%</b>	<b>60.0%</b>	Common Equity Ratio	<b>59.0%</b>
1747.6	1937.2	2134.6	2425.9	2882.2	3388.9	3263.4	3507.4	3584.3	3632.8	<b>4145</b>	<b>4255</b>	Total Capital (\$mill)	<b>4775</b>
1805.6	1982.7	2347.6	2576.5	3286.4	3669.1	3741.2	3822.4	3904.4	4377.0	<b>4945</b>	<b>5320</b>	Net Plant (\$mill)	<b>5575</b>
5.4%	6.0%	5.6%	5.3%	5.2%	5.8%	5.8%	5.5%	5.8%	5.6%	<b>4.5%</b>	<b>4.5%</b>	Return on Total Cap'l	<b>6.0%</b>
7.7%	8.7%	8.1%	7.8%	7.8%	9.0%	8.2%	7.7%	8.1%	7.7%	<b>6.5%</b>	<b>7.5%</b>	Return on Shr. Equity	<b>8.0%</b>
7.7%	8.7%	8.1%	7.8%	7.8%	9.0%	8.2%	7.7%	8.1%	7.7%	<b>6.5%</b>	<b>7.5%</b>	Return on Com Equity <sup>E</sup>	<b>8.0%</b>
1.5%	2.9%	2.3%	2.2%	2.5%	3.6%	2.8%	2.4%	2.7%	2.3%	<b>1.5%</b>	<b>2.0%</b>	Retained to Com Eq	<b>2.5%</b>
81%	66%	71%	72%	67%	60%	66%	68%	66%	70%	<b>79%</b>	<b>73%</b>	All Div'ds to Net Prof	<b>68%</b>

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	+8.4	-2	-1.5
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Winter (Mw)	1599	1589	1573
Annual Load Factor (%)	NA	NA	NA
% Change Customers (avg.)	NA	NA	NA

Fixed Charge Cov. (%) 339 296 277

**ANNUAL RATES** Past Past Est'd '17-'19  
 of change (per sh) 10 Yrs. 5 Yrs. to '23-'25

Revenues	1.0%	2.0%	-1.5%
"Cash Flow"	5.5%	6.0%	4.5%
Earnings	2.5%	4.0%	4.5%
Dividends	3.0%	3.5%	4.5%
Book Value	5.0%	5.0%	3.5%

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	365.6	353.3	362.5	337.9	1419.3
2018	358.2	344.1	348.0	448.3	1498.6
2019	357.2	290.4	288.3	304.6	1240.5
2020	311.6	243.2	275	280.2	1110
2021	325	285	285	300	1195

**EARNINGS PER SHARE<sup>A</sup>**

Cal-endar	Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.97	.72	.88	.56	3.13
2018	.99	.61	.59	1.18	3.38
2019	1.18	.64	.60	.92	3.33
2020	1.28	.39	.57	.86	3.10
2021	1.20	.70	.65	.95	3.50

**QUARTERLY DIVIDENDS PAID<sup>B</sup> + †**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.52	.52	.52	.52	2.08
2017	.535	.535	.535	.535	2.14
2018	.56	.56	.56	.56	2.24
2019	.5875	.5875	.5875	.5875	2.35
2020	.6175	.6175	.6175		

**BUSINESS:** ALLETE, Inc. is the parent of Minnesota Power, which supplies electricity to 146,000 customers in northeastern MN, & Superior Water, Light & Power in northwestern WI. Electric rev. breakdown: taconite mining/processing, 26%; paper/wood products, 9%; other industrial, 8%; residential, 12%; commercial, 13%; wholesale, 16% other, 16%. ALLETE Clean Energy (ACE) owns renewable en-

**We expect an earnings decline for ALLETE in 2020.** In the second quarter, the company took an aftertax charge of \$8.3 million (\$0.16 a share) for a refund to customers of previously collected revenues. This was part of an order that allowed the company's primary utility subsidiary, Minnesota Power, to effect a \$25.5 million rate hike, effective May 1st. The utility may not file a rate application until November 1, 2021, unless specified conditions occur that permit it to file as early as March 1, 2021. (If and when Minnesota Power will file next year remains to be determined.) We include the \$0.16-a-share charge in our earnings presentation. ALLETE's 2020 earnings guidance (on a GAAP basis) is \$3.09-\$3.29 a share. Note that management has cut expenses to offset the costs associated with the coronavirus.

**There is mixed news on the state of the economy in the utility's service area.** Most of Minnesota Power's large industrial customers expect to operate at full capacity for the remainder of 2020 (and will pay demand charges in accordance with this expectation). However, two plants (one taconite, one paper) remain

shut indefinitely.

**We think earnings will recover next year.** The absence of the charge should be a key factor. We figure the economy will be in better condition in 2021, as well, although there is more uncertainty than usual in this regard.

**ALLETE Clean Energy is building a large wind project in Oklahoma.** The 300-megawatt, \$450 million facility is expected to be completed by yearend. A similar project is planned for 2021. Note that ALLETE has a negative tax rate thanks to significant tax credits arising from this subsidiary's investments in renewable energy.

**The price of ALLETE stock has fallen 34% this year.** Investors are worried about the effects of the weak economy on Minnesota Power's heavily industrial service territory. This might well persist into 2021. The dividend yield is almost a percentage point above the utility mean. Total return potential is attractive for the next 18 months. For the 3- to 5-year period, total return potential is modest, but still better than that of most utility equities.

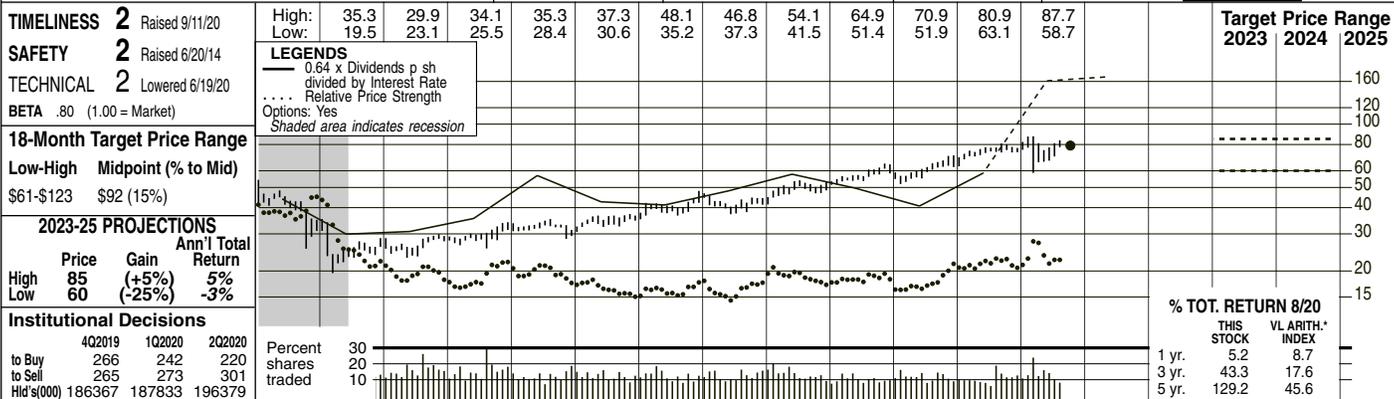
*Paul E. Debbas, CFA September 11, 2020*

(A) Diluted EPS. Excl. nonrec. gains (losses): '04, (25c); '05, (\$1.84); '15, (.46c); '17, 25c; '19, 26c; gain (losses) on disc. ops.: '04, \$2.57; '05, (16c); '06, (2c); '18 & '19 EPS don't sum due to rounding. Next earnings report due early Nov. (B) Div'ds historically paid in early Mar., June, Sept. and Dec. (C) Div'd reinvest. plan avail. † Shareholder invest. plan avail. (D) Incl. deferred charges. In '19: \$8.15/sh. (E) In mill. (E) Rate base: Orig. cost depr. Rate allowed in MN on com. eq. in '18: 9.25%; earned on avg. com. eq., '19: 7.9%. Regulatory Climate: Avg.

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Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	80
Earnings Predictability	85

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2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
26.43	33.12	33.30	36.23	36.92	29.87	31.77	31.04	28.14	24.06	24.95	25.13	25.04	25.46	25.73	24.00	<b>22.85</b>	<b>23.65</b>	Revenues per sh	25.50
5.57	6.10	6.02	6.76	6.44	6.06	6.33	5.87	5.87	5.25	5.77	6.08	6.59	6.80	7.64	7.83	<b>8.20</b>	<b>8.75</b>	"Cash Flow" per sh	10.75
2.82	3.13	2.66	2.98	2.88	2.78	2.77	2.47	2.41	2.10	2.40	2.38	2.68	2.77	3.32	3.35	<b>3.50</b>	<b>3.70</b>	Earnings per sh <sup>A</sup>	4.50
2.54	2.54	2.54	2.54	2.54	1.54	1.54	1.56	1.60	1.60	1.61	1.66	1.72	1.78	1.85	1.92	<b>2.01</b>	<b>2.11</b>	Div'd Decl'd per sh <sup>B</sup>	2.45
4.13	4.63	4.99	6.96	9.75	7.51	4.66	4.50	5.49	5.87	7.66	8.12	8.78	9.05	9.56	9.92	<b>15.85</b>	<b>11.65</b>	Cap'l Spending per sh	11.00
29.71	31.09	31.86	32.41	32.80	33.08	32.15	32.64	27.27	26.97	27.67	28.63	29.27	29.61	31.21	32.73	<b>35.75</b>	<b>37.75</b>	Book Value per sh <sup>C</sup>	44.50
195.20	204.70	206.60	208.30	212.30	237.40	240.40	242.60	242.63	242.63	242.63	242.63	242.63	242.63	244.50	246.20	<b>254.00</b>	<b>258.00</b>	Common Shs Outst'g <sup>D</sup>	270.00
16.3	16.7	19.4	17.4	14.2	9.3	9.7	11.9	13.4	16.5	16.7	17.5	18.3	20.6	18.3	22.1	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	16.0
.86	.89	1.05	.92	.85	.62	.62	.75	.85	.93	.88	.88	.96	1.04	.99	1.18			Relative P/E Ratio	.90
5.5%	4.9%	4.9%	4.9%	6.2%	6.0%	5.8%	5.3%	5.0%	4.6%	4.0%	4.0%	3.5%	3.1%	3.0%	2.6%			Avg Ann'l Div'd Yield	3.4%

CAPITAL STRUCTURE as of 6/30/20		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Debt	\$10648 mill. Due in 5 Yrs \$2165 mill.	7638.0	7531.0	6828.0	5838.0	6053.0	6098.0	6076.0	6177.0	6291.0	5910.0	<b>5800</b>	<b>6100</b>	Revenues (\$mill)	6900				
LT Debt	\$10171 mill. LT Interest \$456 mill.	669.0	602.0	589.0	518.0	593.0	585.0	659.0	683.0	821.0	834.0	<b>875</b>	<b>960</b>	Net Profit (\$mill)	1225				
(LT interest earned: 3.5%)		36.8%	37.3%	36.9%	37.5%	38.9%	38.3%	36.7%	38.2%	22.4%	17.9%	<b>15.5%</b>	<b>12.5%</b>	Income Tax Rate	12.5%				
Leases, Uncapitalized Annual rentals \$8 mill.		7.8%	5.6%	6.1%	7.1%	5.7%	5.1%	4.1%	5.6%	6.9%	5.8%	<b>6.0%</b>	<b>5.0%</b>	AFUDC % to Net Profit	4.0%				
Pension Assets-12/19 \$4564 mill. Oblig \$4967 mill.		48.2%	45.3%	49.5%	45.2%	47.2%	49.3%	47.7%	49.2%	50.3%	52.1%	<b>54.0%</b>	<b>52.1%</b>	Long-Term Debt Ratio	50.0%				
Pfd Stock	\$142 mill. Pfd Div'd \$6 mill.	50.9%	53.7%	49.4%	53.7%	51.7%	49.7%	51.3%	49.8%	48.8%	47.1%	<b>45.5%</b>	<b>47.0%</b>	Common Equity Ratio	49.0%				
807,595 sh. \$3.50 to \$5.50 cum. (no par), \$100 stated val., redeem. \$102.176-\$110/sh.; 616,323 sh. 4.00% to 6.625%, \$100 par, redeem. \$100-\$104/sh.		15185	14738	13384	12190	12975	13968	13840	14420	15632	17116	<b>20000</b>	<b>20675</b>	Total Capital (\$mill)	24500				
Common Stock 247,079,529 shs. as of 7/31/20		17853	18127	16096	16205	17424	18799	20113	21466	22810	24376	<b>27200</b>	<b>28900</b>	Net Plant (\$mill)	33300				
MARKET CAP: \$20 billion (Large Cap)		6.0%	5.6%	6.0%	5.6%	5.8%	5.3%	6.0%	6.0%	6.4%	6.0%	<b>5.5%</b>	<b>6.0%</b>	Return on Total Cap'l	6.0%				
ELECTRIC OPERATING STATISTICS		8.5%	7.5%	8.7%	7.7%	8.7%	8.3%	9.1%	9.3%	10.6%	10.2%	<b>9.5%</b>	<b>9.5%</b>	Return on Shr. Equity	10.0%				
2017 2018 2019		8.6%	7.5%	8.8%	7.8%	8.7%	8.3%	9.2%	9.4%	10.7%	10.3%	<b>9.5%</b>	<b>10.0%</b>	Return on Com Equity <sup>E</sup>	10.0%				
% Change Retail Sales (KWH)		3.8%	2.8%	3.0%	1.9%	2.9%	2.5%	3.3%	3.4%	4.8%	4.4%	<b>4.0%</b>	<b>4.0%</b>	Retained to Com Eq	4.5%				
Avg. Indust. Use (MWH)		56%	63%	66%	76%	67%	70%	64%	64%	56%	57%	<b>57%</b>	<b>57%</b>	All Div'ds to Net Prof	54%				
Avg. Indust. Revs. per KWH (c)		<b>BUSINESS:</b> Ameren Corporation is a holding company formed through the merger of Union Electric and CIPSCO. Has 1.2 million electric and 127,000 gas customers in Missouri; 1.2 million electric and 813,000 gas customers in Illinois. Discontinued nonregulated power-generation operation in '13. Electric revenue breakdown: residential, 43%; commercial, 32%; industrial, 8%; other, 17%.																	
Capacity at Peak (Mw)		Generating sources: coal, 63%; nuclear, 23%; hydro & other, 6%; purchased, 8%. Fuel costs: 24% of revenues. '19 reported deprec. rates: 3%-4%. Has 9,300 employees. Chairman, President & CEO: Warner L. Baxter, Inc.: Missouri. Address: One Ameren Plaza, 1901 Chouteau Ave., P.O. Box 66149, St. Louis, Missouri 63166-6149. Tel.: 314-621-3222. Internet: www.ameren.com.																	
Peak Load, Summer (Mw)		<b>We have boosted our 2020 and 2021 earnings estimates for Ameren by a nickel a share each year.</b> Second-quarter earnings were better than our estimate of \$0.80 a share because Ameren was able to cut expenses more than we expected in order to offset the effects of the slump in kilowatt-hour sales resulting from the weak economy. Our revised 2020 share-net estimate is at the midpoint of Ameren's targeted range of \$3.40-\$3.60. Our 2021 estimate would produce profit growth of 6%, within the company's targeted range of 6%-8% annually.																	
Annual Load Factor (%)		<b>A gas rate case is pending in Illinois.</b> The utility is seeking a base rate increase of \$96 million (including \$46 million that would otherwise be recovered through riders in 2021), based on a 10.5% return on equity and a 54.1% common-equity ratio. The staff of the Illinois Commerce Commission is recommending a hike of \$67 million, based on a 9.32% ROE and a 50.43% common-equity ratio. Various intervenors are proposing an increase of \$66 million, based on a 9.2% ROE and a 50% common-equity ratio. A ruling is required by January, with new tariffs taking effect																	
% Change Customers (yr-end)		in February. This is one source of the profit growth that is likely in 2021. <b>Ameren is building a wind project.</b> The utility is spending \$1.2 billion to add 700 megawatts of capacity. Most of this will be in service by yearend, but about \$100 million of this spending is expected to slip into 2021. This will not affect the production tax credits associated with the project, however. <b>We expect a dividend increase in the fourth quarter.</b> This is the usual timing. We estimate an increase of \$0.025 a share (5.1%) in the quarterly disbursement, but wouldn't be surprised by a larger hike, given that the payout ratio is near the lower end of Ameren's target of 55%-70%. <b>Ameren stock is timely, but has a high valuation.</b> The stock price has risen 3% in what has been a bad year for most utility issues, as the market likes the company's status as a fully regulated utility. The dividend yield is a percentage point below the utility mean. Total return potential for the 18-month span is only about average. The recent quotation is near the upper end of our 3- to 5-year Target Price Range. <i>Paul E. Debbas, CFA September 11, 2020</i>																	
Fixed Charge Cov. (%)		350	313	307															

ANNUAL RATES		Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
of change (per sh)				
Revenues	-3.0%	-5%	.5%	
"Cash Flow"	1.5%	5.5%	6.5%	
Earnings	1.0%	6.5%	6.0%	
Dividends	-2.0%	3.0%	5.0%	
Book Value	-.5%	2.5%	6.0%	

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1514	1538	1723	1402	6177.0
2018	1585	1563	1724	1419	6291.0
2019	1556	1379	1659	1316	5910.0
2020	1440	1398	1650	1312	5800
2021	1600	1450	1700	1350	6100

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.42	.79	1.18	.39	2.77
2018	.62	.97	1.45	.28	3.32
2019	.78	.72	1.47	.38	3.35
2020	.59	.98	1.53	.40	3.50
2021	.65	.85	1.70	.45	3.70

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.425	.425	.425	.44	1.72
2017	.44	.44	.44	.4575	1.78
2018	.4575	.4575	.4575	.475	1.85
2019	.475	.475	.475	.495	1.92
2020	.495	.495	.495		

(A) Dil. EPS. Excl. nonrec. gain (losses): '05, (11c); '10, (\$2.19); '11, (32c); '12, (\$6.42); '17, (63c); gain (loss) from disc. ops.: '13, (92c); '15, 21c. '17 EPS don't sum due to rounding. Next egs. report due early Aug. (B) Div'ds pd. late Mar., June, Sept., & Dec. Div'd reinv. plan avail. (C) Incl. intang. In '19: \$5.70/sh. (D) In mill. (E) Rate base: Orig. cost depr. Rate all'd on com. eq. in MO in '20: elec., none; in '11: gas, none; in IL in '14: elec., 8.7%, in '18: gas, 9.87%; earned on avg. com. eq., '19: 10.5%. Reg. Climate: MO, Avg.; IL, Below Avg.

**Company's Financial Strength** A  
**Stock's Price Stability** 95  
**Price Growth Persistence** 80  
**Earnings Predictability** 90

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<b>TIMELINESS</b> 3 Lowered 3/22/19	High: 38.9	46.7	53.5	54.6	52.9	57.2	Target Price Range 2023 2024 2025
<b>SAFETY</b> 2 Raised 2/17/17	Low: 32.4	35.4	37.4	45.2	47.4	35.6	
<b>TECHNICAL</b> 5 Lowered 8/14/20							
<b>BETA</b> .80 (1.00 = Market)							% TOT. RETURN 7/20
<b>18-Month Target Price Range</b>							1 yr. 2.1
<b>Low-High</b> Midpoint (% to Mid)							3 yr. 21.8
\$35-\$78 \$57 (15%)							5 yr. — 31.7
<b>2023-25 PROJECTIONS</b>							
High Price Gain Ann'l Total							
Low 50 35 (-30%) 4%							
<b>Institutional Decisions</b>							
3Q2019 4Q2019 1Q2020							
to Buy 118 142 123							
to Sell 111 101 136							
Hld's(000) 45639 46257 45979							

AVANGRID, Inc. was formed through a merger between Iberdrola USA, Inc. and UIL Holdings Corporation in December of 2015. Iberdrola S.A., a worldwide leader in the energy industry, owns 81.5% of AVANGRID. The predecessor company was founded in 1852 and is headquartered in New Gloucester, Maine. It was incorporated in 1997 in New York under the name NGE Resources, Inc. AVANGRID began trading on the NYSE on December 17, 2015.	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
	--	--	--	--	--	14.14	19.48	19.30	20.96	20.51	20.40	21.05	Revenues per sh	23.25
	--	--	--	--	--	3.44	4.74	4.49	4.89	5.50	5.30	5.70	"Cash Flow" per sh	6.50
	--	--	--	--	--	1.05	1.98	1.67	1.92	2.26	1.95	2.20	Earnings per sh A	2.50
	--	--	--	--	--	--	1.73	1.73	1.74	1.76	1.76	1.76	Div'd Decl'd per sh B	1.80
	--	--	--	--	--	3.50	5.52	7.82	5.78	8.87	10.05	10.35	Cap'l Spending per sh	9.75
	--	--	--	--	--	48.74	48.90	48.79	48.88	49.31	49.50	49.95	Book Value per sh C	51.75
	--	--	--	--	--	308.86	308.99	309.01	309.01	309.01	309.00	309.00	Common Shs Outst'g D	309.00
	--	--	--	--	--	33.5	20.5	27.3	26.1	22.1	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	17.5
	--	--	--	--	--	1.69	1.08	1.37	1.41	1.19			Relative P/E Ratio	.95
	--	--	--	--	--	--	4.3%	3.8%	3.5%	3.5%			Avg Ann'l Div'd Yield	4.1%

<b>CAPITAL STRUCTURE</b> as of 6/30/20	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Revenues (\$mill)	7150
Total Debt \$8310 mill. Due in 5 Yrs \$4323 mill.	--	--	--	--	4594.0	4367.0	6018.0	5963.0	6478.0	6338.0	6300	6500	Net Profit (\$mill)	785
LT Debt \$7159 mill. LT Interest \$280 mill.	--	--	--	--	424.0	267.0	611.0	516.0	595.0	700.0	600	680	Income Tax Rate	7.0%
Incl. \$63 mill. capitalized leases.	--	--	--	--	39.9%	11.3%	37.4%	32.4%	22.1%	17.5%	2.0%	7.0%	AFUDC % to Net Profit	13.0%
(LT interest earned: 3.5x)	--	--	--	--	6.8%	12.7%	7.5%	12.4%	9.4%	14.4%	17.0%	15.0%	Long-Term Debt Ratio	42.5%
Leases, Uncapitalized Annual rentals \$14 mill.	--	--	--	--	16.8%	23.1%	23.0%	25.6%	26.2%	30.6%	34.0%	36.5%	Common Equity Ratio	57.5%
	--	--	--	--	83.2%	76.9%	77.0%	74.4%	73.8%	69.4%	66.0%	63.5%	Total Capital (\$mill)	27800
<b>Pension Assets-12/19</b> \$2848 mill.	--	--	--	--	14956	19583	19619	20273	20472	21953	23100	24250	Net Plant (\$mill)	34800
	--	--	--	--	17099	20711	21548	22669	23459	25218	27275	29400	Return on Total Cap'l	4.0%
<b>Pfd Stock</b> None	--	--	--	--	3.7%	2.1%	3.8%	3.1%	3.5%	3.8%	3.5%	3.5%	Return on Shr. Equity	5.0%
	--	--	--	--	3.4%	1.8%	4.0%	3.4%	3.9%	4.6%	4.0%	4.5%	Return on Com Equity E	5.0%
<b>Common Stock</b> 309,005,485 shs.	--	--	--	--	3.4%	1.8%	1.4%	NMF	4%	1.0%	.5%	1.0%	Retained to Com Eq	1.5%
as of 7/30/20	--	--	--	--	--	--	66%	104%	90%	78%	91%	80%	All Div'ds to Net Prof	71%
<b>MARKET CAP: \$15 billion (Large Cap)</b>	--	--	--	--	--	--	--	--	--	--	--	--		

<b>ELECTRIC OPERATING STATISTICS</b>	2017	2018	2019	<b>BUSINESS:</b> AVANGRID, Inc. (formerly Iberdrola USA, Inc.), is a diversified energy and utility company that serves 2.2 million electric customers in New York, Connecticut, and Maine and 1 million gas customers in New York, Connecticut, Massachusetts & Maine. Has a nonregulated generating subsidiary focused on wind power, with 7.2 gigawatts of capacity. Revenue breakdown by customer class not available. Generating sources not available. Fuel costs: 24% of revenues. '19 reported depr. rate (utility): 2.9%. Iberdrola owns 81.5% of stock. Has 6,600 employees. Chairman: José Ignacio Sanchez Galan. CEO: Dennis V. Arriola. Deputy CEO & President: Robert Kump. Inc.: NY. Address: 180 Marsh Hill Road, Orange, CT 06477. Tel.: 207-629-1200. Web: www.avangrid.com.
% Change Retail Sales (KWH)	NA	NA	NA	
Avg. Indust. Use (MWH)	NA	NA	NA	
Avg. Indust. Revs. per KWH (c)	NA	NA	NA	
Capacity at Peak (Mw)	NA	NA	NA	
Peak Load, Summer (Mw)	NA	NA	NA	
Annual Load Factor (%)	NA	NA	NA	
% Change Customers (yr-end)	+6	+5	NA	
Fixed Charge Cov. (%)	333	343	278	

<b>ANNUAL RATES</b> Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 of change (per sh)	2017	2018	2019
Revenues	--	--	2.5%
"Cash Flow"	--	--	4.5%
Earnings	--	--	4.0%
Dividends	--	--	.5%
Book Value	--	--	1.0%

<b>QUARTERLY REVENUES (\$ mill.)</b>	Full Year
Cal-endar Mar.31 Jun.30 Sep.30 Dec.31	
2017	1758 1331 1341 1533 5963.0
2018	1865 1402 1546 1665 6478.0
2019	1842 1400 1487 1609 6338.0
2020	1782 1392 1500 1626 6300
2021	1900 1400 1550 1650 6500

<b>EARNINGS PER SHARE A</b>	Full Year
Cal-endar Mar.31 Jun.30 Sep.30 Dec.31	
2017	.77 .39 .32 .19 1.67
2018	.79 .34 .40 .38 1.92
2019	.70 .36 .48 .72 2.26
2020	.78 .28 .44 .47 1.95
2021	.80 .40 .50 .50 2.20

<b>QUARTERLY DIVIDENDS PAID B</b>	Full Year
Cal-endar Mar.31 Jun.30 Sep.30 Dec.31	
2016	-- .432 .432 .432 1.30
2017	.432 .432 .432 .432 1.73
2018	.432 .432 .432 .44 1.74
2019	.44 .44 .44 .44 1.76
2020	.44 .44 .44 .44

(A) Diluted EPS. Excl. nonrecurring gain (loss): '16, 6c; '17, (44c). '18 EPS don't sum due to rounding. Next earnings report due late Oct. (B) Div'ds paid in early Jan., April, July, and Oct. (C) Dividend reinvestment plan available. (D) Incl. intangibles. In '19: \$6.0 bill., \$19.42/sh. (E) In millions. (F) Rate base: net original cost. Rate allowed on com. eq. in NY in '16: 9.0%; in CT in '17: 9.1% elec.; in CT in '19: 9.3% gas; in ME in '20: 8.25%; earned on avg. common eq., '19: 4.6%. Regulatory Climate: Below Average.

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**Company's Financial Strength** B++  
**Stock's Price Stability** 85  
**Price Growth Persistence** 100  
**Earnings Predictability** 60

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**We cut our 2020 earnings estimate for AVANGRID by \$0.20 a share, to \$1.95.** Second-quarter earnings fell short of our \$0.40-a-share estimate, due in part to a decline in prices at the renewable-energy business. Also, we include coronavirus-related expenses (\$0.03 a share) in our earnings presentation even though the company excludes them from its definition of operating earnings. The rest of the year should be better, although the fourth-period comparison will be tough. In 2019, AVANGRID booked a gain of \$0.32 a share on sales of renewable-energy projects.

**For the time being, the company is reviewing earnings guidance for 2020 and expectations for growth beyond this year.** AVANGRID's new chief executive officer, Dennis Arriola, is taking a "deep dive" into the company's financial prospects. Management expects to provide updated expectations by November, when an analyst meeting is planned. This is especially important because AVANGRID's results have disappointed Wall Street at times in the past several quarters.

**We expect better results in 2021.** We figure coronavirus-related costs will be lower. AVANGRID's utilities in New York should also benefit from rate relief, as they have reached a settlement (subject to commission approval) that would provide \$439 million over three years, based on an 8.8% return on equity and a 48% common-equity ratio. The renewable energy division is adding projects. However, we cut our estimate by \$0.10 a share, to \$2.20.

**Some large capital projects are in various stages of development.** Central Maine Power intends to spend \$950 million on a transmission line. However, a ballot measure proposed by opponents to the project might thwart this. AVANGRID also has joint ventures in three offshore wind projects. Investors should note that offshore wind entails significant construction risk. There have already been some permitting delays.

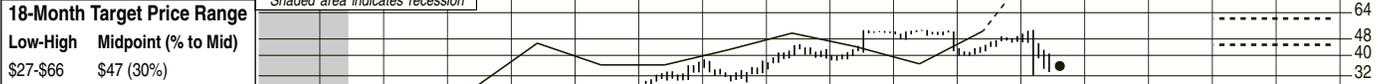
**We think more-attractive selections are available elsewhere.** The stock's dividend yield is not much different from the utility mean, and dividend growth prospects are subpar. The utilities operate in difficult regulatory climates. Total return potential to 2023-2025 is low.

Paul E. Debbas, CFA August 14, 2020

# AVISTA CORP. NYSE-AVA

RECENT PRICE **35.67** P/E RATIO **19.3** (Trailing: 18.5; Median: 17.0) RELATIVE P/E RATIO **0.94** DIV'D YLD **4.6%** VALUE LINE

TIMELINESS <b>3</b> New 12/14/18	High: 22.4	22.8	26.5	28.0	29.3	37.4	38.3	45.2	52.8	52.9	49.5	53.0							Target Price Range		
SAFETY <b>2</b> Raised 5/7/10	Low: 12.7	18.5	21.1	22.8	24.1	27.7	29.8	34.3	37.8	41.9	39.8	32.1							2023	2024	2025
TECHNICAL <b>3</b> Lowered 6/12/20	<b>LEGENDS</b> 0.71 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession																				
BETA .95 (1.00 = Market)	128 96 80 64 48 40 32 24 16 12																				



2023-25 PROJECTIONS		Price	Gain	Ann'l Total Return
High	60	(+70%)	17%	
Low	45	(+25%)	10%	
<b>Institutional Decisions</b> 3Q2019 4Q2019 1Q2020 to Buy 121 121 122 to Sell 103 120 128 Hld's(000) 53961 54694 53448				
Percent shares traded: 18, 12, 6				
% TOT. RETURN 6/20 THIS STOCK VL ARITH. INDEX 1 yr. -16.2 -5.1 3 yr. -6.4 6.8 5 yr. 39.5 24.4				

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
23.76	27.98	28.68	26.80	30.77	27.58	27.29	27.73	25.86	26.94	23.66	23.83	22.47	22.08	21.27	20.03	18.85	19.30	Revenues per sh	20.50
2.35	2.72	4.27	2.93	3.98	4.45	3.62	3.78	3.70	4.36	4.36	4.92	5.30	4.87	5.01	6.06	5.00	5.35	"Cash Flow" per sh	6.00
.73	.92	1.47	.72	1.36	1.58	1.65	1.72	1.32	1.85	1.84	1.89	2.15	1.95	2.07	2.97	1.85	2.05	Earnings per sh A	2.50
.52	.55	.57	.60	.69	.81	1.00	1.10	1.16	1.22	1.27	1.32	1.37	1.43	1.49	1.55	1.62	1.68	Div'd Decl'd per sh B	1.90
2.47	3.23	3.14	4.04	4.09	3.86	3.64	4.20	4.61	5.05	5.47	6.46	6.34	6.30	6.46	6.59	6.20	6.15	Cap'l Spending per sh	6.00
15.54	15.87	17.46	17.27	18.30	19.17	19.71	20.30	21.06	21.61	23.84	24.53	25.69	26.41	26.99	28.87	29.35	29.85	Book Value per sh C	31.75
48.47	48.59	52.51	52.91	54.49	54.84	57.12	58.42	59.81	60.08	62.24	62.31	64.19	65.49	65.69	67.18	69.00	70.00	Common Shs Outst'g D	73.00
24.4	19.4	15.4	30.9	15.0	11.4	12.7	14.1	19.3	14.6	17.3	17.6	18.8	23.4	24.5	15.0	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	20.0
1.29	1.03	.83	1.64	.90	.76	.81	.88	1.23	.82	.91	.89	.99	1.18	1.32	.81			Relative P/E Ratio	1.10
2.9%	3.0%	2.5%	2.7%	3.4%	4.5%	4.8%	4.5%	4.6%	4.5%	4.0%	4.0%	3.4%	3.1%	2.9%	3.5%			Avg Ann'l Div'd Yield	3.8%

<b>CAPITAL STRUCTURE as of 3/31/20</b>		1558.7	1619.8	1547.0	1618.5	1472.6	1484.8	1442.5	1445.9	1396.9	1345.6	1300	1350	Revenues (\$mill)	1500
Total Debt \$2132.5 mill. Due in 5 Yrs \$515.5 mill.		92.4	100.2	78.2	111.1	114.2	118.1	137.2	126.1	136.4	197.0	125	145	Net Profit (\$mill)	175
LT Debt \$1895.5 mill. LT Interest \$86.9 mill.		35.0%	35.4%	34.4%	36.0%	37.6%	36.3%	36.3%	36.5%	16.0%	13.8%	7.5%	16.5%	Income Tax Rate	16.5%
Incl. \$51.5 mill. debt to affiliated trusts; \$54.5 mill. capitalized leases.		4.0%	5.2%	8.3%	8.8%	11.1%	10.1%	8.1%	7.9%	7.7%	5.5%	9.0%	8.0%	AFUDC % to Net Profit	6.0%
(LT interest earned: 2.6x)		51.6%	51.4%	50.8%	51.4%	51.0%	51.2%	47.2%	50.5%	49.4%	50.5%	49.4%	50.5%	Long-Term Debt Ratio	51.0%
Leases, Uncapitalized Annual Rentals \$4.4 mill.		48.4%	48.6%	49.2%	48.6%	49.0%	50.0%	48.8%	49.5%	50.6%	49.5%	50.5%	50.5%	Common Equity Ratio	49.0%
Pension Assets-12/19 \$642.1 mill.		2325.3	2439.9	2561.2	2669.7	3027.3	3060.3	3379.0	3273.2	3580.3	3834.6	4085	4130	Total Capital (\$mill)	4750
Oblig \$742.4 mill.		2714.2	2860.8	3023.7	3202.4	3620.0	3898.6	4147.5	4398.8	4648.9	4797.0	5005	5205	Net Plant (\$mill)	5725
Pfd Stock None		5.4%	5.5%	4.3%	5.4%	4.9%	5.1%	5.3%	5.0%	4.8%	6.2%	4.0%	4.5%	Return on Total Cap'l	5.0%
Common Stock 67,293,360 shs. as of 5/1/20		8.2%	8.5%	6.2%	8.6%	7.7%	7.7%	8.3%	7.3%	7.7%	10.2%	6.0%	7.0%	Return on Shr. Equity	7.5%
MARKET CAP: \$2.4 billion (Mid Cap)		8.2%	8.5%	6.2%	8.6%	7.7%	7.7%	8.3%	7.3%	7.7%	10.2%	6.0%	7.0%	Return on Com Equity E	7.5%
ELECTRIC OPERATING STATISTICS		3.3%	3.1%	.8%	2.9%	2.4%	2.3%	3.0%	1.9%	2.2%	4.9%	.5%	1.0%	Retained to Com Eq	1.5%
		60%	64%	88%	66%	69%	70%	64%	73%	72%	52%	88%	82%	All Div'ds to Net Prof	78%

**BUSINESS:** Avista Corporation (formerly The Washington Water Power Company) supplies electricity & gas in eastern Washington & northern Idaho. Supplies electricity to part of Alaska & gas to part of Oregon. Customers: 410,000 electric, 361,000 gas. Acq'd Alaska Electric Light and Power 7/14. Sold Ecova energy-management sub. 6/14. Electric rev. breakdown: residential, 39%; commercial, 33%; industrial, 11%; wholesale, 8%; other, 9%. Generating sources: gas & coal, 34%; hydro, 30%; purch., 36%. Fuel costs: 33% of revs. '19 reported depr. rate (Avista Utilities): 3.3%. Has 1,900 employees. Chairman: Scott L. Morris. Pres. & CEO: Dennis Vermillion. Inc.: WA. Address: 1411 E. Mission Ave., Spokane, WA 99202-2600. Tel.: 509-489-0500. Internet: www.avistacorp.com.

**We have cut our 2020 and 2021 earnings estimates for Avista.** Management lowered its targeted range for this year from \$1.95-\$2.15 a share to \$1.75-\$1.95 a share. The effects of the coronavirus pandemic have hurt Avista's utility and nonutility businesses. About 10% of the company's utility volume is not protected by regulatory mechanisms that decouple revenues and sales, and some industrial customers had their operations shut for several weeks. In addition, the effects of the weak economy prompted the company to postpone planned rate filings in Washington and Idaho by a few months, to the fourth quarter of 2020. This delay in obtaining rate relief will affect Avista's earning power in 2021. Rate orders are due in Washington 11 months after the filing date and in Idaho seven months after the filing date, so any rate relief Avista obtains from these applications won't have much effect on income until 2022. All told, we reduced our 2020 and 2021 share-net estimates by \$0.15 and \$0.10, respectively. The stock price is down 26% in 2020, more than most utility issues. We also cut the Financial Strength rating from A to B++.

**Earnings were going to decline this year, anyway.** The comparison is difficult because Avista booked a \$1.01-a-share breakup fee in the first quarter of 2019 after a proposed takeover of the company failed to win regulatory approval. We include merger-related costs and benefits in our earnings presentation. **The company has a gas rate case pending in Oregon.** Avista had filed for an increase of \$6.8 million (9.8%), based on a 9.9% return on equity and a 50% common-equity ratio. The utility reached a partial settlement calling for a 9.4% ROE (the same as is currently allowed).

**Avista is making some financing moves.** This year, the company plans to add \$165 million of long-term debt and up to \$70 million of common equity. The latter will be done though an at-the-market issuance program. **The dividend yield of this stock is above the utility average.** Total return potential over the 18-month span is above average, as well. Prospects for the 3- to 5-year period are unspectacular, but superior to those of most utility equities.

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	436.5	314.5	297.1	397.8	1445.9
2018	409.4	319.3	296.0	372.2	1396.9
2019	396.5	300.8	283.8	364.5	1345.6
2020	390.2	284.8	270	355	1300
2021	400	300	280	370	1350
Cal-endar	EARNINGS PER SHARE A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.96	.34	.07	.58	1.95
2018	.83	.39	.15	.70	2.07
2019	1.76	.38	.08	.76	2.97
2020	.72	.33	.10	.70	1.85
2021	.80	.40	.10	.75	2.05
Cal-endar	QUARTERLY DIVIDENDS PAID B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.3425	.3425	.3425	.3425	1.37
2017	.3575	.3575	.3575	.3575	1.43
2018	.3725	.3725	.3725	.3725	1.49
2019	.3875	.3875	.3875	.3875	1.55
2020	.405	.405			

(A) Diluted EPS. Excl. nonrec. gain (loss): '14, 9c; '17, (16c); gains on disc. ops.: '14, \$1.17; '15, 8c. '19 EPS don't sum due to rounding. Next earnings report due early Aug. (B) Div'd paid in mid-Mar., June, Sept. & Dec. (C) Incl. deferred chgs. In '19: \$10.77/sh. (D) In mill. (E) Rate base. Net orig. cost. Rate all'd on com. eq. in WA in '20: 9.4%; in ID in '17: 9.5%; in OR in '17: 9.4%; earned on avg. com. eq., '19: 10.6%. Regulatory Climate: WA, Below Average; ID, Above Average. (F) Winter peak in '17.

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**Company's Financial Strength** B++  
**Stock's Price Stability** 70  
**Price Growth Persistence** 70  
**Earnings Predictability** 65

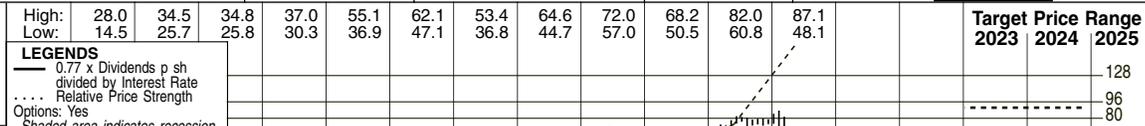
**To subscribe call 1-800-VALUELINE**

Paul E. Debbas, CFA July 24, 2020

# BLACK HILLS CORP. NYSE-BKH

RECENT PRICE **60.02** P/E RATIO **16.9** (Trailing: 18.1; Median: 19.0) RELATIVE P/E RATIO **0.82** DIV'D YLD **3.7%** VALUE LINE

**TIMELINESS** 3 Lowered 9/20/19  
**SAFETY** 2 Raised 5/1/15  
**TECHNICAL** 4 Lowered 7/24/20  
**BETA** 1.00 (1.00 = Market)



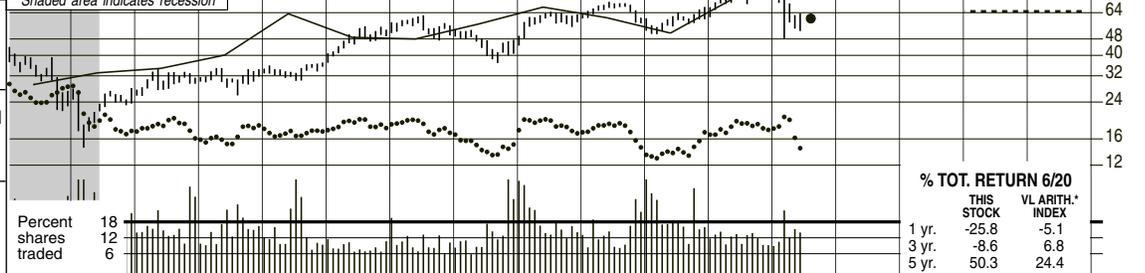
**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$46-\$114 \$80 (35%)

**2023-25 PROJECTIONS**

Price	Gain	Ann'l Total Return
High 90	(+50%)	14%
Low 65	(+10%)	6%

**Institutional Decisions**

	3Q2019	4Q2019	1Q2020
to Buy	145	144	139
to Sell	133	137	143
Hlds(000)	53817	53772	54065



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
34.54	41.97	19.69	18.41	26.03	32.58	33.29	28.96	26.55	28.67	31.20	25.48	29.47	31.38	29.24	28.22	<b>25.50</b>	<b>26.55</b>	Revenues per sh	<b>29.00</b>
4.46	4.81	5.04	5.29	2.95	5.41	4.88	4.01	5.59	5.93	6.25	5.67	6.28	7.15	6.61	7.02	<b>7.15</b>	<b>7.50</b>	"Cash Flow" per sh	<b>8.75</b>
1.74	2.11	2.21	2.68	.18	2.32	1.66	1.01	1.97	2.61	2.89	2.83	2.63	3.38	3.47	3.53	<b>3.55</b>	<b>3.70</b>	Earnings per sh <sup>A</sup>	<b>4.25</b>
1.24	1.28	1.32	1.37	1.40	1.42	1.44	1.46	1.48	1.52	1.56	1.62	1.68	1.81	1.93	2.05	<b>2.17</b>	<b>2.31</b>	Div'd Decl'd per sh <sup>B</sup>	<b>2.75</b>
2.80	4.18	9.24	6.92	8.51	8.90	12.04	10.03	7.90	7.97	8.92	8.90	8.89	6.09	7.62	13.31	<b>10.65</b>	<b>8.65</b>	Cap'l Spending per sh	<b>7.25</b>
22.43	22.29	23.68	25.66	27.19	27.84	28.02	27.53	27.88	29.39	30.80	28.63	30.25	31.92	36.36	38.42	<b>40.60</b>	<b>42.35</b>	Book Value per sh <sup>C</sup>	<b>46.75</b>
32.48	33.16	33.37	37.80	38.64	38.97	39.27	43.92	44.21	44.50	44.67	51.19	53.38	53.54	60.00	61.48	<b>62.75</b>	<b>64.00</b>	Common Shs Outst'g <sup>D</sup>	<b>64.00</b>
17.1	17.3	15.8	15.0	NMF	9.9	18.1	31.1	17.1	18.2	19.0	16.1	22.3	19.5	16.8	21.2	<b>18.5</b>	<b>18.5</b>	Avg Ann'l P/E Ratio	<b>18.5</b>
.90	.92	.85	.80	NMF	.66	1.15	1.95	1.09	1.02	1.00	.81	1.17	.98	.91	1.13	<b>1.13</b>	<b>1.13</b>	Relative P/E Ratio	<b>1.05</b>
4.2%	3.5%	3.8%	3.4%	4.2%	6.2%	4.8%	4.6%	4.4%	3.2%	2.8%	3.5%	2.9%	2.7%	3.3%	2.7%	<b>2.7%</b>	<b>2.7%</b>	Avg Ann'l Div'd Yield	<b>3.5%</b>

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$3461.8 mill. Due in 5 Yrs \$861.1 mill.  
 LT Debt \$136.9 mill. LT Interest \$131.7 mill.  
 (LT interest earned: 3.1x)  
 Leases, Uncapitalized Annual rentals \$1.0 mill.

**Pension Assets-12/19** \$434.3 mill. Oblig \$485.4 mill.

**Pfd Stock** None

**Common Stock** 62,749,727 shs. as of 4/30/20

**MARKET CAP: \$3.8 billion (Mid Cap)**

1307.3	1272.2	1173.9	1275.9	1393.6	1304.6	1573.0	1680.3	1754.3	1734.9	<b>1600</b>	<b>1700</b>	Revenues (\$mill)	<b>1850</b>
64.6	40.4	86.9	115.8	128.8	128.3	140.3	186.5	192.5	214.5	<b>220</b>	<b>235</b>	Net Profit (\$mill)	<b>265</b>
26.4%	31.1%	35.5%	34.7%	33.7%	35.8%	25.1%	28.7%	19.2%	13.0%	<b>13.0%</b>	<b>13.0%</b>	Income Tax Rate	<b>13.0%</b>
28.0%	65.0%	5.4%	2.4%	2.4%	2.7%	5.3%	2.7%	1.4%	3.3%	<b>2.0%</b>	<b>2.0%</b>	AFUDC % to Net Profit	<b>2.0%</b>
51.9%	51.4%	43.2%	51.6%	47.9%	56.0%	66.5%	64.5%	57.5%	57.1%	<b>55.0%</b>	<b>53.5%</b>	Long-Term Debt Ratio	<b>52.0%</b>
48.1%	48.6%	56.8%	48.4%	52.1%	44.0%	33.5%	35.5%	42.5%	42.9%	<b>45.0%</b>	<b>46.5%</b>	Common Equity Ratio	<b>48.0%</b>
2286.3	2489.7	2171.4	2704.7	2643.6	3332.7	4825.8	4818.4	5132.4	5502.2	<b>5690</b>	<b>5850</b>	Total Capital (\$mill)	<b>6200</b>
2495.4	2789.6	2742.7	2990.3	3239.4	3259.1	4469.0	4541.4	4854.9	5503.2	<b>5940</b>	<b>6255</b>	Net Plant (\$mill)	<b>6875</b>
4.4%	3.3%	5.5%	5.5%	6.1%	4.9%	4.0%	5.2%	5.0%	4.9%	<b>5.0%</b>	<b>5.0%</b>	Return on Total Cap'l	<b>5.5%</b>
5.9%	3.3%	7.1%	8.9%	9.4%	8.8%	8.7%	10.9%	8.8%	9.1%	<b>8.5%</b>	<b>8.5%</b>	Return on Shr. Equity	<b>9.0%</b>
5.9%	3.3%	7.1%	8.9%	9.4%	8.8%	8.7%	10.9%	8.8%	9.1%	<b>8.5%</b>	<b>8.5%</b>	Return on Com Equity <sup>E</sup>	<b>9.0%</b>
.7%	NMF	1.8%	3.7%	4.3%	3.8%	3.3%	5.3%	3.9%	3.8%	<b>3.5%</b>	<b>3.5%</b>	Retained to Com Eq	<b>3.0%</b>
87%	NMF	75%	58%	54%	57%	62%	52%	55%	58%	<b>61%</b>	<b>62%</b>	All Div'ds to Net Prof	<b>66%</b>

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	+9	+2.7	+2.1
Avg. Indust. Use (MWH)	18376	19789	21406
Avg. Indust. Revs. per KWH (c)	7.69	7.41	7.38
Capacity at Yearend (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	1094	1104	1022
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+8	+8	+1.1

Fixed Charge Cov. (%) 296 276 278

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 of change (per sh)

Revenues	1.5%	.5%	-.5%
"Cash Flow"	4.5%	3.0%	4.0%
Earnings	7.0%	7.0%	3.5%
Dividends	3.5%	5.0%	6.0%
Book Value	3.0%	4.0%	4.5%

**BUSINESS:** Black Hills Corporation is a holding company for Black Hills Energy, which serves 214,000 electric customers in CO, SD, WY and MT, and 1.1 million gas customers in NE, IA, KS, CO, WY, and AR. Has coal mining sub. Acq'd Cheyenne Light 1/05; utility ops. from Aquila 7/08; SourceGas 2/16. Disc. telecom in '05; oil marketing in '06; gas marketing in '11; gas & oil E&P in '17. Electric rev. breakdown: res'l, 30%; comm'l, 35%; ind'l, 18%; other, 17%. Generating sources: coal, 30%; other, 12%; purch., 58%. Fuel costs: 33% of revs. '19 deprec. rate: 3.2%. Has 2,900 employees. Chairman: David R. Emery. Pres. & CEO: Linn Evans. Inc.: SD. Address: 7001 Mount Rushmore Rd., P.O. Box 1400, Rapid City, SD 57709-1400. Tel.: 605-721-1700. Internet: www.blackhillscorp.com.

**Upon issuing first-quarter results in early May, Black Hills Corporation trimmed its earnings guidance for 2020.** The company reduced its targeted range by a dime a share, from \$3.55-\$3.75 to \$3.45-\$3.65. This was largely due to the expected net effects of the coronavirus problem, which was expected to reduce share net by \$0.05-\$0.10. We are sticking with our 2020 estimate of \$3.55, which is now at the midpoint of Black Hills' targeted range.

**We lowered our 2021 share-profit estimate by a dime, to \$3.70.** We figure the economy will be in better shape next year. However, any growth from Black Hills' utility operations will come off a lower base.

**The company filed a gas rate case in Nebraska.** This followed the consolidation of Black Hills' two utilities in the state into one entity. The request was for an increase of \$17.3 million, based on a 10% return on equity and a 50% common-equity ratio. An order is expected no later than the first quarter of 2021. This might come too late for some of the seasonally strong first period.

**Other rate applications are probably coming.** Black Hills has asked for reconsideration or a rehearing for an unfavorable gas rate decision in Colorado that had a modest negative effect on earnings. Another rate case there might be coming. Black Hills hired a head of regulatory affairs for Colorado, which might help. A gas rate filing is probably upcoming in Arkansas, but the timing has not yet been determined.

**Black Hills has probably completed its major financing moves for 2020.** In February, before the market turmoil began, the company raised \$100 million through the sale of 1.2 million common shares. In June, the parent issued \$400 million of 10-year notes at an attractive rate of 2.5%.

**This stock has an average dividend yield for a utility.** The stock price has declined 24% this year, which is understandable in view of the reduction in earnings guidance. Total return potential is strong for the next 18 months, but not nearly as impressive for the 3- to 5-year period.

**QUARTERLY REVENUES (\$ mill.)**

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	547.5	341.9	335.6	455.3	1680.3
2018	575.4	355.7	322.0	501.2	1754.3
2019	597.8	333.9	325.5	477.7	1734.9
2020	537.1	300	300	462.9	1600
2021	565	330	315	490	1700

**EARNINGS PER SHARE <sup>A</sup>**

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1.42	.41	.52	1.03	3.38
2018	1.59	.45	.32	1.11	3.47
2019	1.73	.24	.44	1.13	3.53
2020	1.73	.35	.42	1.05	3.55
2021	1.75	.40	.45	1.10	3.70

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.42	.42	.42	.42	1.68
2017	.445	.445	.445	.475	1.81
2018	.475	.475	.475	.505	1.93
2019	.505	.505	.505	.535	2.05
2020	.535	.535			

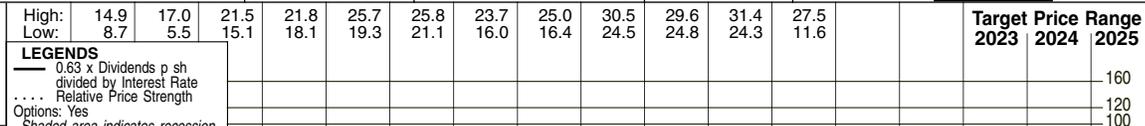
**Paul E. Debbas, CFA** July 24, 2020

(A) Dil. EPS. Excl. nonrec. gains (losses): '08, (\$1.55); '09, (28c); '10, 10c; '15, (\$3.54); '16, (\$1.26); '17, 14c; '18, \$1.31; '19, (25c); gains (losses) on disc. ops.: '08, \$4.12; '09, 7c; '11, 23c; '12, (16c); '17, (31c); '18, (12c). '19 EPS don't sum due to rounding. Next eps. due early Aug. (B) Div'ds pd. early Mar., Jun., Sept., & Dec. (C) Incl. def'd	chgs. In '19: \$25.06/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate all'd on com. eq. in SD in '15: none; in CO in '17: 9.37%; earn. on avg. com. eq., '19: 9.4%. Reg. Climate: Avg.	<b>Company's Financial Strength</b> A	<b>Stock's Price Stability</b> 75
		<b>Price Growth Persistence</b> 65	<b>Earnings Predictability</b> 75

# CENTERPOINT EN'RGY NYSE-CNP

RECENT PRICE **20.07** P/E RATIO **16.2** (Trailing: 12.9; Median: 18.0) RELATIVE P/E RATIO **0.76** DIV'D YLD **3.1%** VALUE LINE

**TIMELINESS** 4 Lowered 5/29/20  
**SAFETY** 3 Lowered 12/18/15  
**TECHNICAL** 3 Raised 5/29/20  
**BETA** 1.10 (1.00 = Market)

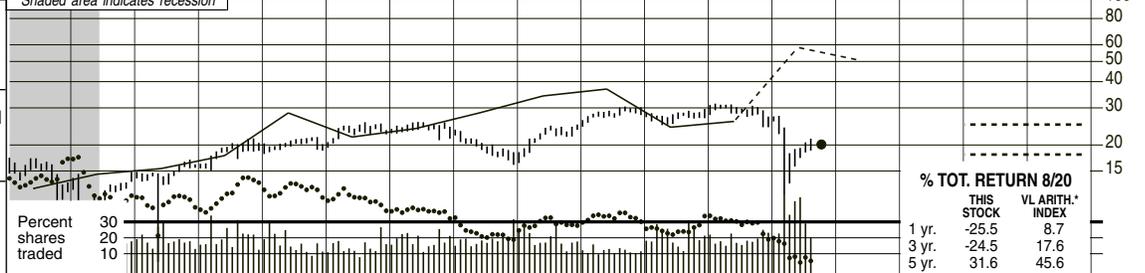


**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$13-\$35 \$24 (20%)

**2023-25 PROJECTIONS**  
 High Price Gain Ann'l Total  
 Low 25 18 (+25%) 9%  
 18 (-10%) 1%

**Institutional Decisions**

	4Q2019	1Q2020	2Q2020
to Buy	259	266	225
to Sell	305	293	293
Hlds(000)	421555	413899	467555



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
27.63	31.33	29.71	29.82	32.71	21.14	20.69	19.83	17.43	18.90	21.51	17.18	17.48	22.30	21.13	24.49	13.30	12.70	Revenues per sh	12.75
2.56	2.72	3.47	3.39	3.42	2.94	3.14	3.43	3.89	3.54	3.85	3.40	3.68	4.03	3.24	4.12	3.55	3.55	"Cash Flow" per sh	4.00
.61	.67	1.33	1.17	1.30	1.01	1.07	1.27	1.35	1.24	1.42	1.08	1.00	1.57	.74	1.49	1.30	1.45	Earnings per sh A	1.60
.40	.40	.60	.68	.73	.76	.78	.79	.81	.83	.95	.99	1.03	1.35	1.12	.86	.74	.64	Div'd Decl'd per sh B	.80
1.72	2.23	3.21	3.45	2.95	2.96	3.55	3.06	2.84	3.00	3.20	3.68	3.28	3.31	3.29	4.99	4.75	4.45	Cap'l Spending per sh	4.25
3.59	4.18	4.96	5.61	5.89	6.74	7.53	9.91	10.06	10.09	10.60	8.05	8.03	10.88	12.53	13.10	11.10	12.30	Book Value per sh C	15.25
308.05	310.33	313.65	322.72	346.09	391.75	424.70	426.03	427.44	429.00	429.00	430.00	430.68	431.04	501.20	502.24	545.00	590.00	Common Shs Outst'g D	640.00
17.8	19.1	10.3	15.0	11.3	11.8	13.8	14.6	14.8	18.7	17.0	18.1	21.9	17.9	NMF	19.5	19.5	19.5	Avg Ann'l P/E Ratio	13.0
.94	1.02	.56	.80	.68	.79	.88	.92	.94	1.05	.89	.91	1.15	.90	NMF	1.04	1.04	1.04	Relative P/E Ratio	.70
3.7%	3.1%	4.4%	3.9%	5.0%	6.4%	5.3%	4.3%	4.0%	3.6%	3.9%	5.1%	4.7%	4.8%	4.1%	3.0%	3.0%	3.0%	Avg Ann'l Div'd Yield	3.8%

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$12886 mill. Due in 5 Yrs \$6312 mill.  
 LT Debt \$10937 mill. LT Interest \$530 mill.  
 Incl. \$639 mill. securitized transition & system restoration bonds.  
 (LT interest earned: 2.7x)  
 Leases, Uncapitalized Annual rentals \$6 mill.  
 Pension Assets-12/19 \$2005 mill.  
 Oblig \$2453 mill.  
 Pfd Stock \$2441 mill. Pfd Div'd \$117 mill.  
 800,000 shs. 6.125%, cum., 977,500 shs. 7%, cum., 725,000 shs. all with liq. value of \$1000.  
 Common Stock 544,818,974 shs. as of 5/1/20  
**MARKET CAP: \$11 billion (Large Cap)**

8785.0	8450.0	7452.0	8106.0	9226.0	7386.0	7528.0	9614.0	10589	12301	7250	7500	Revenues (\$mill)	8200
442.0	546.0	581.0	536.0	611.0	465.0	432.0	679.0	368.0	871.0	875	995	Net Profit (\$mill)	1075
37.3%	33.6%	33.4%	31.4%	31.0%	35.1%	37.0%	36.1%	28.4%	14.9%	20.0%	20.0%	Income Tax Rate	20.0%
2.7%	1.6%	2.6%	3.5%	4.1%	4.7%	3.5%	2.9%	5.4%	6.7%	7.0%	6.0%	AFUDC % to Net Profit	6.0%
73.8%	67.2%	66.0%	64.4%	63.8%	69.5%	68.5%	63.6%	51.9%	63.0%	56.0%	55.5%	Long-Term Debt Ratio	54.5%
26.2%	32.8%	34.0%	35.6%	36.2%	30.5%	31.5%	36.4%	37.5%	29.1%	31.5%	36.0%	Common Equity Ratio	42.0%
12199	12863	12658	12146	12557	11362	10992	12883	16740	22603	19350	20175	Total Capital (\$mill)	23000
11732	12402	13597	9593.0	10502	11537	12307	13057	14044	20945	22575	24175	Net Plant (\$mill)	28600
6.1%	6.4%	6.8%	6.3%	6.7%	6.1%	5.8%	6.8%	3.4%	5.1%	6.0%	6.0%	Return on Total Cap'l	6.0%
13.8%	12.9%	13.5%	12.4%	13.4%	13.4%	12.5%	14.5%	4.6%	10.4%	10.5%	11.0%	Return on Shr. Equity	10.0%
13.8%	12.9%	13.5%	12.4%	13.4%	13.4%	12.5%	14.5%	5.3%	11.5%	12.0%	11.5%	Return on Com Equity E	10.5%
3.8%	5.0%	5.5%	4.2%	4.5%	1.1%	NMF	4.7%	NMF	2.7%	5.5%	6.5%	Retained to Com Eq	5.5%
72%	62%	60%	66%	67%	92%	103%	68%	NMF	80%	61%	52%	All Div'ds to Net Prof	52%

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	+2.1	+2.0	+6.7
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (avg.)	+1.7	+1.7	+7.9

**BUSINESS:** CenterPoint Energy, Inc. is a holding company for Houston Electric, which serves 2.5 million customers in Houston and environs, Indiana Electric, which serves 148,000 customers, and gas utilities with 4.6 million customers in Texas, Minnesota, Arkansas, Louisiana, Oklahoma, Indiana, and Ohio. Owns 53.7% of Enable Midstream Partners. Has nonutility operations that are in the process of being sold. Acquired Vectren 2/19. Electric revenue breakdown not available. Fuel costs: 46% of revenues. '19 depreciation rate: 4.3%. Has 14,300 employees. Chairman: Milton Carroll. President & CEO: David J. Lesar, Inc.: Texas. Address: 1111 Louisiana, P.O. Box 4567, Houston, TX 77210-4567. Tel.: 713-207-1111. Internet: www.centerpointenergy.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 of change (per sh)

Revenues	-2.0%	3.5%	-9.0%
"Cash Flow"	1.5%	-	1.0%
Earnings	1.0%	-1.0%	4.0%
Dividends	4.5%	5.0%	-5.5%
Book Value	7.0%	3.5%	4.0%

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	2735	2143	2098	2638	9614.0
2018	3155	2186	2212	3036	10589
2019	3531	2798	2742	3230	12301
2020	2167	1575	1575	1933	7250
2021	2250	1600	1600	2050	7500

Cal-endar	EARNINGS PER SHARE A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.44	.31	.39	.43	1.57
2018	.38	d.17	.35	.18	.74
2019	.28	.33	.47	.41	1.49
2020	.56	.17	.36	.21	1.30
2021	.50	.30	.40	.25	1.45

Cal-endar	QUARTERLY DIVIDENDS PAID B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.2575	.2575	.2575	.2575	1.03
2017	.2675	.2675	.2675	.2675	1.07
2018	.2775	.2775	.2775	.2775	1.11
2019	.2875	.2875	.2875	.2875	1.15
2020	.29	.15	.15		

**Wall Street awaits the recommendation of CenterPoint Energy's Business Review and Evaluation Committee (BREC).** The BREC is led by CenterPoint's new chief executive officer, Dave Lesar, and is examining the company's operations and deciding what to do with its 53.7% stake in Enable Midstream Partners. This has been a tumultuous year for CenterPoint, with a change in CEO and CFO (a permanent CFO has yet to be named); an unfavorable rate order for Houston Electric; a 48% dividend cut; the issuance of \$1.4 billion in common and preferred stock; the sale of two nonutility operations; and debt reduction from the proceeds of these asset sales. A recommendation from the BREC is due in October. Already, the company has announced that its electric operations in Houston and Indiana will be combined into one entity.

**The price of CenterPoint stock has declined 26% this year.** The key reasons are a steep fall in the value of the company's stake in Enable (which led to a substantial writedown), the disappointing rate order at Houston Electric, and the dividend cut. Whatever the company reports

for share earnings this year, which includes an estimated \$0.10-\$0.15 drag from the effects of the coronavirus and the weak economy, is not a major investment consideration due to the changes the company has undergone. Our 2021 estimate is based on CenterPoint's current configuration.

**A gas rate case is pending in Minnesota.** CenterPoint filed for an increase of \$62 million, based on a return on equity of 10.15% and a common-equity ratio of 51.4%. An interim tariff hike of \$53 million took effect at the start of 2020. The timing of a final rate order is yet to be determined. Note that every year CenterPoint obtains rate relief through regulatory mechanisms in the other states in which it operates.

**This untimely stock doesn't stand out among utilities for its dividend yield.** Total return potential over the 18-month period is worthwhile, but prospects over the 2023-2025 period are unappealing. Nevertheless, the equity has some speculative appeal, depending on the recommendation of the BREC.

Paul E. Debbas, CFA September 11, 2020

(A) Diluted EPS. Excl. extraord. gains (losses): '04, (\$2.72); '05, 9c; '11, \$1.89; '12, (38c); '13, (52c); '15, (\$2.69); '17, \$2.56; '20, \$2.71; losses on disc. ops.: '04, 37c; '05, 1c; '20, 34c.	Next earnings report due early Nov. (B) Div'ds historically paid in early Mar., June, Sept. & Dec. 5 declarations in '17, 3 in '19. ■ Div'd reinvest. plan avail. (C) Incl. intang. In '19:	\$5.14/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate allowed on com. eq. (elec.) in '20: 9.4%; (gas): 9.45%-11.25%; earned on avg. com. eq., '19: 11.6%. Regulatory Climate: Avg.	Company's Financial Strength	B+
			Stock's Price Stability	75
			Price Growth Persistence	35
			Earnings Predictability	45

<b>TIMELINESS</b> 3 Lowered 1/11/19	High: 16.1 19.3 22.4 25.0 30.0 36.9 38.7 46.3 50.8 53.8 65.3 69.2	<b>LEGENDS</b> 0.83 x Dividends p sh divided by Interest Rate ... Relative Price Strength Options: Yes Shaded area indicates recession	<b>Target Price Range</b> 2023 2024 2025
<b>SAFETY</b> 2 Raised 3/21/14	Low: 10.0 14.1 17.0 21.1 24.6 26.0 31.2 35.0 41.1 40.5 48.0 46.0		
<b>TECHNICAL</b> 1 Raised 9/11/20			
<b>BETA</b> .80 (1.00 = Market)			



<b>18-Month Target Price Range</b>		Low-High Midpoint (% to Mid)		\$48-\$101 \$75 (25%)	
<b>2023-25 PROJECTIONS</b>		Price	Gain	Ann'l Total	Return
High	75	(+25%)	9%		
Low	55	(-10%)	1%		
<b>Institutional Decisions</b>		4Q2019	1Q2020	2Q2020	
to Buy	295	252	238		
to Sell	247	301	291		
Hld's(000)	264207	265297	267271		
	Percent	30			
	shares	20			
	traded	10			

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
28.06	28.52	30.57	28.95	30.13	27.23	25.77	25.59	23.90	24.68	26.09	23.29	22.92	23.37	24.25	24.11	22.65	23.45	Revenues per sh	25.25
2.87	3.43	3.22	3.08	3.88	3.47	3.70	3.65	3.82	4.06	4.22	4.59	4.88	5.29	5.61	5.89	6.25	6.60	"Cash Flow" per sh	7.75
.74	1.10	.64	.64	1.23	.93	1.33	1.45	1.53	1.66	1.74	1.89	1.98	2.17	2.32	2.39	2.60	2.75	Earnings per sh A	3.50
--	--	--	.20	.36	.50	.66	.84	.96	1.02	1.08	1.16	1.24	1.33	1.43	1.53	1.63	1.74	Div'd Decl'd per sh B	2.15
2.69	2.69	3.01	5.61	3.50	3.59	3.29	3.47	4.65	4.98	5.73	5.64	5.99	5.91	7.32	7.41	8.20	9.85	Cap'l Spending per sh	8.75
10.63	10.53	10.03	9.46	10.88	11.42	11.19	11.92	12.09	12.98	13.34	14.21	15.23	15.77	16.78	17.68	19.35	20.75	Book Value per sh C	25.50
195.00	220.50	222.78	225.15	226.41	227.89	249.60	254.10	264.10	266.10	275.20	277.16	279.21	281.65	283.37	283.86	287.00	290.00	Common Shs Outst'g D	300.00
12.4	12.6	22.2	26.8	10.9	13.6	12.5	13.6	15.1	16.3	17.3	18.3	20.9	21.3	20.3	24.3	24.0	24.3	Avg Ann'l P/E Ratio	18.0
.66	.67	1.20	1.42	.66	.91	.80	.85	.96	.92	.91	.92	1.10	1.07	1.10	1.30	1.30	1.30	Relative P/E Ratio	1.00
--	--	--	1.2%	2.7%	4.0%	4.0%	4.3%	4.2%	3.8%	3.6%	3.4%	3.0%	2.9%	3.0%	2.6%	2.6%	2.6%	Avg Ann'l Div'd Yield	3.4%

<b>CAPITAL STRUCTURE as of 6/30/20</b>		6432.0	6503.0	6312.0	6566.0	7179.0	6456.0	6399.0	6583.0	6873.0	6845.0	6500	6800	Revenues (\$mill)	7550
Total Debt	\$15225 mill. Due in 5 Yrs	356.0	384.0	413.0	454.0	479.0	525.0	553.0	610.0	659.0	682.0	760	810	Net Profit (\$mill)	1050
LT Debt	\$13481 mill. LT Interest	38.1%	36.8%	39.4%	39.9%	34.3%	34.0%	33.1%	31.2%	14.9%	17.7%	16.0%	16.0%	Income Tax Rate	16.0%
Incl.	\$.67 mill. capitalized leases.	2.2%	2.6%	2.9%	2.0%	2.3%	2.7%	3.1%	1.1%	1.4%	2.1%	2.0%	2.0%	AFUDC % to Net Profit	1.0%
(LT interest earned: 2.9%)		70.1%	66.9%	67.9%	67.5%	68.7%	68.3%	67.1%	67.3%	69.0%	70.4%	70.5%	70.4%	Long-Term Debt Ratio	68.0%
Leases, Uncapitalized	Annual rentals \$11 mill.	29.5%	32.6%	31.6%	32.2%	31.0%	31.4%	32.6%	32.4%	30.7%	29.4%	29.5%	30.0%	Common Equity Ratio	32.0%
Pension Assets-12/19	\$2546 mill.	9473.0	9279.0	10101	10730	11846	12534	13040	13692	15476	17082	18900	20050	Total Capital (\$mill)	24100
Oblig	\$2973 mill.	10069	10633	11551	12246	13412	14705	15715	16761	18126	18926	20225	21975	Net Plant (\$mill)	26000
Pfd Stock	\$37 mill. Pfd Div'd	5.8%	6.3%	5.9%	6.0%	5.7%	5.7%	5.8%	5.9%	5.6%	5.3%	5.5%	5.5%	Return on Total Cap'l	6.0%
Incl.	373,148 shs. \$4.50 \$100 par, cum., callable at \$110.00.	12.5%	12.5%	12.8%	13.0%	12.9%	13.2%	12.9%	13.6%	13.8%	13.5%	13.5%	13.5%	Return on Shr. Equity	13.5%
Common Stock	286,280,694 shs. as of 7/7/20	12.5%	12.6%	12.9%	13.1%	13.0%	13.3%	13.0%	13.7%	13.8%	13.6%	13.5%	13.5%	Return on Com Equity E	13.5%
MARKET CAP:	\$17 billion (Large Cap)	6.9%	5.6%	5.0%	5.2%	5.0%	5.2%	4.8%	5.2%	5.3%	4.9%	5.0%	5.0%	Retained to Com Eq	5.5%
		46%	55%	61%	60%	62%	61%	63%	62%	62%	64%	62%	62%	All Div'ds to Net Prof	61%

<b>ELECTRIC OPERATING STATISTICS</b>		2017	2018	2019
% Change Retail Sales (KWH)		-1.4	+2.2	-3.7
Avg. Indust. Use (MWH)		NA	NA	NA
Avg. Indust. Revs. per KWH (c)		8.26	7.63	7.94
Capacity at Peak (Mw)		NA	NA	NA
Peak Load, Summer (Mw)		7634	8084	8039
Annual Load Factor (%)		NA	NA	NA
% Change Customers (yr-end)		+1.2	+3	+9
Fixed Charge Cov. (%)		301	250	235
<b>ANNUAL RATES</b>	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19	
of change (per sh)				
Revenues	-2.0%	-1.0%	1.0%	
"Cash Flow"	5.0%	7.0%	5.5%	
Earnings	9.5%	7.0%	7.5%	
Dividends	15.0%	7.0%	7.0%	
Book Value	4.5%	5.5%	7.5%	

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1829	1449	1527	1778	6583.0
2018	1953	1492	1599	1829	6873.0
2019	2059	1445	1546	1795	6845.0
2020	1864	1443	1550	1643	6500
2021	1950	1550	1600	1700	6800

Cal-endar	EARNINGS PER SHARE A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.71	.33	.61	.52	2.17
2018	.86	.49	.59	.38	2.32
2019	.75	.33	.73	.58	2.39
2020	.85	.48	.77	.50	2.60
2021	.85	.55	.80	.55	2.75

Cal-endar	QUARTERLY DIVIDENDS PAID B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.31	.31	.31	.31	1.24
2017	.3325	.3325	.3325	.3325	1.33
2018	.3575	.3575	.3575	.3575	1.43
2019	.3825	.3825	.3825	.3825	1.53
2020	.4075	.4075	.4075		

**CMS Energy's utility subsidiary should receive orders on its rate cases in the fourth quarter.** Consumers Energy is seeking a gas rate increase of \$229 million, based on a 10.5% return on equity. The utility is also asking for a regulatory mechanism that decouples revenues and volume. The staff of the Michigan Public Service Commission (MPSC) is recommending a hike of \$160 million, based on a 9.6% ROE. An order is due by October 16th. The utility is requesting an electric tariff increase of \$230 million, based on a 10.5% ROE. The MPSC's staff is proposing a hike of \$149 million, based on a 9.75% ROE. A decision is due by December 28th. Consumers Energy files rate cases frequently because it has a large, aged electric and gas system that requires extensive capital spending. In fact, the utility plans to file another gas rate application in December, with a ruling expected in October of 2021. It helps that Michigan has a good regulatory climate. **We expect continued steady earnings growth this year and next.** Consumers Energy is benefiting from rate relief. Although the utility was hurt by mild weather in the first quarter and a decline in electric volume in the second period, management has cut costs effectively to offset this. Our 2020 earnings estimate is slightly below CMS Energy's targeted range of \$2.64-\$2.68 a share because the company's guidance excludes some costs that we are including. These amounted to two cents a share in the first six months. **CMS Energy acquired a 51% stake in a wind project.** The cost was undisclosed. The 525-megawatt project, in Texas, will sell its output to two large customers under long-term contracts. The company will finance the deal with tax equity and cash on hand. The project will be owned by CMS Enterprises, a nonutility subsidiary, and will likely produce returns at least equal to those of a regulated utility. This also expanded the company's presence in contracted renewables, which was 196 mw before this deal. **The dividend yield of this equity is about a percentage point below the average for electric utilities.** Total return potential is appealing for the next 18 months, but not for the 2023-2025 period. *Paul E. Debbas, CFA September 11, 2020*

# DOMINION ENERGY NYSE-D

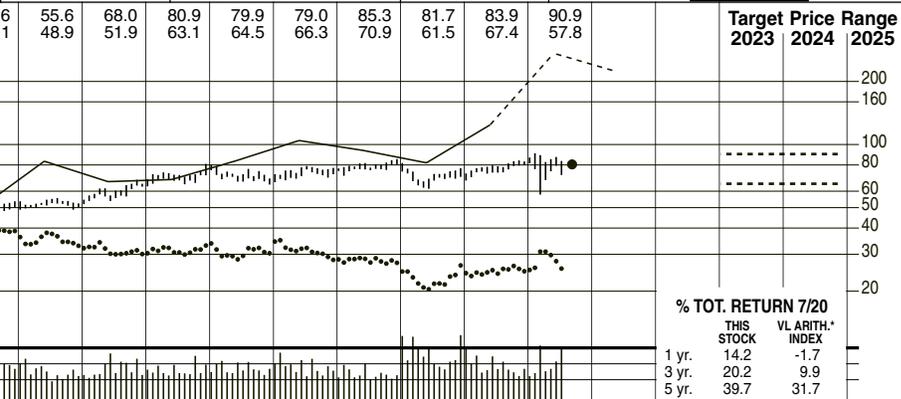
RECENT PRICE **80.33** P/E RATIO **22.0** (Trailing: 20.7; Median: 21.0) RELATIVE P/E RATIO **1.03** DIV'D YLD **3.5%** **VALUE LINE**

**TIMELINESS** 2 Lowered 8/14/20  
**SAFETY** 2 Raised 9/11/98  
**TECHNICAL** 1 Raised 8/14/20  
**BETA** .80 (1.00 = Market)

High: 39.8 45.1 53.6 55.6 68.0 80.9 79.9 79.0 85.3 81.7 83.9 90.9  
 Low: 27.1 36.1 42.1 48.9 51.9 63.1 64.5 66.3 70.9 61.5 67.4 57.8

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$55-\$128 \$92 (15%)

**LEGENDS**  
 — 0.71 x Dividends p sh divided by Interest Rate  
 .... Relative Price Strength  
 2-for-1 split 11/07  
 Options: Yes  
 Shaded area indicates recession



**2023-25 PROJECTIONS**  
 High Price Gain Ann'l Total  
 Low 90 65 (+10%) 6%  
 (-20%) -1%

**Institutional Decisions**  
 3Q2019 4Q2019 1Q2020  
 to Buy 712 739 626  
 to Sell 460 545 691  
 Hld's(000) 544967 565133 560954

Percent	15	10	5
shares	15	10	5
traded	15	10	5

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
20.54	25.96	23.61	27.17	27.93	25.24	26.17	25.24	22.73	22.56	21.25	19.59	18.70	19.53	19.63	19.78	17.70	16.70	Revenues per sh	17.50
4.18	3.70	4.91	5.08	5.07	4.82	5.11	5.04	5.24	5.47	5.71	5.98	6.33	6.90	6.48	5.73	6.60	7.20	"Cash Flow" per sh	8.25
2.13	1.50	2.40	2.13	3.04	2.64	2.89	2.76	2.75	3.09	3.05	3.20	3.44	3.53	3.25	2.19	3.05	3.65	Earnings per sh <sup>A</sup>	4.25
1.30	1.34	1.38	1.46	1.58	1.75	1.83	1.97	2.11	2.25	2.40	2.59	2.80	3.04	3.34	3.67	3.45	2.50	Div'd Decl'd per sh <sup>B</sup>	3.00
3.88	4.83	5.81	6.89	6.09	6.40	5.89	6.41	7.20	7.06	9.13	9.35	9.69	8.54	6.25	5.94	8.95	8.30	Cap'l Spending per sh	8.00
16.79	14.96	18.50	16.31	17.28	18.66	20.66	20.09	18.34	20.02	19.74	21.24	23.26	26.59	29.53	35.33	31.90	33.30	Book Value per sh <sup>C</sup>	39.00
680.40	695.00	698.00	576.80	583.20	599.40	580.80	569.70	576.10	581.50	585.30	596.30	627.80	644.60	680.90	838.00	840.00	844.00	Common Shs Outst'g <sup>D</sup>	887.00
15.1	24.9	16.0	20.6	13.8	12.7	14.3	17.3	18.9	19.2	23.0	22.1	21.3	22.2	21.8	NMF	<b>Bold figures are Value Line estimates</b>		Avg Ann'l P/E Ratio	18.5
.80	1.33	.86	1.09	.83	.85	.91	1.09	1.20	1.08	1.21	1.11	1.12	1.12	1.18	NMF			Relative P/E Ratio	1.05
4.0%	3.6%	3.6%	3.3%	3.8%	5.2%	4.4%	4.1%	4.1%	3.8%	3.4%	3.7%	3.8%	3.9%	4.7%	4.8%			Avg Ann'l Div'd Yield	3.8%

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$39724 mill. Due in 5 Yrs \$14892 mill.  
 LT Debt \$34615 mill. LT Interest \$1450 mill.  
 (LT interest earned: 2.8x)  
 Leases, Uncapitalized Annual rentals \$72 mill.

**Pension Assets-12/19** \$9631 mill.  
 Oblig \$10446 mill.

**Pfd Stock** \$2387 mill. Pfd Divd \$65 mill.  
 2 mill. shs. 1.75%, cum., convert. in 2022. 800,000 shs. 4.65%, cum., redeemable not before 12/15/24.  
**Common Stock** 839,251,000 shs. as of 4/17/20

**MARKET CAP: \$67 billion (Large Cap)**

15197	14379	13093	13120	12436	11683	11737	12586	13366	16572	14850	14100	Revenues (\$mill)	15600
1724.0	1603.0	1594.0	1806.0	1793.0	1899.0	2123.0	2244.0	2130.0	1838.0	2625	3180	Net Profit (\$mill)	3825
38.6%	34.6%	36.2%	33.0%	28.1%	32.0%	22.8%	27.2%	17.7%	21.8%	21.0%	21.0%	Income Tax Rate	21.0%
5.9%	5.3%	5.7%	3.7%	4.5%	5.3%	7.5%	10.5%	6.3%	4.8%	3.0%	3.0%	AFUDC % to Net Profit	2.0%
56.3%	59.8%	60.9%	61.9%	65.4%	65.1%	67.4%	64.4%	60.8%	51.4%	50.0%	50.0%	Long-Term Debt Ratio	49.0%
42.8%	39.3%	38.2%	37.3%	34.6%	34.9%	32.6%	35.6%	39.2%	45.0%	46.0%	45.5%	Common Equity Ratio	50.0%
28012	29097	27676	31229	33360	36280	44836	48090	51251	65818	58425	61675	Total Capital (\$mill)	69400
26713	29670	30773	32628	36270	41554	49964	53758	54560	69082	69975	74025	Net Plant (\$mill)	85300
7.7%	7.0%	7.5%	7.3%	6.6%	6.5%	6.0%	5.9%	5.5%	4.0%	5.5%	6.0%	Return on Total Cap'l	6.5%
14.1%	13.7%	14.7%	15.2%	15.5%	15.0%	14.5%	13.1%	10.6%	5.7%	9.0%	10.0%	Return on Shr. Equity	10.5%
14.2%	13.9%	14.9%	15.4%	15.4%	15.0%	14.5%	13.1%	10.6%	6.2%	9.5%	11.0%	Return on Com Equity <sup>E</sup>	11.0%
5.3%	4.0%	3.5%	4.2%	3.3%	2.9%	2.7%	1.8%	NMF	NMF	NMF	3.5%	Retained to Com Eq	3.5%
63%	71%	77%	73%	79%	81%	81%	86%	NMF	NMF	NMF	7.0%	All Div'ds to Net Prof	71%

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	NA	NA	NA
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	NA	NA	NA

**BUSINESS:** Dominion Energy, Inc. (formerly Dominion Resources) is a holding company for Virginia Power, North Carolina Power, & South Carolina E&G, which serve 3.4 mill. customers in VA, SC, & NC. Serves 3.4 mill. gas customers in OH, WV, UT, SC, & NC. Other ops. incl. independent power production. Acq'd Questar 9/16; SCANA 1/19. Elec. rev. breakdown: residential, 46%; commercial,

32%; industrial, 7%; other, 15%. Generating sources: gas, 41%; nuclear, 29%; coal, 8%; other, 5%; purchased, 17%. Fuel costs: 28% of revs. '19 reported deprec. rates: 2.4%-4.6%. Has 19,100 empl. Chairman, President & CEO: Thomas F. Farrell II, Inc.: VA. Address: 120 Tredegar St., P.O. Box 26532, Richmond, VA 23261-6532. Tel.: 804-819-2000. Internet: www.dominionenergy.com.

**ANNUAL RATES** Past Past Est'd '17-'19  
 of change (per sh) 10 Yrs. 5 Yrs. to '23-'25

Revenues	-3.0%	-2.5%	-1.5%
"Cash Flow"	2.5%	3.0%	3.5%
Earnings	1.5%	-	3.0%
Dividends	7.5%	8.0%	-5%
Book Value	6.0%	9.5%	5.5%

**Dominion Energy is exiting the midstream natural gas business.** After years of delays and cost increases due to litigation, the company took a pretax charge of \$2.8 billion in the second quarter to write off its 53% stake in the proposed Atlantic Coast Pipeline project. Dominion Energy has agreed to sell the remainder of its midstream gas assets (except for a 50% unlevered interest in a liquefied natural gas facility) to Berkshire Hathaway for \$4.0 billion in cash and the assumption of \$5.7 billion of debt. The board of directors has authorized Dominion Energy to buy back \$3.0 billion of common stock with the sale proceeds once the transaction closes, probably in the fourth quarter of 2020. Beginning with the third-quarter financial reports, the midstream gas business will be shown as a discontinued operation.

\$0.625 a share. The company has set a target of 6% annual dividend growth, beginning in 2022, and a payout ratio of 65%. The dividend yield we show at the top of the page is based on one quarter at \$0.94 a share and three at \$0.625 a share. **Following the asset sale, Dominion Energy will be largely a regulated company.** At least 85% of corporate profits is likely to be generated from regulated utilities. Even most of its nonregulated assets (such as the Millstone nuclear plant) operate under long-term contracts. Because of the significant changes the company is making, this year's tally is not reflective of Dominion's earning power. Our 2021 estimate of \$3.65 a share is below the company's guidance of \$3.85-\$3.90 because we won't assume a stock buyback until the deal is completed. The stock is timely.

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	3384	2813	3179	3210	12586
2018	3466	3088	3451	3361	13366
2019	3858	3970	4269	4475	16572
2020	4496	3585	3369	3400	14850
2021	3600	3500	3500	3500	14100

**A dividend cut is almost certainly upcoming.** In late July, the board of directors declared a \$0.94-a-share dividend, payable on September 20th. However, due to Dominion Energy's high payout ratio, beginning in the fourth quarter, management plans to recommend to the board a cut in the quarterly disbursement to

**The stock price has held up well, considering the news of the probable dividend cut.** The quotation is down just 3% in 2020, better than most utility issues have fared. The dividend yield doesn't stand out among utilities, and 3- to 5-year total return potential is unimpressive. *Paul E. Debbas, CFA August 14, 2020*

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1.01	.62	1.03	.87	3.53
2018	.77	.82	1.22	.44	3.25
2019	d.37	.13	1.23	1.22	2.19
2020	.35	1.08	.85	.77	3.05
2021	.95	.80	.95	.95	3.65

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.70	.70	.70	.70	2.80
2017	.755	.755	.755	.77	3.04
2018	.835	.835	.835	.835	3.34
2019	.9175	.9175	.9175	.9175	3.67
2020	.94	.94	.94		

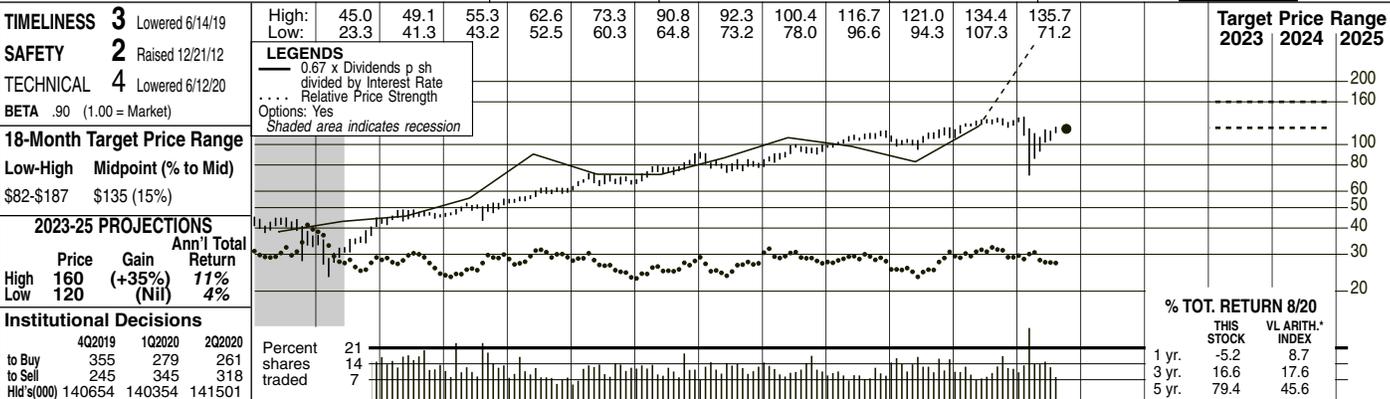
Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	55
Earnings Predictability	50

(A) Dil. egs. Excl. nonrec. gains (losses): '07, \$1.67; '08, 12c; '09, (47c); '10, \$2.18; '11, (7c); '12, (\$1.70); '14, (76c); '17, \$1.19; '18, 43c; '19, (58c); '20, (67c); losses from disc. ops.: '06, 26c; '10, 26c; '12, 4c; '13, 16c. '19 EPS don't sum due to chng. in shs. Next egs. report due early Nov. (B) Div'ds paid mid-Mar., June, Sept., & Dec. (C) Div'd reinv. plan avail. (D) Incl. intang. In '19: \$20.79/sh. (E) In mill., adj. for all'd on com. eq. in '11: 10.9%; earned on avg. com. eq., '19: 6.7%. Regulatory Climate: Avg.

# DTE ENERGY CO. NYSE-DTE

RECENT PRICE **118.67** P/E RATIO **17.1** (Trailing: 18.7; Median: 17.0) RELATIVE P/E RATIO **0.80** DIV'D YLD **3.7%**

**VALUE LINE**



Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	23-25
Revenues per sh	40.84	50.74	50.93	54.28	57.23	48.45	50.51	52.57	51.01	54.56	69.50	57.60	59.24	70.28	78.12	65.91	<b>60.10</b>	<b>62.55</b>	68.25
"Cash Flow" per sh	6.81	8.14	8.19	8.28	8.26	9.38	9.78	9.57	9.77	10.13	11.85	9.44	10.60	11.77	12.58	12.97	<b>14.45</b>	<b>15.30</b>	18.00
Earnings per sh <sup>A</sup>	2.55	3.27	2.45	2.66	2.73	3.24	3.74	3.67	3.88	3.76	5.10	4.44	4.83	5.73	6.17	6.31	<b>6.70</b>	<b>7.15</b>	8.50
Div'd Decl'd per sh <sup>B</sup>	2.06	2.06	2.08	2.12	2.12	2.12	2.18	2.32	2.42	2.59	2.69	2.84	3.06	3.36	3.59	3.85	<b>4.12</b>	<b>4.42</b>	5.20
Cap'l Spending per sh <sup>C</sup>	5.19	5.99	7.92	7.96	8.42	6.26	6.49	8.77	10.56	10.59	11.58	11.26	11.40	12.54	14.91	15.59	<b>19.95</b>	<b>18.45</b>	13.50
Book Value per sh <sup>D</sup>	31.85	32.44	33.02	35.86	36.77	37.96	39.67	41.41	42.78	44.73	47.05	48.88	50.22	53.03	56.27	60.73	<b>63.60</b>	<b>66.95</b>	79.25
Common Shs Outst'g <sup>D</sup>	174.21	177.81	177.14	163.23	163.02	165.40	169.43	169.25	172.35	177.09	176.99	179.47	179.43	179.39	181.93	192.21	<b>193.00</b>	<b>195.00</b>	205.00
Avg Ann'l P/E Ratio	16.0	13.8	17.4	18.3	14.8	10.4	12.3	13.5	14.9	17.9	14.9	18.1	19.0	18.6	17.4	19.9	<b>16.5</b>	<b>16.5</b>	16.5
Relative P/E Ratio	.85	.73	.94	.97	.89	.69	.78	.85	.95	1.01	.78	.91	1.00	.94	.94	1.06	<b>1.06</b>	<b>1.06</b>	.90
Avg Ann'l Div'd Yield	5.0%	4.6%	4.9%	4.4%	5.2%	6.3%	4.8%	4.7%	4.2%	3.8%	3.5%	3.5%	3.3%	3.2%	3.3%	3.1%	<b>3.1%</b>	<b>3.1%</b>	3.7%

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	23-25
Revenues (\$mill)	8557.0	8897.0	8791.0	9661.0	12301	10337	10630	12607	14212	12669	<b>11600</b>	<b>12200</b>	14000						
Net Profit (\$mill)	630.0	624.0	666.0	661.0	905.0	796.0	868.0	1029.0	1120.0	1169.0	<b>1295</b>	<b>1390</b>	1755						
Income Tax Rate	32.7%	35.9%	29.8%	27.5%	28.5%	25.6%	24.5%	21.8%	8.1%	11.5%	<b>8.0%</b>	<b>8.0%</b>	8.0%						
AFUDC % to Net Profit	1.6%	1.6%	3.0%	3.5%	4.1%	4.3%	3.6%	3.5%	3.8%	3.3%	<b>3.0%</b>	<b>3.0%</b>	2.0%						
Long-Term Debt Ratio	51.3%	50.6%	48.8%	47.7%	50.0%	50.2%	55.6%	56.2%	54.2%	57.7%	<b>60.0%</b>	<b>60.0%</b>	58.5%						
Common Equity Ratio	48.7%	49.4%	51.2%	52.3%	50.0%	49.8%	44.4%	43.8%	45.8%	42.3%	<b>40.0%</b>	<b>40.0%</b>	41.5%						
Total Capital (\$mill)	13811	14196	14387	15135	16670	17607	20280	21697	22371	27607	<b>30750</b>	<b>32525</b>	39000						
Net Plant (\$mill)	12992	13746	14684	15800	16820	18034	19730	20721	21650	25317	<b>28275</b>	<b>30275</b>	33500						
Return on Total Cap'l	6.3%	5.9%	6.1%	5.7%	6.6%	5.7%	5.3%	5.9%	6.1%	5.3%	<b>5.5%</b>	<b>5.5%</b>	5.5%						
Return on Shr. Equity	9.4%	8.9%	9.0%	8.3%	10.9%	9.1%	9.6%	10.8%	10.9%	10.0%	<b>10.5%</b>	<b>10.5%</b>	11.0%						
Return on Com Equity <sup>E</sup>	9.4%	8.9%	9.0%	8.3%	10.9%	9.1%	9.6%	10.8%	10.9%	10.0%	<b>10.5%</b>	<b>10.5%</b>	11.0%						
Retained to Com Eq	4.0%	3.4%	3.5%	2.7%	5.2%	3.4%	3.7%	4.6%	4.9%	4.1%	<b>4.0%</b>	<b>4.0%</b>	4.5%						
All Div'ds to Net Prof	57%	62%	61%	67%	52%	63%	61%	58%	55%	59%	<b>61%</b>	<b>62%</b>	61%						

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$18925 mill. Due in 5 Yrs \$7387 mill.  
 LT Debt \$17341 mill. LT Interest \$685 mill.  
 (LT interest earned: 3.0x)

**Leases, Uncapitalized** Annual rentals \$38 mill.

**Pension Assets-12/19** \$4993 mill. Oblig \$5810 mill.

**Pfd Stock** None  
**Common Stock** 192,650,741 shs.

**MARKET CAP: \$23 billion (Large Cap)**

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	-3.1	+3.5	-3.9
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NMF	NMF	NMF
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	NA	NA	NA

**ANNUAL RATES** Past 10 Yrs. 5 Yrs. Past Est'd '17-'19

	Past 10 Yrs.	5 Yrs.	Past	Est'd '17-'19
Revenues	3.0%	4.0%	-1.0%	
"Cash Flow"	3.5%	3.5%	6.5%	
Earnings	8.0%	7.5%	6.0%	
Dividends	5.5%	7.0%	6.5%	
Book Value	4.5%	5.0%	5.5%	

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	3236	2855	3245	3271	12607
2018	3753	3159	3550	3750	14212
2019	3514	2888	3119	3148	12669
2020	3022	2583	2950	3045	11600
2021	<b>3300</b>	<b>2700</b>	<b>3050</b>	<b>3150</b>	<b>12200</b>

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	2.23	.99	1.51	1.00	5.73
2018	2.00	1.29	1.84	1.05	6.17
2019	2.19	.99	1.73	1.40	6.31
2020	1.76	1.44	2.00	1.50	6.70
2021	<b>2.00</b>	<b>1.55</b>	<b>2.10</b>	<b>1.50</b>	<b>7.15</b>

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.73	.73	.73	.77	2.96
2017	.825	.825	.825	.825	3.30
2018	.8825	.8825	.8825	.8825	3.53
2019	.945	.945	.945	.945	3.78
2020	1.0125	1.0125	1.0125		

**BUSINESS:** DTE Energy Company is a holding company for DTE Electric (formerly Detroit Edison), which supplies electricity in Detroit and a 7,600-square-mile area in southeastern Michigan, and DTE Gas (formerly Michigan Consolidated Gas). Customers: 2.2 mill. electric, 1.3 mill. gas. Has various nonutility operations. Electric revenue breakdown: residential, 46%; commercial, 34%; industrial, 13%; other, 7%. Generating sources: coal, 67%; nuclear, 17%; gas, 1%; purchased, 15%. Fuel costs: 54% of revenues. '19 reported deprec. rates: 4.0% electric, 2.7% gas. Has 10,700 employees. Chairman: Gerard M. Anderson. President & CEO: Jerry Norcia. Inc.: MI. Address: One Energy Plaza, Detroit, MI 48226-1279. Tel.: 313-235-4000. Internet: www.dteenergy.com.

**DTE Energy's gas utility received a rate order.** The Michigan Public Service Commission approved a settlement for DTE Gas calling for an increase of \$110 million, based on a 9.9% return on equity and a 52% common-equity ratio. Earnings will also be augmented by \$20 million of accelerated amortization to income of deferred taxes. New tariffs will take effect on October 1st. Separately, DTE Electric will delay its next rate application until 2021, but will also benefit from the accelerated amortization of deferred taxes.

**Earnings in 2020 are likely to end up near the upper end of DTE Energy's targeted range of \$6.47-\$6.75 a share.** The negative effects of the weak economy have been less than the company feared, as residential kilowatt-hour sales have risen even more than expected from people working from home. Favorable weather patterns have helped, too. On the non-utility side, the Gas Pipeline and Storage segment has fared better than expected as the demand for natural gas remains healthy. A pipeline began service on August 1st, completed on schedule and below the \$600 million budget. The Energy Trad-

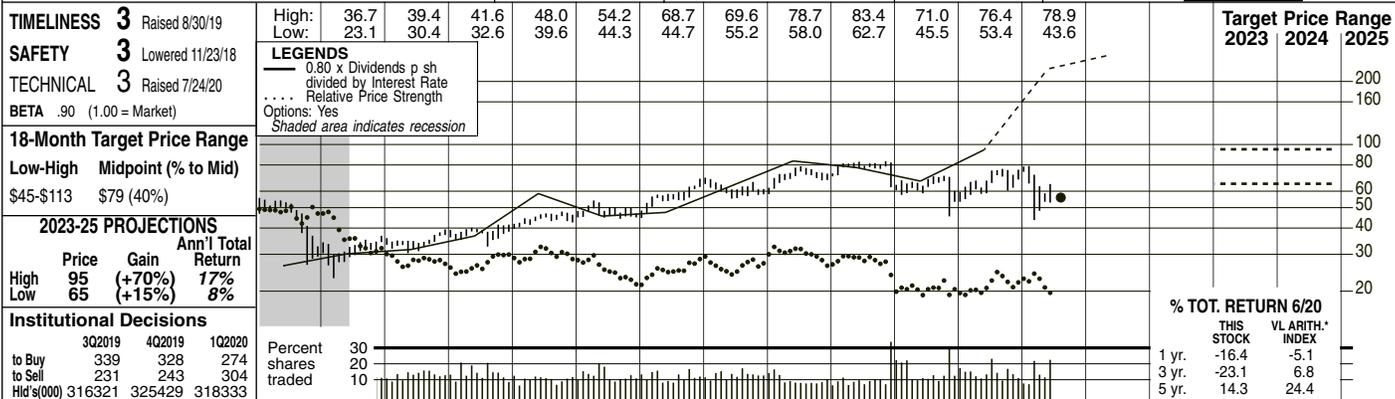
ing business is trending at the high end of DTE Energy's expectation. Second-quarter profits exceeded our estimate, so we boosted our 2020 share-net expectation by \$0.20, to \$6.70. Note that we raised the Financial Strength rating a notch, to A.

**Earnings will likely improve in 2021.** The economy should be better by then. DTE Electric and DTE Gas will benefit from a full year's effect of rate increases obtained in 2020. DTE Gas also recovers certain capital spending through a rider on customers' bills. We expect continued growth from the nonutility operations, especially Gas Pipeline and Storage. Our estimate of \$7.15 a share, which we raised by \$0.25, would produce a 7% increase.

**We think the board of directors will boost the dividend in the fourth quarter, effective with the January payment.** DTE Energy's goal for dividend growth is 7%, and we estimate a hike of \$0.29 a share (7.2%) in the annual payout. **This stock's dividend yield is average, by utility standards.** Total return potential does not stand out, either for the 18-month span or the 3- to 5-year period.

*Paul E. Debbas, CFA September 11, 2020*

(A) Diluted EPS. Excl. nonrec. gains (losses): '05, (2c); '07, \$1.96; '08, 50c; '11, 51c; '15, (3c); '17, 59c; gains (losses) on disc. ops.: '04, (6c); '05, (20c); '06, (2c); '07, \$1.20; '08, 13c; '12, (33c). '17-'18 EPS don't sum due to rounding. Next earnings report due late Oct.	'19: \$47.33/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate all'd on com. eq. in '20: 9.9% elec.; in '20: 9.9% gas; earned on avg. com. eq., '19: 10.8%. Regulat. Climate: Above Avg.	<b>Company's Financial Strength</b> A
(B) Div'ds pd. mid-Jan., Apr., July & Oct. Div'd reinvest. plan avail. (C) Incl. intang. In		<b>Stock's Price Stability</b> 95
		<b>Price Growth Persistence</b> 90
		<b>Earnings Predictability</b> 85



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
31.30	36.38	38.74	40.25	43.31	37.98	38.09	39.16	36.41	38.61	41.17	35.37	36.43	37.81	38.85	34.11	31.75	33.35	Revenues per sh	39.25
3.79	6.99	7.25	7.60	8.08	7.96	8.41	9.03	9.63	8.80	9.95	10.35	10.43	11.03	4.69	9.15	10.30	10.85	"Cash Flow" per sh	12.75
.69	3.34	3.28	3.32	3.68	3.24	3.35	3.23	4.55	3.78	4.33	4.15	3.94	4.51	d1.26	3.98	4.10	4.25	Earnings per sh A	5.25
.80	1.02	1.10	1.18	1.23	1.25	1.27	1.29	1.31	1.37	1.48	1.73	1.98	2.23	2.43	2.48	2.58	2.68	Div'd Decl'd per sh B	3.00
5.32	5.73	7.78	8.67	8.67	10.07	13.94	14.76	12.73	11.05	11.99	12.97	11.46	11.75	13.84	13.47	13.25	14.30	Cap'l Spending per sh	14.25
18.57	20.30	23.66	25.92	29.21	30.20	32.44	30.86	28.95	30.50	33.64	34.89	36.82	35.82	32.10	36.75	39.10	40.65	Book Value per sh C	46.50
325.81	325.81	325.81	325.81	325.81	325.81	325.81	325.81	325.81	325.81	325.81	325.81	325.81	325.81	325.81	361.99	378.00	378.00	Common Shs Outst'g D	378.00
37.6	11.7	13.0	16.0	12.4	9.7	10.3	11.8	9.7	12.7	13.0	14.8	17.9	17.2	--	16.7			Avg Ann'l P/E Ratio	15.0
1.99	.62	.70	.85	.75	.65	.66	.74	.62	.71	.68	.75	.94	.87	--	.90			Relative P/E Ratio	.85
3.1%	2.6%	2.6%	2.2%	2.7%	4.0%	3.7%	3.4%	3.0%	2.8%	2.6%	2.8%	2.8%	2.9%	3.8%	3.7%			Avg Ann'l Div'd Yield	3.8%

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$21301 mill. Due in 5 Yrs \$5647 mill.  
 LT Debt \$19125 mill. LT Interest \$896 mill.  
 (LT interest earned: 2.3x)

**Leases, Uncapitalized** Annual rentals \$107 mill.  
**Pens. Assets-12/19** \$3755 mill. Oblig \$4139 mill.  
**Pfd Stock** \$2193 mill. **Pfd Div'd** \$121 mill.  
 4,800,198 sh. 4.08%-4.78%, \$25 par, call. \$25.50-\$28.75/sh.; 3,250,000 sh. variable, noncum., call. \$100; 1,250,000 sh. 6.5% cum., \$100 liq. value; 350,000 sh. 6.25%, \$100 liq. value; 460,012 sh. 5.1%-5.75%, \$2500 liq. value.  
**Common Stock** 363,560,677 sh. as of 4/27/20  
**MARKET CAP:** \$20 billion (Large Cap)

12409	12760	11862	12581	13413	11524	11869	12320	12657	12347	12000	12600	Revenues (\$mill)	14800
1153.0	1112.0	1594.0	1344.0	1539.0	1480.0	1422.0	1603.0	d290.0	1477.0	1645	1725	Net Profit (\$mill)	2100
32.1%	25.7%	14.3%	25.2%	22.4%	6.6%	11.1%	5.0%	--	NMF	Nil	Nil	Income Tax Rate	Nil
16.9%	14.8%	8.5%	7.8%	5.8%	8.0%	6.8%	7.2%	--	11.1%	10.0%	10.0%	AFUDC % to Net Profit	8.0%
51.8%	55.3%	45.2%	45.7%	44.1%	45.0%	41.8%	45.6%	53.6%	53.5%	53.5%	55.0%	Long-Term Debt Ratio	58.0%
44.3%	40.6%	46.2%	46.2%	47.2%	46.7%	49.2%	45.8%	38.3%	39.9%	40.5%	39.5%	Common Equity Ratio	37.5%
23861	24773	20422	21516	23216	24352	24362	25506	27284	33360	36500	39025	Total Capital (\$mill)	47200
24778	32116	30273	30455	32981	35085	37000	39050	41348	44285	46900	49800	Net Plant (\$mill)	57700
6.3%	6.0%	8.9%	7.3%	7.7%	7.1%	6.9%	7.3%	.1%	5.6%	5.5%	5.5%	Return on Total Cap'l	6.0%
10.0%	10.0%	14.2%	11.5%	11.9%	11.1%	10.0%	11.6%	NMF	9.5%	9.5%	10.0%	Return on Shr. Equity	10.5%
10.4%	10.5%	15.9%	12.5%	13.0%	12.0%	10.8%	12.7%	NMF	10.2%	10.5%	10.5%	Return on Com Equity E	11.0%
6.5%	6.3%	11.4%	8.1%	8.8%	7.2%	5.6%	6.6%	NMF	4.1%	4.0%	4.0%	Retained to Com Eq	5.0%
40%	43%	32%	40%	37%	44%	53%	52%	NMF	63%	65%	66%	All Div'ds to Net Prof	60%

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	+2	-4	-2.9
Avg. Indust. Use (MWH)	643	667	657
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	23508	23766	22009
Annual Load Factor (%)	48.8	48.0	49.6
% Change Customers (yr-end)	+7	+6	+5

**BUSINESS:** Edison International (formerly SCECorp) is a holding company for Southern California Edison Company (SCE), which supplies electricity to 5.1 mill. customers in a 50,000-sq.-mi. area in central, coastal, & southern CA (excl. Los Angeles & San Diego). Edison Energy is an energy svcs. co. Disc. Edison Mission Energy (independent power producer) in '12. Elec. rev. breakdown: residential, 39%; commercial, 43%; industrial, 4%; other, 14%. Generating sources: nuclear, 8%; gas, 7%; hydro, 5%; purchased, 80%. Fuel costs: 39% of revs. '19 reported depr. rate: 3.6%. Has 12,500 empl. Chairman: William P. Sullivan. Pres. & CEO: Pedro J. Pizarro. Inc.: CA. Address: 2244 Walnut Grove Ave., P.O. Box 976, Rosemead, CA 91770. Tel.: 626-302-2222. Web: www.edison.com.

**Edison International's utility subsidiary has a general rate case pending.** Southern California Edison filed for increases of \$1.109 billion (11.4%) for 2021, \$423 million for 2022, and \$514 million for 2023. The California Public Advocates proposed hikes of \$458 million in 2021, \$242 million in 2022, and \$250 million in 2023, and recommended the approval of roughly 90% of SCE's proposed capital spending. Even if an order doesn't come by yearend, any rate relief the utility receives will be retroactive to the start of 2021.

**Our 2020 earnings estimate is below the company's targeted range of \$4.32-\$4.62 a share for "core" earnings.** Edison International's guidance excludes charges the company books for the amortization expense stemming from a fund utilities contributed to in order to address the potentially huge liabilities associated with wildfires in California. This amounted to \$60 million after taxes in the March quarter. Note that the coronavirus should have little effect on the company's income because its revenues and volume are decoupled and it should be able to defer related costs for future recovery.

**The company has completed its financing plans for 2020.** Earlier this year, the parent and SCE issued \$2.7 billion of long-term debt. Any debt the utility issues subsequently will be for refinancing. Edison International also sold \$900 million of common stock (up from \$800 million previously expected), and stated that its equity needs will be "minimal" beyond this year. Because of these significant financing moves, we estimate only a modest increase in share net next year, despite the benefit of rate relief from the aforementioned general rate case.

**Wildfires in California continue to be an investment concern.** The company took a big reserve in the fourth quarter of 2018 and a much-smaller charge in the same period of 2019 for potential liabilities stemming from wildfire damage. Additional charges might well occur. At least the aforementioned fund should help meet costs associated with future wildfires.

**The stock's yield is about a percentage point above the utility average.** Total return potential to 2023-2025 is modest, but above average for the group.

*Paul E. Debbas, CFA July 24, 2020*

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	2463	2965	3672	3220	12320
2018	2564	2815	4269	3009	12657
2019	2824	2812	3741	2970	12347
2020	2790	2710	3700	2800	12000
2021	2800	2900	3900	3000	12600

Cal-endar	EARNINGS PER SHARE A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1.11	.85	1.43	1.12	4.51
2018	.82	.84	1.57	d4.49	d1.26
2019	.64	1.57	1.35	.45	3.98
2020	.50	1.30	1.45	.85	4.10
2021	.70	1.20	1.50	.85	4.25

Cal-endar	QUARTERLY DIVIDENDS PAID B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.48	.48	.48	.48	1.92
2017	.5425	.5425	.5425	.5425	2.17
2018	.605	.605	.605	.605	2.42
2019	.6125	.6125	.6125	.6125	2.45
2020	.6375	.6375			

(A) Dil. EPS. Excl. nonrec. gains (losses): '04, (\$2.12); '09, (.64c); '10, .54c; '11, (\$3.33); '13, (\$1.12); '15, (\$1.18); '17, (\$1.37); '18, (.15c); '19, (.21c); gains (loss) from disc. ops.: '12, (\$5.11); '13, 11c; '14, 57c; '15, 11c; '18, 10c. avail. (C) Incl. def'd charges. In '19: \$16.82/sh. '19 EPS don't sum due to chng. in shs. Next earnings report due late July. (B) Div'ds paid all'd on com. eq. in '20: 10.3%; earned on avg. com. eq., '19: 11.5%. Regulatory Climate: Avg. (D) In mill. (E) Rate base: net orig. cost. Rate all'd on com. eq. in '20: 10.3%; earned on avg. com. eq., '19: 11.5%. Regulatory Climate: Avg.

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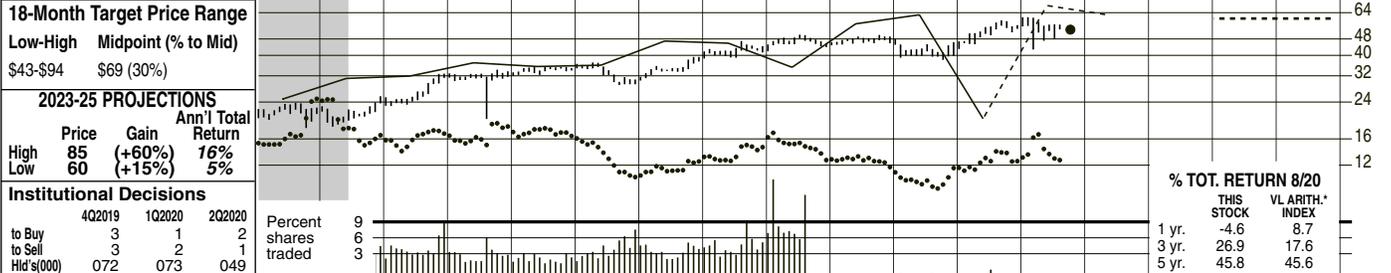
**Company's Financial Strength** B+  
**Stock's Price Stability** 75  
**Price Growth Persistence** 60  
**Earnings Predictability** 5

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# EMERA INC. TSE-EMA.TO

RECENT PRICE **53.12** P/E RATIO **22.5** (Trailing: 15.6 Median: 17.0) RELATIVE P/E RATIO **1.06** DIV'D YLD **4.6%** VALUE LINE **1213**

TIMELINESS <b>3</b> Lowered 10/4/19	High: 25.6	32.8	34.3	35.4	37.0	39.4	46.9	50.3	50.0	48.0	58.8	60.9							Target Price Range
SAFETY <b>2</b> Raised 12/23/16	Low: 18.3	23.0	20.0	32.1	28.9	30.4	38.7	42.0	44.7	38.1	42.9	42.7							2023 2024 2025
TECHNICAL <b>2</b> Lowered 6/12/20	<b>LEGENDS</b> — 9.0 x "Cash Flow" p sh ... Relative Price Strength Options: Yes Shaded area indicates recession																		
BETA .75 (1.00 = Market)																			



2023-25 PROJECTIONS																	© VALUE LINE PUB. LLC		23-25
High	Price	Gain	Ann'l Total														% TOT. RETURN 8/20		
Low	85	(+60%)	Return														THIS STOCK		
	60	(+15%)	16%														VL ARITH. INDEX		
			5%														1 yr. -4.6		8.7
																	3 yr. 26.9		17.6
																	5 yr. 45.8		45.6

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Revenues per sh <sup>E</sup>		29.50
10.42	10.61	10.51	12.02	11.87	12.75	13.55	16.81	15.72	16.78	20.67	18.95	20.36	27.21	27.87	25.20	24.20	24.50	"Cash Flow" per sh		8.15
2.38	2.52	2.65	2.98	2.75	3.45	3.54	4.11	3.93	4.00	5.20	5.09	3.90	6.29	6.95	2.22	7.70	6.90	Earnings per sh <sup>A</sup>		4.00
1.14	1.10	1.12	1.32	1.26	1.52	1.65	1.97	1.76	1.64	2.82	2.71	1.32	2.72	3.04	2.76	3.75	2.90	Div'ds Decl'd per sh <sup>C</sup>		2.76
.88	.89	.89	.90	.97	1.03	1.16	1.31	1.36	1.41	1.48	1.66	2.00	2.13	2.28	2.38	2.46	2.54	Cap'l Spending per sh		3.80
1.39	1.17	1.75	2.26	4.86	2.89	4.60	3.93	3.41	2.42	3.02	2.51	4.91	6.68	9.23	10.29	10.10	7.00	Book Value per sh <sup>B</sup>		44.95
12.28	12.41	12.69	12.20	13.78	13.31	14.16	11.80	12.60	15.68	18.60	23.71	28.55	27.89	31.24	31.08	41.90	42.25	Common Shs Outst'g <sup>D</sup>		262.00
108.87	110.10	110.93	111.47	112.21	112.98	114.62	122.83	130.98	132.89	143.78	147.21	210.02	228.78	234.12	242.48	247.00	250.00	Avg Ann'l P/E Ratio		18.0
15.9	17.2	18.0	15.7	17.2	14.0	16.1	16.2	19.4	20.1	12.3	15.5	35.2	17.3	13.8	19.0			Relative P/E Ratio		1.00
.84	.92	.97	.83	1.04	.93	1.02	1.02	1.23	1.13	.65	.78	1.85	.87	.75	1.02			Avg Ann'l Div'd Yield		3.8%
4.9%	4.7%	4.4%	4.3%	4.5%	4.8%	4.4%	4.1%	4.0%	4.3%	4.3%	4.0%	4.3%	4.5%	5.4%	4.5%			Bold figures are Value Line estimates		

CAPITAL STRUCTURE as of 6/30/20																	Revenues (\$mill)		7725	
Total Debt \$15698 mill. Due in 5 Yrs \$4496.0 mill.																	5975	6125	Operating Margin	37.0%
LT Debt \$13588 mill. LT Interest \$715.0 mill.																	925	950	Depreciation (\$mill)	1045
(Total int. coverage:2.2x)																	975	780	Net Profit (\$mill)	1095
(59% of Cap'l)																	28.0%	20.0%	Income Tax Rate	20.0%
Leases, Uncapitalized Annual rentals \$19.0 mill.																	12.5%	12.0%	Net Profit Margin	14.2%
Pension Assets-12/19 \$2593.0 mill																	92.2	191.6	Working Cap'l (\$mill)	400
Oblig. \$2822.0 mill																	3141.9	3273.5	Long-Term Debt (\$mill)	12800
Pfd Stock \$1004.0 mill. Pfd Div'ds \$45.0 mill.																	1773.6	1599.2	Shr. Equity (\$mill)	11075
Common Stock 246,440,000 shs.																	5.7%	6.9%	Return on Total Cap'l	6.0%
MARKET CAP: \$13.1 billion (Large Cap)																	10.9%	15.5%	Return on Shr. Equity	10.0%
CURRENT POSITION																	3.6%	5.8%	Retained to Com Eq	3.0%
(SMILL.)																	70%	66%	All Div'ds to Net Prof	68%
Cash Assets	316	222	285														BUSINESS: Emera Inc. is geographically diverse energy and services company. It invests in electricity generation, transmission, and distribution, as well as gas transportation and utility energy services. Also provides energy marketing, trading, and other energy-related management svcs. Has investments throughout North America, and in four Caribbean countries. Acquired TECO Energy		7/16. As of 12/31/19, served approx. 2,500,000 customers in Florida (45%), New Mexico (22%), Nova Scotia (22%), Maine, and the island of Barbados. Has about 7,500 employees. President and CEO: Scott Balfour. Chairman: Jackie Sheppard. Inc.: Nova Scotia, Canada. Address: 1223 Lower Water St., Halifax, Canada NS B3J 3S8. Telephone: (902) 428-6112. Internet: www.emera.com.	
Receivables	1140	1486	1325														Emera's second-quarter earnings came in lower than expected. Whereas we were looking for share net of \$0.58, the bottom line clocked in at \$0.23, down from \$0.43 reported the year before. The decline was due to a doubling of aftertax market-to-market losses (to \$45 million), the timing of the approval of preferred dividends, and a \$12 million tax benefit in 2019. On an adjusted basis, earnings were \$0.48 per share, versus \$0.54 last year, mainly due to asset sales, which reduced earnings by \$33 million combined.		remain on track. These include solar investments, the ongoing modernization of the Big Bend Power Station, and storm hardening. However, COVID-19's impact on the state's economy could result in sales volumes being flat to slightly lower for the year. Meanwhile, management expects volumes to be down at Nova Scotia Power and other electric utilities. We are trimming our 2020 share-earnings call by \$0.35, to \$3.75, largely to reflect the second-quarter shortfall. However, this still suggests a 35% gain over last year's tally. Meanwhile, we have taken a more conservative stance for 2021, reducing our estimate by \$0.15, to \$2.90.	
Inventory (Avg Cst)	474	467	474														On the plus side, the Florida Electric Utility business, the company's largest, continues to do well. Adjusted net income for the segment was up 17% for the June quarter, to \$146 million. The increase reflected customer growth, contributions from solar generation projects, and an increased mix of sales to residential customers. This helped to partially offset COVID-19-related declines at its Canadian Electric Utilities and Gas Utilities and Infrastructure segments		These shares remain an attractive choice for conservative accounts. The company's stock has bounced back strongly from the market's coronavirus-driven dive in mid-March. As such, the issue's 3- to 5-year price appreciation potential is below average. However, thanks to a lower risk profile (Safety 2: Above Average; Stock Price Stability score: 100 out of 100), it makes for an appealing holding on a total return basis.	
Other	902	311	234														We have lowered our share-net estimates for this year and next. Emera's Florida capital projects (\$1 billion in 2020)		Mario Ferro	
Current Assets	2832	2486	2318																September 18, 2020	
Accts Payable	1289	1118	996																	
Debt Due	1119	2038	2110																	
Other	2145	1010	948																	
Current Liab.	4553	4166	4054																	

ANNUAL RATES					Past 10 Yrs		Past 5 Yrs		Est'd '17-'19 to '23-'25	
Revenue	8.0%	8.0%	8.5%	1.5%						
"Cash Flow"	5.5%	5.5%	3.5%	3.0%						
Earnings	7.5%	7.5%	6.5%	6.0%						
Dividends	9.0%	10.0%	3.5%							
Book Value	8.5%	14.0%	3.0%							

Cal-endar	QUARTERLY REVENUES (\$ mill.) <sup>E</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1857	1469	1427	1473	6226
2018	1807	1423	1495	1799	6524
2019	1818	1378	1299	1616	6111
2020	1637	1169	1450	1719	5975
2021	1575	1300	1500	1750	6125

Cal-endar	EARNINGS PER SHARE <sup>AE</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1.46	.47	.38	.41	2.72
2018	1.18	.38	.50	.98	3.04
2019	1.32	.43	.23	.79	2.77
2020	2.14	.23	.64	.74	3.75
2021	.75	.65	.70	.80	2.90

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>CE</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.475	.475	.5225	.5225	2.00
2017	.5225	.5225	.5225	.565	2.13
2018	.565	.565	.565	.5875	2.28
2019	.5875	.5875	.5875	.613	2.38
2020	.6125	.6125	.6125		

(A) Diluted earnings. Excludes nonrecurring charge: 2017: \$1.47. Next earnings report due early November.	(B) Incl. intangibles. In 2019, \$6.4 bill., or \$26.39 per share.	(C) Common div. historically paid in the middle of Feb., May, August, and Nov.	(D) In millions.	(E) All data in Canadian dollars.	Company's Financial Strength	B+
					Stock's Price Stability	100
					Price Growth Persistence	40
					Earnings Predictability	55

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# ENTERGY CORP. NYSE-ETR

RECENT PRICE **99.14** P/E RATIO **19.6** (Trailing: 16.1; Median: 13.0) RELATIVE P/E RATIO **0.92** DIV'D YLD **3.8%** VALUE LINE

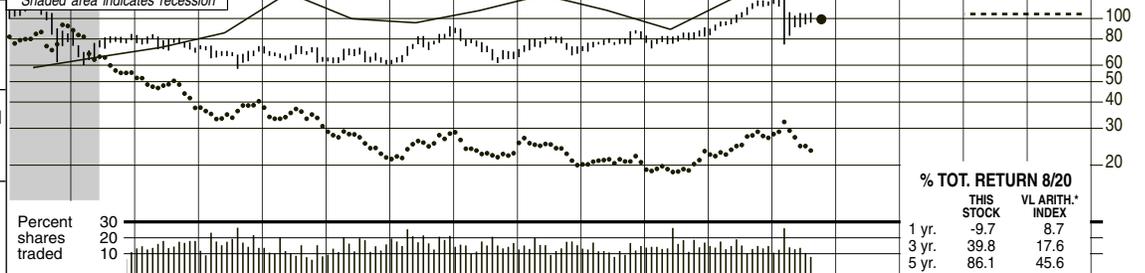
**TIMELINESS** 3 Raised 10/26/18  
**SAFETY** 2 Raised 12/13/19  
**TECHNICAL** 3 Raised 9/11/20  
**BETA** .95 (1.00 = Market)

High: 86.6 84.3 74.5 74.5 72.6 92.0 90.3 82.1 87.9 90.8 122.1 135.5  
 Low: 59.9 68.7 57.6 61.6 60.2 60.4 61.3 65.4 69.6 71.9 83.2 75.2

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$74-\$169 \$122 (25%)

**2023-25 PROJECTIONS**  
 High Price Gain Ann'l Total  
 Low 140 (+40%) 12%  
 105 (+5%) 6%

**Institutional Decisions**  
 4Q2019 10Q2020 20Q2020  
 to Buy 348 281 283  
 to Sell 242 349 315  
 Hld's(000) 176392 172217 173722



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
46.69	46.61	53.94	59.47	69.15	56.82	64.27	63.67	57.94	63.86	69.71	64.54	60.55	61.35	58.23	54.63	<b>51.00</b>	<b>50.50</b>	Revenues per sh	<b>50.50</b>
8.33	8.18	10.69	11.73	12.89	13.29	16.54	17.53	15.98	16.25	17.68	17.71	18.72	16.70	16.50	17.19	<b>16.50</b>	<b>18.10</b>	"Cash Flow" per sh	<b>21.25</b>
3.93	4.40	5.36	5.60	6.20	6.30	6.66	7.55	6.02	4.96	5.77	5.81	6.88	5.19	5.88	6.30	<b>5.00</b>	<b>5.95</b>	Earnings per sh <sup>A</sup>	<b>7.00</b>
1.89	2.16	2.16	2.58	3.00	3.00	3.24	3.32	3.32	3.32	3.32	3.34	3.42	3.50	3.58	3.66	<b>3.74</b>	<b>3.86</b>	Div'd Decl'd per sh <sup>B</sup> = †	<b>4.55</b>
6.51	6.72	9.44	10.29	13.92	12.99	13.33	15.21	18.18	15.73	14.82	16.79	17.28	22.07	22.45	21.72	<b>20.60</b>	<b>19.15</b>	Cap'l Spending per sh	<b>19.00</b>
38.26	35.71	40.45	40.71	42.07	45.54	47.53	50.81	51.73	54.00	55.83	51.89	45.12	44.28	46.78	51.34	<b>52.90</b>	<b>55.70</b>	Book Value per sh <sup>C</sup>	<b>64.00</b>
216.83	216.83	202.67	193.12	189.36	189.12	178.75	176.36	177.81	178.37	179.24	178.39	179.13	180.52	189.06	199.15	<b>201.00</b>	<b>204.00</b>	Common Shs Outst'g <sup>D</sup>	<b>210.00</b>
15.1	16.3	14.3	19.3	16.6	12.0	11.6	9.1	11.2	13.2	12.9	12.5	10.9	15.0	13.8	16.5	<b>16.50</b>	<b>18.10</b>	Avg Ann'l P/E Ratio	<b>17.5</b>
.80	.87	.77	1.02	1.00	.80	.74	.57	.71	.74	.68	.63	.57	.75	.75	.88	<b>.88</b>	<b>.88</b>	Relative P/E Ratio	<b>.95</b>
3.2%	3.0%	2.8%	2.4%	2.9%	4.0%	4.2%	4.9%	4.9%	5.1%	4.5%	4.6%	4.6%	4.5%	4.4%	3.5%	<b>3.5%</b>	<b>3.5%</b>	Avg Ann'l Div'd Yield	<b>3.7%</b>

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$21430 mill. Due in 5 Yrs \$8321.8 mill.  
 LT Debt \$18278 mill. LT Interest \$800.0 mill.  
 Incl. \$231.9 mill. of securitization bonds.  
 (LT interest earned: 1.9x)  
**Leases, Uncapitalized** Annual rentals \$62.1 mill.  
**Pension Assets-12/19** \$6271.2 mill.  
**Oblig** \$8406.2 mill.  
**Pfd Stock** \$254.4 mill. Pfd Div'd \$18.3 mill.  
 200,000 shs. 6.25%-7.5%. \$100 par; 250,000 shs.  
 8.75%, 1.4 mill. shs. 5.375%; all cum., without sinking fund.  
**Common Stock** 200,211,323 shs. as of 7/31/20  
**MARKET CAP: \$20 billion (Large Cap)**

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	+2	+4.1	-1.4
Avg. Indust. Use (MWH)	1034	946	1070
Avg. Indust. Revs. per KWH(c)	5.41	5.16	5.24
Capacity at Peak (Mw)	24279	23121	23887
Peak Load, Summer (Mw)	21671	21587	21598
Annual Load Factor (%)	62	65	64
% Change Customers (yr-end)	+6	+6	+8

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 of change (per sh)

	10 Yrs.	5 Yrs.	Est'd '17-'19
Revenues	-5%	-2.0%	-2.5%
"Cash Flow"	3.0%	-	4.0%
Earnings	-5%	.5%	3.0%
Dividends	2.5%	1.5%	4.0%
Book Value	1.0%	-2.5%	5.0%

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	2588	2618	3244	2624	11074
2018	2724	2669	3104	2512	11009
2019	2610	2666	3141	2462	10879
2020	2427	2413	<b>3010</b>	<b>2400</b>	<b>10250</b>
2021	<b>2600</b>	<b>2500</b>	<b>2900</b>	<b>2300</b>	<b>10300</b>

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.46	2.27	2.21	.25	5.19
2018	.73	1.34	3.42	.39	5.88
2019	1.32	1.22	1.82	1.94	6.30
2020	.59	1.79	<b>1.95</b>	<b>.67</b>	<b>5.00</b>
2021	<b>1.15</b>	<b>1.50</b>	<b>2.60</b>	<b>.70</b>	<b>5.95</b>

**QUARTERLY DIVIDENDS PAID <sup>B</sup> = †**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.85	.85	.85	.87	3.42
2017	.87	.87	.87	.89	3.50
2018	.89	.89	.89	.91	3.58
2019	.91	.91	.91	.93	3.66
2020	.93	.93	.93		

**BUSINESS:** Entergy Corporation supplies electricity to 2.9 million customers through subsidiaries in Arkansas, Louisiana, Mississippi, Texas, and New Orleans (regulated separately from Louisiana). Distributes gas to 202,000 customers in Louisiana. Has a nonutility subsidiary that owns four nuclear units (two no longer operating). Electric revenue breakdown: residential, 38%; commercial, 26%; industrial, 27%; other, 9%. Generating sources: gas, 40%; nuclear, 28%; coal, 6%; purchased, 26%. Fuel costs: 30% of revenues. '19 reported depreciation rate: 2.8%. Has 13,600 employees. Chairman & CEO: Leo P. Denault. Incorporated: Delaware. Address: 639 Loyola Avenue, P.O. Box 61000, New Orleans, Louisiana 70161. Telephone: 504-576-4000. Internet: www.entergy.com.

**Entergy continues to exit most of its nonregulated power-generating activities.** Nonregulated nuclear units have not fared well for the past several years because of unfavorable conditions in the power markets, so the company has gradually been shutting and selling these facilities. Earlier this year, Entergy shut Indian Point Unit 2 in New York, and will close Unit 3 in 2021. In 2022, the company will shut the Palisades plant in Michigan. We are including the results of this business in our earnings presentation, even though Entergy excludes this from its share-net targets of \$5.45-\$5.75 in 2020 and \$5.80-\$6.10 in 2021. Entergy estimates that this business will lose \$0.55 a share this year, so our 2020 profit estimate is \$5.00 a share. Note that the company has cut operating and maintenance expenses by \$100 million to offset the effects of the weak economy on commercial and industrial kilowatt-hour sales.

**Entergy faces a regulatory risk.** Its System Energy subsidiary, which has ownership and leasehold interests in the Grand Gulf nuclear plant, sells power to Entergy's utilities. System Energy is

facing challenges by state regulatory commissions to its allowed return on equity, which is set by the Federal Energy Regulatory Commission. Our estimates and projections are based on no change to the allowed ROE, although Entergy has already taken a reserve for a possible refund. When this matter will be resolved is unknown.

**We expect a dividend increase at the board meeting in the fourth quarter.** We think the directors will hike the quarterly payout two cents a share (2.2%), the same as in recent years. This is less than half the norm for utilities, but we expect growth to accelerate beginning in 2021.

**Entergy's service area was hit by a hurricane in late August.** As we went to press, the amount of the damage was still being tallied. It is likely that the company will defer most of the costs for future recovery.

**Entergy stock's yield is about average for a utility.** The equity offers solid total return potential for the next 18 months, but unimpressive prospects for the 3- to 5-year period.  
 Paul E. Debbas, CFA September 11, 2020

(A) Diluted EPS. Excl. nonrec. losses: '05, 21c; '12, \$1.26; '13, \$1.14; '14, 56c; '15, \$6.99; '16, \$10.14; '17, \$2.91; '18, \$1.25. Next earnings report due late Oct. (B) Div'ds historically paid in early Mar., June, Sept., & Dec. = Div'd reinvestment plan avail. † Shareholder investment plan avail. (C) Incl. def'd charges. In '19: \$29.67/sh. (D) In millions. (E) Rate base: Net original cost. Allowed ROE (blended): 9.95%; earned on avg. com. eq., '19: 13.0%. Regulatory Climate: Average.

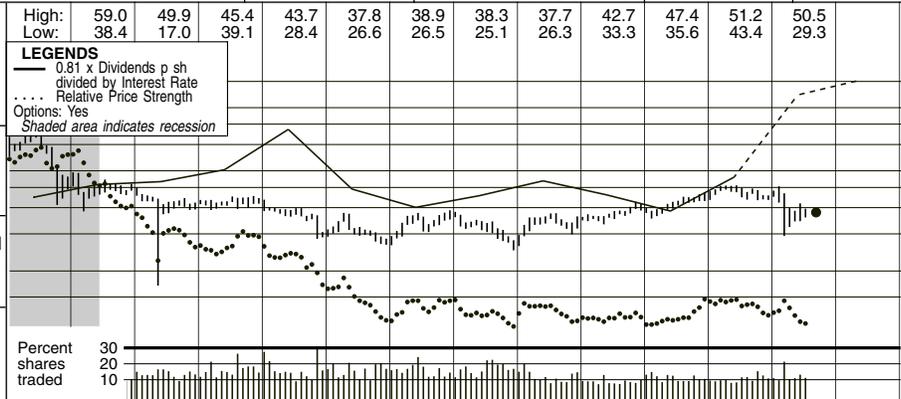
**Company's Financial Strength** B++  
**Stock's Price Stability** 90  
**Price Growth Persistence** 25  
**Earnings Predictability** 60

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# EXELON CORP. NDQ-EXC

RECENT PRICE **37.99** P/E RATIO **12.9** (Trailing: 13.1; Median: 15.0) RELATIVE P/E RATIO **0.60** DIV'D YLD **4.1%** VALUE LINE

**TIMELINESS** 3 Lowered 6/7/19  
**SAFETY** 3 Lowered 5/15/20  
**TECHNICAL** 3 Raised 8/14/20  
**BETA** .95 (1.00 = Market)



**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$29-\$61 \$45 (20%)

**2023-25 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	60	(+60%)	15%
Low	40	(+5%)	6%

**Institutional Decisions**

	3Q2019	4Q2019	1Q2020
to Buy	423	428	361
to Sell	451	478	493
Hlds(000)	767278	768153	765293

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
21.85	23.05	23.37	28.62	28.65	26.25	28.17	28.53	27.48	29.03	31.90	32.01	33.94	34.81	37.17	35.39	<b>32.80</b>	<b>34.75</b>	Revenues per sh	<b>40.50</b>
5.68	6.19	6.71	7.43	7.64	8.25	8.32	8.32	6.61	6.72	6.61	6.80	8.37	8.24	8.96	<b>8.90</b>	<b>9.50</b>	"Cash Flow" per sh	<b>11.00</b>	
2.75	3.21	3.50	4.03	4.10	4.29	3.87	3.75	1.92	2.31	2.10	2.54	1.80	2.78	2.07	3.01	<b>2.70</b>	<b>3.00</b>	Earnings per sh <sup>A</sup>	<b>3.50</b>
1.26	1.60	1.64	1.82	2.05	2.10	2.10	2.10	2.10	1.46	1.24	1.24	1.26	1.31	1.38	1.45	<b>1.53</b>	<b>1.61</b>	Div'd Decl'd per sh <sup>B</sup>	<b>1.90</b>
2.89	3.25	3.61	4.05	4.74	4.96	5.03	6.09	6.77	6.29	7.07	8.29	9.26	7.87	7.84	7.45	<b>8.30</b>	<b>7.25</b>	Cap'l Spending per sh	<b>7.50</b>
14.19	13.69	14.89	15.34	16.78	19.16	20.49	21.68	25.07	26.52	26.29	28.04	27.96	30.99	31.77	33.12	<b>34.10</b>	<b>35.55</b>	Book Value per sh <sup>C</sup>	<b>40.25</b>
664.19	666.37	669.86	660.88	658.15	659.76	661.85	663.37	854.78	857.29	859.83	919.92	924.04	963.34	968.19	973.00	<b>976.00</b>	<b>979.00</b>	Common Shs Outst'g <sup>D</sup>	<b>990.00</b>
13.0	15.4	16.5	18.2	18.0	11.5	11.0	11.3	19.1	13.4	16.0	12.6	18.7	13.4	20.1	15.7	<b>14.5</b>	<b>14.5</b>	Avg Ann'l P/E Ratio	<b>14.5</b>
.69	.82	.89	.97	1.08	.77	.70	.71	1.22	.75	.84	.63	.98	.67	1.09	.84	<b>.80</b>	<b>.80</b>	Relative P/E Ratio	<b>.80</b>
3.5%	3.2%	2.8%	2.5%	2.8%	4.3%	4.9%	5.0%	5.7%	4.7%	3.7%	3.9%	3.7%	3.5%	3.3%	3.1%	<b>3.8%</b>	<b>3.8%</b>	Avg Ann'l Div'd Yield	<b>3.8%</b>

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$40025 mill. Due in 5 Yrs \$13745 mill.  
 LT Debt \$35198 mill. LT Interest \$1478 mill.  
 Includes \$390 mill. nonrecourse transition bonds.  
 (LT interest earned: 3.3x)  
 Leases, Uncapitalized Annual rentals \$287 mill.

**Pension Assets-12/19** \$18590 mill.  
 Oblig \$22868 mill.

**Pfd Stock** None

**Common Stock** 974,407,848 shs.

**MARKET CAP: \$37 billion (Large Cap)**

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
18644	18924	23489	24888	27429	29447	31360	33531	35985	34438	<b>32000</b>	<b>34000</b>	Revenues (\$mill)	<b>40000</b>						
2567.0	2499.0	1579.0	1999.0	1826.0	2282.0	1677.0	2636.0	2010.0	2936.0	<b>2615</b>	<b>2925</b>	Net Profit (\$mill)	<b>3510</b>						
39.2%	36.8%	32.4%	36.5%	27.2%	32.2%	38.5%	34.2%	5.4%	19.4%	<b>19.5%</b>	<b>19.5%</b>	Income Tax Rate	<b>19.5%</b>						
2.1%	3.0%	5.8%	4.5%	5.5%	5.4%	12.3%	6.5%	7.0%	5.3%	<b>5.0%</b>	<b>5.0%</b>	AFUDC % to Net Profit	<b>4.0%</b>						
46.8%	45.7%	45.8%	44.4%	46.7%	48.3%	55.5%	52.2%	52.8%	49.6%	<b>52.0%</b>	<b>50.5%</b>	Long-Term Debt Ratio	<b>50.0%</b>						
52.9%	54.0%	53.5%	55.2%	52.8%	51.3%	44.5%	47.8%	47.2%	50.4%	<b>48.0%</b>	<b>49.5%</b>	Common Equity Ratio	<b>50.0%</b>						
25651	26661	40057	41196	42811	50272	58053	62422	65229	63943	<b>68075</b>	<b>70000</b>	Total Capital (\$mill)	<b>80300</b>						
29941	32570	45186	47330	52087	57439	71555	74202	76707	80233	<b>82800</b>	<b>84025</b>	Net Plant (\$mill)	<b>86400</b>						
11.4%	10.6%	5.1%	5.9%	5.3%	5.5%	4.1%	5.3%	4.2%	5.7%	<b>5.0%</b>	<b>5.5%</b>	Return on Total Cap'l	<b>5.5%</b>						
18.8%	17.3%	7.3%	8.7%	8.0%	8.8%	6.5%	8.8%	6.5%	9.1%	<b>8.0%</b>	<b>8.5%</b>	Return on Shr. Equity	<b>9.0%</b>						
18.9%	17.3%	7.3%	8.7%	8.0%	8.8%	6.5%	8.8%	6.5%	9.1%	<b>8.0%</b>	<b>8.5%</b>	Return on Com Equity <sup>E</sup>	<b>9.0%</b>						
8.7%	7.7%	NMF	3.2%	3.3%	4.5%	1.9%	4.7%	2.2%	4.7%	<b>3.5%</b>	<b>4.0%</b>	Retained to Com Eq	<b>4.0%</b>						
54%	56%	109%	63%	59%	49%	70%	47%	66%	48%	<b>51%</b>	<b>49%</b>	All Div'ds to Net Prof	<b>52%</b>						

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	-3.0	NA	NA
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NMF	NMF	NMF
Capacity at Peak (Mw)	NA	NA	NA
Peak Load (Mw)	NA	NA	NA
Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+9	NA	NA

Fixed Charge Cov. (%) 282 236 257

**ANNUAL RATES** Past Past Est'd '17-'19  
 of change (per sh) 10 Yrs. 5 Yrs. to '23-'25

	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19
Revenues	2.5%	4.0%	2.0%
"Cash Flow"	1.0%	5.0%	4.5%
Earnings	-4.5%	4.5%	5.0%
Dividends	-3.5%	-3.0%	5.5%
Book Value	6.5%	4.0%	4.0%

**BUSINESS:** Exelon Corporation is a holding company for Commonwealth Edison, PECO Energy, Baltimore Gas and Electric, Pepco, Delmarva Power, & Atlantic City Electric. Has 8.9 mill. elec., 1.3 mill. gas customers. Has nonregulated generating & energy-marketing ops. Acq'd Constellation Energy 3/12; Pepco Holdings 3/16. Elec. rev. breakdown: res'l, 54%; small comm'l & ind'l, 16%;

large comm'l & ind'l, 17%; other, 13%. Generating sources: nuclear, 65%; other, 10%; purch., 25%. Fuel costs: 45% of revs. '19 depr. rates: 2.8%-7.4% elec., 2.0% gas. Has 32,700 empls. Chairman: Mayo A. Shattuck III. Pres. & CEO: Christopher M. Crane. Inc.: PA. Address: 10 S. Dearborn St., P.O. Box 805379, Chicago, IL 60680-5379. Tel.: 312-394-7398. Internet: www.exeloncorp.com.

**Exelon's Commonwealth Edison unit reached a deal with the U.S. Attorney's Office to resolve an investigation of lobbying activities in Illinois.** As part of a deferred prosecution agreement, ComEd will pay a \$200 million fine as a result of a bribery allegation involving the state government. This resolved some uncertainty that was overhanging the stock, although investors should note that an SEC investigation is ongoing. We excluded the fine from our earnings presentation as a nonrecurring item.

**This has been a difficult year for Exelon for other reasons.** Unusually mild winter weather hurt the company's earnings — not just at the utility, but at the nonutility operations as well. The coronavirus will have just a modest negative effect on the bottom line because 70% of Exelon's utility businesses operate under regulatory mechanisms that decouple revenues and volume. Management has cut capital and operating costs in response. All told, we think earnings will fall well short of the 2019 tally. Note that our estimate is well below Exelon's guidance of \$2.80-\$3.10 a share (reduced from the initial

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	8757	7623	8769	8382	33531
2018	9693	8076	9403	8813	35985
2019	9477	7689	8929	8343	34438
2020	8747	7322	8231	7700	32000
2021	<b>9450</b>	<b>7500</b>	<b>8850</b>	<b>8200</b>	<b>34000</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.83	.44	.95	.56	2.78
2018	.60	.56	.76	.16	2.07
2019	.93	.50	.79	.79	3.01
2020	.60	.73	.75	.62	2.70
2021	<b>.85</b>	<b>.60</b>	<b>.90</b>	<b>.65</b>	<b>3.00</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.31	.318	.318	.318	1.26
2017	.3275	.3275	.3275	.3275	1.31
2018	.345	.345	.345	.345	1.38
2019	.3625	.3625	.3625	.3625	1.45
2020	.3825	.3825			

\$3.00-\$3.30) because we include some items that the company excludes from its definition of operating earnings. As usual, some rate cases are pending. In Maryland, Baltimore G&E is seeking multiyear increases totaling \$235.0 million, based on a 10.1% return on equity. An order is expected in December. In Washington, D.C., Pepco is seeking multi-year increases totaling \$135.9 million, based on a 9.7% ROE. A ruling is expected in November or December. In Delaware, Delmarva filed for electric and gas hikes totaling \$32.8 million, based on a 10.3% ROE. Decisions are due in 2021. Rate relief and a better economy should produce higher profits in 2021. We figure share net will rebound to about the 2019 level.

**We suggest investors look elsewhere.** Exelon's nonregulated businesses are operating in a tough environment. The dividend yield, just slightly above the industry average, does not offer enough compensation for the risks. The stock price has declined 17% this year, in line with many electric companies. Total return potential is just modest to 2023-2025.

Paul E. Debbas, CFA August 14, 2020

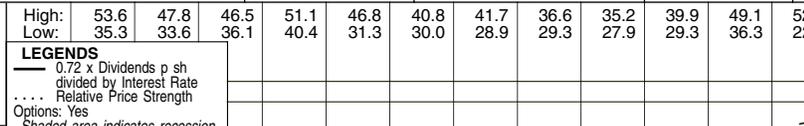
large comm'l & ind'l, 17%; other, 13%. Generating sources: nuclear, 65%; other, 10%; purch., 25%. Fuel costs: 45% of revs. '19 depr. rates: 2.8%-7.4% elec., 2.0% gas. Has 32,700 empls. Chairman: Mayo A. Shattuck III. Pres. & CEO: Christopher M. Crane. Inc.: PA. Address: 10 S. Dearborn St., P.O. Box 805379, Chicago, IL 60680-5379. Tel.: 312-394-7398. Internet: www.exeloncorp.com.

(A) Diluted eps. Excl. nonrec. gain (losses): '05, (\$1.85); '06, (\$1.15); '09, (20c); '12, (50c); '13, (31c); '14, 23c; '16, (58c); '17, \$1.19; 2Q '20, (20c). '18 EPS don't sum due to rounding. Next earnings report due late Oct. (B) Div's historically paid in early Mar., June, Sept., & Dec. (C) Div'd reinv. plan avail. (D) Incl. deferred charges. In '19: \$15.43/sh. (E) Rate all'd on com. eq. in IL in '15: 9.25%; in MD in '16: 9.75% elec., 9.65% gas; in NJ in '16: 9.75%; earned on avg. com. eq., '19: 9.3%. Reg. Climate: PA, NJ Avg.; IL, MD, Below Avg.

# FIRSTENERGY NYSE-FE

RECENT PRICE **29.19** P/E RATIO **11.2** (Trailing: 24.7; Median: 19.0) RELATIVE P/E RATIO **0.52** DIV'D YLD **5.4%** VALUE LINE

**TIMELINESS** 3 Lowered 6/7/19  
**SAFETY** 3 Lowered 8/14/20  
**TECHNICAL** 4 Lowered 8/14/20  
**BETA** .85 (1.00 = Market)



Target Price Range	2023	2024	2025
200			
160			
100			
80			
60			
50			
40			
30			
20			

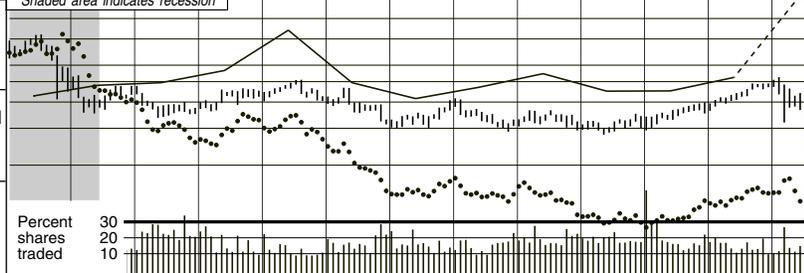
**18-Month Target Price Range**  
**Low-High** Midpoint (% to Mid)  
 \$32-\$67 \$50 (70%)

**2023-25 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	60	(+105%)	23%
Low	40	(+35%)	13%

**Institutional Decisions**

	3Q2019	4Q2019	1Q2020
to Buy	301	333	292
to Sell	279	264	360
Hlds(000)	495950	465497	458808



**% TOT. RETURN 7/20**

	THIS STOCK	VL ARITH. INDEX
1 yr.	-32.3	-1.7
3 yr.	1.3	9.9
5 yr.	4.1	31.7

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
37.76	36.35	36.03	42.00	44.70	41.70	43.76	38.87	36.57	35.60	35.74	35.48	32.92	31.49	22.00	20.41	20.25	21.05	Revenues per sh	22.50
7.60	7.55	7.22	8.34	9.04	8.80	8.50	5.75	6.05	6.30	4.55	6.33	6.53	6.54	3.98	3.94	3.90	4.95	"Cash Flow" per sh	5.50
2.77	2.84	3.82	4.22	4.38	3.32	3.25	1.88	2.13	2.97	.85	2.00	2.10	2.73	1.33	1.84	1.95	2.75	Earnings per sh A	3.25
1.91	1.71	1.85	2.05	2.20	2.20	2.20	2.20	2.20	1.65	1.44	1.44	1.44	1.44	1.82	1.53	1.56	1.60	Div'd Decl'd per sh B	1.90
2.57	3.66	4.12	5.36	9.47	7.23	6.44	5.45	7.09	6.90	8.42	6.83	6.93	6.38	5.23	4.93	5.50	5.75	Cap'l Spending per sh	5.50
26.04	27.86	28.30	29.45	27.17	28.08	28.03	31.75	31.29	30.32	29.49	29.33	14.11	8.81	13.17	12.90	13.50	14.75	Book Value per sh C	20.50
329.84	329.84	319.21	304.84	304.84	304.84	304.84	418.22	418.22	418.63	421.10	423.56	442.34	445.33	511.92	540.65	543.00	546.00	Common Shs Outst'g D	580.00
14.1	16.1	14.2	15.6	15.6	13.0	11.7	22.4	21.1	13.1	NMF	17.0	15.9	11.4	26.5	23.8	23.8	23.8	Avg Ann'l P/E Ratio	15.5
.74	.86	.77	.83	.94	.87	.74	1.41	1.34	.74	NMF	.86	.83	.57	1.43	1.28	1.43	1.28	Relative P/E Ratio	.85
4.9%	3.7%	3.4%	3.1%	3.2%	5.1%	5.8%	5.2%	4.9%	4.3%	4.3%	4.2%	4.3%	4.6%	5.2%	3.5%	3.5%	3.5%	Avg Ann'l Div'd Yield	3.8%

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$21952 mill. Due in 5 Yrs \$5922 mill.  
 LT Debt \$20821 mill. LT Interest \$944 mill.  
 Incl. \$40 mill. capitalized leases.  
 (LT interest earned: 2.1x)  
 Leases, Uncapitalized Annual rentals \$40 mill.

**Pension Assets-12/19** \$8395 mill. Oblig \$11050 mill.

**Pfd Stock** None

**Common Stock** 541,753,695 shs.

**MARKET CAP: \$16 billion (Large Cap)**

13339	16258	15294	14903	15049	15029	14562	14022	11261	11035	11000	11500	Revenues (\$mill)	13000
991.0	752.0	891.0	1245.0	356.0	844.0	892.0	1213.0	726.0	995.0	1060	1515	Net Profit (\$mill)	1810
38.6%	41.3%	41.1%	36.1%	5.6%	35.7%	37.8%	37.2%	32.4%	19.0%	22.5%	22.5%	Income Tax Rate	22.5%
16.6%	9.3%	8.1%	6.0%	33.1%	13.9%	6.5%	6.5%	9.0%	7.1%	7.0%	5.0%	AFUDC % to Net Profit	4.0%
59.5%	54.2%	53.7%	55.5%	60.7%	60.7%	74.5%	84.3%	72.3%	73.8%	75.0%	72.5%	Long-Term Debt Ratio	66.0%
40.5%	45.8%	46.3%	44.5%	39.3%	39.3%	25.5%	15.7%	27.4%	26.2%	25.0%	27.5%	Common Equity Ratio	34.0%
21124	28996	28263	28523	31596	31613	24433	25040	24565	26593	29050	29525	Total Capital (\$mill)	35000
19788	30337	32903	33252	35783	37214	29387	28879	29911	31650	33650	35650	Net Plant (\$mill)	41200
6.3%	4.0%	4.9%	6.0%	2.7%	4.3%	5.7%	7.0%	4.9%	5.4%	5.5%	7.0%	Return on Total Cap'l	6.5%
11.6%	5.7%	6.8%	9.8%	2.9%	6.8%	14.3%	30.9%	10.7%	14.3%	14.5%	19.0%	Return on Shr. Equity	15.5%
11.6%	5.7%	6.8%	9.8%	2.9%	6.8%	14.3%	30.9%	9.7%	14.2%	14.5%	19.0%	Return on Com Equity E	15.5%
3.8%	NMF	NMF	2.6%	NMF	1.9%	4.5%	14.6%	NMF	2.5%	3.0%	8.0%	Retained to Com Eq	6.0%
68%	117%	103%	74%	NMF	72%	68%	53%	108%	82%	80%	58%	All Div'ds to Net Prof	60%

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	2.1	+4.2	2.7
Avg. Indust. Use (MWH)	NMF	NMF	NMF
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+5	+4	+3

Fixed Charge Cov. (%) 249 199 249

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 of change (per sh)

Revenues	-5.5%	-7.5%	-1.5%
"Cash Flow"	-6.0%	-3.0%	2.0%
Earnings	-7.0%	-	8.5%
Dividends	-3.0%	-2.0%	3.0%
Book Value	-8.5%	-17.5%	10.0%

**BUSINESS:** FirstEnergy Corp. is a holding company for Ohio Edison, Pennsylvania Power, Cleveland Electric, Toledo Edison, Metropolitan Edison, Penelec, Jersey Central Power & Light, West Penn Power, Potomac Edison, & Mon Power. Provides electric service to 6.1 million customers in OH, PA, NJ, WV, MD, & NY. Acq'd Allegheny Energy 2/11. Electric revenue breakdown: residential, 61%; commercial, 25%; industrial, 13%; other, 1%. Purchases most of its power. Fuel costs: 31% of revenues. '19 reported deprec. rate: 2.7%. Has 12,300 employees. Chairman: George M. Smart. CEO: Charles E. Jones. President: Steven E. Strah. Incorporated: Ohio. Address: 76 South Main Street, Akron, Ohio 44308-1890. Tel.: 800-736-3402. Internet: www.firstenergycorp.com.

**This matter has far overshadowed the company's performance this year.** Although the second-quarter comparison was negative, that was understandable in view of the coronavirus-related expenses. (First-quarter results were depressed by a \$0.59-a-share actuarial charge related to the company's pension plan.) In fact, we raised our 2020 share-earnings estimate by a dime, to \$1.95. With a more-typical March-period tally in 2021, the bottom line will probably be much improved. FirstEnergy should benefit from rate relief and capital spending for electric transmission.

**Jersey Central Power & Light has a rate case pending.** The utility is seeking an increase of \$182 million (7.6%), based on a 10.15% return on equity and a 52.8% common-equity ratio. When an order will come is unknown. The utility is optimistic that it will reach a settlement.

**This stock is suitable only for aggressive accounts stressing income.** Other investors should steer clear due to the legal uncertainties. This makes the equity more volatile than its high Price Stability Index suggests.

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	3557	3309	3714	3442	14022
2018	2862	2625	3064	2710	11261
2019	2883	2516	2963	2673	11035
2020	2709	2522	3069	2700	11000
2021	2900	2700	3100	2800	11500

**EARNINGS PER SHARE A**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.71	.59	.95	.47	2.73
2018	.01	.27	.66	.34	1.33
2019	.66	.63	.75	d.20	1.84
2020	.05	.57	.78	.55	1.95
2021	.70	.70	.80	.55	2.75

**QUARTERLY DIVIDENDS PAID B**

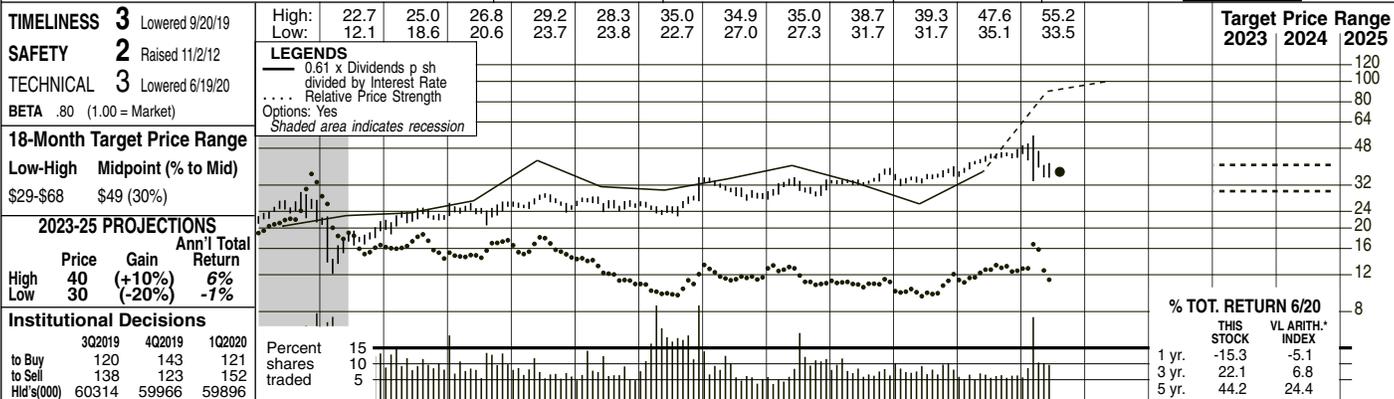
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.36	.36	.36	.36	1.44
2017	.36	.36	.36	.36	1.44
2018	.36	.36	.36	.36	1.44
2019	.38	.38	.38	.38	1.52
2020	.39	.39			

**FirstEnergy's stock price plummeted after five people, including the speaker of the Ohio House of Representatives, were arrested on federal bribery charges.** FirstEnergy has not been charged, nor were any of its employees arrested. However, the federal government is investigating the company's role in the alleged bribery, which was intended to get legislation passed that would benefit nuclear assets owned by a former FirstEnergy subsidiary. FirstEnergy said it intends to cooperate fully with the investigation, and its chief executive officer said, "I believe that FirstEnergy acted ethically in this matter." The market does not like such uncertainty, so the stock price sunk more than 25%, from above \$40 to below \$30. For the full year, the quotation is down 40%. Following the decline, FirstEnergy stock has a dividend yield that is more than a percentage point above the utility average. We had expected the board of directors to declare a one-cent increase in the quarterly dividend in the fourth quarter, payable in the first quarter of 2021, but whether this will occur is now questionable.

**This stock is suitable only for aggressive accounts stressing income.** Other investors should steer clear due to the legal uncertainties. This makes the equity more volatile than its high Price Stability Index suggests.

*Paul E. Debbas, CFA August 14, 2020*

(A) Dil. EPS. Excl. nonrec. losses: '13, \$2.07; '14, 17c; '15, 63c; '16, \$16.59; '17, \$6.61; gains (loss) from disc. ops.: '14, 20c; '18, 66c; '19, (17c); '20, 9c. '17, '18 EPS don't sum due to rounding or chg. in shs. Next egs. due late Oct. (B) Div'ds pd. early Mar., June, Sept., & Dec. 5 from disc. ops.: '14, 20c; '18, 66c; reinv. avail. (C) Incl. intang. In '19: \$10.57/sh. (D) In mill. (E) Rate base: Depr. orig. cost. Rates all'd on com. eq.: 9.75%-11.7%; earned avg. com. eq., '19: 14.0%. Reg. Climate: OH Above Avg.; PA, NJ Avg.; MD, WV Below Avg.	Company's Financial Strength	B+
	Stock's Price Stability	95
	Price Growth Persistence	15
	Earnings Predictability	40



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
23.85	27.36	30.21	30.40	35.56	24.96	28.14	33.76	34.46	31.98	31.59	24.22	21.92	23.49	26.28	26.38	<b>26.35</b>	<b>27.05</b>	Revenues per sh	<b>29.00</b>
3.09	3.22	3.19	3.01	2.72	2.59	2.88	3.18	3.28	3.22	3.41	3.31	4.17	3.68	4.20	4.55	<b>4.30</b>	<b>4.55</b>	"Cash Flow" per sh	<b>5.00</b>
1.36	1.46	1.33	1.11	1.07	.91	1.21	1.44	1.67	1.62	1.64	1.50	2.29	1.64	1.85	1.99	<b>1.65</b>	<b>1.80</b>	Earnings per sh <sup>A</sup>	<b>2.00</b>
1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.28	<b>1.32</b>	<b>1.32</b>	Div'd Decl'd per sh <sup>B</sup>	<b>1.40</b>
2.66	2.76	2.58	2.62	3.12	3.29	1.92	2.45	3.32	3.49	3.31	3.39	3.04	4.55	4.94	4.20	<b>4.10</b>	<b>4.30</b>	Cap'l Spending per sh	<b>4.50</b>
15.01	15.02	13.44	15.29	15.35	15.58	15.67	15.95	16.28	17.06	17.47	17.94	19.03	19.28	19.86	20.93	<b>21.45</b>	<b>22.10</b>	Book Value per sh <sup>C</sup>	<b>24.50</b>
80.69	80.98	81.46	83.43	90.52	92.52	94.69	96.04	97.93	101.26	102.57	107.46	108.58	108.79	108.88	108.97	<b>110.00</b>	<b>111.00</b>	Common Shs Outst'g <sup>D</sup>	<b>114.00</b>
19.2	18.3	20.3	21.6	23.2	19.8	18.6	17.1	15.8	16.2	15.9	20.4	13.6	20.7	18.9	21.3	<b>18.5</b>	<b>18.5</b>	Avg Ann'l P/E Ratio	<b>18.5</b>
1.01	.97	1.10	1.15	1.40	1.32	1.18	1.07	1.01	.91	.84	1.03	.71	1.04	1.02	1.15	<b>1.02</b>	<b>1.15</b>	Relative P/E Ratio	<b>1.05</b>
4.8%	4.6%	4.6%	5.2%	5.0%	6.9%	5.5%	5.0%	4.7%	4.7%	4.8%	4.1%	4.0%	3.7%	3.5%	3.0%	<b>3.5%</b>	<b>3.0%</b>	Avg Ann'l Div'd Yield	<b>3.8%</b>

CAPITAL STRUCTURE as of 3/31/20		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Debt \$2168.0 mill. Due in 5 Yrs \$627.9 mill.		2665.0	3242.3	3375.0	3238.5	3239.5	2603.0	2380.7	2555.6	2860.8	2874.6	<b>2900</b>	<b>3000</b>	Revenues (\$mill)		<b>3300</b>			
LT Debt \$2054.1 mill. LT Interest \$95.5 mill.		115.4	140.1	164.9	163.4	170.2	161.8	250.1	180.6	203.7	219.8	<b>185</b>	<b>205</b>	Net Profit (\$mill)		<b>235</b>			
Incl. \$50 mill. 6.5% oblig. pf. sec. of trust substd. (LT interest earned: 3.7%)		37.0%	35.1%	35.9%	34.0%	35.0%	36.5%	33.1%	34.7%	20.0%	19.0%	<b>19.0%</b>	<b>19.0%</b>	Income Tax Rate		<b>19.0%</b>			
Leases, Uncapitalized Annual rentals \$12.0 mill. Pension Assets-12/19 \$1779.2 mill. Oblig \$2278.3 mill.		7.4%	6.0%	6.9%	4.8%	5.5%	5.8%	4.6%	9.6%	7.7%	7.5%	<b>8.0%</b>	<b>8.0%</b>	AFUDC % to Net Profit		<b>8.0%</b>			
Pfd Stock \$34.3 mill. Pfd Div'd \$2.0 mill.		44.5%	44.9%	45.7%	44.0%	45.2%	43.5%	41.6%	43.4%	47.5%	44.6%	<b>47.5%</b>	<b>46.5%</b>	Long-Term Debt Ratio		<b>48.0%</b>			
1,114,657 shs. 4 1/4% to 5 1/4%, \$20 par. call. \$20 to \$21; 120,000 shs. 7% & \$100 par. call. \$100. Sinking fund ends 2018.		54.3%	53.9%	53.1%	55.0%	53.8%	55.5%	57.5%	55.7%	51.7%	54.6%	<b>52.0%</b>	<b>53.0%</b>	Common Equity Ratio		<b>51.5%</b>			
Common Stock 109,145,492 shs. as of 4/24/20 MARKET CAP: \$4.0 billion (Mid Cap)		2732.9	2841.3	3001.0	3142.9	3332.3	3473.5	3595.1	3765.5	4182.3	4176.9	<b>4555</b>	<b>4650</b>	Total Capital (\$mill)		<b>5425</b>			
ELECTRIC OPERATING STATISTICS		3165.9	3334.5	3594.8	3858.9	4148.8	4377.7	4603.5	5025.9	4830.1	5109.6	<b>5270</b>	<b>5440</b>	Net Plant (\$mill)		<b>5950</b>			
%		5.6%	6.2%	6.7%	6.4%	6.2%	5.7%	7.9%	5.8%	5.9%	6.3%	<b>5.0%</b>	<b>5.5%</b>	Return on Total Cap'l		<b>5.5%</b>			
%		7.6%	8.9%	10.1%	9.3%	9.3%	8.2%	11.9%	8.5%	9.3%	9.5%	<b>7.5%</b>	<b>8.0%</b>	Return on Shr. Equity		<b>8.5%</b>			
%		7.7%	9.0%	10.2%	9.4%	9.4%	8.3%	12.0%	8.5%	9.3%	9.6%	<b>8.0%</b>	<b>8.0%</b>	Return on Com Equity <sup>E</sup>		<b>8.5%</b>			
%		1.4%	2.1%	4.2%	3.7%	2.3%	1.5%	6.3%	2.1%	3.1%	3.4%	<b>1.5%</b>	<b>2.5%</b>	Retained to Com Eq		<b>2.5%</b>			
%		82%	78%	59%	61%	75%	83%	48%	76%	67%	64%	<b>79%</b>	<b>73%</b>	All Div'ds to Net Prof <sup>F</sup>		<b>68%</b>			

**BUSINESS:** Hawaiian Electric Industries, Inc. is the parent company of Hawaiian Electric Company, Inc. (HECO), American Savings Bank (ASB), and Pacific Current. HECO & its subs., Maui Electric Co. (MECO) & Hawaii Electric Light Co. (HELCO), supply electricity to 465,000 customers on O'ahu, Maui, Molokai, Lanai, & Hawaii. Operating companies' systems are not interconnected. Elec. rev. breakdown: residential, 31%; commercial, 33%; lg. light & power, 35%; other, 1%. Generating sources: oil, 54%; purch., 46%. Fuel costs: 47% of revs. '19 reported deprec. rate (utility): 3.2%. Has 3,800 employees. Chairman: Tom Fargo. President & CEO: Constance H. Lau, Inc.: HI. Address: 1001 Bishop St., Suite 2900, Honolulu, HI 96808-0730. Tel.: 808-543-5662. Web: www.hei.com.

**We reduced our 2020 earnings estimate for Hawaiian Electric Industries by \$0.30 a share.** This is primarily due to the diminished prospects of HEI's American Savings Bank subsidiary rather than those of the company's three utilities. When management put forth earnings guidance of \$1.90-\$2.10 a share in mid-February, it expected ASB to record a provision for loan losses of \$17 million-\$22 million. Due to the recession, this provision will be much higher. (It is too early to determine how much higher, but ASB recorded a provision of \$10.4 million in the March quarter.) Moreover, the steep decline in interest rates has caused the bank's net interest margin to shrink. ASB is also being hurt by lower noninterest income and higher noninterest expenses. As for the utility operations, HEI now thinks earnings will likely come in at the bottom half of its targeted range of \$1.46-\$1.54 a share. This is based on the assumption that the Hawaii commission will allow the utilities to defer for future recovery its coronavirus-related costs, which are estimated at \$22 million in 2020.

**Company (HECO) will not receive a base rate increase.** In view of the economic stress caused by the recession, the utility agreed to a settlement calling for no increase. The settlement awaits a ruling from the regulators. The company should be able to offset some of the lack of rate relief through expense reductions. HECO will also retain some cost cuts that were to be passed through to ratepayers. Separately, Maui Electric is no longer required to file a rate case this year, and will probably not put forth an application in the current economic environment.

**We have lowered our 2021 earnings estimate by \$0.25 a share.** We figure ASB's income will make only a partial recovery. Note that we are no longer estimating a dividend hike next year.

**The stock price has declined 21% this year.** This is understandable, in view of HEI's diminished earnings prospects. Even following this falloff, however, the dividend yield is only about average for a utility. Total return potential is attractive for the next 18 months, but not for the 3- to 5-year period.

**It now appears as if Hawaiian Electric** Paul E. Debbas, CFA July 24, 2020

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	591.5	632.3	673.2	658.6	2555.6
2018	645.9	685.3	768.0	761.6	2860.8
2019	661.6	715.5	771.5	726.0	2874.6
2020	677.2	697.8	775	750	2900
2021	675	750	800	775	3000

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.31	.36	.55	.42	1.64
2018	.37	.42	.60	.45	1.85
2019	.42	.39	.58	.61	1.99
2020	.31	.34	.55	.45	1.65
2021	.39	.40	.56	.45	1.80

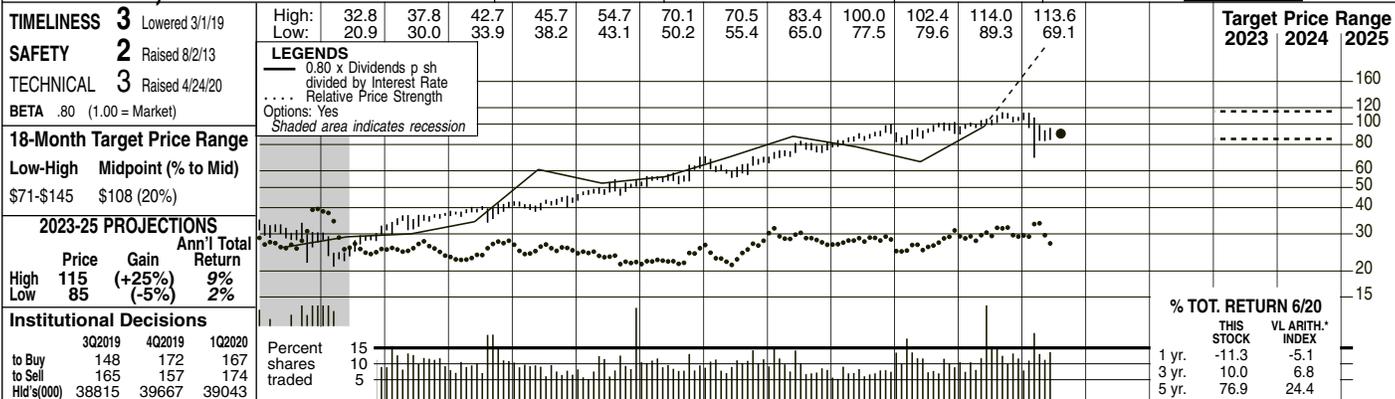
  

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.31	.31	.31	.31	1.24
2017	.31	.31	.31	.31	1.24
2018	.31	.31	.31	.31	1.24
2019	.32	.32	.32	.32	1.28
2020	.33	.33			

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# IDACORP, INC. NYSE-IDA

RECENT PRICE **90.28** P/E RATIO **19.8** (Trailing: 20.0 Median: 16.0) RELATIVE P/E RATIO **0.96** DIV'D YLD **3.1%** VALUE LINE



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
20.00	20.15	21.23	19.51	20.47	21.92	20.97	20.55	21.55	24.81	25.51	25.23	25.04	26.76	27.19	26.70	<b>24.80</b>	<b>25.75</b>	Revenues per sh	<b>28.75</b>
4.12	3.87	4.58	4.11	4.27	5.07	5.35	5.84	5.93	6.29	6.58	6.70	6.86	7.50	7.85	8.07	<b>8.10</b>	<b>8.50</b>	"Cash Flow" per sh	<b>9.75</b>
1.90	1.75	2.35	1.86	2.18	2.64	2.95	3.36	3.37	3.64	3.85	3.87	3.94	4.21	4.49	4.61	<b>4.55</b>	<b>4.75</b>	Earnings per sh <sup>A</sup>	<b>5.50</b>
1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.37	1.57	1.76	1.92	2.08	2.24	2.40	2.56	<b>2.73</b>	<b>2.93</b>	Div'd Decl'd per sh <sup>B</sup> + †	<b>3.55</b>
4.73	4.53	5.16	6.39	5.19	5.26	6.85	6.76	4.78	4.68	5.45	5.84	5.89	5.66	5.51	5.53	<b>6.80</b>	<b>6.95</b>	Cap'l Spending per sh	<b>7.00</b>
23.88	24.04	25.77	26.79	27.76	29.17	31.01	33.19	35.07	36.84	38.85	40.88	42.74	44.65	47.01	48.88	<b>50.60</b>	<b>52.35</b>	Book Value per sh <sup>C</sup>	<b>58.00</b>
42.22	42.66	43.63	45.06	46.92	47.90	49.41	49.95	50.16	50.23	50.27	50.34	50.40	50.42	50.42	50.42	<b>50.45</b>	<b>50.45</b>	Common Shs Outst'g <sup>D</sup>	<b>50.40</b>
15.5	16.7	15.1	18.2	13.9	10.2	11.8	11.5	12.4	13.4	14.7	16.2	19.1	20.6	20.5	22.3	<b>20.5</b>	<b>22.3</b>	Avg Ann'l P/E Ratio	<b>18.5</b>
.82	.89	.82	.97	.84	.68	.75	.72	.79	.75	.77	.82	1.00	1.04	1.11	1.21	<b>1.11</b>	<b>1.21</b>	Relative P/E Ratio	<b>1.05</b>
4.1%	4.1%	3.4%	3.5%	4.0%	4.5%	3.4%	3.1%	3.3%	3.2%	3.1%	3.1%	2.8%	2.6%	2.6%	2.5%	<b>2.6%</b>	<b>2.5%</b>	Avg Ann'l Div'd Yield	<b>3.5%</b>

CAPITAL STRUCTURE as of 3/31/20		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	
Total Debt	\$1837.0 mill. Due in 5 Yrs \$299.8 mill.	1036.0	1026.8	1080.7	1246.2	1282.5	1270.3	1262.0	1349.5	1370.8	1346.4	1250	1300	Revenues (\$mill)	1450						
LT Debt	\$1837.0 mill. LT Interest \$78.6 mill. (LT interest earned: 3.6%)	142.5	166.9	168.9	182.4	193.5	194.7	198.3	212.4	226.8	232.9	230	240	Net Profit (\$mill)	280						
Pension Assets-12/19	\$763.1 mill. Oblig \$1134.8 mill.	--	--	13.4%	28.3%	8.0%	19.0%	15.5%	18.6%	7.1%	9.5%	12.0%	12.0%	Income Tax Rate	12.0%						
Pfd Stock	None	19.1%	23.3%	20.3%	12.3%	13.6%	16.3%	16.3%	13.9%	15.2%	16.2%	17.0%	17.0%	AFUDC % to Net Profit	15.0%						
Common Stock	50,453,936 shs. as of 4/24/20	49.3%	45.6%	45.5%	46.6%	45.3%	45.6%	44.8%	43.7%	43.6%	41.3%	46.0%	46.0%	Long-Term Debt Ratio	46.5%						
MARKET CAP:	\$4.6 billion (Mid Cap)	50.7%	54.4%	54.5%	53.4%	54.7%	54.4%	55.2%	56.3%	56.4%	58.7%	54.0%	54.0%	Common Equity Ratio	53.5%						
ELECTRIC OPERATING STATISTICS		3020.4	3045.2	3225.4	3465.9	3567.6	3783.3	3898.5	3997.5	4205.1	4201.3	4740	4900	Total Capital (\$mill)	5450						
% Change Retail Sales (KWH)		3161.4	3406.6	3536.0	3665.0	3833.5	3992.4	4172.0	4283.9	4395.7	4531.5	4695	4860	Net Plant (\$mill)	5300						
Avg. Indust. Rev. per KWH (c)		6.0%	6.8%	6.5%	6.4%	6.6%	6.2%	6.1%	6.3%	6.4%	6.5%	6.0%	6.0%	Return on Total Cap'l	6.0%						
Capacity at Peak (Mw)		9.3%	10.1%	9.6%	9.9%	9.9%	9.5%	9.2%	9.4%	9.6%	9.4%	9.0%	9.0%	Return on Shr. Equity	9.5%						
Peak Load, Summer (Mw)		9.3%	10.1%	9.6%	9.9%	9.9%	9.5%	9.2%	9.4%	9.6%	9.4%	9.0%	9.0%	Return on Com Equity <sup>E</sup>	9.5%						
Annual Load Factor (%)		5.5%	6.5%	5.7%	5.6%	5.4%	4.8%	4.3%	4.4%	4.4%	4.2%	3.5%	3.5%	Retained to Com Eq	3.5%						
% Change Customers (yr-end)		41%	36%	41%	43%	46%	50%	53%	53%	54%	56%	60%	61%	All Div'ds to Net Prof	64%						

**BUSINESS:** IDACORP, Inc. is a holding company for Idaho Power Company, a regulated electric utility that serves 572,000 customers throughout a 24,000-square-mile area in southern Idaho and eastern Oregon (population: 1.2 million). Most of the company's revenues are derived from the Idaho portion of its service area. Revenue breakdown: residential, 39%; commercial, 22%; industrial, 13%; irrigation, 10%; other, 16%. Generating sources: hydro, 45%; coal, 16%; gas, 11%; purchased, 28%. Fuel costs: 33% of revenues. '19 reported depreciation rate: 2.9%. Has 2,000 employees. Chairman: Richard J. Dahl. President & CEO: Lisa Grow. Incorporated: Idaho. Address: 1221 W. Idaho St., Boise, Idaho 83702. Telephone: 208-388-2200. Internet: www.idacorpinc.com.

**IDACORP's utility subsidiary, Idaho Power, is faring better than many other utilities during the coronavirus problem.** The company's service area has numerous food processing and agriculture-related businesses, which continued to operate even as some industries were shut down temporarily. In fact, Moody's estimates that the economy of the utility's service territory will grow 0.7% this year, which is good considering that the U.S. economy is in a recession. Customer growth for the 12-month period that ended on March 31st was 2.6%, which is well above the norm (slightly below 1%) for electric companies. Upon reporting first-quarter results, IDACORP maintained its 2020 earnings guidance of \$4.45-\$4.65 a share, and we did not change our estimate of \$4.55 a share. This would amount to a slight decline from the 2019 tally of \$4.61 a share, which benefited from an unusually high fourth-quarter showing.

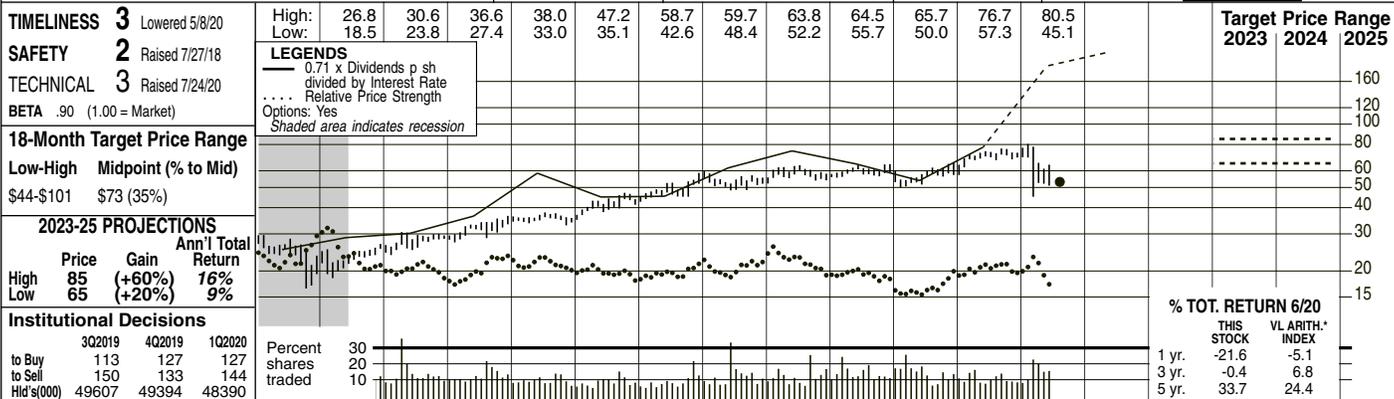
**We expect record profits in 2021.** The economy will likely be much better, with Moody's estimating economic growth of 5.0% in Idaho Power's service area. This should enable the utility's healthy customer growth to continue. The company might well benefit from an increase in data-center customers, now that the state has eliminated the sales tax on data centers. Our estimate of \$4.75 a share would produce a 4% increase.

**A regulatory mechanism is available to stabilize the utility's income, if needed.** Idaho Power may use up to \$25 million of accumulated deferred investment tax credits annually if its return on equity falls below 9.4%. The company does not expect to use any of these credits in order to attain its earnings target for 2020. **The board of directors will probably raise the dividend in September.** IDACORP's target for a payout ratio is 60%-70%, and management plans to recommend to the board annual increases of at least 5%. We estimate a hike of \$0.05 a share (7.5%) quarterly.

**The stock price is down 15% in 2020.** This is less than many utility issues. The dividend yield is below the utility mean. Total return potential is below the median for both the 18-month span and the 3- to 5-year period. *Paul E. Debbas, CFA* July 24, 2020

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	302.6	333.0	408.3	305.6	1349.5
2018	310.1	340.0	408.8	311.9	1370.8
2019	350.3	316.9	386.3	292.9	1346.4
2020	291.0	309	375	275	1250
2021	305	325	385	285	1300

(A) Diluted EPS. Excl. nonrecurring gain (loss): '05, (24c); '06, 17c. '17 & '19 earnings don't sum due to rounding. Next earnings report due late July. (B) Dividends historically paid in late Feb., May, Aug., and Nov. (C) Shareholder investment plan available. (D) In millions. (E) Rate base: Net original cost. Rate allowed on common equity in '11: 10% (imputed); earned on avg. com. eq., '19: 9.6%. Regulatory Climate: Above Average.



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
29.18	32.57	31.49	30.79	35.09	31.72	30.66	30.80	28.76	29.80	25.68	25.21	26.01	26.45	23.81	24.93	<b>23.75</b>	<b>24.25</b>	Revenues per sh	<b>26.50</b>
3.20	4.00	3.62	3.70	4.40	4.62	4.76	5.42	5.18	5.45	5.39	5.92	6.74	6.76	6.96	7.07	<b>6.85</b>	<b>7.15</b>	"Cash Flow" per sh	<b>8.00</b>
d14.32	1.71	1.31	1.44	1.77	2.02	2.14	2.53	2.26	2.46	2.99	2.90	3.39	3.34	3.40	3.53	<b>3.30</b>	<b>3.50</b>	Earnings per sh <sup>A</sup>	<b>3.75</b>
--	1.00	1.24	1.28	1.32	1.34	1.36	1.44	1.48	1.52	1.60	1.92	2.00	2.10	2.20	2.30	<b>2.40</b>	<b>2.50</b>	Div'd Decl'd per sh <sup>B</sup> = †	<b>2.80</b>
2.25	2.26	2.81	3.00	3.47	5.26	6.30	5.20	5.89	5.95	5.76	5.89	5.96	5.60	5.64	6.26	<b>7.90</b>	<b>7.85</b>	Cap'l Spending per sh	<b>6.00</b>
19.92	20.60	20.65	21.12	21.25	21.86	22.64	23.68	25.09	26.60	31.50	33.22	34.68	36.44	38.60	40.42	<b>41.80</b>	<b>43.00</b>	Book Value per sh <sup>C</sup>	<b>45.75</b>
35.60	35.79	35.97	38.97	35.93	36.00	36.23	36.28	37.22	38.75	46.91	48.17	48.33	49.37	50.32	50.45	<b>50.50</b>	<b>51.50</b>	Common Shs Outst'g <sup>D</sup>	<b>53.00</b>
--	17.1	26.0	21.7	13.9	11.5	12.9	12.6	15.7	16.9	16.2	18.4	17.2	17.8	16.8	19.9	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	<b>19.5</b>
--	.91	1.40	1.15	.84	.77	.82	.79	1.00	.95	.85	.93	.90	.90	.91	1.08			Relative P/E Ratio	<b>1.10</b>
--	3.4%	3.6%	4.1%	5.4%	5.7%	4.9%	4.5%	4.2%	3.7%	3.3%	3.6%	3.4%	3.5%	3.9%	3.3%			Avg Ann'l Div'd Yield	<b>3.8%</b>

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$2258.7 mill. Due in 5 Yrs \$448.1 mill.  
 LT Debt \$2256.2 mill. LT Interest \$83.7 mill.  
 Incl. \$16.8 mill. capitalized leases.  
 (LT interest earned: 2.8x)

**Pension Assets-12/19** \$609.0 mill. **Oblig** \$735.6 mill.

**Pfd Stock** None

**Common Stock** 50,568,881 shs. as of 4/17/20

**MARKET CAP: \$2.7 billion (Mid Cap)**

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	+3.8	+2.9	+4.6
Avg. Indust. Use (MWH)	30987	34573	37808
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Winter (Mw)	2133	2173	2237
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+1.3	+1.2	+1.2

Fixed Charge Cov. (%) 275 275 284

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 of change (per sh)
Revenues	-2.5%	-2.0%	1.0%
"Cash Flow"	5.0%	5.5%	2.5%
Earnings	7.0%	6.0%	1.5%
Dividends	5.5%	7.5%	4.0%
Book Value	6.0%	7.0%	3.0%

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	367.3	283.9	309.9	344.6	1305.7
2018	341.5	261.8	279.9	314.9	1198.1
2019	384.2	270.7	274.8	328.2	1257.9
2020	335.3	<b>254.7</b>	<b>290</b>	<b>320</b>	<b>1200</b>
2021	<b>355</b>	<b>270</b>	<b>295</b>	<b>330</b>	<b>1250</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1.17	.44	.75	.98	3.34
2018	1.18	.61	.56	1.06	3.40
2019	1.44	.49	.42	1.18	3.53
2020	1.00	<b>.45</b>	<b>.65</b>	<b>1.20</b>	<b>3.30</b>
2021	<b>1.15</b>	<b>.50</b>	<b>.65</b>	<b>1.20</b>	<b>3.50</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup> = †				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.50	.50	.50	.50	2.00
2017	.525	.525	.525	.525	2.10
2018	.55	.55	.55	.55	2.20
2019	.575	.575	.575	.575	2.30
2020	.60	.60			

**BUSINESS:** NorthWestern Corporation (doing business as NorthWestern Energy) supplies electricity & gas in the Upper Midwest and Northwest, serving 443,000 electric customers in Montana and South Dakota and 292,000 gas customers in Montana (85% of gross margin), South Dakota (14%), and Nebraska (1%). Electric revenue breakdown: residential, 39%; commercial, 47%; industrial, 4%; other, 10%. Generating sources: hydro, 34%; coal, 28%; wind, 5%; other, 3%; purchased, 30%. Fuel costs: 25% of revenues. '19 reported deprec. rate: 2.8%. Has 1,500 employees. Chairman: Stephen P. Adik. President & CEO: Robert C. Rowe. Inc.: Delaware. Address: 3010 West 69th Street, Sioux Falls, South Dakota 57108. Tel.: 605-978-2900. Internet: www.northwesternenergy.com.

**Upon reporting first-quarter earnings in late April, NorthWestern cut its guidance for 2020.** Previously, the company expected share net to wind up in a range of \$3.45-\$3.60. Now, management's target is \$3.30-\$3.45. This is only partly due to the economic weakness caused by the coronavirus, which was felt most noticeably in the second quarter. First-period profits fell short of management's expectation due to some unusual costs. NorthWestern bases its guidance on normal weather, but we note that a mild winter reduced share earnings by \$0.06. Putting it all together, we lowered our 2020 earnings estimate from \$3.45 a share to \$3.30. Because growth in 2021 will come off a lower base, we trimmed our estimate from \$3.55 a share to \$3.50.

**The utility needs additional generating capacity.** NorthWestern has more exposure to the purchased-power markets than other electric companies in the region. The utility intends to build a gas-fired facility in South Dakota, which will add about 60 megawatts of capacity in late 2021 at an expected cost of \$80 million. NorthWestern also agreed to pay 50 cents

to Puget Sound Energy for a 12.5% stake (92.5 mw) in Unit 4 of the Colstrip coal-fired plant. NorthWestern would sell 45 mw back to Puget Sound Energy and use the remainder to serve its customers. (This deal was originally twice the size, but was halved after another company exercised its purchase option.) The transaction requires the approval of the Montana commission. NorthWestern issued a request for proposals for up to 280 mw of peaking and intermediate capacity for commercial operation in early 2023. The successful project(s) are expected to be selected by early 2021.

**The company added some debt in April, and plans to add some equity as well.** In the second quarter, NorthWestern issued a \$100 million term loan and \$150 million of long-term debt. The company plans to issue common equity, possibly in late 2020 but more likely in 2021.

**The stock's yield is above the utility average.** The price has fallen 26% in 2020, affected by the cut in earnings guidance. Total return potential is strong for the 18-month span, but not as impressive for the 3- to 5-year period.

*Paul E. Debbas, CFA* *July 24, 2020*

(A) Diluted EPS. Excl. gain (loss) on disc. ops.: '05, (6c); '06, 1c; nonrec. gains: '12, 39c net; '15, 27c; '18, 52c; '19, 45c. '18 EPS don't sum due to rounding. Next earnings report due late July. (B) Div'ds historically paid in late Mar., June, Sept. & Dec. ■ Div'd reinvestment plan avail. (C) Incl. def'd charges. In '19: \$16.68/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate allowed on com. eq. in MT in '19 (elec.): 9.65%; in '17 (gas): 9.55%; in SD in '15: none spec.; in NE in '07: 10.4%; earned on avg. com. eq., '19: 9.0%. Reg. Climate: Below Avg.

**Company's Financial Strength** B++  
**Stock's Price Stability** 90  
**Price Growth Persistence** 75  
**Earnings Predictability** 85

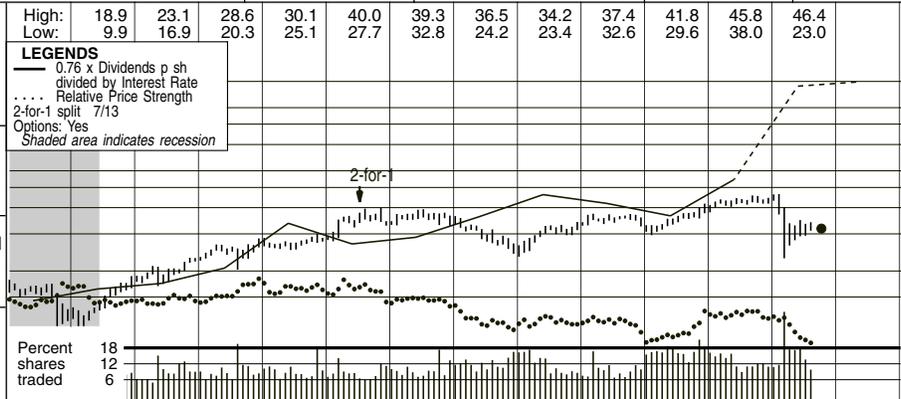
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# OGE ENERGY CORP. NYSE-OGE

RECENT PRICE **31.86** P/E RATIO **15.0** (Trailing: 14.2 Median: 17.0) RELATIVE P/E RATIO **0.70** DIV'D YLD **5.1%** VALUE LINE

**TIMELINESS** 3 Lowered 3/6/20  
**SAFETY** 2 Lowered 12/18/15  
**TECHNICAL** 3 Lowered 5/1/20  
**BETA** 1.05 (1.00 = Market)



**18-Month Target Price Range**  
**Low-High** Midpoint (% to Mid)  
 \$23-\$61 \$42 (30%)

**2023-25 PROJECTIONS**  
 High Price Gain Ann'l Total  
 Low 55 40 (+75%) 18%  
 40 (+25%) 10%

**Institutional Decisions**  
 4Q2019 1Q2020 2Q2020  
 to Buy 205 176 203  
 to Sell 185 221 182  
 Hlds(000) 133273 128589 129209

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
27.37	32.83	21.96	20.68	21.77	14.79	19.04	19.96	18.58	14.45	12.30	11.00	11.31	11.32	11.37	11.15	10.50	11.50	Revenues per sh	13.75
1.87	1.94	2.23	2.39	2.40	2.69	3.01	3.31	3.69	3.46	3.40	3.23	3.31	3.34	3.74	4.02	4.05	4.35	"Cash Flow" per sh	5.00
.89	.92	1.23	1.32	1.25	1.33	1.50	1.73	1.79	1.94	1.98	1.69	1.69	1.92	2.12	2.24	2.10	2.25	Earnings per sh <sup>A</sup>	2.50
.67	.67	.67	.68	.70	.71	.73	.76	.80	.85	.95	1.05	1.16	1.27	1.40	1.51	1.60	1.68	Div'd Decl'd per sh <sup>B</sup>	1.95
1.51	1.65	2.67	3.04	4.01	4.37	4.36	6.48	5.85	4.99	2.86	2.74	3.31	4.13	2.87	3.18	2.90	3.65	Cap'l Spending per sh	3.75
7.14	7.59	8.79	9.16	10.14	10.52	11.73	13.06	14.00	15.30	16.27	16.66	17.24	19.28	20.06	20.69	18.25	18.85	Book Value per sh <sup>C</sup>	20.50
180.00	181.20	182.40	183.60	187.00	194.00	195.20	196.20	197.60	198.50	199.40	199.70	199.70	199.70	199.70	200.10	200.00	200.00	Common Shs Outst'g <sup>D</sup>	200.00
14.1	14.9	13.7	13.8	12.4	10.8	13.3	14.4	15.2	17.7	18.3	17.7	17.7	18.3	16.5	19.0	19.0	19.0	Avg Ann'l P/E Ratio	19.5
.74	.79	.74	.73	.75	.72	.85	.90	.97	.99	.96	.89	.93	.92	.89	1.02	1.02	1.02	Relative P/E Ratio	1.10
5.3%	4.9%	4.0%	3.8%	4.5%	5.0%	3.7%	3.1%	2.9%	2.5%	2.6%	3.5%	3.9%	3.6%	4.0%	3.5%	3.5%	3.5%	Avg Ann'l Div'd Yield	4.0%

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$3568.4 mill. Due in 5 Yrs \$75.0 mill.  
 LT Debt \$3493.4 mill. LT Interest \$154.4 mill.  
 (LT interest earned: 4.2x)

Leases, Uncapitalized Annual rentals \$6.2 mill.

Pension Assets-12/19 \$530.3 mill. Oblig \$616.9 mill.

Pfd Stock None

Common Stock 200,169,838 shs.

MARKET CAP: \$6.4 billion (Large Cap)

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	-2.2	+6.8	+1.1
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	5.30	4.86	4.69
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	6456	6863	6817
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+1.0	+9	+1.0

Fixed Charge Cov. (%) 315 292 335

**ANNUAL RATES** Past Past Est'd '17-'19  
 of change (per sh) 10 Yrs. 5 Yrs. to '23-'25

Revenues	-5.0%	-5.5%	3.5%
"Cash Flow"	4.0%	1.0%	5.0%
Earnings	5.0%	2.0%	3.0%
Dividends	7.0%	10.0%	6.0%
Book Value	7.0%	5.5%	.5%

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	456.0	586.4	716.8	501.9	2261.1
2018	492.7	567.0	698.8	511.8	2270.3
2019	490.0	513.7	755.4	472.5	2231.6
2020	431.3	503.5	715.2	450	2100
2021	500	550	750	500	2300

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.18	.52	.92	.30	1.92
2018	.27	.55	1.02	.27	2.12
2019	.24	.50	1.25	.26	2.24
2020	.23	.51	1.13	.23	2.10
2021	.25	.55	1.20	.25	2.25

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.275	.275	.275	.3025	1.13
2017	.3025	.3025	.3025	.3325	1.24
2018	.3325	.3325	.3325	.365	1.36
2019	.365	.365	.365	.3875	1.48
2020	.3875	.3875	.3875		

**BUSINESS:** OGE Energy Corp. is a holding company for Oklahoma Gas and Electric Company (OG&E), which supplies electricity to 858,000 customers in Oklahoma (84% of electric revenues) and western Arkansas (8%); wholesale is (8%). Owns 25.5% of Enable Midstream Partners. Electric revenue breakdown: residential, 40%; commercial, 23%; industrial, 10%; oilfield, 9%; other, 18%. Generating sources: gas, 35%; coal, 15%; wind, 5%; purchased, 45%. Fuel costs: 35% of revenues. '19 reported depreciation rate (utility): 2.7%. Has 2,400 employees. Chairman, President and Chief Executive Officer: Sean Trauschke. Incorporated: Oklahoma. Address: 321 North Harvey, P.O. Box 321, Oklahoma City, Oklahoma 73101-0321. Telephone: 405-553-3000. Internet: www.oge.com.

**The price of Enable Midstream Partners stock continues to affect the price of OGE Energy stock.** OGE has a 25.5% stake in the midstream natural gas master limited partnership. Enable has been hurt by reduced activity in the gas and oil sector this year, so its units have lost nearly 50% of their value since the start of 2020. The distributions that OGE receives from Enable have been halved. In addition, OGE took a pretax charge of \$780 million in the first quarter to write down the value of its stake in Enable. (There will be tax adjustments throughout the remainder of 2020, and the company expects the aftertax nonrecurring charge for the full year to amount to \$590 million.) The price of OGE stock has fallen 28% this year, making this one of the worst-performing equities in the electric utility industry.

**We cut our 2020 earnings estimate by \$0.05 a share, to \$2.10.** June-quarter profits were a bit below our estimate. Our revised estimate is near the low end of OGE's targeted range of \$2.08-\$2.18 a share, which is unchanged. Earnings are likely to fall short of the 2019 tally due to

a decline in equity income from OGE's stake in Enable. Oklahoma Gas and Electric has held up well despite the coronavirus problem. Oklahoma has a relatively low unemployment rate, and OG&E received permission to defer for future recovery its coronavirus-related costs in Oklahoma and Arkansas. A better economy ought to help earnings rebound in 2021.

**OG&E is awaiting a regulatory decision in Oklahoma.** The utility is asking the state regulators to approve an \$810 million grid modernization plan. The company wants to recover the costs through a rider (surcharge) on customers' bills. A ruling is expected by yearend.

**A dividend increase is likely later this month, effective with the October payment.** We estimate a boost of \$0.09 a share (5.8%) in the annual disbursement, and project similar dividend growth over the 3- to 5-year period.

**This stock has an attractive yield.** This is more than one percentage point above the utility average. Total return potential is strong for the 18-month period and respectable for the pull to 2023-2025.

Paul E. Debbas, CFA September 11, 2020

(A) Diluted EPS. Excl. nonrecurring gain (losses): '04, (3c); '15, (33c); '17, \$1.18; '19, (8c); '20, (\$2.95); gains on discount. ops.: '05, 25c; '06, 20c. '18 & '19 EPS don't sum due to rounding. Next earnings report due early Nov. (B) Div'ds historically paid in late Jan., Apr., July, & Oct. ■ Div'd reinvestment plan avail. (C) Incl. deferred charges. In '19: \$1.53/sh. (D) In mill., adj. for split. (E) Rate base: Net original cost. Rate allowed on com. eq. in OK in '19: 9.5%; in AR in '18: 9.5%; earned on avg. com. eq., '19: 11.0%. Regulatory Climate: Average.

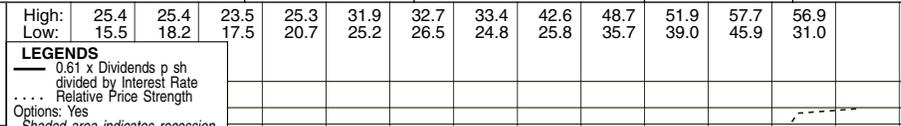
Company's Financial Strength	A
Stock's Price Stability	80
Price Growth Persistence	80
Earnings Predictability	85

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# OTTER TAIL CORP. NDQ-OTTR

RECENT PRICE **38.85** P/E RATIO **17.4** (Trailing: 18.1; Median: 22.0) RELATIVE P/E RATIO **0.81** DIV'D YLD **4.0%** VALUE LINE

**TIMELINESS** 4 Lowered 9/11/20  
**SAFETY** 2 Raised 6/17/16  
**TECHNICAL** 3 Raised 5/8/20  
**BETA** .85 (1.00 = Market)



High:	25.4	25.4	23.5	25.3	31.9	32.7	33.4	42.6	48.7	51.9	57.7	56.9
Low:	15.5	18.2	17.5	20.7	25.2	26.5	24.8	25.8	35.7	39.0	45.9	31.0

**18-Month Target Price Range**  
**Low-High** Midpoint (% to Mid)  
 \$31-\$67 \$49 (25%)

**2023-25 PROJECTIONS**

Price	Gain	Ann'l Total Return
High 60	(+55%)	14%
Low 45	(+15%)	8%

**Institutional Decisions**

	4Q2019	1Q2020	2Q2020
to Buy	85	78	75
to Sell	69	84	82
Hlds(000)	18484	18228	18869



	1 yr.	3 yr.	5 yr.
% TOT. RETURN 8/20	-21.2	1.0	76.5
THIS STOCK	8.7	17.6	45.6
VL ARITH. INDEX			

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
30.45	35.59	37.43	41.50	37.06	29.03	31.08	29.86	23.76	24.63	21.48	20.60	20.42	21.47	23.10	22.90	<b>20.50</b>	<b>22.60</b>	Revenues per sh	26.50
2.88	3.35	3.39	3.55	2.81	2.76	2.60	2.36	2.71	3.02	3.09	3.14	3.44	3.70	3.96	4.11	<b>4.05</b>	<b>4.35</b>	"Cash Flow" per sh	5.25
1.50	1.78	1.69	1.78	1.09	.71	.38	.45	1.05	1.37	1.55	1.56	1.60	1.86	2.06	2.17	<b>2.15</b>	<b>2.30</b>	Earnings per sh <sup>A</sup>	2.75
1.10	1.12	1.15	1.17	1.19	1.19	1.19	1.19	1.19	1.19	1.21	1.23	1.25	1.28	1.34	1.40	<b>1.48</b>	<b>1.56</b>	Div'd Decl'd per sh <sup>B</sup>	1.80
1.72	2.04	2.35	5.43	7.51	4.95	2.38	2.04	3.20	4.53	4.40	4.23	4.10	3.36	2.66	5.16	<b>9.15</b>	<b>3.75</b>	Cap'l Spending per sh	3.00
14.81	15.80	16.67	17.55	19.14	18.78	17.57	15.83	14.43	14.75	15.39	15.98	17.03	17.62	18.38	19.46	<b>20.70</b>	<b>21.40</b>	Book Value per sh <sup>C</sup>	23.75
28.98	29.40	29.52	29.85	35.38	35.81	36.00	36.10	36.17	36.27	37.22	37.86	39.35	39.56	39.66	40.16	<b>41.50</b>	<b>41.60</b>	Common Shs Outst'g <sup>D</sup>	42.00
17.3	15.4	17.3	19.0	30.1	31.2	55.1	47.5	21.7	21.1	18.8	18.2	20.2	22.1	22.2	23.5	<b>20.50</b>	<b>22.60</b>	Avg Ann'l P/E Ratio	18.5
.91	.82	.93	1.01	1.81	2.08	3.51	2.98	1.38	1.19	.99	.92	1.06	1.11	1.20	1.26	<b>1.48</b>	<b>1.56</b>	Relative P/E Ratio	1.05
4.2%	4.1%	3.9%	3.5%	3.6%	5.4%	5.7%	5.6%	5.2%	4.1%	4.1%	4.3%	3.9%	3.1%	2.9%	2.7%	<b>2.15</b>	<b>2.30</b>	Avg Ann'l Div'd Yield	3.5%

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$765.9 mill. Due in 5 Yrs \$190.3 mill.  
 LT Debt \$724.4 mill. LT Interest \$33.8 mill.  
 (LT interest earned: 4.1x)

**Leases, Uncapitalized** Annual rentals \$22.3 mill.  
**Pension Assets-12/19** \$329.8 mill.  
**Oblig** \$384.8 mill.

**Pfd Stock** None

**Common Stock** 40,872,064 shs. as of 7/31/20

**MARKET CAP:** \$1.6 billion (Mid Cap)

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	+1.4	+3.4	-2
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	6.26	5.97	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Winter (Mw)	917	912	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+5	+2	+1

Fixed Charge Cov. (%)	608	409	407
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**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19

	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19
Revenues	-4.5%	-5%	3.0%
"Cash Flow"	2.5%	6.0%	5.0%
Earnings	5.5%	9.0%	5.0%
Dividends	1.5%	2.5%	5.0%
Book Value	--	4.5%	4.5%

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	214.1	212.1	216.5	206.7	849.4
2018	241.2	226.3	227.7	221.2	916.4
2019	246.0	229.2	228.6	215.7	919.5
2020	234.7	192.8	212.5	210	850
2021	250	235	235	220	940

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.49	.42	.45	.50	1.86
2018	.66	.47	.58	.35	2.06
2019	.66	.39	.62	.51	2.17
2020	.60	.42	.63	.50	2.15
2021	.68	.47	.65	.50	2.30

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.3125	.3125	.3125	.3125	1.25
2017	.32	.32	.32	.32	1.28
2018	.335	.335	.335	.335	1.34
2019	.35	.35	.35	.35	1.40
2020	.37	.37	.37		

**BUSINESS:** Otter Tail Corporation is the parent of Otter Tail Power Company, which supplies electricity to 132,000 customers in Minnesota (52% of retail electric revenues), North Dakota (38%), and South Dakota (10%). Electric rev. breakdown: residential, 32%; commercial & farms, 36%; industrial, 30%; other, 2%. Generating sources: coal, 45%; wind & hydro, 8%; other, 1%; purchased, 46%.

**Otter Tail Corporation raised its earnings guidance for 2020 upon reporting June-quarter results.** Profits of \$0.42 a share topped the year-ago tally and were above our estimate of \$0.35. The Plastics segment is faring better than expected. Market conditions suggest that volume and (possibly) pricing will improve in the second half of 2020. Management now estimates that this operation will generate a profit of \$0.50-\$0.54 this year, versus \$0.51 in 2019 and its previous expectation of just \$0.43-\$0.47. This is the primary reason why Otter Tail revised its targeted range for 2020 from \$2.00-\$2.25 a share to \$2.10-\$2.30 a share. (This is still below the company's original guidance of \$2.23-\$2.37, issued in February.) Another reason is the negative effect on earnings from declines in commercial and industrial kilowatt-hour sales at Otter Tail Power will probably be less than expected three months ago: \$0.04-\$0.06, versus \$0.06-\$0.10. We raised our 2020 and 2021 estimates by \$0.10 each year, to \$2.15 and \$2.30, respectively. The stock's reaction was positive, but modest. The share price is still down 24% for the year.

Fuel costs: 14% of revenues. Also has operations in manufacturing and plastics (38% of '18 income). '19 reported deprec. rate (utility): 2.8%. Has 2,300 employees. Chairman: Nathan I. Partain. President & CEO: Charles S. MacFarlane. Inc.: Minnesota. Address: 215 South Cascade St., P.O. Box 496, Fergus Falls, Minnesota 56538-0496. Tel.: 866-410-8780. Internet: www.ottertail.com.

**The weak economy has hurt Otter Tail.** Besides the negative effect of the sales decline on utility income, the company's Manufacturing segment has been hit hard, as many customers closed facilities due to the coronavirus. A slowdown in sales of oil and gas fracking equipment is another factor. In response, the company has cut operating and maintenance costs in each division. Otter Tail Power has also asked the regulators in each state to allow the utility to defer for future recovery costs associated with the coronavirus. We expect a stronger economy in 2021, which points to higher earnings next year.

**Two significant projects are under construction.** Otter Tail Power is building a 245-megawatt gas-fired plant at an expected cost of \$154 million and a 150-mw wind farm at an expected cost of \$260 million. The projects should be completed in late 2020 or early 2021.

**The dividend yield of this untimely stock is about equal to the utility average.** The equity offers attractive total return potential for the 18-month span, but isn't as high for the 2023-25 period.

*Paul E. Debbas, CFA September 11, 2020*

(A) Dil. EPS. Excl. nonrec. gains (loss): '10, (44c); '11, 26c; '13, 2c; gains (losses) from disc. ops.: '04, 8c; '05, 33c; '06, 1c; '11, (\$1.11); '12, (\$1.22); '13, 2c; '14, 2c; '15, 2c; '16, 1c; '17, 1c. '19 EPS don't sum due to rndg. Next egs. rept. due early Nov. (B) Div'ds histor. '04, 8c; '05, 33c; '06, 1c; '11, Div'd reinv. plan avail. (C) Incl. intang. In '19: \$4.67/sh. (D) In mill. (E) Rate all'd on com. eq. in MN in '17: 9.41%; in ND in '18: 9.77%; in SD in '19: 8.75%; earn. avg. com. eq., '19: 11.6%. Reg. Clim.: MN, ND, Avg.; SD, Above Avg.

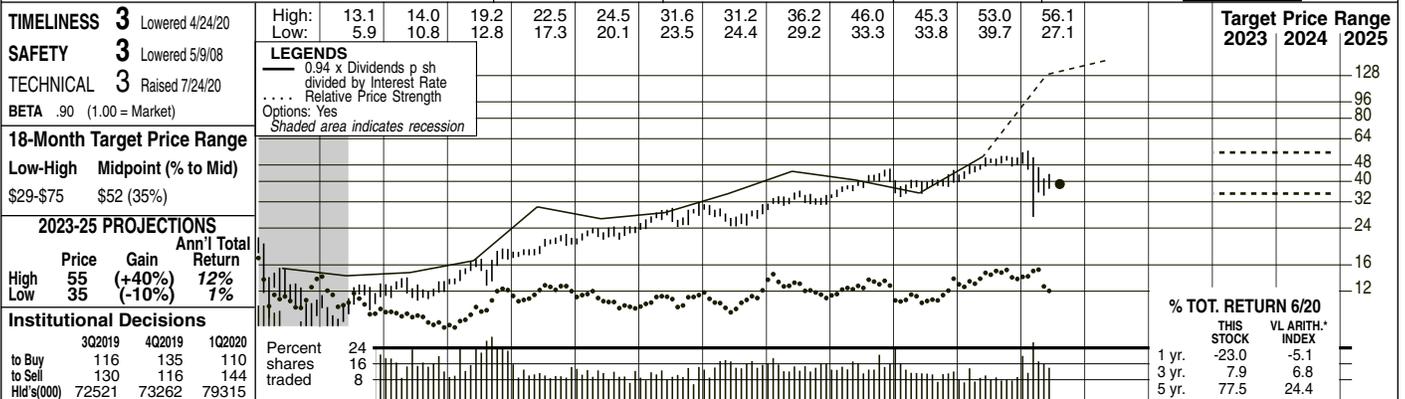
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Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	85
Earnings Predictability	85

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# PNM RESOURCES NYSE-PNM

RECENT PRICE **38.86** P/E RATIO **20.5** (Trailing: 20.9 Median: 18.0) RELATIVE P/E RATIO **1.00** DIV'D YLD **3.2%** VALUE LINE



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
26.54	30.19	32.25	24.92	22.65	19.01	19.31	21.35	16.85	17.42	18.03	18.07	17.11	18.14	18.04	18.30	<b>16.30</b>	<b>16.90</b>	Revenues per sh	<b>18.00</b>
3.14	3.56	3.57	2.54	1.76	2.32	2.67	3.18	3.39	3.52	4.09	4.28	4.51	5.30	5.13	6.07	<b>5.45</b>	<b>6.15</b>	"Cash Flow" per sh	<b>7.25</b>
1.43	1.56	1.72	.76	.11	.58	.87	1.08	1.31	1.41	1.45	1.48	1.46	1.92	1.66	2.28	<b>1.90</b>	<b>2.25</b>	Earnings per sh <sup>A</sup>	<b>2.75</b>
.63	.79	.86	.91	.61	.50	.50	.50	.58	.68	.76	.82	.90	.99	1.09	1.18	<b>1.24</b>	<b>1.30</b>	Div'd Decl'd per sh <sup>B + †</sup>	<b>1.50</b>
2.25	3.07	4.04	5.94	3.99	3.32	3.25	4.10	3.88	4.37	5.78	7.01	7.53	6.28	6.29	7.74	<b>9.95</b>	<b>11.55</b>	Cap'l Spending per sh	<b>6.00</b>
18.19	18.70	22.09	22.03	18.89	18.90	17.60	19.62	20.05	20.87	22.39	20.78	21.04	21.28	21.20	21.08	<b>23.50</b>	<b>24.45</b>	Book Value per sh <sup>C</sup>	<b>29.25</b>
60.46	68.79	76.65	76.81	86.53	86.67	86.67	79.65	79.65	79.65	79.65	79.65	79.65	79.65	79.65	79.65	<b>85.83</b>	<b>85.83</b>	Common Shs Outst'g <sup>D</sup>	<b>92.00</b>
15.0	17.4	15.6	35.6	NMF	18.1	14.0	14.5	15.0	16.1	18.7	18.7	22.4	20.4	23.4	21.1	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	<b>16.5</b>
.79	.93	.84	1.89	NMF	1.21	.89	.91	.95	.90	.98	.94	1.18	1.03	1.26	1.14			Relative P/E Ratio	<b>.90</b>
2.9%	2.9%	3.2%	3.4%	4.9%	4.8%	4.1%	3.2%	3.0%	3.0%	2.8%	3.0%	2.8%	2.5%	2.8%	2.5%			Avg Ann'l Div'd Yield	<b>3.3%</b>

CAPITAL STRUCTURE as of 3/31/20		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
Total Debt \$3308.9 mill. Due in 5 Yrs \$1778.9 mill.		1673.5	1700.6	1342.4	1387.9	1435.9	1439.1	1363.0	1445.0	1436.6	1457.6	<b>1400</b>	<b>1450</b>	Revenues (\$mill)	<b>1650</b>						
LT Debt \$2468.7 mill. LT Interest \$112.3 mill.		80.5	97.1	106.1	114.0	116.8	118.8	117.4	154.4	133.4	182.8	<b>170</b>	<b>210</b>	Net Profit (\$mill)	<b>265</b>						
(LT interest earned: 2.7x)		32.6%	38.8%	31.4%	31.6%	34.8%	36.9%	32.4%	33.0%	13.8%	9.4%	<b>23.0%</b>	<b>23.0%</b>	Income Tax Rate	<b>23.0%</b>						
Leases, Uncapitalized Annual rentals \$30.7 mill.		7.1%	8.7%	7.1%	1.3%	10.7%	17.0%	11.9%	14.5%	9.2%	<b>12.0%</b>	<b>10.0%</b>	AFUDC % to Net Profit	<b>7.0%</b>							
Pension Assets-12/19 \$590.8 mill.		50.4%	51.5%	50.9%	50.0%	47.8%	54.1%	55.7%	56.1%	61.1%	59.8%	<b>48.5%</b>	<b>54.0%</b>	Long-Term Debt Ratio	<b>50.5%</b>						
Oblig \$671.3 mill.		49.2%	48.1%	48.7%	49.7%	51.9%	45.5%	44.0%	43.6%	38.6%	39.9%	<b>51.0%</b>	<b>46.0%</b>	Common Equity Ratio	<b>49.0%</b>						
Pfd Stock \$11.5 mill. Pfd Div'd \$5 mill.		3100.3	3245.6	3277.9	3344.0	3437.1	3633.3	3806.8	3887.5	4370.0	4207.7	<b>3950</b>	<b>4575</b>	Total Capital (\$mill)	<b>5475</b>						
115,293 shs. 4.58%, \$100 par without mandatory redemption. Sinking fund began 2/1/84.		3444.4	3627.1	3746.5	3933.9	4270.0	4535.4	4904.7	4980.2	5234.6	5466.0	<b>6005</b>	<b>6660</b>	Net Plant (\$mill)	<b>7500</b>						
Common Stock 79,653,624 shs. as of 5/1/20		4.2%	4.5%	5.1%	5.2%	5.1%	4.8%	4.7%	5.3%	4.3%	5.8%	<b>5.5%</b>	<b>6.0%</b>	Return on Total Cap'l	<b>6.0%</b>						
MARKET CAP: \$3.1 billion (Mid Cap)		5.2%	6.2%	6.6%	6.8%	6.5%	7.1%	7.0%	9.0%	7.8%	10.8%	<b>7.5%</b>	<b>9.0%</b>	Return on Shr. Equity	<b>9.5%</b>						
ELECTRIC OPERATING STATISTICS		5.2%	6.2%	6.6%	6.8%	6.5%	7.1%	7.0%	9.1%	7.9%	10.9%	<b>7.5%</b>	<b>9.0%</b>	Return on Com Equity <sup>E</sup>	<b>9.5%</b>						
2017 2018 2019		2.2%	3.3%	3.8%	3.8%	3.2%	3.3%	2.8%	4.5%	2.9%	5.4%	<b>2.5%</b>	<b>4.0%</b>	Retained to Com Eq	<b>4.5%</b>						
% Change Retail Sales (KWH)		57%	47%	43%	45%	51%	54%	61%	51%	64%	51%	<b>67%</b>	<b>58%</b>	All Div'ds to Net Prof	<b>54%</b>						

**BUSINESS:** PNM Resources, Inc. is a holding company with two regulated electric utilities. Public Service Company of New Mexico (PNM) serves 532,000 customers in north central New Mexico, incl. Albuquerque and Santa Fe. Texas-New Mexico Power Company (TNMP) transmits and distributes power to 257,000 customers in Texas. Electric revenue breakdown: residential, 40%; commercial, 35%; industrial, 6%; other, 19%. Generating sources not available. Fuel costs: 28% of revenues. '19 reported deprec. rates: 2.5%-7.9%. Has 1,700 employees. Chairman, President & CEO: Patricia K. Collawn. Incorporated: New Mexico. Address: 414 Silver Ave. SW, Albuquerque, New Mexico 87102-3289. Telephone: 505-241-2700. Internet: www.pnmresources.com.

**PNM Resources' utility subsidiary in New Mexico delayed the filing of a general rate case, but there are still some regulatory matters pending.** Public Service of New Mexico had planned to file an application in the second quarter, but decided not to do so due to the state of the economy. PNM did request a regulatory mechanism that would decouple revenues and volume for residential and small commercial customers. Currently, the fixed charges billed to these users aren't high enough to reflect the fixed costs of serving them. The company expects an order by yearend. By October 1, the New Mexico commission is expected to rule on PNM's plan to replace the capacity of a coal-fired facility that is scheduled for a shutdown (well before the end of its useful life). The utility would build 280 megawatts of gas-fired capacity and 70 mw of battery storage, a total investment of \$278 million. The regulators have already approved the issuance of up to \$361 million of securitized bonds so that PNM can recover the cost of the plant.

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	Year
2017	330.2	362.3	419.9	332.6	1445.0
2018	317.9	352.3	422.7	343.7	1436.6
2019	349.7	330.2	433.6	344.1	1457.6
2020	333.6	<b>320</b>	<b>415</b>	<b>331.4</b>	<b>1400</b>
2021	<b>345</b>	<b>320</b>	<b>430</b>	<b>345</b>	<b>1450</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	Year
2017	.29	.47	.92	.25	1.92
2018	.19	.48	1.09	d.10	1.66
2019	.23	.36	1.29	.40	2.28
2020	d.19	<b>.52</b>	<b>1.24</b>	<b>.33</b>	<b>1.90</b>
2021	<b>.18</b>	<b>.47</b>	<b>1.30</b>	<b>.30</b>	<b>2.25</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B + †</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	Year
2016	.22	.22	.22	.22	.88
2017	.2425	.2425	.2425	.2425	.97
2018	.265	.265	.265	.265	1.06
2019	.29	.29	.29	.29	1.16
2020	.3075	.3075			

**We raised our 2020 earnings estimate by \$0.10 a share.** Although kilowatt-hour sales declines stemming from the recession are hurting the company, PNM benefited from hotter-than-normal weather in the second quarter. The company has also cut certain expenses, such as executive travel. We are sticking with our 2021 estimate of \$2.25 a share.

**The company's TNMP subsidiary in Texas received some rate relief.** Each year, TNMP gets revenues to recover transmission and distribution expenditures. In March, the utility was granted \$7.8 million for transmission costs, and another such filing was expected this month. For distribution, TNMP reached a settlement calling for a \$14.3 million increase, effective September 1st.

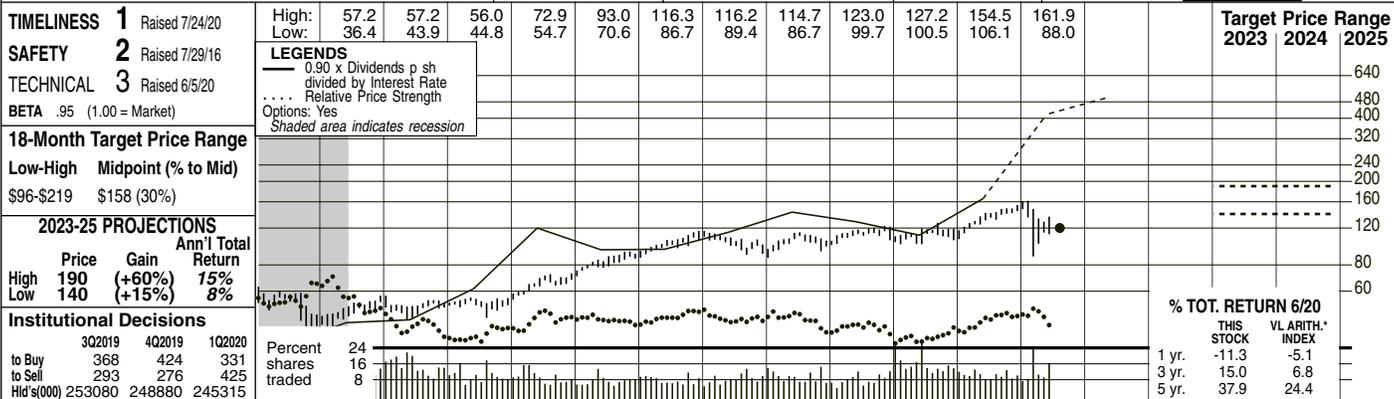
**The share count will increase, probably in late 2020.** In early 2020, PNM Resources raised \$290 million through a forward sale of 6.18 million common shares.

**Although the stock price has declined 23% this year, the dividend yield is still below the utility mean.** The equity offers good total return potential for the next 18 months, but not for the period to 2023-2025.

Paul E. Debbas, CFA July 24, 2020

Company's Financial Strength	B+
Stock's Price Stability	80
Price Growth Persistence	80
Earnings Predictability	70

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2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
40.18	45.64	44.89	43.79	44.21	32.88	37.44	41.83	39.80	43.18	44.80	41.20	40.71	44.59	42.69	37.12	<b>38.00</b>	<b>36.90</b>	Revenues per sh	41.25
6.58	5.96	6.74	6.93	7.40	7.94	7.76	8.58	8.92	8.87	9.41	10.32	9.50	10.57	11.07	11.14	<b>12.65</b>	<b>12.95</b>	"Cash Flow" per sh	15.75
3.93	3.52	4.23	4.26	4.43	4.78	4.02	4.47	4.35	4.22	4.63	5.23	4.24	4.63	5.48	5.97	<b>7.20</b>	<b>7.75</b>	Earnings per sh <sup>A</sup>	9.50
1.00	1.16	1.20	1.24	1.37	1.56	1.56	1.92	2.40	2.52	2.64	2.80	3.02	3.29	3.58	3.87	<b>4.18</b>	<b>4.50</b>	Div'd Decl'd per sh <sup>B</sup>	5.60
4.62	5.46	7.28	7.70	8.47	7.76	8.58	11.85	12.20	10.52	12.68	12.71	16.85	15.71	13.82	12.71	<b>18.10</b>	<b>16.00</b>	Cap'l Spending per sh	12.00
20.78	23.95	28.66	31.87	32.75	36.54	37.54	41.00	42.42	45.03	45.98	47.56	51.77	50.41	54.35	60.58	<b>72.40</b>	<b>77.00</b>	Book Value per sh <sup>C</sup>	88.75
234.18	257.19	262.01	261.21	243.32	246.51	240.45	239.93	242.37	244.46	246.33	248.30	250.15	251.36	273.77	291.71	<b>300.00</b>	<b>325.00</b>	Common Shs Outst'g <sup>D</sup>	340.00
8.6	11.8	11.5	14.0	11.8	10.1	12.6	11.8	14.9	19.7	21.9	19.7	24.4	24.3	20.4	22.5	<b>20.4</b>	<b>22.5</b>	Avg Ann'l P/E Ratio	17.5
.45	.63	.62	.74	.71	.67	.80	.74	.95	1.11	1.15	.99	1.28	1.22	1.10	1.21	<b>1.10</b>	<b>1.21</b>	Relative P/E Ratio	.95
2.9%	2.8%	2.5%	2.1%	2.6%	3.2%	3.1%	3.6%	3.7%	3.0%	2.6%	2.7%	2.9%	2.9%	3.2%	2.9%	<b>3.2%</b>	<b>2.9%</b>	Avg Ann'l Div'd Yield	3.4%

CAPITAL STRUCTURE as of 3/31/20		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Debt \$28019 mill. Due in 5 Yrs \$12723 mill.		9003.0	10036	9647.0	10557	11035	10231	10183	11207	11687	10829	11400	12000	11687	10829	11400	12000	11687	10829
LT Debt \$20198 mill. LT Interest \$798 mill.		1008.0	1088.0	1079.0	1060.0	1162.0	1314.0	1065.0	1169.0	1607.0	1825.0	2400	2590	1607.0	1825.0	2400	2590	1607.0	1825.0
Incl. \$1275 mill. capitalized leases.		26.5%	25.3%	18.2%	26.5%	19.7%	19.2%	14.4%	24.5%	20.1%	17.9%	18.0%	18.0%	20.1%	17.9%	18.0%	18.0%	20.1%	17.9%
(LT interest earned: 3.3%)		11.3%	15.2%	17.2%	11.2%	14.4%	15.3%	22.2%	21.9%	12.6%	10.0%	8.0%	7.0%	12.6%	10.0%	8.0%	7.0%	12.6%	10.0%
Leases, Uncapitalized Annual rentals \$75 mill.		49.4%	50.4%	52.8%	50.5%	51.7%	52.6%	52.7%	56.4%	55.7%	51.0%	48.0%	48.0%	55.7%	51.0%	48.0%	48.0%	55.7%	51.0%
Pension Assets-12/19 \$2662 mill.		49.6%	49.2%	46.7%	49.4%	48.2%	47.3%	47.3%	43.5%	38.4%	43.4%	47.0%	51.5%	38.4%	43.4%	47.0%	51.5%	38.4%	43.4%
Oblig \$3768 mill.		18186	20015	22002	22281	23513	24963	27400	29135	38769	40734	46175	48675	38769	40734	46175	48675	38769	40734
Pfd Stock \$2278 mill. Pfd Div'd \$142 mill.		19876	23572	25191	25460	25902	28039	32931	36503	36796	36452	40200	43625	36796	36452	40200	43625	36796	36452
17.25 mill. shs. 6% mandatorily convertible pfd.;		6.8%	6.7%	6.1%	6.0%	6.1%	6.4%	5.0%	5.1%	5.1%	5.5%	6.0%	6.5%	5.1%	5.5%	6.0%	6.5%	5.1%	5.5%
5.75 mill. shs. 6.75% mandatorily convertible pfd.;		10.9%	10.9%	10.4%	9.6%	10.2%	11.1%	8.2%	9.2%	9.4%	9.1%	9.5%	10.0%	9.4%	9.1%	9.5%	10.0%	9.4%	9.1%
811,073 shs. 6% cum., \$25 par.		11.1%	11.0%	10.4%	9.6%	10.3%	11.1%	8.2%	9.2%	10.0%	9.5%	10.0%	10.0%	10.0%	9.5%	10.0%	10.0%	10.0%	9.5%
Common Stock 292,533,413 shs. as of 4/29/20		7.0%	6.5%	5.1%	4.1%	5.0%	5.8%	2.9%	3.3%	4.1%	3.9%	4.0%	4.0%	4.1%	3.9%	4.0%	4.0%	4.1%	3.9%
MARKET CAP: \$35 billion (Large Cap)		37%	41%	52%	58%	52%	48%	65%	65%	62%	62%	61%	58%	62%	62%	61%	58%	62%	62%

**ELECTRIC OPERATING STATISTICS**

	2017	2018	2019
% Change Retail Sales (KWH)	-2	-3.2	-4.3
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NMF	NMF	NMF
Peak Load, Summer (Mw)	NMF	NMF	NMF
Annual Load Factor (%)	NMF	NMF	NMF
% Change Customers (yr-end)	+8	+9	+8

**BUSINESS:** Sempra Energy is a holding co. for San Diego Gas & Electric Company, which sells electricity & gas mainly in San Diego County, & Southern California Gas Company, which distributes gas to most of Southern California. Owns 80% of Oncor (acq'd 3/18), which distributes electricity in Texas. Customers: 5.2 million electric, 6.9 million gas. Electric revenue breakdown not available. Purchases most of its power; the rest is gas. Has nonutility subsidiaries, incl. IEnova (67% owned) in Mexico. Sold commodities business in '10. Power costs: 25% of revenues. '19 reported deprec. rates: 2.5%-6.6%. Has 14,000 employees. Chairman, President & CEO: Jeffrey W. Martin. Inc.: CA. Address: 488 8th Ave., San Diego, CA 92101. Tel.: 619-696-2000. Internet: www.sempra.com.

**Sempra Energy has completed the sales of its South American utilities.** For the past two years, the company has been selling assets in order to narrow its operational and geographic focus, concentrating on the United States and Mexico. The divestitures of the utilities in Chile and Peru completed this process. The two sales raised \$5.8 billion, which will be used for debt reduction at the parent level and capital spending. The aftertax gain on the sales is estimated at \$1.7 billion-\$1.8 billion. This will be excluded from our earnings presentation as income from discontinued operations. The profits from these utilities while Sempra still owned them is also included in discontinued operations, but the company is including this in its 2020 earnings guidance of \$6.70-\$7.50 a share. This will probably contribute \$0.25 a share, give or take a few cents. Management is guiding Wall Street toward the upper end of the range. Note that the weak economy does not have a major effect on Sempra's results because utilities in California operate under a regulatory mechanism that decouples sales and volume.

**The Cameron liquefied natural gas facility on the Gulf Coast is close to completion.** The first two trains are up and running, and the third should begin operating in the current quarter. This is expected to provide net profit of \$400 million-\$450 million annually, beginning in 2021. In this segment, Sempra does not take commodity or volumetric risk, and has long-term contracts with creditworthy counterparties.

**Earnings will likely advance solidly this year and next.** Sempra's utilities in California and Texas are benefiting from rate relief. As mentioned above, the Cameron facility will make a significant contribution next year. Our 2021 earnings estimate of \$7.75 a share is within the company's targeted range of \$7.50-\$8.10. The share count will likely rise in 2021.

**This timely stock has a dividend yield that is about average for a utility.** The share price has fallen 21% this year, more than most utility issues. Total return potential is above average for the 18-month span but unimpressive for the 3- to 5-year period.

*Paul E. Debbas, CFA* July 24, 2020

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	3031	2533	2679	2964	11207
2018	2962	2564	2940	3221	11687
2019	2898	2230	2758	2943	10829
2020	3029	2371	2900	3100	11400
2021	3200	2500	3050	3250	12000

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1.75	1.20	.22	1.46	4.63
2018	1.43	1.27	1.23	1.55	5.48
2019	1.78	.85	2.00	1.34	5.97
2020	2.30	1.55	1.60	1.75	7.20
2021	2.25	1.75	1.80	1.95	7.75

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.70	.755	.755	.755	2.97
2017	.755	.8225	.8225	.8225	3.22
2018	.8225	.895	.895	.895	3.51
2019	.895	.9675	.9675	.9675	3.80
2020	.9675	1.045	1.045		

(A) Diluted EPS. Excl. nonrec. gains (losses): '09, (26c); '10, (\$1.05); '11, \$1.15; '12, (98c); '13, (30c); '15, 14c; '16, \$1.23; '17, (17c); '18, (\$2.06); '19, 16c; gain (losses) from disc. ops.: '06, \$1.21; '07, (10c); '19, 95c; '20, \$6.65. Next earnings report due early Aug. (B) Div'ds paid mid-Jan., Apr., July, Oct. ■ Div'd reinvestment plan avail. (C) Incl. intang. In '19: \$13.37/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate all'd on com. eq.: SD&E in '20: 10.2%; SoCalGas in '20: 10.05%; earned on avg. com. eq., '19: 10.4%. Regulatory Climate: Average.

Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	AEE	Industry	Sector(s)	S&P 500
Current Qtr.	3.40%	N/A	N/A	N/A
Next Qtr.	N/A	N/A	N/A	N/A
Current Year	3.60%	N/A	N/A	N/A
Next Year	8.40%	N/A	N/A	N/A
Next 5 Years (per annum)	6.00%	N/A	N/A	N/A
Past 5 Years (per annum)	8.24%	N/A	N/A	N/A



**Analyst Price Targets (10) >**

Average 85.20



**Upgrades & Downgrades >**

- Maintains Morgan Stanley: to Equal-Weight 10/5/2020
- Downgrade Barclays: Equal-Weight to Underweight 9/21/2020
- Maintains Morgan Stanley: to Equal-Weight 9/18/2020
- Downgrade B of A Securities: Buy to Neutral 8/13/2020
- Maintains BMO Capital: to Outperform 8/10/2020
- Maintains B of A Securities: to Buy 7/7/2020

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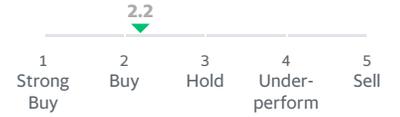
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Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	AEP	Industry	Sector(s)	S&P 500
Current Qtr.	-0.70%	N/A	N/A	N/A
Next Qtr.	30.00%	N/A	N/A	N/A
Current Year	2.10%	N/A	N/A	N/A
Next Year	7.40%	N/A	N/A	N/A
Next 5 Years (per annum)	5.63%	N/A	N/A	N/A
Past 5 Years (per annum)	6.58%	N/A	N/A	N/A



**Analyst Price Targets (15) >**

Average 93.07



**Upgrades & Downgrades >**

- Maintains** Morgan Stanley: to Overweight 9/18/2020
- Maintains** KeyBanc: to Overweight 7/21/2020
- Maintains** Morgan Stanley: to Overweight 6/17/2020
- Maintains** UBS: to Buy 6/5/2020
- Maintains** Morgan Stanley: to Overweight 5/15/2020
- Upgrade** Evercore ISI Group: In-Line to Outperform 4/20/2020

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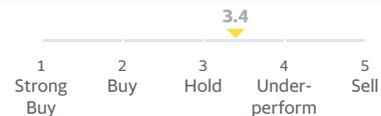
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Up Last 7 Days	N/A	2	1	2
Up Last 30 Days	N/A	2	1	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	2	N/A	N/A	N/A

Growth Estimates	AGR	Industry	Sector(s)	S&P 500
Current Qtr.	2.50%	N/A	N/A	N/A
Next Qtr.	-10.80%	N/A	N/A	N/A
Current Year	N/A	N/A	N/A	N/A
Next Year	10.60%	N/A	N/A	N/A
Next 5 Years (per annum)	4.60%	N/A	N/A	N/A
Past 5 Years (per annum)	1.74%	N/A	N/A	N/A



**Analyst Price Targets (8) >**

Average 47.50



**Upgrades & Downgrades >**

<b>Maintains</b>	Morgan Stanley: to Equal-Weight	9/18/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	8/14/2020
<b>Upgrade</b>	Wells Fargo: Equal-Weight to Overweight	7/1/2020
<b>Upgrade</b>	B of A Securities: Underperform to Neutral	4/30/2020
<b>Downgrade</b>	Goldman Sachs: Neutral to Sell	1/16/2020
<b>Maintains</b>	JP Morgan: to Underweight	10/14/2019

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EPS Revisions	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	1	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	ALE	Industry	Sector(s)	S&P 500
Current Qtr.	10.00%	N/A	N/A	N/A
Next Qtr.	-12.50%	N/A	N/A	N/A
Current Year	-7.20%	N/A	N/A	N/A
Next Year	7.80%	N/A	N/A	N/A
Next 5 Years (per annum)	7.00%	N/A	N/A	N/A
Past 5 Years (per annum)	1.25%	N/A	N/A	N/A

<b>BKH</b> Black Hills Corporation	55.85	+0.51	+0.92%
<b>AVA</b> Avista Corporation	34.26	-0.35	-1.01%
<b>LNT</b> Alliant Energy Corporation	53.31	+0.22	+0.41%
<b>IDA</b> IDACORP, Inc.	83.08	+0.11	+0.13%
<b>NWE</b> NorthWestern Corporation	50.87	+0.84	+1.68%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (6) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	Mizuho: to Neutral	8/26/2020
<b>Maintains</b>	JP Morgan: to Underweight	6/1/2020
<b>Maintains</b>	Wells Fargo: to Equal-Weight	5/7/2020
<b>Upgrade</b>	Mizuho: Underperform to Neutral	3/3/2020
<b>Upgrade</b>	Guggenheim: Neutral to Buy	1/8/2020
<b>Downgrade</b>	Mizuho: Neutral to Underperform	2/11/2019

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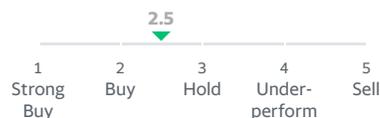
90 Days Ago 0.14 0.21 0.66 0.77

EPS Revisions	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	1
Up Last 30 Days	N/A	N/A	N/A	4
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	1	N/A

Growth Estimates	AQN.TO	Industry	Sector(s)	S&P 500
Current Qtr.	N/A	N/A	N/A	N/A
Next Qtr.	10.00%	N/A	N/A	N/A
Current Year	1.60%	N/A	N/A	N/A
Next Year	15.60%	N/A	N/A	N/A
Next 5 Years (per annum)	5.70%	N/A	N/A	N/A
Past 5 Years (per annum)	17.39%	N/A	N/A	N/A



Recommendation Rating >



Analyst Price Targets (13) >

Average 15.47



Upgrades & Downgrades >

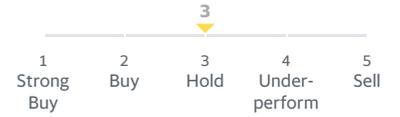
- Maintains** Morgan Stanley: to Equal-Weight 10/5/2020
- Maintains** Morgan Stanley: to Equal-Weight 9/18/2020
- Maintains** Wells Fargo: to Equal-Weight 8/17/2020
- Maintains** Morgan Stanley: to Equal-Weight 8/14/2020
- Maintains** Morgan Stanley: to Equal-Weight 6/17/2020
- Maintains** Morgan Stanley: to Equal-Weight 5/15/2020

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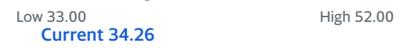
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	AVA	Industry	Sector(s)	S&P 500
Current Qtr.	100.00%	N/A	N/A	N/A
Next Qtr.	-2.60%	N/A	N/A	N/A
Current Year	N/A	N/A	N/A	N/A
Next Year	10.10%	N/A	N/A	N/A
Next 5 Years (per annum)	5.80%	N/A	N/A	N/A
Past 5 Years (per annum)	-5.94%	N/A	N/A	N/A



**Analyst Price Targets (5) >**

Average 39.60



**Upgrades & Downgrades >**

- Downgrade** B of A Securities: Buy to Neutral 9/22/2020
- Upgrade** KeyBanc: Underweight to Sector Weight 3/24/2020
- Maintains** KeyBanc: to Underweight 1/17/2020
- Maintains** B of A Securities: to Underperform 1/16/2020
- Downgrade** Guggenheim: Neutral to Sell 1/8/2020
- Maintains** KeyBanc: to Underweight 10/21/2019

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<b>EPS Trend</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.48	1.13	3.58	3.87
7 Days Ago	0.48	1.13	3.58	3.87
30 Days Ago	0.48	1.13	3.58	3.87
60 Days Ago	0.48	1.1	3.56	3.86
90 Days Ago	0.48	1.2	3.56	3.86

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	BKH	Industry	Sector(s)	S&P 500
Current Qtr.	9.10%	N/A	N/A	N/A
Next Qtr.	N/A	N/A	N/A	N/A
Current Year	1.40%	N/A	N/A	N/A
Next Year	8.10%	N/A	N/A	N/A
Next 5 Years (per annum)	4.69%	N/A	N/A	N/A
Past 5 Years (per annum)	-7.70%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	2	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	CMS	Industry	Sector(s)	S&P 500
Current Qtr.	-8.20%	N/A	N/A	N/A
Next Qtr.	-5.90%	N/A	N/A	N/A
Current Year	6.80%	N/A	N/A	N/A
Next Year	7.10%	N/A	N/A	N/A
Next 5 Years (per annum)	7.08%	N/A	N/A	N/A
Past 5 Years (per annum)	7.18%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	CNP	Industry	Sector(s)	S&P 500
Current Qtr.	-45.30%	N/A	N/A	N/A
Next Qtr.	-53.30%	N/A	N/A	N/A
Current Year	-27.90%	N/A	N/A	N/A
Next Year	4.70%	N/A	N/A	N/A
Next 5 Years (per annum)	-6.65%	N/A	N/A	N/A
Past 5 Years (per annum)	10.26%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	1	1	1	2
Up Last 30 Days	1	1	2	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	D	Industry	Sector(s)	S&P 500
Current Qtr.	-13.60%	N/A	N/A	N/A
Next Qtr.	-30.50%	N/A	N/A	N/A
Current Year	-15.60%	N/A	N/A	N/A
Next Year	7.80%	N/A	N/A	N/A
Next 5 Years (per annum)	2.74%	N/A	N/A	N/A
Past 5 Years (per annum)	3.37%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	1	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	DTE	Industry	Sector(s)	S&P 500
Current Qtr.	-1.00%	N/A	N/A	N/A
Next Qtr.	21.50%	N/A	N/A	N/A
Current Year	5.70%	N/A	N/A	N/A
Next Year	6.80%	N/A	N/A	N/A
Next 5 Years (per annum)	5.95%	N/A	N/A	N/A
Past 5 Years (per annum)	7.07%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	2	N/A	3	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	1

<b>Growth Estimates</b>	DUK	Industry	Sector(s)	S&P 500
Current Qtr.	1.70%	N/A	N/A	N/A
Next Qtr.	14.30%	N/A	N/A	N/A
Current Year	0.40%	N/A	N/A	N/A
Next Year	2.60%	N/A	N/A	N/A
Next 5 Years (per annum)	1.60%	N/A	N/A	N/A
Past 5 Years (per annum)	0.38%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	ED	Industry	Sector(s)	S&P 500
Current Qtr.	-1.30%	N/A	N/A	N/A
Next Qtr.	-10.30%	N/A	N/A	N/A
Current Year	-3.20%	N/A	N/A	N/A
Next Year	6.40%	N/A	N/A	N/A
Next 5 Years (per annum)	2.55%	N/A	N/A	N/A
Past 5 Years (per annum)	1.62%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	2	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	1

<b>Growth Estimates</b>	EIX	Industry	Sector(s)	S&P 500
Current Qtr.	-0.70%	N/A	N/A	N/A
Next Qtr.	23.20%	N/A	N/A	N/A
Current Year	-5.50%	N/A	N/A	N/A
Next Year	2.00%	N/A	N/A	N/A
Next 5 Years (per annum)	1.40%	N/A	N/A	N/A
Past 5 Years (per annum)	0.95%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	1	1	1	N/A
Up Last 30 Days	1	1	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	1

<b>Growth Estimates</b>	EMA.TO	Industry	Sector(s)	S&P 500
Current Qtr.	33.30%	N/A	N/A	N/A
Next Qtr.	21.70%	N/A	N/A	N/A
Current Year	3.50%	N/A	N/A	N/A
Next Year	12.30%	N/A	N/A	N/A
Next 5 Years (per annum)	5.74%	N/A	N/A	N/A
Past 5 Years (per annum)	12.34%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	1	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	N/A	N/A

<b>Growth Estimates</b>	ES	Industry	Sector(s)	S&P 500
Current Qtr.	5.10%	N/A	N/A	N/A
Next Qtr.	9.20%	N/A	N/A	N/A
Current Year	7.10%	N/A	N/A	N/A
Next Year	6.90%	N/A	N/A	N/A
Next 5 Years (per annum)	6.44%	N/A	N/A	N/A
Past 5 Years (per annum)	4.45%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	2	1	2
Up Last 30 Days	1	3	2	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	1	1	1	N/A

<b>Growth Estimates</b>	ETR	Industry	Sector(s)	S&P 500
Current Qtr.	-4.80%	N/A	N/A	N/A
Next Qtr.	-1.50%	N/A	N/A	N/A
Current Year	3.10%	N/A	N/A	N/A
Next Year	6.60%	N/A	N/A	N/A
Next 5 Years (per annum)	5.40%	N/A	N/A	N/A
Past 5 Years (per annum)	1.88%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	EVRG	Industry	Sector(s)	S&P 500
Current Qtr.	2.50%	N/A	N/A	N/A
Next Qtr.	-3.10%	N/A	N/A	N/A
Current Year	4.20%	N/A	N/A	N/A
Next Year	7.60%	N/A	N/A	N/A
Next 5 Years (per annum)	6.80%	N/A	N/A	N/A
Past 5 Years (per annum)	-0.13%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	EXC	Industry	Sector(s)	S&P 500
Current Qtr.	-8.70%	N/A	N/A	N/A
Next Qtr.	-14.50%	N/A	N/A	N/A
Current Year	-8.10%	N/A	N/A	N/A
Next Year	-0.30%	N/A	N/A	N/A
Next 5 Years (per annum)	-3.48%	N/A	N/A	N/A
Past 5 Years (per annum)	5.11%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	2	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	FE	Industry	Sector(s)	S&P 500
Current Qtr.	N/A	N/A	N/A	N/A
Next Qtr.	-5.50%	N/A	N/A	N/A
Current Year	-3.10%	N/A	N/A	N/A
Next Year	5.20%	N/A	N/A	N/A
Next 5 Years (per annum)	-2.40%	N/A	N/A	N/A
Past 5 Years (per annum)	-2.09%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	3	3	4	4
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	FTS.TO	Industry	Sector(s)	S&P 500
Current Qtr.	1.50%	N/A	N/A	N/A
Next Qtr.	9.70%	N/A	N/A	N/A
Current Year	1.20%	N/A	N/A	N/A
Next Year	10.10%	N/A	N/A	N/A
Next 5 Years (per annum)	5.40%	N/A	N/A	N/A
Past 5 Years (per annum)	17.84%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

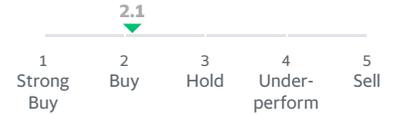
<b>Growth Estimates</b>	HE	Industry	Sector(s)	S&P 500
Current Qtr.	-12.10%	N/A	N/A	N/A
Next Qtr.	-34.40%	N/A	N/A	N/A
Current Year	-14.10%	N/A	N/A	N/A
Next Year	11.10%	N/A	N/A	N/A
Next 5 Years (per annum)	3.30%	N/A	N/A	N/A
Past 5 Years (per annum)	3.87%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	IDA	Industry	Sector(s)	S&P 500
Current Qtr.	5.60%	N/A	N/A	N/A
Next Qtr.	-19.40%	N/A	N/A	N/A
Current Year	-1.10%	N/A	N/A	N/A
Next Year	3.90%	N/A	N/A	N/A
Next 5 Years (per annum)	2.60%	N/A	N/A	N/A
Past 5 Years (per annum)	4.44%	N/A	N/A	N/A

Up Last 7 Days	N/A	N/A	N/A	1
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	LNT	Industry	Sector(s)	S&P 500
Current Qtr.	-3.20%	N/A	N/A	N/A
Next Qtr.	-37.00%	N/A	N/A	N/A
Current Year	4.30%	N/A	N/A	N/A
Next Year	6.60%	N/A	N/A	N/A
Next 5 Years (per annum)	5.30%	N/A	N/A	N/A
Past 5 Years (per annum)	8.33%	N/A	N/A	N/A



**Analyst Price Targets (8) >**

Average 57.00



**Upgrades & Downgrades >**

- Downgrade** Barclays: Overweight to Equal-Weight 9/21/2020
- Maintains** UBS: to Neutral 8/11/2020
- Maintains** Wells Fargo: to Overweight 5/13/2020
- Upgrade** Guggenheim: Neutral to Buy 3/31/2020
- Maintains** Barclays: to Overweight 3/26/2020
- Maintains** Mizuho: to Neutral 3/3/2020

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<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	MGEE	Industry	Sector(s)	S&P 500
Current Qtr.	N/A	N/A	N/A	N/A
Next Qtr.	N/A	N/A	N/A	N/A
Current Year	N/A	N/A	N/A	N/A
Next Year	8.00%	N/A	N/A	N/A
Next 5 Years (per annum)	4.40%	N/A	N/A	N/A
Past 5 Years (per annum)	2.50%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	4	4	4	8
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	NEE	Industry	Sector(s)	S&P 500
Current Qtr.	7.90%	N/A	N/A	N/A
Next Qtr.	9.70%	N/A	N/A	N/A
Current Year	9.10%	N/A	N/A	N/A
Next Year	8.90%	N/A	N/A	N/A
Next 5 Years (per annum)	8.14%	N/A	N/A	N/A
Past 5 Years (per annum)	11.17%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	NWE	Industry	Sector(s)	S&P 500
Current Qtr.	26.00%	N/A	N/A	N/A
Next Qtr.	4.20%	N/A	N/A	N/A
Current Year	-2.60%	N/A	N/A	N/A
Next Year	8.70%	N/A	N/A	N/A
Next 5 Years (per annum)	3.80%	N/A	N/A	N/A
Past 5 Years (per annum)	3.94%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	1	1

<b>Growth Estimates</b>	OGE	Industry	Sector(s)	S&P 500
Current Qtr.	-5.60%	N/A	N/A	N/A
Next Qtr.	27.80%	N/A	N/A	N/A
Current Year	-1.40%	N/A	N/A	N/A
Next Year	3.80%	N/A	N/A	N/A
Next 5 Years (per annum)	2.40%	N/A	N/A	N/A
Past 5 Years (per annum)	9.96%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	OTTR	Industry	Sector(s)	S&P 500
Current Qtr.	3.20%	N/A	N/A	N/A
Next Qtr.	11.80%	N/A	N/A	N/A
Current Year	2.30%	N/A	N/A	N/A
Next Year	7.70%	N/A	N/A	N/A
Next 5 Years (per annum)	9.00%	N/A	N/A	N/A
Past 5 Years (per annum)	7.60%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	1
Up Last 30 Days	1	2	3	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	PEG	Industry	Sector(s)	S&P 500
Current Qtr.	-3.10%	N/A	N/A	N/A
Next Qtr.	N/A	N/A	N/A	N/A
Current Year	3.40%	N/A	N/A	N/A
Next Year	N/A	N/A	N/A	N/A
Next 5 Years (per annum)	1.47%	N/A	N/A	N/A
Past 5 Years (per annum)	3.50%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	1	1	1	N/A
Up Last 30 Days	1	1	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	PNM	Industry	Sector(s)	S&P 500
Current Qtr.	-7.00%	N/A	N/A	N/A
Next Qtr.	-30.60%	N/A	N/A	N/A
Current Year	2.30%	N/A	N/A	N/A
Next Year	5.40%	N/A	N/A	N/A
Next 5 Years (per annum)	4.95%	N/A	N/A	N/A
Past 5 Years (per annum)	4.02%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	PNW	Industry	Sector(s)	S&P 500
Current Qtr.	-3.60%	N/A	N/A	N/A
Next Qtr.	-54.40%	N/A	N/A	N/A
Current Year	1.70%	N/A	N/A	N/A
Next Year	3.50%	N/A	N/A	N/A
Next 5 Years (per annum)	3.75%	N/A	N/A	N/A
Past 5 Years (per annum)	13.63%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	1	2	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	POR	Industry	Sector(s)	S&P 500
Current Qtr.	-177.00%	N/A	N/A	N/A
Next Qtr.	-14.50%	N/A	N/A	N/A
Current Year	-37.70%	N/A	N/A	N/A
Next Year	71.80%	N/A	N/A	N/A
Next 5 Years (per annum)	4.30%	N/A	N/A	N/A
Past 5 Years (per annum)	1.78%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	1	1
Up Last 30 Days	N/A	N/A	1	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	PPL	Industry	Sector(s)	S&P 500
Current Qtr.	N/A	N/A	N/A	N/A
Next Qtr.	1.80%	N/A	N/A	N/A
Current Year	-1.20%	N/A	N/A	N/A
Next Year	1.70%	N/A	N/A	N/A
Next 5 Years (per annum)	-16.20%	N/A	N/A	N/A
Past 5 Years (per annum)	1.54%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	1	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	SO	Industry	Sector(s)	S&P 500
Current Qtr.	-8.20%	N/A	N/A	N/A
Next Qtr.	40.70%	N/A	N/A	N/A
Current Year	1.60%	N/A	N/A	N/A
Next Year	5.10%	N/A	N/A	N/A
Next 5 Years (per annum)	4.55%	N/A	N/A	N/A
Past 5 Years (per annum)	3.96%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	2	N/A	3	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	SRE	Industry	Sector(s)	S&P 500
Current Qtr.	-1.30%	N/A	N/A	N/A
Next Qtr.	-2.60%	N/A	N/A	N/A
Current Year	12.10%	N/A	N/A	N/A
Next Year	5.40%	N/A	N/A	N/A
Next 5 Years (per annum)	6.27%	N/A	N/A	N/A
Past 5 Years (per annum)	3.17%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	3	1	3	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	WEC	Industry	Sector(s)	S&P 500
Current Qtr.	1.40%	N/A	N/A	N/A
Next Qtr.	5.20%	N/A	N/A	N/A
Current Year	4.70%	N/A	N/A	N/A
Next Year	6.70%	N/A	N/A	N/A
Next 5 Years (per annum)	5.95%	N/A	N/A	N/A
Past 5 Years (per annum)	6.98%	N/A	N/A	N/A

<b>EPS Revisions</b>	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	1	1	N/A
Up Last 30 Days	N/A	1	1	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	1

<b>Growth Estimates</b>	XEL	Industry	Sector(s)	S&P 500
Current Qtr.	7.90%	N/A	N/A	N/A
Next Qtr.	5.40%	N/A	N/A	N/A
Current Year	5.30%	N/A	N/A	N/A
Next Year	6.80%	N/A	N/A	N/A
Next 5 Years (per annum)	5.85%	N/A	N/A	N/A
Past 5 Years (per annum)	5.68%	N/A	N/A	N/A

**Quote Overview****Stock Activity**

Open	14.90
Day Low	14.83
Day High	15.45
52 Wk Low	9.53
52 Wk High	16.85
Avg. Volume	688,588
Market Cap	8.74 B
Dividend	0.63 ( 4.27%)
Beta	0.46

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	0.14
Current Qtr Est	0.14
Current Yr Est	0.64
Exp Earnings Date	11/5/20
Prior Year EPS	0.63
Exp EPS Growth (3-5yr)	7.87%
Forward PE	23.14
PEG Ratio	2.94

Utilities » Utility - Electric Power

**Quote Overview**

Stock Activity		Key Earnings Data	
Open	53.12	Earnings ESP	0.00%
Day Low	52.91	Most Accurate Est	0.62
Day High	53.92	Current Qtr Est	0.62
52 Wk Low	48.22	Current Yr Est	3.31
52 Wk High	87.83	Exp Earnings Date	11/4/20
Avg. Volume	392,846	Prior Year EPS	3.59
Market Cap	2.76 B	Exp EPS Growth (3-5yr)	NA
Dividend	2.47 ( 4.65%)	Forward PE	16.05
Beta	0.33	PEG Ratio	NA

Utilities » Utility - Electric Power

**Quote Overview**

Stock Activity		Key Earnings Data	
Open	53.15	Earnings ESP	0.00%
Day Low	52.53	Most Accurate Est	0.94
Day High	53.52	Current Qtr Est	0.94
52 Wk Low	37.66	Current Yr Est	2.43
52 Wk High	60.28	Exp Earnings Date	11/4/20
Avg. Volume	1,615,929	Prior Year EPS	2.31
Market Cap	13.25 B	Exp EPS Growth (3-5yr)	5.54%
Dividend	1.52 ( 2.86%)	Forward PE	21.85
Beta	0.39	PEG Ratio	3.94

Utilities » Utility - Electric Power

**Quote Overview**

Stock Activity		Key Earnings Data	
Open	79.85	Earnings ESP	2.30%
Day Low	78.82	Most Accurate Est	1.56
Day High	81.06	Current Qtr Est	1.53
52 Wk Low	58.74	Current Yr Est	3.46
52 Wk High	87.66	Exp Earnings Date	11/13/20
Avg. Volume	1,069,047	Prior Year EPS	3.35
Market Cap	19.72 B	Exp EPS Growth (3-5yr)	6.89%
Dividend	1.98 ( 2.48%)	Forward PE	23.04
Beta	0.28	PEG Ratio	3.34

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	85.25
Day Low	84.25
Day High	87.33
52 Wk Low	65.14
52 Wk High	104.97
Avg. Volume	2,193,164
Market Cap	42.32 B
Dividend	2.80 ( 3.28%)
Beta	0.31

**Key Earnings Data**

Earnings ESP	-0.35%
Most Accurate Est	1.44
Current Qtr Est	1.44
Current Yr Est	4.32
Exp Earnings Date <sup>*BMO</sup>	10/22/20
Prior Year EPS	4.24
Exp EPS Growth (3-5yr)	5.59%
Forward PE	19.77
PEG Ratio	3.54

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	52.71
Day Low	52.36
Day High	53.67
52 Wk Low	35.62
52 Wk High	57.24
Avg. Volume	507,721
Market Cap	16.19 B
Dividend	1.76 ( 3.36%)
Beta	0.29

**Key Earnings Data**

Earnings ESP	8.87%
Most Accurate Est	0.45
Current Qtr Est	0.41
Current Yr Est	2.17
Exp Earnings Date	*AMC10/20/20
Prior Year EPS	2.17
Exp EPS Growth (3-5yr)	5.31%
Forward PE	24.11
PEG Ratio	4.54

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	34.69
Day Low	34.23
Day High	34.93
52 Wk Low	32.09
52 Wk High	53.00
Avg. Volume	530,398
Market Cap	2.35 B
Dividend	1.62 ( 4.68%)
Beta	0.43

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	0.17
Current Qtr Est	0.17
Current Yr Est	1.88
Exp Earnings Date	11/5/20
Prior Year EPS	1.74
Exp EPS Growth (3-5yr)	5.14%
Forward PE	18.46
PEG Ratio	3.59

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	55.79
Day Low	54.81
Day High	55.91
52 Wk Low	48.07
52 Wk High	87.12
Avg. Volume	368,522
Market Cap	3.47 B
Dividend	2.14 ( 3.87%)
Beta	0.29

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	0.49
Current Qtr Est	0.49
Current Yr Est	3.55
Exp Earnings Date	11/2/20
Prior Year EPS	3.53
Exp EPS Growth (3-5yr)	5.76%
Forward PE	15.59
PEG Ratio	2.71

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	20.02
Day Low	19.71
Day High	20.24
52 Wk Low	11.58
52 Wk High	30.23
Avg. Volume	4,517,867
Market Cap	10.86 B
Dividend	0.60 ( 3.01%)
Beta	0.96

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	0.29
Current Qtr Est	0.29
Current Yr Est	1.28
Exp Earnings Date	*BMO11/5/20
Prior Year EPS	1.79
Exp EPS Growth (3-5yr)	5.00%
Forward PE	15.57
PEG Ratio	3.11

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	61.71
Day Low	60.84
Day High	61.92
52 Wk Low	46.03
52 Wk High	69.17
Avg. Volume	1,708,221
Market Cap	17.65 B
Dividend	1.63 ( 2.64%)
Beta	0.16

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	0.77
Current Qtr Est	0.77
Current Yr Est	2.65
Exp Earnings Date	10/22/20
Prior Year EPS	2.49
Exp EPS Growth (3-5yr)	7.01%
Forward PE	23.28
PEG Ratio	3.32

[Utilities » Utility - Electric Power](#)

## Quote Overview

### Stock Activity

Open	79.60
Day Low	79.11
Day High	80.33
52 Wk Low	62.03
52 Wk High	95.10
Avg. Volume	2,720,469
Market Cap	26.68 B
Dividend	3.06 ( 3.84%)
Beta	0.14

### Key Earnings Data

Earnings ESP	0.00%
Most Accurate Est	1.53
Current Qtr Est	1.53
Current Yr Est	4.26
Exp Earnings Date	11/2/20
Prior Year EPS	4.37
Exp EPS Growth (3-5yr)	2.00%
Forward PE	18.75
PEG Ratio	9.37

Utilities » Utility - Electric Power

## Research Reports For ED

**Quote Overview****Stock Activity**

Open	79.60
Day Low	79.21
Day High	80.69
52 Wk Low	57.79
52 Wk High	90.89
Avg. Volume	3,960,338
Market Cap	67.04 B
Dividend	3.76 ( 4.71%)
Beta	0.36

**Key Earnings Data**

Earnings ESP	3.79%
Most Accurate Est	1.10
Current Qtr Est	1.06
Current Yr Est	3.63
Exp Earnings Date	11/6/20
Prior Year EPS	4.24
Exp EPS Growth (3-5yr)	3.53%
Forward PE	21.98
PEG Ratio	6.23

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	114.48
Day Low	113.49
Day High	115.25
52 Wk Low	71.21
52 Wk High	135.67
Avg. Volume	1,010,511
Market Cap	21.99 B
Dividend	4.05 ( 3.55%)
Beta	0.61

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	1.84
Current Qtr Est	1.84
Current Yr Est	6.68
Exp Earnings Date	10/26/20
Prior Year EPS	6.30
Exp EPS Growth (3-5yr)	5.67%
Forward PE	17.08
PEG Ratio	3.01

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	90.98
Day Low	89.90
Day High	92.15
52 Wk Low	62.13
52 Wk High	103.79
Avg. Volume	3,935,727
Market Cap	67.35 B
Dividend	3.86 ( 4.21%)
Beta	0.23

**Key Earnings Data**

Earnings ESP	1.49%
Most Accurate Est	1.84
Current Qtr Est	1.81
Current Yr Est	5.08
Exp Earnings Date	*BMO11/13/20
Prior Year EPS	5.06
Exp EPS Growth (3-5yr)	3.10%
Forward PE	18.03
PEG Ratio	5.82

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	51.76
Day Low	51.59
Day High	52.86
52 Wk Low	43.63
52 Wk High	78.93
Avg. Volume	2,558,046
Market Cap	19.48 B
Dividend	2.55 ( 4.95%)
Beta	0.46

**Key Earnings Data**

Earnings ESP	0.70%
Most Accurate Est	1.44
Current Qtr Est	1.43
Current Yr Est	4.45
Exp Earnings Date	11/3/20
Prior Year EPS	4.70
Exp EPS Growth (3-5yr)	2.89%
Forward PE	11.57
PEG Ratio	4.00

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	103.42
Day Low	102.34
Day High	105.06
52 Wk Low	75.20
52 Wk High	135.55
Avg. Volume	1,125,932
Market Cap	20.75 B
Dividend	3.72 ( 3.59%)
Beta	0.51

**Key Earnings Data**

Earnings ESP	-2.04%
Most Accurate Est	2.50
Current Qtr Est	2.55
Current Yr Est	5.61
Exp Earnings Date	11/4/20
Prior Year EPS	5.40
Exp EPS Growth (3-5yr)	5.43%
Forward PE	18.48
PEG Ratio	3.41

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	51.91
Day Low	51.52
Day High	52.63
52 Wk Low	42.01
52 Wk High	76.57
Avg. Volume	1,493,117
Market Cap	11.79 B
Dividend	2.02 ( 3.89%)
Beta	0.41

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	1.72
Current Qtr Est	1.72
Current Yr Est	3.00
Exp Earnings Date	11/4/20
Prior Year EPS	2.89
Exp EPS Growth (3-5yr)	6.41%
Forward PE	17.33
PEG Ratio	2.70

Oils-Energy » Alternative Energy - Other

**Quote Overview****Stock Activity**

Open	87.42
Day Low	86.83
Day High	89.56
52 Wk Low	60.69
52 Wk High	99.42
Avg. Volume	1,480,333
Market Cap	29.83 B
Dividend	2.27 ( 2.61%)
Beta	0.32

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	1.02
Current Qtr Est	1.02
Current Yr Est	3.62
Exp Earnings Date	11/3/20
Prior Year EPS	3.45
Exp EPS Growth (3-5yr)	6.59%
Forward PE	24.07
PEG Ratio	3.65

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	36.05
Day Low	35.73
Day High	36.89
52 Wk Low	29.28
52 Wk High	50.54
Avg. Volume	4,981,452
Market Cap	35.02 B
Dividend	1.53 ( 4.26%)
Beta	0.39

**Key Earnings Data**

Earnings ESP	-1.48%
Most Accurate Est	0.83
Current Qtr Est	0.84
Current Yr Est	2.96
Exp Earnings Date	10/29/20
Prior Year EPS	3.22
Exp EPS Growth (3-5yr)	4.00%
Forward PE	12.13
PEG Ratio	3.03

Utilities » Utility - Electric Power

**Quote Overview**

Stock Activity		Key Earnings Data	
Open	29.66	Earnings ESP	3.22%
Day Low	29.42	Most Accurate Est	0.77
Day High	30.04	Current Qtr Est	0.75
52 Wk Low	22.85	Current Yr Est	2.50
52 Wk High	52.52	Exp Earnings Date	11/2/20
Avg. Volume	4,089,193	Prior Year EPS	2.58
Market Cap	16.00 B	Exp EPS Growth (3-5yr)	NA
Dividend	1.56 ( 5.28%)	Forward PE	11.81
Beta	0.26	PEG Ratio	NA

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	41.38
Day Low	41.16
Day High	41.92
52 Wk Low	28.59
52 Wk High	44.72
Avg. Volume	321,934
Market Cap	19.17 B
Dividend	1.45 ( 3.52%)
Beta	0.21

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	0.51
Current Qtr Est	0.51
Current Yr Est	1.98
Exp Earnings Date	*BMO11/6/20
Prior Year EPS	1.92
Exp EPS Growth (3-5yr)	6.11%
Forward PE	20.85
PEG Ratio	3.41

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	34.02
Day Low	33.72
Day High	34.36
52 Wk Low	32.02
52 Wk High	55.15
Avg. Volume	445,918
Market Cap	3.70 B
Dividend	1.32 ( 3.89%)
Beta	0.12

**Key Earnings Data**

Earnings ESP	NA
Most Accurate Est	NA
Current Qtr Est	NA
Current Yr Est	1.70
Exp Earnings Date	11/6/20
Prior Year EPS	1.99
Exp EPS Growth (3-5yr)	1.67%
Forward PE	19.93
PEG Ratio	11.94

[Utilities » Utility - Electric Power](#)

**Quote Overview****Stock Activity**

Open	82.97
Day Low	81.91
Day High	83.43
52 Wk Low	69.05
52 Wk High	113.58
Avg. Volume	312,951
Market Cap	4.19 B
Dividend	2.68 ( 3.23%)
Beta	0.46

**Key Earnings Data**

Earnings ESP	NA
Most Accurate Est	NA
Current Qtr Est	NA
Current Yr Est	4.55
Exp Earnings Date	10/29/20
Prior Year EPS	4.61
Exp EPS Growth (3-5yr)	2.63%
Forward PE	18.24
PEG Ratio	6.93

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	63.91
Day Low	63.20
Day High	64.19
52 Wk Low	47.19
52 Wk High	83.26
Avg. Volume	112,962
Market Cap	2.31 B
Dividend	1.48 ( 2.32%)
Beta	0.45

**Key Earnings Data**

Earnings ESP	2.25%
Most Accurate Est	0.91
Current Qtr Est	0.89
Current Yr Est	2.62
Exp Earnings Date	11/4/20
Prior Year EPS	2.51
Exp EPS Growth (3-5yr)	4.38%
Forward PE	24.40
PEG Ratio	5.57

Utilities » Utility - Electric Power

**Quote Overview**

Stock Activity		Key Earnings Data	
Open	283.84	Earnings ESP	0.92%
Day Low	282.93	Most Accurate Est	2.75
Day High	288.98	Current Qtr Est	2.73
52 Wk Low	174.80	Current Yr Est	9.16
52 Wk High	299.30	Exp Earnings Date	10/27/20
Avg. Volume	2,079,099	Prior Year EPS	8.37
Market Cap	137.67 B	Exp EPS Growth (3-5yr)	7.94%
Dividend	5.60 ( 1.99%)	Forward PE	30.71
Beta	0.20	PEG Ratio	3.87

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	50.39
Day Low	49.99
Day High	50.95
52 Wk Low	45.06
52 Wk High	80.52
Avg. Volume	350,001
Market Cap	2.53 B
Dividend	2.40 ( 4.80%)
Beta	0.30

**Key Earnings Data**

Earnings ESP	NA
Most Accurate Est	NA
Current Qtr Est	NA
Current Yr Est	3.35
Exp Earnings Date	11/3/20
Prior Year EPS	3.42
Exp EPS Growth (3-5yr)	3.39%
Forward PE	14.93
PEG Ratio	4.41

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	31.17
Day Low	31.04
Day High	32.18
52 Wk Low	23.01
52 Wk High	46.43
Avg. Volume	1,291,803
Market Cap	6.22 B
Dividend	1.55 ( 4.99%)
Beta	0.72

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	1.24
Current Qtr Est	1.24
Current Yr Est	2.11
Exp Earnings Date	11/5/20
Prior Year EPS	2.16
Exp EPS Growth (3-5yr)	3.69%
Forward PE	14.76
PEG Ratio	4.00

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	37.28
Day Low	37.22
Day High	37.78
52 Wk Low	30.95
52 Wk High	57.74
Avg. Volume	132,343
Market Cap	1.51 B
Dividend	1.48 ( 3.99%)
Beta	0.35

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	0.65
Current Qtr Est	0.65
Current Yr Est	2.22
Exp Earnings Date	11/2/20
Prior Year EPS	2.17
Exp EPS Growth (3-5yr)	NA
Forward PE	16.69
PEG Ratio	NA

[Utilities » Utility - Electric Power](#)

## Quote Overview

### Stock Activity

Open	77.92
Day Low	77.53
Day High	80.34
52 Wk Low	60.05
52 Wk High	105.51
Avg. Volume	825,519
Market Cap	8.76 B
Dividend	3.13 ( 4.02%)
Beta	0.31

### Key Earnings Data

Earnings ESP	-5.97%
Most Accurate Est	2.68
Current Qtr Est	2.85
Current Yr Est	4.82
Exp Earnings Date <sup>*BMO</sup>	10/30/20
Prior Year EPS	4.77
Exp EPS Growth (3-5yr)	4.70%
Forward PE	16.15
PEG Ratio	3.44

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	43.14
Day Low	42.52
Day High	43.89
52 Wk Low	27.08
52 Wk High	56.14
Avg. Volume	414,126
Market Cap	3.41 B
Dividend	1.23 ( 2.87%)
Beta	0.63

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	1.18
Current Qtr Est	1.18
Current Yr Est	2.21
Exp Earnings Date	11/6/20
Prior Year EPS	2.16
Exp EPS Growth (3-5yr)	4.87%
Forward PE	19.39
PEG Ratio	3.98

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	36.76
Day Low	36.17
Day High	36.83
52 Wk Low	31.96
52 Wk High	63.08
Avg. Volume	1,779,208
Market Cap	3.28 B
Dividend	1.63 ( 4.45%)
Beta	0.26

**Key Earnings Data**

Earnings ESP	14.94%
Most Accurate Est	-0.37
Current Qtr Est	-0.44
Current Yr Est	1.47
Exp Earnings Date <sup>*BMO</sup>	10/30/20
Prior Year EPS	2.39
Exp EPS Growth (3-5yr)	5.00%
Forward PE	24.91
PEG Ratio	4.98

Utilities » Utility - Electric Power

**Quote Overview**

Stock Activity		Key Earnings Data	
Open	28.37	Earnings ESP	0.00%
Day Low	28.17	Most Accurate Est	0.62
Day High	28.60	Current Qtr Est	0.62
52 Wk Low	18.12	Current Yr Est	2.41
52 Wk High	36.83	Exp Earnings Date	11/3/20
Avg. Volume	5,143,703	Prior Year EPS	2.45
Market Cap	21.69 B	Exp EPS Growth (3-5yr)	NA
Dividend	1.66 ( 5.88%)	Forward PE	11.69
Beta	0.76	PEG Ratio	NA

Utilities » Utility - Electric Power

## Quote Overview

### Stock Activity

Open	56.05
Day Low	55.56
Day High	56.90
52 Wk Low	34.75
52 Wk High	63.88
Avg. Volume	2,179,757
Market Cap	28.30 B
Dividend	1.96 ( 3.50%)
Beta	0.53

### Key Earnings Data

Earnings ESP	-25.00%
Most Accurate Est	0.62
Current Qtr Est	0.82
Current Yr Est	3.39
Exp Earnings Date	10/29/20
Prior Year EPS	3.28
Exp EPS Growth (3-5yr)	3.46%
Forward PE	16.48
PEG Ratio	4.76

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	121.42
Day Low	119.69
Day High	121.86
52 Wk Low	88.00
52 Wk High	161.87
Avg. Volume	1,461,053
Market Cap	34.86 B
Dividend	4.18 ( 3.47%)
Beta	0.69

**Key Earnings Data**

Earnings ESP	11.66%
Most Accurate Est	1.66
Current Qtr Est	1.49
Current Yr Est	7.62
Exp Earnings Date	*AMC11/6/20
Prior Year EPS	6.78
Exp EPS Growth (3-5yr)	7.36%
Forward PE	15.81
PEG Ratio	2.15

Utilities » Utility - Gas Distribution

**Quote Overview****Stock Activity**

Open	56.32
Day Low	56.27
Day High	57.36
52 Wk Low	41.96
52 Wk High	71.10
Avg. Volume	4,031,916
Market Cap	59.42 B
Dividend	2.56 ( 4.55%)
Beta	0.38

**Key Earnings Data**

Earnings ESP	0.00%
Most Accurate Est	1.27
Current Qtr Est	1.27
Current Yr Est	3.16
Exp Earnings Date	11/4/20
Prior Year EPS	3.11
Exp EPS Growth (3-5yr)	4.00%
Forward PE	17.82
PEG Ratio	4.45

Utilities » Utility - Electric Power

**Quote Overview****Stock Activity**

Open	97.93
Day Low	96.82
Day High	98.46
52 Wk Low	68.01
52 Wk High	109.53
Avg. Volume	1,150,826
Market Cap	30.82 B
Dividend	2.53 ( 2.59%)
Beta	0.18

**Key Earnings Data**

Earnings ESP	-0.66%
Most Accurate Est	0.76
Current Qtr Est	0.76
Current Yr Est	3.75
Exp Earnings Date	11/4/20
Prior Year EPS	3.58
Exp EPS Growth (3-5yr)	5.94%
Forward PE	26.07
PEG Ratio	4.39

Utilities » Utility - Electric Power

**Quote Overview**

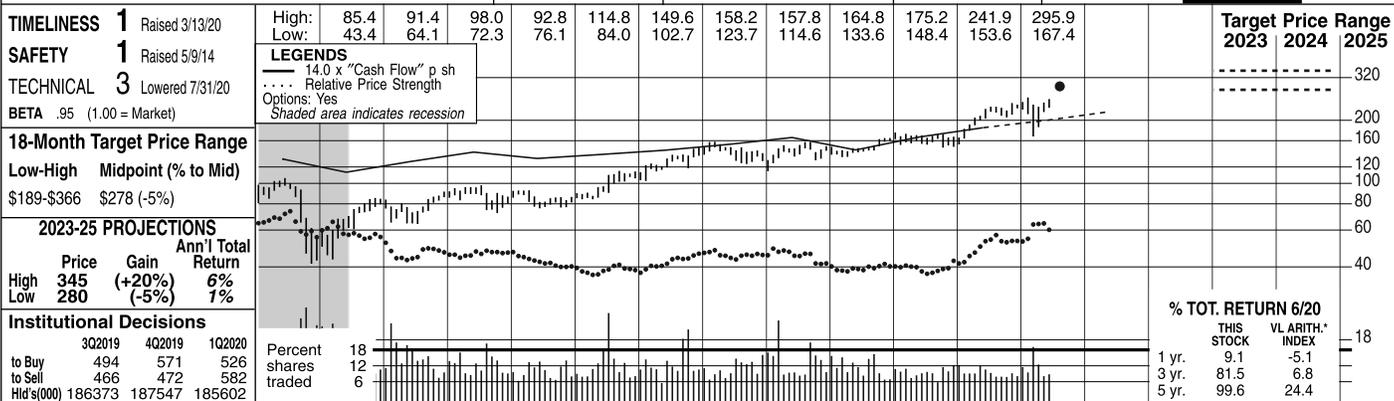
Stock Activity		Key Earnings Data	
Open	70.44	Earnings ESP	0.00%
Day Low	69.60	Most Accurate Est	1.11
Day High	71.55	Current Qtr Est	1.11
52 Wk Low	46.58	Current Yr Est	2.78
52 Wk High	73.00	Exp Earnings Date	10/22/20
Avg. Volume	2,162,752	Prior Year EPS	2.64
Market Cap	37.03 B	Exp EPS Growth (3-5yr)	5.81%
Dividend	1.72 ( 2.44%)	Forward PE	25.35
Beta	0.28	PEG Ratio	4.36

Utilities » Utility - Electric Power

# AIR PRODUCTS NYSE-APD

RECENT PRICE **290.87** P/E RATIO **34.4** (Trailing: 33.7, Median: 19.0) RELATIVE P/E RATIO **1.60** DIV'D YLD **1.8%**

**VALUE LINE**



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
32.83	36.70	40.74	46.61	49.75	39.08	42.22	47.97	45.24	48.21	48.89	45.95	43.82	37.50	40.68	40.46	<b>40.15</b>	<b>42.80</b>	Sales per sh <sup>A</sup>	<b>58.50</b>
5.84	6.49	7.17	8.48	9.36	8.08	9.09	10.09	9.41	9.82	10.30	10.98	11.84	10.31	11.91	13.17	<b>13.70</b>	<b>15.30</b>	"Cash Flow" per sh	<b>20.55</b>
2.64	3.08	3.50	4.40	4.97	4.06	5.02	5.73	5.40	5.50	5.78	6.57	7.55	6.31	7.45	8.21	<b>8.35</b>	<b>9.75</b>	Earnings per sh <sup>B</sup>	<b>14.50</b>
1.04	1.25	1.34	1.48	1.70	1.79	1.92	2.23	2.50	2.77	3.02	3.20	3.39	3.71	4.25	4.64	<b>5.18</b>	<b>5.40</b>	Div's Decl'd per sh <sup>C</sup>	<b>6.48</b>
3.12	4.19	5.81	4.90	5.18	5.58	4.82	6.43	7.16	7.22	7.89	7.50	4.86	4.76	7.14	9.03	<b>13.10</b>	<b>7.90</b>	Cap'l Spending per sh	<b>6.60</b>
19.68	20.62	22.67	25.52	24.03	22.68	25.94	27.57	30.48	33.35	34.49	33.66	32.57	46.19	49.46	50.15	<b>54.80</b>	<b>59.80</b>	Book Value per sh <sup>D</sup>	<b>79.00</b>
225.77	221.90	217.25	215.36	209.33	211.26	213.80	210.19	212.48	211.18	213.54	215.36	217.35	218.35	219.52	220.42	<b>221.00</b>	<b>222.00</b>	Common Shs Outst'g <sup>E</sup>	<b>223.00</b>
19.0	19.1	18.0	17.5	19.0	14.9	15.1	15.4	15.6	16.5	20.6	21.7	18.6	22.6	21.8	23.2	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	<b>21.5</b>
1.00	1.02	.97	.93	1.14	.99	.96	.97	.99	.93	1.08	1.09	.98	1.14	1.18	1.25			Relative P/E Ratio	<b>1.20</b>
2.1%	2.1%	2.1%	1.9%	1.8%	3.0%	2.5%	2.5%	3.0%	3.1%	2.5%	2.2%	2.4%	2.6%	2.6%	2.4%			Avg Ann'l Div'd Yield	<b>2.1%</b>

**CAPITAL STRUCTURE as of 3/31/20**

Total Debt \$2989.5 mill. Due in 5 Yrs \$2155 mill.  
 LT Debt \$2922.10 mill. LT Interest \$90.0 mill.  
 (Total interest coverage: 22.1x) (20% of Cap'l)

Leases, Uncapitalized Annual rentals \$75.1 mill.  
 Pension Assets-9/19 \$4.50 bill Oblig. \$5.15 bill.

Pfd Stock None  
 Common Stock 220,854,647 shs.

MARKET CAP: \$64.2 billion (Large Cap)

CURRENT POSITION	2018	2019	3/31/20
Cash Assets	2791.3	2248.7	2220.1
Receivables	1207.2	1260.2	1399.4
Inventory (FIFO)	396.1	388.3	399.7
Other	687.6	721.1	669.3
Current Assets	5082.2	4618.3	4688.5
Accts Payable	1817.8	1635.7	1649.1
Debt Due	460.9	98.6	67.4
Other	59.6	86.6	90.4
Current Liab.	2338.3	1820.9	1806.9

9026.0	10082	9611.7	10180	10439	9894.9	9524.4	8187.6	8930.2	8918.9	<b>8875</b>	<b>9500</b>	Sales (\$mill) <sup>A</sup>	<b>13050</b>
25.6%	24.9%	24.2%	23.7%	24.5%	28.4%	32.2%	30.9%	32.3%	35.9%	<b>36.0%</b>	<b>36.0%</b>	Operating Margin	<b>36.5%</b>
863.4	873.9	840.8	907.0	956.9	936.4	925.9	865.8	970.7	1082.8	<b>1175</b>	<b>1220</b>	Depreciation (\$mill)	<b>1330</b>
1079.8	1246.9	1158.2	1167.2	1243.1	1427.7	1647.8	1385.9	1644.7	1819.4	<b>1855</b>	<b>2175</b>	Net Profit (\$mill)	<b>3255</b>
25.8%	24.9%	18.5%	17.7%	27.0%	24.0%	25.9%	23.4%	18.6%	19.4%	<b>20.0%</b>	<b>20.0%</b>	Income Tax Rate	<b>20.0%</b>
12.0%	12.4%	12.0%	11.5%	11.9%	14.4%	17.3%	16.9%	18.4%	20.4%	<b>20.9%</b>	<b>22.9%</b>	Net Profit Margin	<b>24.9%</b>
789.7	847.8	725.9	211.5	331.8	6737.3	1034.0	3387.7	2743.9	2797.4	<b>2300</b>	<b>3025</b>	Working Cap'l (\$mill)	<b>5450</b>
3659.8	3927.5	4584.2	5056.3	4824.5	3949.1	4918.1	3402.4	2967.4	3227.4	<b>3000</b>	<b>3100</b>	Long-Term Debt (\$mill)	<b>3400</b>
5546.9	5795.8	6477.2	7042.1	7365.8	7249.0	7079.6	10086	10858	11054	<b>12115</b>	<b>13275</b>	Shr. Equity (\$mill)	<b>17625</b>
12.4%	13.4%	11.0%	10.2%	10.7%	13.2%	14.2%	10.7%	12.4%	13.2%	<b>12.5%</b>	<b>13.5%</b>	Return on Total Cap'l	<b>16.0%</b>
19.5%	21.5%	17.9%	16.6%	16.9%	19.7%	23.3%	13.7%	15.1%	16.5%	<b>15.5%</b>	<b>16.5%</b>	Return on Shr. Equity	<b>18.5%</b>
12.3%	13.6%	9.9%	8.5%	8.4%	10.3%	13.1%	5.9%	6.9%	7.5%	<b>6.0%</b>	<b>7.5%</b>	Retained to Com Eq	<b>10.0%</b>
37%	37%	44%	48%	50%	47%	44%	57%	55%	55%	<b>62%</b>	<b>75%</b>	All Div'ds to Net Prof	<b>45%</b>

**BUSINESS:** Air Products and Chemicals, Inc. supplies a variety of atmospheric (oxygen, nitrogen) and process (hydrogen, helium) gases to energy, industrial, technology, and healthcare customers worldwide. The company is the world's largest supplier of hydrogen, with leading positions serving the refinery hydrogen, semiconductor materials, and natural gas liquefaction markets.

FY2018: R&D: .8% of sales; foreign business: 62% of sales. Has about 17,700 employees. Vanguard Group owns 8.3% of shares out.; BlackRock, 8.0%; State Farm Mutual, 7.1%; officers & directors, less than 1% (12/19 Proxy). Chairman, Pres. & CEO: Seifi Ghasemi, Inc.: DE. Addr.: 7201 Hamilton Blvd, Allentown, PA 18195. Telephone: 610-481-4911. Internet: www.airproducts.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 of change (per sh) to '23-'25

Sales	-1.5%	-3.5%	6.5%
"Cash Flow"	3.0%	3.5%	9.5%
Earnings	5.0%	5.5%	12.0%
Dividends	9.5%	8.5%	7.5%
Book Value	7.5%	8.0%	8.0%

**Air Products turned in a solid fiscal second-quarter performance (period ended March 31st).** Adjusted share earnings were up 6%, on a modest increase in sales. Performance was driven by higher prices and volumes in all industrial gas segments, reflecting acquisitions, base business growth, and new plants. Because the company provides essential products, services, and equipment, most of its operations continued with only minor interruptions. Altogether, the profit impact from COVID-19 in the quarter was an estimated \$0.06 to \$0.08 per share.

**Despite the pandemic, the company has continued to expand.** In early July, it inked a \$5 billion joint venture deal with ACWA Power and NEOM for a world-scale green hydrogen-based ammonia production facility in Saudi Arabia. Prior to that, it announced it would be investing \$2 billion in a coal-to-methanol production facility in Indonesia. APD also announced and closed on the acquisition of five operating hydrogen plants in the U.S., and began to supply hydrogen to PBF Energy under a long-term agreement.

**We have scaled back our earnings es-**

**timates for fiscal 2020 and 2021.** Asia merchant volumes were impacted by the coronavirus, but have since rebounded. However, management expected that declines in the Americas and EMEA would be more significant in the June interim, and possibly longer. Thus, earnings comparisons will likely turn negative in the second half. For the year, we have trimmed our bottom-line call by \$0.65, to \$8.35, suggesting a small increase versus last year. Under the assumption that progress is made in curbing COVID-19, we look for a more sizable advance in fiscal 2021. However, we have taken a more conservative stance, reducing our forecast by \$0.50, to \$9.75 a share.

**These shares are a timely selection for year-ahead relative performance.** The stock, which held up very well during the recent market selloff, is up more than 35% since our last review in early May, better than double the S&P's advance over the period. Also of note, unlike many other industrial companies, Air Products' financials remain in solid shape. Yet, 3- 5-year upside potential is now quite modest.

Fiscal Year Ends	Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2017	1883	1980	2122	2203	8188
2018	2217	2156	2259	2299	8930
2019	2224	2188	2224	2283	8919
2020	2255	2216	2125	2279	8875
2021	<b>2325</b>	<b>2300</b>	<b>2300</b>	<b>2575</b>	<b>9500</b>

**Mario Ferro**  
 July 31, 2020

**Company's Financial Strength** A++  
**Stock's Price Stability** 95  
**Price Growth Persistence** 65  
**Earnings Predictability** 90

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.81	.86	.86	.86	3.39
2017	.86	.95	.95	.95	3.71
2018	.95	1.10	1.10	1.10	4.25
2019	1.16	1.16	1.16	1.16	4.64
2020	1.16	1.34			

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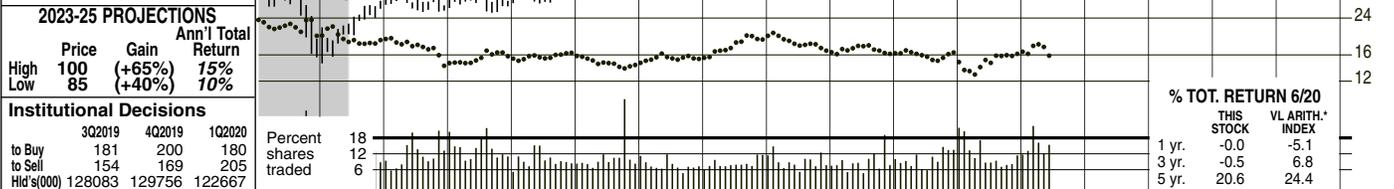
(A) Fisc. yr. ends Sept. 30th. (B) Excl. nonrec. gains/(losses): '06, (24c); '07, 30c; '09, (\$1.06); '10, (28c); '11, (14c); '12, (74c); '13, (77c); '14, (\$1.19); '15, (69c); '16, (61c); '17, (\$1.15); '18, (86c); '19, (27c). Excl. disc. op.: '06, (8c); '07, (3c); '08, (82c); '09, (4c); '11, 4c; '12, 78c; '13, (5c); '14, 2c; '16, (\$4.05); '17, \$8.49; '18, 19c; '20, Q2 17c. Next egs. rep. due mid-Oct. (C) Divs. paid in mid-Feb., May, Aug., and Nov. ■ Div. reinv. plan avail. (D) Incl. intangibles. In '19: \$1.2 bill, \$.52/sh. (E) In mill. (F) Qtrs. may not sum due to rounding.

# AMDOCS LIMITED NDQ-DX

RECENT PRICE **61.26** P/E RATIO **16.3** (Trailing: 16.8 Median: 17.0) RELATIVE P/E RATIO **0.74** DIV'D YLD **2.1%** VALUE LINE

TIMELINESS <b>2</b> Lowered 4/17/20	High: 29.0 32.4 32.0 35.0 41.5 49.0 61.5 61.3 68.0 71.7 72.9 77.3	Target Price Range 2023 2024 2025
SAFETY <b>1</b> Raised 2/13/15	Low: 14.6 25.6 25.4 28.2 33.8 40.4 45.8 50.1 56.1 55.9 52.6 44.1	128
TECHNICAL <b>4</b> Lowered 8/7/20	LEGENDS 11.5 x "Cash Flow" p sh Relative Price Strength Options: Yes Shaded area indicates recession	96
BETA .95 (1.00 = Market)		80

18-Month Target Price Range  
Low-High Midpoint (% to Mid)  
\$47-\$98 \$73 (20%)



2023-25 PROJECTIONS		© VALUE LINE PUB. LLC															23-25															
High	Low	Price	Gain	Ann'l Total Return	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Revenues per sh <sup>A</sup>	"Cash Flow" per sh	Earnings per sh <sup>B</sup>	Div'ds Decl'd per sh <sup>C</sup>	Cap'l Spending per sh	Book Value per sh <sup>E</sup>	Common Shs Outst'g <sup>D</sup>	Avg Ann'l P/E Ratio	Relative P/E Ratio	Avg Ann'l Div'd Yield
100	85	100	(+65%)	15%	8.81	10.18	11.99	13.52	15.51	13.96	15.46	18.19	19.99	20.90	22.74	24.11	25.27	26.78	28.36	30.32	31.80	33.80	38.45	5.90	5.10	1.65	1.25	35.60	130.00	18.0	1.00	1.8%
			(+40%)	10%	1.74	2.04	2.50	2.84	2.80	2.56	2.80	3.02	3.39	3.46	3.73	4.21	4.22	4.51	5.08	5.50	5.90	6.50	7.20	4.05	5.10	1.65	1.25	35.60	130.00	18.0	1.00	1.8%
					1.16	1.45	1.85	1.93	1.74	1.58	1.69	1.86	2.32	2.53	2.62	2.95	2.71	2.96	2.47	3.49	3.70	4.05	5.10	1.45	1.65	1.65	1.25	35.60	130.00	18.0	1.00	1.8%
					2.17	3.26	3.39	3.79	4.67	4.41	4.45	6.3	7.5	6.7	7.1	8.0	8.8	9.2	1.65	1.95	1.05	1.10	1.25	1.10	1.25	1.65	1.25	35.60	130.00	18.0	1.00	1.8%
					7.27	8.27	10.42	12.40	13.76	15.67	16.73	17.31	18.67	20.46	21.67	22.54	23.47	24.75	24.60	25.97	28.05	30.15	1.25	30.15	1.25	1.65	1.25	35.60	130.00	18.0	1.00	1.8%
					201.33	200.18	206.79	209.76	203.92	205.08	193.05	174.69	162.45	160.06	156.70	151.15	147.13	144.39	140.18	134.77	132.00	131.00	1.25	30.15	1.25	1.65	1.25	35.60	130.00	18.0	1.00	1.8%
					20.9	18.9	17.9	19.2	18.0	13.2	16.7	15.5	13.0	14.1	16.9	17.7	21.2	20.8	26.9	17.3	13.0	13.0	1.25	30.15	1.25	1.65	1.25	35.60	130.00	18.0	1.00	1.8%
					1.10	1.01	.97	1.02	1.08	.88	1.06	.97	.83	.79	.89	.89	1.11	1.05	1.45	.94	1.35	1.45	1.25	30.15	1.25	1.65	1.25	35.60	130.00	18.0	1.00	1.8%
					--	--	--	--	--	--	--	--	4%	1.5%	1.3%	1.3%	1.3%	1.4%	1.5%	1.8%	1.35	1.45	1.25	30.15	1.25	1.65	1.25	35.60	130.00	18.0	1.00	1.8%

CAPITAL STRUCTURE as of 3/31/20		© VALUE LINE PUB. LLC															23-25		
Total Debt \$350.0 mill. Due in 5 Yrs \$350.0 mill. LT Debt Nil																			
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Revenues per sh <sup>A</sup>	Operating Margin
8.81	10.18	11.99	13.52	15.51	13.96	15.46	18.19	19.99	20.90	22.74	24.11	25.27	26.78	28.36	30.32	31.80	33.80	38.45	22.0%
1.74	2.04	2.50	2.84	2.80	2.56	2.80	3.02	3.39	3.46	3.73	4.21	4.22	4.51	5.08	5.50	5.90	6.50	7.20	22.0%
1.16	1.45	1.85	1.93	1.74	1.58	1.69	1.86	2.32	2.53	2.62	2.95	2.71	2.96	2.47	3.49	3.70	4.05	5.10	22.0%
--	--	--	--	--	--	--	--	.13	.52	.60	.67	.76	.86	.97	1.11	1.35	1.45	1.65	22.0%
2.17	3.26	3.39	3.79	4.67	4.41	4.45	6.3	7.5	6.7	7.1	8.0	8.8	9.2	1.65	1.95	1.05	1.10	1.25	22.0%
7.27	8.27	10.42	12.40	13.76	15.67	16.73	17.31	18.67	20.46	21.67	22.54	23.47	24.75	24.60	25.97	28.05	30.15	1.25	22.0%
201.33	200.18	206.79	209.76	203.92	205.08	193.05	174.69	162.45	160.06	156.70	151.15	147.13	144.39	140.18	134.77	132.00	131.00	1.25	22.0%
20.9	18.9	17.9	19.2	18.0	13.2	16.7	15.5	13.0	14.1	16.9	17.7	21.2	20.8	26.9	17.3	13.0	13.0	1.25	22.0%
1.10	1.01	.97	1.02	1.08	.88	1.06	.97	.83	.79	.89	.89	1.11	1.05	1.45	.94	1.35	1.45	1.25	22.0%
--	--	--	--	--	--	--	--	4%	1.5%	1.3%	1.3%	1.3%	1.4%	1.5%	1.8%	1.35	1.45	1.25	22.0%

**Leases, Uncapitalized:** Annual rentals \$75.2 mill.  
**No Defined Benefit Pension Plan**  
**Common Stock** 134,288,000  
**MARKET CAP:** \$8.2 billion (Large Cap)

CURRENT POSITION (SMILL.)		© VALUE LINE PUB. LLC															23-25																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2

# AMGEN NDQ:AMGN

RECENT PRICE **226.43** P/E RATIO **14.4** (Trailing: 14.7; Median: 13.0) RELATIVE P/E RATIO **0.78** DIV'D YLD **3.0%**

**VALUE LINE**

**TIMELINESS** 2 Raised 5/15/20  
**SAFETY** 1 Raised 3/20/09  
**TECHNICAL** 1 Raised 6/5/20  
**BETA** .85 (1.00 = Market)

High: 64.8 61.3 65.0 90.8 119.7 173.1 181.8 176.9 191.1 210.2 245.0 245.0  
 Low: 45.0 50.3 47.7 63.3 81.6 108.2 130.1 133.6 147.1 163.3 166.3 177.1

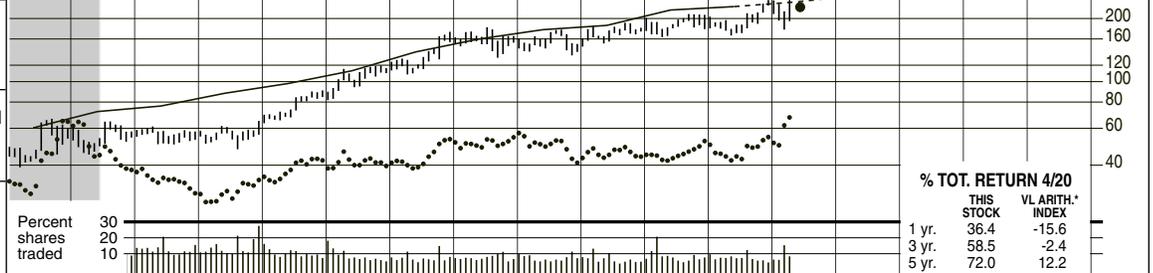
**LEGENDS**  
 — 12.0 x "Cash Flow" p sh  
 ... Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

**Target Price Range**  
 2023 2024 2025

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$180-\$316 \$248 (10%)

**2023-25 PROJECTIONS**  
 High Price Gain Ann'l Total  
 Low 360 (+60%) 15%  
 295 (+30%) 10%

**Institutional Decisions**  
 2Q2019 3Q2019 4Q2019  
 to Buy 822 828 936  
 to Sell 868 853 884  
 Hlds(000) 461888 459717 456092



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
8.37	10.16	12.24	13.59	14.33	14.72	16.15	19.59	22.83	24.75	26.38	28.73	31.14	31.64	37.72	39.50	<b>43.60</b>	<b>45.85</b>	Revenues per sh	<b>50.90</b>
2.87	3.72	4.41	4.57	6.01	6.39	7.35	8.16	9.41	11.56	13.34	14.75	15.48	18.30	18.99	<b>20.00</b>	<b>21.70</b>	"Cash Flow" per sh	<b>25.40</b>	
2.19	2.95	3.51	3.31	3.90	4.83	5.12	5.25	6.46	7.60	10.38	11.65	12.58	14.40	14.82	<b>15.75</b>	<b>17.25</b>	Earnings per sh <sup>A</sup>	<b>20.50</b>	
--	--	--	--	--	--	--	.56	1.44	1.88	2.44	3.16	4.00	4.60	5.28	5.80	<b>6.40</b>	<b>7.00</b>	Div'ds Decl'd per sh <sup>D</sup>	<b>8.40</b>
1.06	.71	1.04	1.17	.64	.53	.62	.71	.91	.92	.94	.79	1.00	.92	1.17	1.05	<b>1.25</b>	<b>1.30</b>	Cap'l Spending per sh	<b>1.50</b>
15.64	16.71	16.26	16.44	19.47	22.78	25.69	23.92	25.20	29.28	33.90	37.25	40.47	34.95	19.85	16.36	<b>17.10</b>	<b>21.75</b>	Book Value per sh <sup>B</sup>	<b>35.70</b>
1260.0	1224.0	1166.0	1087.0	1047.0	995.00	932.00	795.60	756.30	754.60	760.40	754.00	738.20	722.20	629.60	591.40	<b>585.00</b>	<b>575.00</b>	Common Shs Outst'g <sup>C</sup>	<b>560.00</b>
27.0	23.7	20.2	17.4	13.2	11.4	10.9	10.7	11.8	13.7	15.1	15.2	13.4	13.6	13.1	13.3	<b>13.1</b>	<b>13.3</b>	Avg Ann'l P/E Ratio	<b>16.0</b>
1.43	1.26	1.09	.92	.79	.76	.69	.67	.75	.77	.79	.77	.70	.68	.71	.73	<b>.71</b>	<b>.73</b>	Relative P/E Ratio	<b>.90</b>
--	--	--	--	--	--	--	1.0%	1.9%	1.8%	1.9%	2.0%	2.6%	2.7%	2.8%	3.0%	<b>2.8%</b>	<b>3.0%</b>	Avg Ann'l Div'd Yield	<b>2.6%</b>

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$31848 mill. Due in 5 Yrs \$14562 mill.  
 LT Debt \$30008 mill. LT Interest \$800 mill.  
 (75% of Cap'l)

**Leases, Uncapitalized Annual rentals \$164 mill.**  
**No Defined Benefit Pension Plan**

**Common Stock 588,247,399 shares as of 4/27/20**  
**MARKET CAP: \$133 billion (Large Cap)**

15053	15582	17265	18676	20063	21662	22991	22849	23747	23362	<b>25500</b>	<b>26375</b>	Revenues (\$mill)	<b>28500</b>
47.1%	42.1%	43.6%	44.3%	51.2%	54.4%	57.8%	68.9%	58.4%	57.0%	<b>54.0%</b>	<b>54.5%</b>	Operating Margin	<b>56.5%</b>
1017.0	1060.0	1088.0	1286.0	2092.0	2108.0	2105.0	1955.0	1946.0	2206.0	<b>2250</b>	<b>2300</b>	Depreciation (\$mill)	<b>2450</b>
4937.2	4787.0	5085.0	5815.0	6698.0	7950.0	8785.1	9223.0	9577.0	9024.0	<b>9450</b>	<b>10175</b>	Net Profit (\$mill)	<b>11785</b>
19.1%	10.4%	13.3%	6.1%	6.0%	13.0%	15.8%	29.3%	12.1%	14.2%	<b>14.5%</b>	<b>14.2%</b>	Income Tax Rate	<b>15.0%</b>
32.8%	30.7%	29.5%	31.1%	33.4%	36.7%	38.2%	40.4%	40.3%	38.6%	<b>37.0%</b>	<b>38.5%</b>	Net Profit Margin	<b>41.3%</b>
16559	21839	23018	19420	27705	29851	34806	40456	24130	5605.0	<b>8000</b>	<b>10000</b>	Working Cap'l (\$mill)	<b>15000</b>
10874	21344	24034	29623	30215	29306	30193	34190	29510	26950	<b>25000</b>	<b>22000</b>	Long-Term Debt (\$mill)	<b>18000</b>
23944	19029	19060	22096	25778	28083	29875	25241	12500	9673.0	<b>10000</b>	<b>12500</b>	Shr. Equity (\$mill)	<b>20000</b>
14.7%	12.4%	12.4%	12.1%	12.9%	14.8%	15.7%	16.6%	24.5%	26.4%	<b>28.0%</b>	<b>30.5%</b>	Return on Total Cap'l	<b>31.5%</b>
20.6%	25.2%	26.7%	26.3%	26.0%	28.3%	29.4%	36.5%	76.6%	93.3%	<b>94.5%</b>	<b>81.5%</b>	Return on Shr. Equity	<b>59.0%</b>
20.6%	22.5%	20.8%	19.9%	18.8%	19.8%	19.4%	23.2%	48.6%	57.0%	<b>57.0%</b>	<b>49.0%</b>	Retained to Com Eq	<b>35.5%</b>
--	10%	22%	24%	28%	30%	34%	36%	37%	39%	<b>40%</b>	<b>40%</b>	All Div'ds to Net Prof	<b>40%</b>

**CURRENT POSITION (SMILL.)**

	2018	2019	3/31/20
Cash Assets	29304	8911	8012
Receivables	3580	4057	5009
Inventory (FIFO)	2940	3584	3682
Other	1794	1888	2110
Current Assets	<b>37618</b>	<b>18440</b>	<b>18813</b>
Accts Payable	1207	1371	1338
Debt Due	4419	2953	1840
Other	7862	8511	8649
Current Liab.	13488	12835	11827

**ANNUAL RATES** Past Past Est'd '17-'19  
 of change (per sh) 10 Yrs. 5 Yrs. to '23-'25

Revenues	10.0%	8.0%	6.0%
"Cash Flow"	13.0%	12.5%	6.5%
Earnings	13.5%	13.0%	6.5%
Dividends	--	22.0%	8.0%
Book Value	2.0%	-4.0%	7.0%

**QUARTERLY REVENUES (\$ mill.)**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	5464	5810	5773	5802	22849
2018	5554	6059	5904	6230	23747
2019	5557	5871	5737	6197	23362
2020	6161	<b>6350</b>	<b>6450</b>	<b>6539</b>	<b>25500</b>
2021	<b>6200</b>	<b>6575</b>	<b>6600</b>	<b>7000</b>	<b>26375</b>

**EARNINGS PER SHARE<sup>AB</sup>**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	3.15	3.27	3.27	2.89	12.58
2018	3.47	3.83	3.69	3.42	14.40
2019	3.56	3.97	3.66	3.64	14.82
2020	4.17	<b>4.10</b>	<b>3.75</b>	<b>3.73</b>	<b>15.75</b>
2021	<b>4.15</b>	<b>4.35</b>	<b>4.25</b>	<b>4.50</b>	<b>17.25</b>

**QUARTERLY DIVIDENDS PAID <sup>D</sup>**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	1.00	1.00	1.00	1.00	4.00
2017	1.15	1.15	1.15	1.15	4.60
2018	1.32	1.32	1.32	1.32	5.28
2019	1.45	1.45	1.45	1.45	5.80
2020	1.60	1.60			

**BUSINESS:** Amgen Inc. is one of the world's largest independent biotech medicines company. It discovers, develops, manufactures, and markets medicines for serious ailments. Product sales were 95% in 2019, and includes: *Aranesp* and *EPOGEN* (treat anemia in patients with chronic renal failure); *Neulasta* and *Neupogen* (fight infections in chemotherapy patients), and *Enbrel* (treats autoim-

**Positive news has driven Amgen stock higher, of late.** Indeed, since our March report, the equity has increased in value. Although economic challenges (more below) are likely to persist over the near term, the company's competitive portfolio and pipeline focus have likely contributed to upbeat investor sentiment.

**The company recorded decent 2020 first-quarter results, and reiterated its full-year guidance.** In the March period, sales of \$6.161 billion rose 11% above the year-ago tally. A favorable product mix including *Otezla* (psoriasis) and *Repatha* (lowering LDL cholesterol) helped offset lower revenues realized from legacy drugs, such as *Neupogen* (white blood cell enhancer) due to the loss of patent protection and the introduction of generic competition. Stock repurchases and cost-containment initiatives also helped Amgen earn \$4.17 a share in the first quarter, 17% higher than last year's result. Given management's guidance, we continue to anticipate single-digit sales and earnings advances over this year and next.

**The emergence of COVID-19 has cast some uncertainty, yet we do not**

foresee a meaningful disruption to Amgen's operations. Indeed, many of the company's medicines serve to treat patients with serious illnesses. Additionally, Amgen's supply chain continues to deliver its therapies to consumer channels including pharmacies and doctors' offices. Moreover, the company continues to accelerate its pipeline endeavors in the hopes of gaining further commercial success. Notably, it intends to virtually present data at the 2020 ASCO Conference for its clinical findings from its colorectal and non-small-cell lung cancer studies.

**The company has also focused research endeavors toward a possible treatment for COVID-19.** First, it has been testing *Otezla*, an existing drug used to treat inflammatory diseases such as psoriasis as a possible option. Also, it recently announced a partnership with Adaptive Biotechnologies to identify pipeline candidates.

**The recent stock-price action limits capital appreciation potential over the 2023-2025 span, and long-term investors should avoid, for now**

*Nira Maharaj* June 5, 2020

(A) EPS based on diluted shares. Excls. non-rec. items: '04, d40c; '05, d2c; '06, d\$1.03; '07, d53c; '09, d32c; '10, d33c; '11, d\$1.21; '12, d\$94c; '13, d96c; '14, d\$2.00; '15, d\$1.32; '16, d\$1.41; '17, d\$9.89; '18, d\$1.78; '19, d\$1.94. May not sum due to change in share count or rounding. Next earnings report due late July.	\$57.68/sh. (C) In millions. (D) Div'ds paid in early Mar., June, Sept., Dec. Div'd reinvestment plan available.	Company's Financial Strength A++ Stock's Price Stability 90 Price Growth Persistence 80 Earnings Predictability 100
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# AMPHENOL CORP. NYSE-APH

RECENT PRICE **96.48** P/E RATIO **32.7** (Trailing: 26.3; Median: 22.0) RELATIVE P/E RATIO **1.63** DIV'D YLD **1.0%** **VALUE LINE**

**TIMELINESS** 3 Lowered 11/1/19  
**SAFETY** 1 Raised 9/28/18  
**TECHNICAL** 4 Lowered 6/12/20  
**BETA** .95 (1.00 = Market)



**18-Month Target Price Range**  
**Low-High** Midpoint (% to Mid)  
 \$64-\$122 \$93 (-5%)

**2023-25 PROJECTIONS**  
 High Price **130** Gain **(+35%)** Ann'l Total Return **9%**  
 Low Price **110** Gain **(+15%)** **5%**

**Institutional Decisions**  
 3Q2019 4Q2019 1Q2020  
 to Buy 302 334 331  
 to Sell 325 289 363  
 Hld's(000) 281843 284238 278994

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
4.43	5.16	6.98	7.97	9.45	8.14	10.12	12.08	13.42	14.58	17.25	18.08	20.43	22.94	27.48	27.61	<b>25.55</b>	<b>28.15</b>	Revenues per sh	<b>36.85</b>
.58	.74	.97	1.22	1.49	1.20	1.71	1.97	2.12	2.48	2.87	3.04	3.48	3.97	5.04	4.92	<b>4.10</b>	<b>4.90</b>	"Cash Flow" per sh	<b>7.30</b>
.46	.57	.73	.97	1.17	.92	1.41	1.53	1.70	1.93	2.25	2.41	2.72	3.12	3.85	3.75	<b>2.95</b>	<b>3.75</b>	Earnings per sh <sup>A</sup>	<b>6.00</b>
--	.03	.03	.03	.03	.03	.03	.03	.21	.31	.45	.53	.56	.67	.84	.96	<b>1.00</b>	<b>1.12</b>	Div'ds Decl'd per sh <sup>B</sup>	<b>1.28</b>
.13	.16	.23	.29	.32	.18	.31	.31	.40	.50	.67	.56	.62	.74	1.04	.99	<b>.85</b>	<b>1.00</b>	Cap'l Spending per sh	<b>1.35</b>
1.39	1.97	2.55	3.54	3.94	5.04	6.61	6.66	7.60	9.04	9.38	10.51	11.92	13.05	13.46	15.21	<b>16.55</b>	<b>17.95</b>	Book Value per sh <sup>D</sup>	<b>20.00</b>
345.74	350.56	354.12	357.68	342.37	346.47	351.10	326.25	319.72	316.41	309.88	308.00	308.30	305.70	298.50	297.90	<b>296.00</b>	<b>295.00</b>	Common Shs Outst'g <sup>C</sup>	<b>285.00</b>
17.8	17.7	19.4	19.1	16.7	18.5	16.0	16.4	17.0	20.1	21.6	22.8	21.7	24.7	23.1	25.4	<b>23.00</b>	<b>23.00</b>	Avg Ann'l P/E Ratio	<b>20.0</b>
.94	.94	1.05	1.01	1.01	1.23	1.02	1.03	1.08	1.13	1.14	1.15	1.14	1.24	1.25	1.37	<b>1.25</b>	<b>1.37</b>	Relative P/E Ratio	<b>1.10</b>
--	.3%	.2%	.2%	.2%	.2%	.1%	.1%	.7%	.8%	.9%	1.0%	1.0%	.9%	1.0%	1.0%	<b>1.0%</b>	<b>1.0%</b>	Avg Ann'l Div'd Yield	<b>1.1%</b>

**CAPITAL STRUCTURE as of 3/31/20**  
**Total Debt** \$5092.4 mill. **Due in 5 Yrs** \$1673 mill.  
**LT Debt** \$4591.5 mill. **LT Interest** \$136.0 mill.  
 (Total interest coverage: over 25x) (51% of Cap'l)  
**Leases, Uncapitalized:** Annual leases \$58.8 mill.  
**Pension Assets-12/19** \$581.0 mill. **Oblig.** \$757.9 mill.  
**Pfd Stock** None  
**Common Stock** 295,894,369 shs.  
**as of 4/21/20**  
**MARKET CAP:** \$28.5 billion (Large Cap)

3554.1	3939.8	4292.1	4614.7	5345.5	5568.7	6286.4	7011.3	8202.0	8225.4	<b>7560</b>	<b>8300</b>	Revenues (\$mill)	<b>10500</b>
22.6%	22.1%	22.2%	22.7%	22.8%	22.9%	23.2%	23.7%	24.2%	23.5%	<b>22.0%</b>	<b>23.0%</b>	Operating Margin	<b>24.5%</b>
102.8	119.4	121.8	136.5	168.1	171.6	217.0	226.8	299.7	312.1	<b>315</b>	<b>325</b>	Depreciation (\$mill)	<b>350</b>
496.4	524.2	555.3	647.0	721.9	763.5	856.0	986.1	1205.0	1155.0	<b>900</b>	<b>1125</b>	Net Profit (\$mill)	<b>1725</b>
24.3%	26.2%	28.2%	24.6%	26.2%	26.6%	26.5%	26.5%	23.4%	22.2%	<b>23.0%</b>	<b>23.0%</b>	Income Tax Rate	<b>23.0%</b>
14.0%	13.3%	12.9%	14.0%	13.5%	13.7%	13.6%	14.1%	14.7%	14.0%	<b>11.9%</b>	<b>13.6%</b>	Net Profit Margin	<b>16.4%</b>
1337.1	1538.8	1818.4	1547.7	2458.5	2841.6	1956.0	3076.6	2120.3	2078.5	<b>3100</b>	<b>3600</b>	Working Cap'l (\$mill)	<b>5000</b>
799.6	1376.8	1606.2	1431.4	2672.3	2813.2	2635.5	3541.5	2806.4	3203.4	<b>4500</b>	<b>4000</b>	Long-Term Debt (\$mill)	<b>3000</b>
2320.9	2171.8	2430.0	2859.5	2907.4	3238.5	3674.9	3989.8	4017.0	4530.3	<b>4900</b>	<b>5300</b>	Shr. Equity (\$mill) <sup>D</sup>	<b>5700</b>
16.6%	15.4%	14.5%	15.8%	13.7%	13.2%	14.1%	13.7%	18.4%	15.7%	<b>10.5%</b>	<b>12.5%</b>	Return on Total Cap'l	<b>20.5%</b>
21.4%	24.1%	22.9%	22.6%	24.8%	23.6%	23.3%	24.7%	30.0%	25.5%	<b>18.5%</b>	<b>21.0%</b>	Return on Shr. Equity	<b>30.5%</b>
20.9%	23.7%	20.0%	19.2%	21.3%	18.7%	18.6%	19.6%	23.7%	19.3%	<b>12.5%</b>	<b>15.0%</b>	Retained to Com Eq	<b>24.0%</b>
2%	2%	13%	15%	14%	21%	20%	21%	21%	24%	<b>33%</b>	<b>29%</b>	All Div'ds to Net Prof	<b>21%</b>

**CURRENT POSITION** 2018 2019 3/31/20 (SMILL.)

Cash Assets	1279.3	891.2	2372.3
Receivables	1791.8	1736.4	1540.5
Inventory (FIFO)	1233.8	1310.1	1325.0
Other	266.7	273.5	279.7
Current Assets	4571.6	4211.2	5517.5
Accts Payable	890.5	866.8	817.2
Debt Due	764.3	403.3	500.9
Other	796.5	862.6	852.1
Current Liab.	2451.3	2132.7	2170.2

**BUSINESS:** Amphenol Corp. manufactures electrical, electronic, and fiber-optic connectors, interconnect systems, and coaxial and flat-ribbon cable. Its two primary business segments are interconnect products and assemblies and Cable products. Amphenol sells its products to original equipment manufacturers, contract manufacturers, cable system operators, and telecommunication companies through manufacturer's reps. and dist. FMR LLC owns 13.3% of common stock outstanding; Vanguard Group, 11.1%; BlackRock, 7.7%; officers & directors: 2.7% (4/20 proxy). Employs about 74,000. Chairman: Martin H. Loeffler. President & CEO: R. Adam Norwitz. Inc.: DE. Address: 358 Hall Ave., Wallingford, CT 06492. Telephone: 203-265-8900. Internet: www.amphenol.com.

**ANNUAL RATES** Past Past Est'd '17-'19 of change (per sh) 10 Yrs. 5 Yrs. to '23-'25

Revenues	12.0%	11.5%	6.0%
"Cash Flow"	13.5%	13.5%	8.0%
Earnings	13.5%	13.0%	9.0%
Dividends	39.5%	21.5%	7.0%
Book Value	13.0%	10.0%	6.0%

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1560.1	1666.5	1840.8	1943.9	7011.3
2018	1866.9	1981.4	2129.0	2224.7	8202.0
2019	1958.5	2015.3	2100.6	2151.0	8225.4
2020	1862.0	1750	1900	2048	7560
2021	1985	2045	2120	2150	8300

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.69	.74	.83	.86	3.12
2018	.84	.91	1.01	1.09	3.85
2019	.87	.93	.92	1.03	3.75
2020	.79	.62	.74	.80	2.95
2021	1.00	.80	.95	1.00	3.75

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.14	.14	.14	.14	.56
2017	.16	.16	.16	.19	.67
2018	.19	.19	.23	.23	.84
2019	.23	.23	.23	.25	.94
2020	.25	.25			

**Shares of Amphenol Corporation have rallied more than 30% in value since our March review.** To recap, the company's top line has been largely hindered by widespread manufacturing disruptions in China stemming from the COVID-19 outbreak. In fact, regulators in China ordered Amphenol to shut down its factory operations for approximately three weeks. These events have resulted in weaker sales of mobile devices, networks, IC datacom solutions, automotive applications, and industrial products. Nevertheless, the Wall Street community cheered recent news that the company has been cleared to resume full production levels at each of its 50 facilities in China. Too, many investors feel its well-diversified portfolio and customer base have Amphenol in good position to weather the current storm. We have reduced our 2020 share-net call by \$0.90, to \$2.95, reflecting the challenging operating landscape. **The waters might remain a tad choppy next year, as well.** Thus, we have decided to trim our 2021 EPS estimate by \$0.50, to \$3.75. Though the electronics provider's pipeline appears stout,

we think an uneven operating environment and elevated costs will stifle overall performance next year, to a degree. That said, increased military spending and further investments into next-generation mobile networks ought to bolster sales and profits moving forward. In addition, Amphenol's global communications line has seen a sharp uptick, as workers in both the public and private sector have been working from home in much greater numbers. Leadership has hinted at its intention to continue pursuing value-added bolt-on acquisitions once market volatility (due to the coronavirus) finally subsides. **A couple of segments may lag behind for a prolonged stretch.** Indeed, the company has experienced a sizable dropoff in demand from commercial airliners, as most were severely affected by the pandemic. Like the commercial aerospace market, automotive businesses have felt the squeeze. These industries face a potentially slow road to recovery. **This neutrally ranked stock currently offers below-average capital appreciation potential out to 2023-2025.**  
*Kenneth J. DeFranco, Jr. June 26, 2020*

(A) Diluted earnings. Next earnings report due late July.	(C) In millions, adjusted for stock splits.	Company's Financial Strength	A
(B) Dividends historically paid in early January, April, July, and October.	(D) Includes intangibles. In 2019: \$5605.3 mill., \$18.82/sh.	Stock's Price Stability	95
		Price Growth Persistence	100
		Earnings Predictability	95

# APPLE INC. NDAQ:AAPL

RECENT PRICE **342.99** P/E RATIO **26.5** (Trailing: 26.9; Median: 13.0) RELATIVE P/E RATIO **1.33** DIV'D YLD **1.0%** VALUE LINE



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
1.51	2.38	3.23	3.93	5.22	5.80	10.17	16.64	23.81	27.15	31.16	41.89	40.41	44.72	55.86	58.56	<b>61.65</b>	<b>71.55</b>	Sales per sh <sup>A</sup>	102.70
.08	.25	.37	.62	.85	1.02	2.35	4.26	6.85	6.96	8.09	11.59	15.65	18.40	14.81	15.26	<b>15.65</b>	<b>18.40</b>	"Cash Flow" per sh	28.90
.05	.21	.32	.56	.77	.90	2.16	3.95	6.31	5.68	6.45	9.22	8.31	9.21	11.91	11.89	<b>12.50</b>	<b>14.90</b>	Earnings per sh <sup>B</sup>	24.00
--	--	--	--	--	--	--	--	.38	1.63	1.81	1.98	2.18	2.40	2.72	3.00	<b>3.18</b>	<b>3.38</b>	Div'ds Decl'd per sh <sup>E</sup>	5.40
.03	.04	.11	.12	.18	.18	.31	.65	1.26	1.30	1.63	2.02	2.39	2.43	2.80	2.36	<b>2.55</b>	<b>2.75</b>	Cap'l Spending per sh	3.40
.93	1.28	1.67	2.38	3.38	4.42	7.45	11.78	17.98	19.63	19.02	21.39	24.03	26.15	22.53	20.37	<b>18.35</b>	<b>23.60</b>	Book Value per sh	48.10
5480.2	5845.1	5986.8	6106.3	6218.3	6298.6	6411.8	6504.9	6574.5	6294.5	5866.2	5578.8	5336.2	5126.2	4755.0	4443.2	<b>4300.0</b>	<b>4150.0</b>	Common Shs Outst'g <sup>C</sup>	3700.0
38.0	26.2	29.1	26.3	30.4	19.2	15.2	12.4	12.0	12.3	13.0	12.8	12.6	14.9	15.3	16.1	<b>16.0</b>	<b>16.0</b>	Avg Ann'l P/E Ratio	16.0
2.01	1.40	1.57	1.40	1.83	1.28	.97	.78	.76	.69	.68	.64	.66	.75	.83	.88	<b>.88</b>	<b>.88</b>	Relative P/E Ratio	.90
--	--	--	--	--	--	--	--	.5%	2.3%	2.2%	1.7%	2.1%	1.8%	1.5%	1.6%	<b>1.6%</b>	<b>1.6%</b>	Avg Ann'l Div'd Yield	1.4%

**CAPITAL STRUCTURE as of 3/28/20**

Total Debt \$109507 mill. Due in 5 Yrs \$55000 mill.  
 LT Debt \$89086 mill. LT Interest \$4500 mill. (53% of Cap'l)  
 Leases, Uncapitalized Annual rentals \$1306 mill.

No Defined Benefit Pension Plan  
 Pfd Stock None

Common Stock 4,334,335,000 shs. as of 4/17/20  
 MARKET CAP: \$1.5 trillion (Large Cap)

	2018	2019	3/28/20	
Cash Assets	66301	100557	94051	
Receivables	23186	22926	15722	
Inventory (FIFO)	3956	4106	3334	
Other	37896	35230	30646	
Current Assets	131339	162819	143753	
Accts Payable	55888	46236	32421	
Debt Due	20748	16240	20421	
Other	40230	43242	43252	
Current Liab.	116866	105718	96094	

**BUSINESS:** Apple Inc., established in 1977, is one of the world's largest makers of PCs and peripheral and consumer products, such as the iPod digital music player, the iPad tablet, the iPhone smartphone, and the Apple Watch, for sale primarily to the business, creative, education, government, and consumer markets. It also sells operating systems, services like iCloud storage and Apple Pay, and a host of digital content from the popular iTunes store and other portals. Research and development: 6.2% of '19 sales. Has approximately 137,000 employees. Off./dir. own less than 1.0% of common stock; Vanguard, 7.7%; BlackRock, 6.8% (1/20 Proxy). CEO: Tim Cook. Inc.: CA. Addr.: One Apple Park Way, Cupertino, CA 95014. Tel.: 408-996-1010. Internet: www.apple.com.

**ANNUAL RATES** Past Past Est'd '17-'19 of change (per sh) 10 Yrs. 5 Yrs. to '23-'25

Sales	26.5%	14.0%	11.5%
"Cash Flow"	32.5%	13.5%	13.0%
Earnings	31.0%	12.5%	14.0%
Dividends	--	16.5%	12.0%
Book Value	21.0%	4.0%	13.0%

**QUARTERLY SALES (\$ mill.)<sup>A</sup>**

Fiscal Year Ends	Dec.	Mar.	Jun.	Per Sep.	Per	Full Fiscal Year
2017	78351	52896	45408	52579		229234
2018	88293	61137	53265	62900		265595
2019	84310	58015	53809	64040		260174
2020	91819	58313	<b>51868</b>	<b>63000</b>		<b>265000</b>
2021	<b>101000</b>	<b>65000</b>	<b>60000</b>	<b>71000</b>		<b>297000</b>

**EARNINGS PER SHARE<sup>A,B</sup>**

Fiscal Year Ends	Dec.	Mar.	Jun.	Per Sep.	Per	Full Fiscal Year
2017	3.36	2.10	1.67	2.07		9.21
2018	3.89	2.73	2.34	2.91		11.91
2019	4.18	2.46	2.18	3.03		11.89
2020	4.99	2.55	<b>2.06</b>	<b>2.90</b>		<b>12.50</b>
2021	<b>5.45</b>	<b>3.15</b>	<b>2.75</b>	<b>3.55</b>		<b>14.90</b>

**QUARTERLY DIVIDENDS PAID<sup>E</sup>**

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.52	.57	.57	.57	2.23
2017	.57	.63	.63	.63	2.46
2018	.63	.73	.73	.73	2.82
2019	.73	.77	.77	.77	3.04
2020	.77	.82			

**Apple shares have been riding high of late.** In fact, the mega-cap Dow component has surged roughly 35% in value since our March review, leading a rebound in the broader equity market, despite a worsening of the COVID-19 pandemic that has disrupted large swaths of the global economy. Part of this is probably due to strength in the wider tech sector, which has been viewed by bulls as fairly coronavirus-proof, particularly with more consumers working from home and seeking new ways to stay connected. But... **Apple's business has also shown some welcome resiliency, with results for the second quarter of fiscal 2020 (year ends September 26th) coming in better than feared.** For the March stanza, share net clocked in at \$2.55, 4% above the year-earlier tally and nicely ahead of Wall Street's consensus view of \$2.26. Even better, against the challenging backdrop, the company managed to grow its top line by 1%, to \$58.3 billion, with another good showing from the services segment, including iCloud storage, Apple Music, and a host of subscription offerings, leading the charge. And free cash flow remained

robust, prompting the tech behemoth to hike the quarterly dividend by 6% (from \$0.77 to \$0.82 a share) and tack on \$50 billion to the existing stock-repurchase authorization. Looking ahead... **We remain upbeat about prospects here.** Results are apt to face modest pressure through the second half of the year, hampered by lingering iPhone softness. (iPhone revenue fell 7% in the March period.) We expect the services momentum to persist, however, especially as Apple TV+, the company's new streaming platform, gains traction. We also see the wearables segment, along with its expanded lineup of health-oriented apps, emerging as a more powerful growth engine. This suggests that double-digit top- and bottom-line advances are in the cards for fiscal 2021. And it gives us confidence that profits can reach around \$24.00 a share by 2023-2025. **The valuation is getting full at these levels, and the issue is no longer timely.** Yet, we think our longer-range share-net estimates may well prove to be conservative, particularly in light of Apple's aggressive actions on the buyback front. *Justin Hellman* June 26, 2020

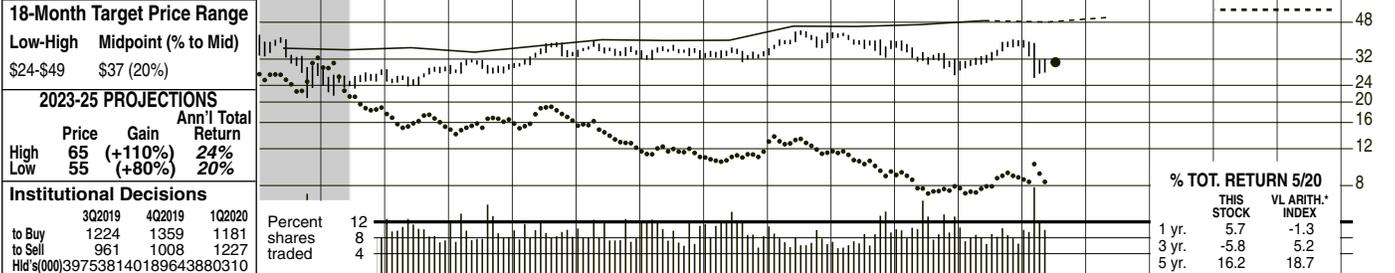
(A) Fiscal year ends last Saturday in September. (B) Diluted earnings. Quarters may not add to total due to rounding/changes in the share count. Excludes nonrecurring gain: '05, 2c. Next earnings report due in late July. (C) In millions, adjusted for splits. (D) Depreciation on accelerated basis. (E) New dividend policy adopted 3/12. Payments typically made in February, May, August, and November.

Company's Financial Strength	A++
Stock's Price Stability	85
Price Growth Persistence	80
Earnings Predictability	80

# AT&T INC. NYSE-T

RECENT PRICE **30.93** P/E RATIO **9.0** (Trailing: 8.7 Median: 13.0) RELATIVE P/E RATIO **0.46** DIV'D YLD **6.8%** VALUE LINE

TIMELINESS <b>3</b> Lowered 12/13/19	High: 29.5 29.6 31.9 38.6 39.0 37.5 36.4 43.9 43.0 39.3 39.7 39.6	Target Price Range 2023 2024 2025
SAFETY <b>1</b> Raised 3/28/08	Low: 21.4 23.8 27.2 29.0 32.8 31.7 31.0 33.4 32.6 26.8 28.3 26.1	120
TECHNICAL <b>3</b> Lowered 5/15/20	LEGENDS — 6.5 x "Cash Flow" p sh ... Relative Price Strength Options: Yes Shaded area indicates recession	100
BETA .80 (1.00 = Market)		80



2023-25 PROJECTIONS		Ann'l Total Return		High Low		Price Gain		Ann'l Total Return	
High	65	(+110%)	24%	Low	55	(+80%)	20%		

Institutional Decisions		Percent shares traded	
3Q2019	4Q2019	10Q2020	
to Buy	1224	1359	1181
to Sell	961	1008	1227
Hlds	3097538140	189643880310	

© VALUE LINE PUB. LLC		23-25	
2004	2005	2006	2007
12.36	11.31	16.24	19.83
3.77	3.42	4.63	5.36
1.47	1.72	2.34	2.76
1.25	1.29	1.33	1.42
1.54	1.44	2.14	2.93
12.29	14.11	29.76	19.09
3300.9	3876.9	3882.0	6043.5
17.2	13.9	12.6	14.2
.91	.74	.68	.75
5.0%	5.4%	4.5%	3.6%

CAPITAL STRUCTURE as of 3/31/20		Total Debt \$164269 mill. Due in 5 Yrs \$56000 mill.		LT Debt \$147202 mill. LT Interest \$7500 mill.	
124399	126723	127434	128752	132447	146801
13612	13103	13698	13463	13056	15188
39.3%	33.6%	32.6%	33.2%	34.6%	32.4%
10.9%	10.3%	10.7%	10.5%	9.9%	10.3%
34.5%	36.7%	41.7%	43.1%	46.7%	48.9%
65.5%	63.3%	58.3%	56.9%	53.3%	51.8%
170921	167097	159053	160772	162935	242155
103196	107087	109767	110968	112898	124450
8.8%	8.9%	9.7%	9.6%	9.1%	7.2%
12.2%	12.4%	14.8%	14.7%	15.0%	12.4%
12.2%	12.4%	14.8%	14.7%	15.0%	12.4%
3.3%	2.8%	3.7%	4.1%	4.0%	4.1%
73%	78%	75%	72%	73%	67%

Pension Assets-12/19 \$53530 mill. Oblig. \$59873 mill.		Pfd Stock None		Common Stock 7,125 mill. shares as of 4/30/20	
124399	126723	127434	128752	132447	146801
13612	13103	13698	13463	13056	15188
39.3%	33.6%	32.6%	33.2%	34.6%	32.4%
10.9%	10.3%	10.7%	10.5%	9.9%	10.3%
34.5%	36.7%	41.7%	43.1%	46.7%	48.9%
65.5%	63.3%	58.3%	56.9%	53.3%	51.8%
170921	167097	159053	160772	162935	242155
103196	107087	109767	110968	112898	124450
8.8%	8.9%	9.7%	9.6%	9.1%	7.2%
12.2%	12.4%	14.8%	14.7%	15.0%	12.4%
12.2%	12.4%	14.8%	14.7%	15.0%	12.4%
3.3%	2.8%	3.7%	4.1%	4.0%	4.1%
73%	78%	75%	72%	73%	67%

MARKET CAP: \$220 billion (Large Cap)		CURRENT POSITION		2018		2019		3/31/20	
Cash Assets	5204	12130	9955						
Other	46223	42631	42749						
Current Assets	51427	54761	52704						
Accts Payable	43184	45956	40771						
Debt Due	10255	11838	17067						
Other	10981	11117	11866						
Current Liab.	64420	68911	69704						
Fix. Chg. Cov.	355%	332%	371%						

ANNUAL RATES		Past		Past		Est'd '17-'19	
of change (per sh)	10 Yrs.	5 Yrs.	2.0%	5%	2.5%	5%	2.5%
Revenues	3.0%	4.0%	3.0%	4.0%	3.5%	4.0%	3.5%
"Cash Flow"	3.5%	6.5%	3.5%	6.5%	5.5%	6.5%	5.5%
Earnings	2.5%	2.0%	2.5%	2.0%	4.5%	2.5%	2.0%
Dividends	3.5%	7.5%	3.5%	7.5%	4.5%	3.5%	7.5%
Book Value							

QUARTERLY REVENUES (\$ mill.)		Full Year	
Cal-endar	Mar.31 Jun.30 Sep.30 Dec.31	2017	160546
		2018	170756
		2019	181193
		2020	175000
		2021	180000

EARNINGS PER SHARE A		Full Year	
Cal-endar	Mar.31 Jun.30 Sep.30 Dec.31	2017	3.05
		2018	3.52
		2019	3.58
		2020	3.45
		2021	3.75

QUARTERLY DIVIDENDS PAID B		Full Year	
Cal-endar	Mar.31 Jun.30 Sep.30 Dec.31	2016	1.92
		2017	1.96
		2018	2.00
		2019	2.04
		2020	

**AT&T will soon have a new CEO.** Randall Stephenson, who orchestrated the \$85 billion acquisition of Time Warner (completed in mid-2018), is retiring from the top spot effective July 1st. In his place, John Stankey, the current president and COO of the Dallas-based telecom giant, will move into the corner office. Mr. Stankey's appointment has the blessing of Elliott Management, an activist hedge fund that has been pushing AT&T to shake up the managerial ranks and improve operations across the former Time Warner media assets (including Warner Bros. studios and the HBO, CNN, TBS, and TNT networks). And he seems like a good fit for the job, given his deep involvement with the new WarnerMedia business segment. Still, Mr. Stankey will have his work cut out for him. Indeed...

**The company continues to face numerous challenges.** The COVID-19 pandemic is hampering near-term results (it took a \$0.05 bite out of share net in the first quarter), most notably by hurting advertising and wireless-equipment sales. But AT&T is grappling with longer-range problems, too, from a sizable debt load to mounting subscriber losses at DirecTV. And the competitive landscape isn't getting any easier, thanks to the recent merger between T-Mobile and Sprint. (AT&T unsuccessfully tried to purchase T-Mobile back in 2011.) Nonetheless...

**We see a gradual turnaround unfolding here.** We have lowered our 2020 share-earnings call by \$0.20, to \$3.45, to reflect the ongoing coronavirus crisis. The bottom line will probably begin to recover next year, however, supported by solid wireless service revenue growth. The HBO Max streaming service, which launched in May, should also prove to be a nice catalyst. The streaming space has gotten crowded, with the company competing for cord-cutters with the likes of Netflix, Disney, Amazon, and Apple. Yet, AT&T's extensive content library should help the new offering to quickly gain traction.

**We continue to like this issue for income-oriented buy-and-hold investors.** Though stock buybacks have been suspended, the company generates ample free cash flow and is committed to maintaining its generous dividend payout.

*Justin Hellman*  
June 12, 2020

Company's Financial Strength		A++	
Stock's Price Stability	100		
Price Growth Persistence	25		
Earnings Predictability	100		

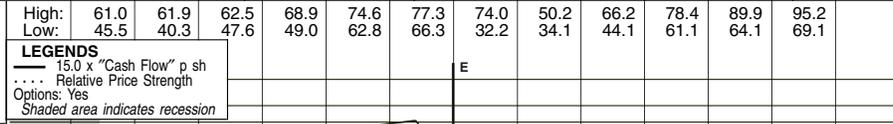
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# BAXTER INT'L NYSE-BAX

RECENT PRICE **83.16** P/E RATIO **26.3** (Trailing: 26.2 Median: 19.0) RELATIVE P/E RATIO **1.23** DIV'D YLD **1.2%**

**VALUE LINE**

**TIMELINESS** 2 Lowered 8/14/20  
**SAFETY** 1 Raised 2/16/18  
**TECHNICAL** 2 Lowered 8/14/20  
**BETA** .80 (1.00 = Market)



Target Price Range	2023	2024	2025

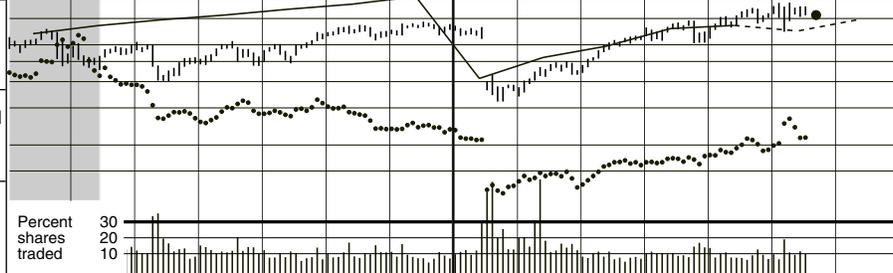
**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$73-\$125 \$99 (20%)

**2023-25 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	120	(+45%)	11%
Low	100	(+20%)	6%

**Institutional Decisions**

	3Q2019	4Q2019	1Q2020
to Buy	423	478	373
to Sell	452	487	598
Hlds(000)	425645	419059	425439



% TOT. RETURN 7/20	THIS STOCK	VL ARITH. INDEX
1 yr.	4.0	-1.7
3 yr.	47.4	9.9
5 yr.	127.6	31.7

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
15.44	15.76	15.95	17.78	20.05	20.90	22.48	24.42	25.98	28.10	30.74	18.20	18.83	19.50	21.69	22.45	<b>22.15</b>	<b>23.55</b>	Sales per sh	27.45
2.66	2.46	3.13	3.80	4.52	4.94	5.25	5.54	5.91	6.24	6.80	2.76	3.48	3.95	4.78	4.95	<b>4.65</b>	<b>5.30</b>	"Cash Flow" per sh	6.65
1.68	1.52	2.23	2.79	3.38	3.80	3.98	4.31	4.53	4.67	4.90	1.38	1.96	2.48	3.05	3.31	<b>3.10</b>	<b>3.75</b>	Earnings per sh <sup>A</sup>	5.00
.58	.58	.58	.72	.91	1.07	1.18	1.27	1.46	1.88	2.02	1.68	.49	.58	.70	.82	<b>.93</b>	<b>1.01</b>	Div's Decl'd per sh <sup>B</sup>	1.22
.91	.71	.81	1.09	1.55	1.69	1.66	1.69	2.13	2.81	3.50	1.66	1.33	1.17	1.33	1.38	<b>1.30</b>	<b>1.35</b>	Cap'l Spending per sh	1.45
6.01	6.88	9.64	10.91	10.11	11.97	11.31	11.57	12.70	15.58	14.97	16.15	15.36	16.85	15.19	15.57	<b>16.25</b>	<b>17.65</b>	Book Value per sh <sup>C</sup>	23.55
616.00	624.90	650.48	633.64	615.99	600.97	580.73	569.00	546.21	543.04	542.38	547.66	539.60	541.48	513.00	506.16	<b>510.00</b>	<b>510.00</b>	Common Shs Outst'g <sup>D</sup>	510.00
18.8	24.5	18.4	19.6	18.2	14.2	12.6	12.6	12.8	14.9	14.7	40.5	22.4	23.3	22.9	24.1	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	22.0
.99	1.30	.99	1.04	1.10	.95	.80	.79	.81	.84	.77	2.04	1.18	1.17	1.24	1.30			Relative P/E Ratio	1.20
1.8%	1.6%	1.4%	1.3%	1.5%	2.0%	2.4%	2.3%	2.5%	2.7%	2.8%	3.0%	1.1%	1.0%	1.0%	1.0%			Avg Ann'l Div'd Yield	1.1%

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$6374 mill. Due in 5 Yrs \$1767 mill.  
 LT Debt \$6055 mill. LT Interest \$112 mill.  
 (43% of Cap'l)

**Leases, Uncapitalized** Annual rentals \$112.0 mill.

**Pension Assets-12/19** \$3.0 billion  
 Obligation \$4.0 billion

**Common Stock** 506,231,732 shares as of 7/21/20

**MARKET CAP: \$42.1 billion (Large Cap)**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
13056	13893	14190	15259	16671	9968.0	10163	10561	11127	11362	11300	12000	Sales (\$mill)	14000						
28.6%	26.0%	27.9%	27.5%	27.0%	12.1%	15.0%	19.1%	20.6%	25.6%	24.5%	26.0%	Operating Margin	28.0%						
685.0	670.0	712.0	823.0	1005.0	759.0	800.0	761.0	785.0	789.0	795	800	Depreciation (\$mill)	850						
2366.0	2485.0	2516.0	2567.0	2683.0	755.0	1078.0	1376.0	1666.0	1717.0	1580	1910	Net Profit (\$mill)	2550						
20.1%	18.0%	21.9%	22.0%	21.7%	18.6%	21.9%	18.0%	16.9%	16.7%	17.0%	17.0%	Income Tax Rate	17.0%						
18.1%	17.9%	17.7%	16.8%	16.1%	7.6%	10.6%	13.0%	15.0%	15.1%	14.0%	15.9%	Net Profit Margin	18.2%						
3948.0	3793.0	4501.0	4098.0	4309.0	6046.0	3830.0	4442.0	3083.0	4273.0	5000	5000	Working Cap'l (\$mill)	5500						
4363.0	4749.0	5580.0	8126.0	7606.0	3935.0	2779.0	3509.0	3473.0	4809.0	6000	5500	Long-Term Debt (\$mill)	5000						
6567.0	6585.0	6938.0	8463.0	8120.0	8846.0	8290.0	9124.0	7794.0	7882.0	8300	9000	Shr. Equity (\$mill)	12000						
22.0%	22.1%	20.4%	15.8%	17.5%	6.4%	10.0%	11.1%	15.0%	13.8%	11.5%	13.5%	Return on Total Cap'l	15.5%						
36.0%	37.7%	36.3%	30.3%	33.0%	8.5%	13.0%	15.1%	21.4%	21.8%	19.0%	21.0%	Return on Shr. Equity	21.5%						
25.6%	27.0%	24.7%	18.2%	19.6%	NMF	9.8%	11.6%	16.6%	16.4%	13.5%	15.5%	Retained to Com Eq	16.0%						
29%	29%	32%	40%	41%	121%	25%	23%	23%	25%	30%	27%	All Div's to Net Prof	24%						

**CURRENT POSITION (SMILL.)**

	2018	2019	6/30/20
Cash Assets	1832	3335	4085
Receivables	1812	1896	1884
Inventory (FIFO)	1653	1653	1905
Other	622	619	692
Current Assets	5919	7503	8566
Accts Payable	2728	2689	2561
Debt Due	4	541	319
Other	104	--	--
Current Liab.	2836	3230	2880

**BUSINESS:** Baxter International, through its subsidiaries, provides a broad portfolio of healthcare products, including acute and chronic dialysis therapies; sterile IV solutions; infusion systems and devices; parenteral nutrition therapies; inhaled anesthetics; generic injectable pharmaceuticals; and surgical hemostat and sealant products. At 12/31/19, it manufactured products in over 20 countries and sold them in over 100. Completed spinoff of pharma. business Baxalta (7/15). Acq. Claris Injectables (7/17). Has 50,000 employees. Off./dirs. own less than 1% of comm. stock; BlackRock, 8.0%; Vanguard, 7.7%; Wellington, 6.1% (3/20 proxy). Chairman and CEO: Jose E. Almeida. Inc.: DE. Addr.: 1 Baxter Pkwy., Deerfield, IL. 60015. Tel.: 224-948-2000. Internet: www.baxter.com.

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**ANNUAL RATES**

	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
of change (per sh)			
Sales	1.0%	-5.5%	4.5%
"Cash Flow"	.5%	-6.5%	6.5%
Earnings	-1.0%	-9.0%	9.0%
Dividends	-2.5%	-17.0%	9.5%
Book Value	3.5%	2.0%	7.0%

**Baxter's second-quarter results fell short of consensus expectations.** The company reported adjusted earnings of \$0.64 a share on sales of \$2.72 billion, versus \$0.84 and \$2.84 billion in the comparable year-ago period. While some fallout was widely anticipated, due to business disruptions stemming from COVID-19, the tallies missed analysts' targets by about \$0.07 a share on the bottom line and \$140 million on the top. To make matter worse, management provided full-year guidance that fell well below previous expectations. BAX shares have declined roughly 9% in price since the day of the second-quarter release (July 30th).

projecting a more drawn out recovery than many had initially anticipated. We have lowered our 2020 adjusted earnings estimate to \$3.10 a share (previously \$3.25). **We look for meaningful recovery to occur in 2021.** Stay-at-home policies and overwhelmed hospitals took a significant toll on certain areas of Baxter's business in Q2, most notably in the Advanced Surgery (sales -27%), Medication Delivery (-11%), and Pharmaceuticals (-10%) segments. While a recent resurgence in COVID cases may continue limit physician visits in the near term, pent up demand should help to fuel a strong rebound when more normalized conditions are realized. Our 2021 earnings estimate stands at \$3.75 a share, implying annual growth of 21% compared to our 2020 call.

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.58	.63	.64	.64	2.48
2018	.70	.77	.80	.78	3.05
2019	.75	.84	.74	.97	3.31
2020	.82	.64	.75	.89	3.10
2021	.88	.94	.95	.98	3.75

**The company is targeting adjusted earnings of \$3.00-\$3.10 a share in 2020.** The range implies a year-over-year decline of 8% at the midpoint. Management also guided for sales growth of down 1% to up 1% on a reported basis and flat to up 3% operationally, the latter of which excludes the impact of foreign exchange. Altogether, the bottom-line outlook was a bit of a disappointment, considering that the average analyst estimate had been closer to \$3.30 prior to the Q2 release. Baxter is clearly

**The Timeliness rank was recently dropped a notch to 2 (Above Average).** Despite the downgrade, BAX shares are still pegged to outperform the broader market in the year ahead. Our 18-month projections suggest a midpoint case of \$99 a share, implying appreciation potential of about 20% at current price levels. *Michael Ratty August 14, 2020*

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

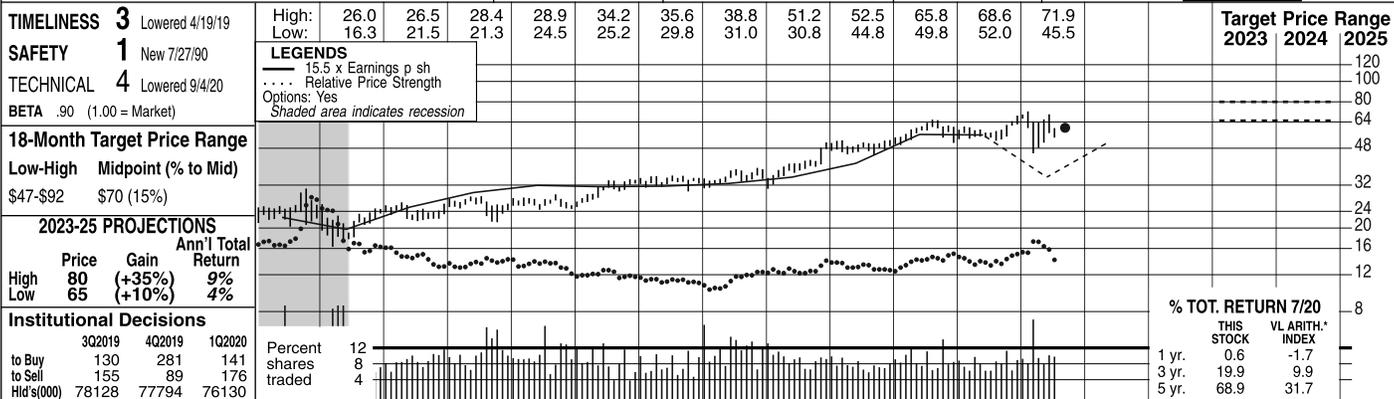
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.115	.115	.13	.13	.49
2017	.13	.13	.16	.16	.58
2018	.16	.16	.19	.19	.70
2019	.19	.19	.22	.22	.82
2020	.22	.22	.245		

**(A)** Diluted egs. Excl. nonrecr. gains/(losses): '07, (\$0.18); '08, (\$0.22); '09, (\$0.21); '10, (\$1.59); '11, (\$0.43); '12, (\$0.35); '13, (\$1.01); '14, (\$0.34); '15, \$0.38; '16, \$7.05; '17, (\$1.19); '18, (\$0.08); '19, (\$1.38). May not sum due to rounding. Next egs. report due late October. **(B)** Div'd historically paid in Jan., Apr., July, and Oct. **(C)** Div'd reinvestment plan available. **(D)** Incl. intang. In 2019: \$4.5 billion, \$8.89/sh. **(E)** Data post 2014 reflect completed spinoff of biopharmaceutical operation (July 1, 2015).

Company's Financial Strength	A+
Stock's Price Stability	100
Price Growth Persistence	100
Earnings Predictability	45

# COMMERCE BANCSH. NDQ-CBSH

RECENT PRICE **60.07** P/E RATIO **23.0** (Trailing: 22.8) (Median: 16.0) RELATIVE P/E RATIO **1.06** DIV'D YLD **1.8%** VALUE LINE



Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
Price	1.49	1.60	1.64	1.57	1.45	1.27	1.62	1.91	2.06	2.03	2.05	2.11	2.25	2.62	3.60	3.58	2.25	3.35	Earnings per sh <sup>A</sup>	4.40
Div'd	.42	.46	.49	.53	.56	.56	.58	.59	.63	.64	.67	.71	.74	.78	.85	.99	1.04	1.10	Div'ds Decl'd per sh <sup>B</sup>	1.26
Book Value	10.04	9.98	10.92	11.83	12.15	13.93	15.04	16.49	16.83	17.18	17.75	18.73	19.99	21.86	23.93	26.67	28.20	30.70	Book Value per sh <sup>D</sup>	39.90
Common Shs	142.07	134.01	132.07	129.09	129.78	135.37	134.54	131.58	128.79	128.66	123.11	118.35	117.63	117.65	116.45	112.09	111.00	111.00	Common Shs Outst'g <sup>C</sup>	111.00
P/E Ratio	14.7	15.3	15.6	15.9	16.7	16.6	14.7	13.5	12.8	15.0	16.4	16.6	17.6	18.7	16.0	16.3	16.5	16.5	Avg Ann'l P/E Ratio	16.5
Relative P/E	.78	.81	.84	.84	1.01	1.11	.94	.85	.81	.84	.86	.84	.92	.94	.86	.89	.89	.89	Relative P/E Ratio	.90
Div'd Yield	1.9%	1.9%	1.9%	2.1%	2.3%	2.7%	2.4%	2.3%	2.4%	2.1%	2.0%	2.0%	1.9%	1.6%	1.5%	1.7%	1.7%	1.7%	Avg Ann'l Div'd Yield	1.7%

Category	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
LT Debt \$1.5 mill.	18502	20649	22160	23072	23994	24605	25641	24833	25464	26066	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000
LT Interest \$5.5 mill.	9213.4	8992.9	9658.9	10795	11313	12293	13257	13824	13980	14577	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000
Pension Assets-12/19 \$107.6 mill.	645.9	646.1	639.9	619.4	620.2	634.3	680.0	733.7	823.8	821.3	820	865	865	865	865	865	865	865	865	865	865	865	865
Oblig. \$120.6 mill.	100.0	51.5	27.3	20.4	29.5	28.7	36.3	45.2	42.7	50.4	220	125	125	125	125	125	125	125	125	125	125	125	125
Pfd Stock \$144.8 mill. Pfd. Div'd \$9.0 mill.	403.3	403.7	404.5	414.0	450.1	453.9	474.3	511.7	500.9	528.3	540	570	570	570	570	570	570	570	570	570	570	570	570
Common Stock 111,533,322 shs. as of 8/3/20	631.1	617.2	618.5	629.6	657.8	675.9	717.1	769.7	737.8	767.4	800	815	815	815	815	815	815	815	815	815	815	815	815
MARKET CAP: \$6.7 billion (Large Cap)	221.7	256.3	269.3	261.0	261.8	263.7	275.4	319.4	433.5	421.2	265	385	385	385	385	385	385	385	385	385	385	385	385
Income Tax Rate	30.3%	31.9%	31.9%	31.9%	31.4%	30.4%	31.0%	25.7%	19.5%	20.5%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%
Return on Total Assets	1.20%	1.24%	1.22%	1.13%	1.09%	1.07%	1.07%	1.29%	1.70%	1.62%	.90%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%
Long-Term Debt (\$mill)	112.3	111.8	103.7	107.3	104.1	103.8	102.0	1.8	8.7	2.4	50	50	50	50	50	50	50	50	50	50	50	50	50
Shr. Equity (\$mill)	2023.5	2170.4	2167.1	2210.6	2330.2	2362.0	2495.8	2716.6	2931.3	3134.7	3275	3550	3550	3550	3550	3550	3550	3550	3550	3550	3550	3550	3550
Shr. Eq. to Total Assets	10.9%	10.5%	9.8%	9.6%	9.7%	9.7%	9.7%	10.9%	11.5%	12.0%	11.7%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Loans to Tot Assets	49.8%	43.6%	43.6%	46.8%	47.1%	50.0%	51.7%	55.7%	54.9%	55.9%	53.5%	53.5%	53.5%	53.5%	53.5%	53.5%	53.5%	53.5%	53.5%	53.5%	53.5%	53.5%	53.5%
Return on Shr. Equity	11.0%	11.8%	12.4%	11.8%	11.2%	11.2%	11.0%	11.8%	14.8%	13.4%	8.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Retained to Com Eq	7.1%	8.2%	8.7%	8.1%	7.9%	7.7%	7.6%	8.5%	11.6%	10.0%	5.0%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
All Div'ds to Net Prof	35%	31%	30%	31%	34%	36%	35%	32%	25%	29%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%

Category	2018	2019	6/30/20
ASSETS(\$Mill.)	13980.4	14577.1	16154.3
Loans	13980.4	14577.1	16154.3
Funds Sold	20.7	13.8	12.8
Securities	8698.7	8741.9	10468.1
Other Earning	1393.2	1245.9	2255.0
Other	1370.8	1487.1	1605.9
LIABILITIES(\$Mill.)			
Deposits	20323.7	20520.4	24527.0
Funds Borrowed	1956.4	1850.8	1740.4
Long-Term Debt	8.7	2.4	1.5
Net Worth	2931.3	3134.7	3357.9
Other	243.7	557.5	869.3
Total	25463.8	26065.8	30496.2
Loan Loss Resrv.	159.9	160.7	240.7

**BUSINESS:** Commerce Bancshares, Inc. has 552 bank/ATM locations in Missouri, Illinois, Kansas, Oklahoma, & Colorado. Net loan losses, about .35% of average loans in '19. Loan loss reserve, 1.47% of loans on 6/30/20. Problem & past-due assets, .14% of loans & OREO. Loans (12/31/19): commercial, 37%; commercial real estate, 25%; residential mortgage, 18%; consumer, 20%. On 12/31/19, had 4,576 full-time equivalent employees. Directors & officers own 3.4% of stock; Commerce Bank in trust capacities, 6.9%; Vanguard, 9.6%; BlackRock, 8.6%; State Street, 5.1% (proxy 3/20). C.E.O.: David W. Kemper. Incorporated: MO. Address: 1000 Walnut, P.O. Box 13686, Kansas City, MO 64199. Telephone: 816-234-2000. Internet: www.commercebank.com.

**Commerce Bancshares posted unusual June-period results.** Given the tremendous economic impact that COVID-19 has caused, disruptions come as no surprise. Simultaneously, Federal relief programs have provided much needed support, thereby diluting credit concerns. **Earnings of \$0.34 a share in the second quarter were down sharply.** The primary consideration was a steeper provision for loan losses. Given the present stress on the economy, problematic loans are likely to increase in the not-too-distant future. The bleak forecast necessitated an increase in reserves for future loan losses, and Commerce recorded an \$81 million provision in the quarter.

**Charge-offs have remained surprisingly low, so far.** The company wrote off \$8.4 million of loans in the June interim, but that was actually notably less than \$11.3 million last year, when the economy was performing much better. The reason is the aforementioned relief programs. In some cases, customers have been permitted to skip payments temporarily and, in turn, consumer loan charge-offs were lower than usual.

**Loan growth has surged.** Demand for Paycheck Protection Program (PPP) loans has been huge. This program provides small businesses with loans to help navigate the difficult time. Commerce provided funding to 7,443 customers, for an aggregate \$1.5 billion. Average total loans were also up \$1.5 billion, to \$16.2 billion. Aside from this commercial production, growth in both personal and commercial real estate was partially offset by lower consumer credit utilization.

**Low interest rates are a net headwind.** The net interest margin dropped 39 basis points last quarter, to 2.94%. A higher level of interest-bearing deposits also increased expenses. Rates are set to stay down for the foreseeable future, but the company has done a fine job executing in the environment so far.

**These shares are not for everyone.** Long-term capital gains potential is not going to whet too many appetites. But, conservative income investors will appreciate the high Price Stability score, relatively strong creditworthiness, and dividend growth potential.

Category	2017	2018	2019	2020	2021
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
Loans	4.5%	8.0%	5.0%	5.0%	5.0%
Earnings	8.5%	10.0%	5.0%	5.0%	5.0%
Dividends	5.0%	6.0%	6.5%	6.5%	6.5%
Book Value	6.5%	7.0%	8.5%	8.5%	8.5%
Total Assets	5.5%	4.0%	5.0%	5.0%	5.0%

(A) Based on diluted shares outstanding. May not sum due to rounding. Next earnings report due early October. (B) Dividends historically paid in late March, June, September, and December. Plus stock dividend: 5% in '04, '05, '06, '07, '08, '09, '10, '11, '12, '13, '14, '15, '16, '17, '18, '19. Excludes special div'd of \$1.2958 a share paid Dec. 17, 2012. (C) In millions, adjusted for stock dividends. (D) Incl. intangibles: As of 12/31/19, \$148.5 mill., \$1.33 a share.

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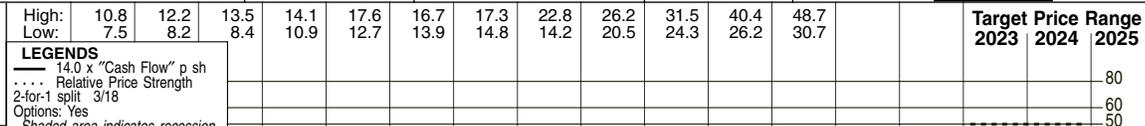
**Company's Financial Strength** A  
**Stock's Price Stability** 90  
**Price Growth Persistence** 75  
**Earnings Predictability** 75

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# BROWN & BROWN NYSE-BRO

RECENT PRICE **45.49** P/E RATIO **28.4** (Trailing: 29.3 Median: 21.0) RELATIVE P/E RATIO **1.29** DIV'D YLD **0.7%** **VALUE LINE**

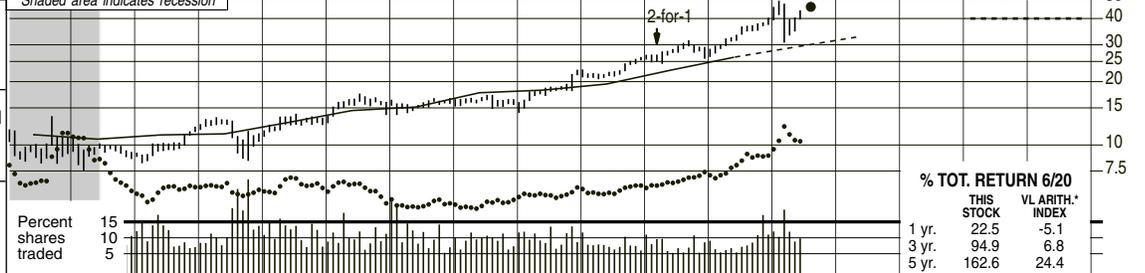
**TIMELINESS 2** Lowered 5/22/20  
**SAFETY 1** Raised 5/11/18  
**TECHNICAL 3** Lowered 8/7/20  
**BETA .95** (1.00 = Market)



**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$32-\$65 \$49 (5%)

**2023-25 PROJECTIONS**  
 High Price 50 Gain (+10%) Ann'l Total Return 4%  
 Low Price 40 (-10%) -2%

**Institutional Decisions**  
 3Q2019 4Q2019 1Q2020  
 to Buy 181 193 191  
 to Sell 154 173 181  
 Hlds(000) 198323 205728 205238



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.34	2.82	3.14	3.41	3.45	3.41	3.41	3.54	4.17	4.69	5.49	5.97	6.30	6.81	7.20	8.49	<b>8.80</b>	<b>9.30</b>	Revenues per sh	11.15
.58	.70	.79	.87	.80	.76	.80	.81	.91	1.04	1.08	1.27	1.30	1.39	1.62	1.87	<b>2.10</b>	<b>2.35</b>	"Cash Flow" per sh	2.90
.46	.54	.62	.68	.59	.54	.56	.57	.63	.74	.71	.85	.91	.98	1.22	1.40	<b>1.60</b>	<b>1.80</b>	Earnings per sh <sup>A</sup>	2.20
.07	.09	.11	.13	.14	.15	.16	.16	.17	.19	.21	.23	.25	.28	.31	.33	<b>.35</b>	<b>.37</b>	Div'ds Decl'd per sh <sup>B</sup>	.50
.04	.05	.05	.11	.05	.04	.04	.05	.08	.06	.09	.07	.06	.09	.15	.26	<b>.10</b>	<b>.10</b>	Cap'l Spending per sh	.15
2.26	2.74	3.32	3.90	4.39	4.82	5.27	5.73	6.28	6.90	7.37	7.73	8.42	9.35	10.73	11.90	<b>12.30</b>	<b>12.65</b>	Book Value per sh <sup>D</sup>	13.90
276.64	278.77	280.03	281.35	283.09	284.15	285.59	286.70	287.76	290.84	286.97	277.97	280.21	276.21	279.58	281.66	<b>284.00</b>	<b>285.00</b>	Common Shs Outst'g <sup>C</sup>	282.00
22.0	22.3	24.4	19.5	16.6	17.4	17.7	20.5	20.1	21.2	22.1	19.0	20.0	23.2	22.8	23.9	<b>22.8</b>	<b>23.9</b>	Avg Ann'l P/E Ratio	20.0
1.16	1.19	1.32	1.04	1.00	1.16	1.13	1.29	1.28	1.19	1.16	.96	1.05	1.17	1.23	1.29	<b>1.23</b>	<b>1.29</b>	Relative P/E Ratio	1.00
.7%	.7%	.7%	1.0%	1.5%	1.6%	1.6%	1.4%	1.4%	1.2%	1.3%	1.4%	1.4%	1.2%	1.1%	1.0%	<b>1.1%</b>	<b>1.0%</b>	Avg Ann'l Div'd Yield	1.1%

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$1.541 bill. Due in 5 Yrs \$480.0 mill.  
 LT Debt \$1.483 bill. LT Interest \$63.0 mill.  
 (LT Interest Coverage: 11.5x)  
 (31% of Cap'l)  
 Leases, Uncapitalized: Annual rentals \$40.9 mill.  
 No Defined Benefit Pension Plan  
 Pfd Stock None  
 Common Stock 283,441,000 shs.  
 MARKET CAP: \$12.9 billion (Large Cap)

973.5	1013.5	1200.0	1363.3	1575.8	1660.5	1766.6	1881.3	2014.2	2392.2	<b>2500</b>	<b>2650</b>	Revenues (\$mill)	3150
35.6%	34.7%	33.3%	33.7%	30.0%	33.1%	32.3%	32.1%	30.4%	30.1%	<b>31.0%</b>	<b>31.0%</b>	Operating Margin	32.5%
65.9	67.1	78.9	85.4	103.8	108.3	107.7	108.1	109.4	128.7	<b>145</b>	<b>160</b>	Depreciation (\$mill)	195
161.8	164.0	184.0	217.1	206.9	243.3	257.5	277.0	344.3	398.5	<b>455</b>	<b>510</b>	Net Profit (\$mill)	620
39.2%	39.4%	39.6%	39.3%	39.1%	39.6%	39.2%	38.4%	25.6%	24.2%	<b>24.0%</b>	<b>23.5%</b>	Income Tax Rate	22.0%
16.6%	16.2%	15.3%	15.9%	13.1%	14.7%	14.6%	14.7%	17.1%	16.7%	<b>18.1%</b>	<b>19.3%</b>	Net Profit Margin	19.7%
182.6	226.5	191.7	21.1	300.9	208.8	315.5	254.7	384.3	449.4	<b>500</b>	<b>550</b>	Working Cap'l (\$mill)	650
250.1	250.0	450.0	380.0	1152.8	1079.9	1018.4	856.1	1457.0	1500.3	<b>1450</b>	<b>1350</b>	Long-Term Debt (\$mill)	1000
1506.3	1644.0	1807.3	2007.1	2113.7	2149.8	2360.2	2582.7	3000.6	3350.3	<b>3500</b>	<b>3600</b>	Retained to Com Eq	3925
9.6%	9.0%	8.5%	9.4%	6.8%	8.1%	8.2%	8.6%	8.2%	8.9%	<b>9.5%</b>	<b>11.0%</b>	Return on Total Cap'l	13.0%
10.7%	10.0%	10.2%	10.8%	9.8%	11.3%	10.9%	10.7%	11.5%	11.9%	<b>13.0%</b>	<b>14.0%</b>	Return on Shr. Equity	16.0%
7.8%	7.1%	7.4%	8.1%	7.0%	8.3%	7.9%	7.7%	8.7%	9.2%	<b>10.0%</b>	<b>11.5%</b>	Retained to Com Eq	12.0%
28%	28%	27%	25%	29%	26%	27%	28%	25%	23%	<b>22%</b>	<b>21%</b>	All Div'ds to Net Prof	23%

CURRENT POSITION	2018	2019	3/31/20
Cash Assets	790.5	975.3	791.8
Receivables	844.8	942.9	1000.1
Other	532.0	576.6	491.9
Current Assets	2167.3	2494.8	2283.8
Accts Payable	944.9	1114.3	1126.0
Debt Due	50.0	55.0	58.8
Other	788.1	876.0	705.8
Current Liab	1783.0	2045.3	1890.6

ANNUAL RATES of change (per sh)	Past 10 Yrs	Past 5 Yrs	Est'd '17-'19 to '23-'25
Revenues	7.5%	10.5%	7.0%
"Cash Flow"	6.0%	9.5%	10.0%
Earnings	5.0%	10.0%	10.5%
Dividends	8.5%	10.0%	8.5%
Book Value	9.5%	8.5%	4.5%

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	465.1	466.3	475.6	474.3	1881.3
2018	501.5	473.1	530.9	508.7	2014.2
2019	619.3	575.2	618.7	579.0	2392.2
2020	698.5	<b>570</b>	<b>630</b>	<b>601.5</b>	<b>2500</b>
2021	<b>700</b>	<b>635</b>	<b>670</b>	<b>645</b>	<b>2650</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.25	.23	.27	.24	.98
2018	.32	.26	.38	.27	1.22
2019	.41	.33	.41	.27	1.40
2020	.54	<b>.30</b>	<b>.42</b>	<b>.34</b>	<b>1.60</b>
2021	<b>.55</b>	<b>.42</b>	<b>.45</b>	<b>.38</b>	<b>1.80</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.06	.06	.06	.0675	.25
2017	.0675	.0675	.0675	.075	.28
2018	.075	.075	.075	.08	.31
2019	.08	.08	.08	.085	.33
2020	.085	.085			

**BUSINESS:** Brown & Brown Inc. operates an insurance brokerage firm that markets property/casualty products and services to commercial, professional, and individual customers. The company's property insurance protects against physical damage to property and the resultant interruption of business caused by firestorm, windstorm, or other perils. Casualty insurance relates to legal liabilities,

**Brown & Brown's stock price is on the mend.** Since our mid-May review, shares of the diversified insurance firm have risen roughly 20% in value, rebounding strongly from the COVID-19-induced sell-off earlier this year. Following the past few months of appreciation, Brown shares are not trading far from recently etched all-time highs.

**Respectable top- and bottom-line growth is probably in the cards this year and next.** For 2020, the company started off on the right foot amidst a challenging economic backdrop. Despite what we believe to be a more subdued back half of the year due to lingering coronavirus constraints, our model calls for decent revenue and earnings expansion. Next year, similar growth is likely on tap, as we look for earnings of \$1.80 a share from revenues of \$2.5 billion.

**Brown & Brown is acquiring more assets.** Coming off the heels of some notable asset accumulation earlier this year, Brown recently announced the acquisition of First Resource, an auto finance and insurance provider that operates in Texas and the Southwest. Looking forward, we

think there is more insurance industry consolidation on the horizon and, based on its track record, Brown is likely to take part in the action.

**A potential macroeconomic recovery augurs well for long-term prospects.** While the near term may still be a bit cloudy due to a lack of transparency around consumer and business spending, we think the sky will clear as the economy slowly reopens and business activity picks up. As a result, demand for property and casualty insurance products ought to noticeably strengthen. On top of that, we expect management to continue to pursue tuck-in acquisitions as part of its broader growth strategy.

**Brown & Brown shares are favorably ranked (2) for relative year-ahead price performance, but have fallen one notch on our Timeliness ranking scale.** Conversely, investors with a view to 2023-2025 can probably find better options elsewhere. The stock is presently trading firmly within our 3- to 5-year Target Price parameters, thus limiting the issue's long-term appeal.

*Nicholas P. Patrikis August 7, 2020*

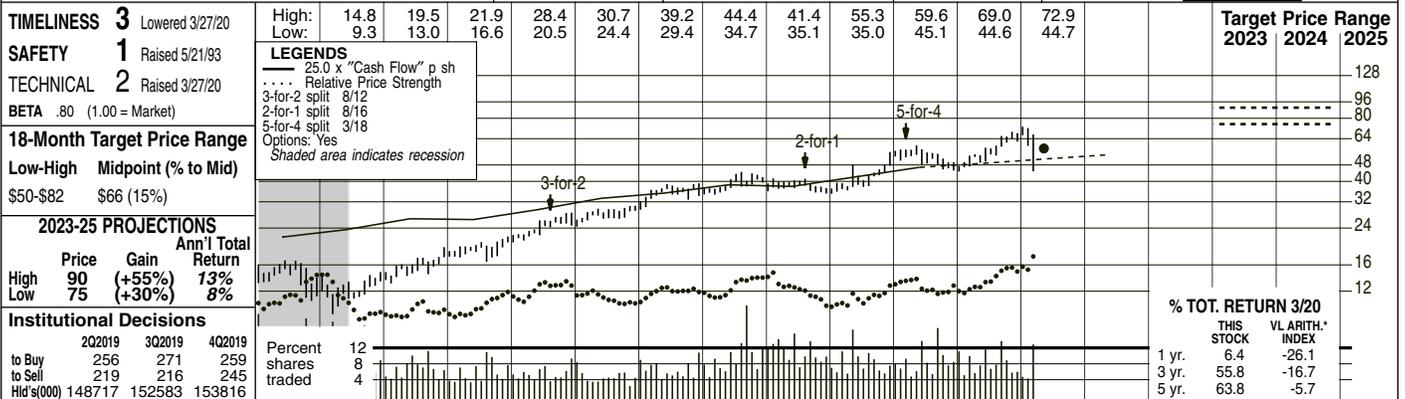
(A) Diluted earnings. Excludes n/r items: '17, \$0.85. Next earnings report due late October. Earnings may not sum due to rounding or changes in shares outstanding. (B) Dividends historically paid in early February, May, August, and November. (C) In millions, adjusted for split. (D) Includes intangibles. In '19: \$4662.9 million, \$16.56 a share.

Company's Financial Strength	A
Stock's Price Stability	100
Price Growth Persistence	80
Earnings Predictability	90

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# BROWN-FORMAN 'B' NYSE-BFB

RECENT PRICE **57.39** P/E RATIO **31.2** (Trailing: 32.1; Median: 26.0) RELATIVE P/E RATIO **2.33** DIV'D YLD **1.2%** VALUE LINE



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
4.05	3.44	3.84	4.57	4.41	4.48	4.76	5.11	5.33	5.61	6.01	6.25	6.24	6.75	6.97	7.10	7.45	7.80	Sales per sh <sup>A</sup>	9.25
.63	.70	.75	.87	.87	.94	1.06	1.05	1.17	1.33	1.41	1.54	1.51	1.68	1.87	1.95	2.05	2.15	"Cash Flow" per sh	3.45
.52	.62	.67	.76	.77	.82	.95	.95	1.07	1.22	1.28	1.38	1.37	1.54	1.73	1.80	1.90	2.00	Earnings per sh <sup>B</sup>	3.25
.18	.22	.24	.27	.30	.31	.33	.36	.39	.44	.48	.52	.56	.61	.65	.66	.69	.74	Div's Decl'd per sh <sup>C</sup>	.88
.09	.09	.10	.07	.10	.07	.08	.11	.18	.24	.23	.22	.23	.26	.25	.50	.60	.70	Cap'l Spending per sh	5.90
2.29	2.72	2.72	3.05	3.23	3.44	3.79	3.88	3.05	3.81	3.65	3.16	2.85	2.74	3.45	3.65	3.90	4.05	Book Value per sh <sup>D</sup>	9.35
571.35	574.05	577.67	565.28	562.98	551.11	543.71	532.78	534.28	533.64	521.75	494.36	480.11	481.00	477.17	478.50	476.50	475.00	Common Shs Outst'g <sup>E</sup>	465.00
19.7	22.5	22.3	19.7	17.8	16.1	17.9	21.4	24.1	24.7	28.4	28.8	27.6	30.4	29.3	Bold figures are Value Line estimates			Avg Ann'l P/E Ratio	25.0
1.04	1.20	1.20	1.05	1.07	1.07	1.14	1.34	1.53	1.39	1.49	1.45	1.45	1.53	1.58				Relative P/E Ratio	1.40
1.8%	1.6%	1.6%	1.8%	2.2%	2.4%	1.9%	1.8%	1.5%	1.4%	1.3%	1.3%	1.5%	1.3%	1.3%				Avg Ann'l Div'd Yield	1.1%

CAPITAL STRUCTURE as of 1/31/20		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Total Debt	\$2297 mill.	2586.0	2723.0	2849.0	2991.0	3134.0	3089.0	2994.0	3248.0	3324.0	3400	3550	3700	Sales (\$mill) <sup>A</sup>						4300
LT Debt	\$2293 mill.	29.5%	30.7%	32.5%	33.6%	35.1%	35.4%	34.6%	35.1%	35.5%	35.8%	36.0%	36.5%	Operating Margin						37.5%
(Total interest coverage: 21.1x) (54% of Cap'l Leases, Uncapitalized Annual rentals \$23 mill. Pension Assets-4/19 \$754 mill. Obligations \$958 mill.)		55.0	49.0	51.0	50.0	51.0	56.0	58.0	64.0	58.0	65.0	70.0	75.0	Depreciation (\$mill)						95.0
		523.4	513.0	576.0	659.0	684.0	707.5	669.0	746.0	835.0	865	920	960	Net Profit (\$mill)						1500
		31.0%	32.5%	31.7%	30.4%	31.7%	29.5%	28.3%	26.6%	19.9%	20.0%	21.0%	21.0%	Income Tax Rate						23.0%
		20.2%	18.8%	20.2%	22.0%	21.8%	22.9%	23.3%	23.0%	25.1%	25.4%	25.9%	25.9%	Net Profit Margin						34.8%
		1269.0	1345.0	1348.0	1616.0	1296.0	1442.0	1381.0	1734.0	2016.0	2025	2050	2075	Working Cap'l (\$mill)						2125
		504.0	503.0	997.0	997.0	748.0	1230.0	1689.0	2341.0	2290.0	2300	2200	2100	Long-Term Debt (\$mill)						2000
		2060.0	2069.0	1628.0	2032.0	1905.0	1562.0	1370.0	1316.0	1647.0	1750	1850	1925	Shr. Equity (\$mill)						2500
		21.0%	20.5%	22.6%	22.2%	26.3%	26.2%	22.8%	21.3%	22.3%	22.0%	23.5%	24.5%	Return on Total Cap'l						34.0%
		25.4%	24.8%	35.4%	32.4%	35.9%	45.3%	48.8%	56.7%	50.7%	49.0%	50.0%	50.0%	Return on Shr. Equity						60.0%
		16.7%	15.5%	22.5%	21.0%	22.5%	28.3%	28.8%	NMF	31.9%	31.0%	32.0%	32.0%	Retained to Com Eq						43.5%
		34%	37%	36%	35%	37%	38%	41%	104%	37%	36%	36%	37%	All Div'ds to Net Prof						27%

**BUSINESS:** Brown-Forman is engaged in the production and marketing of distilled spirits and wines. Major brands include *Jack Daniel's*, *Finlandia*, *Canadian Mist*, and *Korbel*. In the U.S., sells spirits either through wholesale distributors or directly to state governments in those states that control alcohol sales. Sold Hartmann luggage business, 5/07; Lenox tableware division, 9/05; minority stake in Glenmorangie PLC, 11/04. Acquired Slane Castle Irish Whiskey 6/15. Acquired Benriach 6/16. Non-U.S. sales represent 53% of total revenue. Has 4,700 employees. Off. & dir. own about 6.5% of 'A' and 31.2% of 'B' shares (6/19 Proxy). CEO: Lawson Whiting, Inc.; DE. Address: 850 Dixie Highway Louisville, KY 40201-1080. Tel.: 502-585-1100. Internet: www.brown-forman.com.

**Brown-Forman shares have declined roughly 15% in price since our January review.** Investors have likely reacted to the company's tempered fiscal 2019 full-year guidance (year ends April 30th) and cautious outlook. Notably, the global spread of COVID-19 is expected to impact operations in the near term. Indeed, Brown-Forman anticipates that lower manufacturing activities at its production plants will lead to supply-chain disruptions for the foreseeable future. Additionally, in light of economic concerns, consumers may adopt more constrained spending habits for nonessential items such as alcoholic beverages.

**The company has certain headwinds to overcome.** Ongoing trade uncertainties and increased tariffs may contribute to near-term challenges. Also, falling demand for Brown-Forman's traditional *Jack Daniel's* label is a concern. Too, weakening economic conditions in countries such as Mexico indicate that top- and bottom-line contributions from these emerging markets will probably lessen. Lastly, higher costs for ingredients, such as agave, have led to increased manufacturing expenses for tequila labels *Her-radura* and *el Jimador*.

**There are measures being implemented that should help improve operating results.** First, pricing initiatives ought to alleviate tariff-related and manufacturing burdens. Additionally, brand building and a growing portfolio of well-sought-after premium (*Woodford Reserve*) and ready-to-drink, on trend, offerings (*Jack Daniel's Tennessee Apple*) are expected to facilitate sales growth in the 2%-4% range in fiscal 2019, 2020, and 2021 (years end April 30th). Moreover, management's ongoing efforts to maintain cost discipline through efficiency actions, such as improved route-to-market distributions ought to support bottom-line growth in the 4%-5% range over the next three years.

**Despite the recent stock-price decline, long-term investors should wait for a better entry point.** At present, these high-quality shares possess below average capital appreciation over the 2023-2025 pull. Moreover, ongoing turmoil in the global markets makes near-term stock-price volatility a likelihood.

*Nira Maharaj*  
 April 17, 2020

Fiscal Year Begins	QUARTERLY SALES (\$ mill.) <sup>A</sup>	Full Fiscal Year	Fiscal Year Begins	EARNINGS PER SHARE <sup>A, B</sup>	Full Fiscal Year	Cal-endar	QUARTERLY DIVIDENDS PAID <sup>C</sup>	Full Year			
	Jul.31	Oct.31	Jan.31	Apr.30			Apr.31	Jul.30	Oct.30	Jan.31	
2017	723	914	878	733	3248	2017	.36	.49	.44	.23	1.54
2018	766	910	904	744	3324	2018	.41	.52	.47	.33	1.73
2019	766	989	899	746	3400	2019	.39	.59	.48	.34	1.80
2020	787	995	975	793	3550	2020	.42	.60	.50	.38	1.90
2021	820	1025	995	860	3700	2021	.44	.62	.54	.40	2.00
2016	.136	.136	.146	.146	.56	2016	.146	.146	.146	.157	.59
2017	.146	.146	.146	.157	.59	2017	.157	.157	.158	.166	.64
2018	.157	.157	.158	.166	.64	2018	.166	.166	.166	.174	.67
2019	.166	.166	.166	.174	.67	2019	.174				
2020	.174					2020					

(A) Excludes excise taxes. Fiscal yr. ends April 30th of foll. cal. year. (B) Dil. earnings. Excls. nonrec. gain (loss): '04, 2c; '05, 4c; '06, 3c, '09, (3c), '10, 14c, '12, 3c, '15, 70c; '17, (6c). May not sum due to rounding. Next earnings report due early June. (C) Div'ds paid early April, July, Oct., and Jan. ■ Co. Div'd reinvestment plan available. Special dividend of \$1.00 paid on 4/2/18. (D) Incl. intangibles. In '18: \$1398.0 mill., \$2.92/sh. (E) In mills., adj for splits.

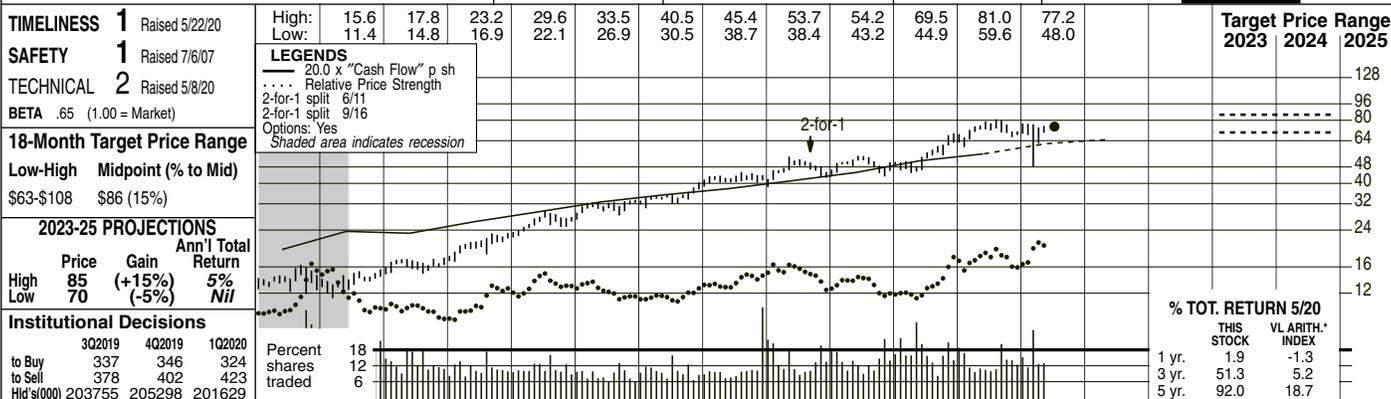
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Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	85
Earnings Predictability	100

# CHURCH & DWIGHT NYSE-CHD

RECENT PRICE **74.75** P/E RATIO **26.7** (Trailing: 28.0; Median: 24.0) RELATIVE P/E RATIO **1.24** DIV'D YLD **1.3%** VALUE LINE **1187**



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
5.78	6.87	7.44	8.38	8.64	8.93	9.09	9.66	10.53	11.49	12.36	13.06	13.75	15.25	16.79	17.76	<b>18.55</b>	<b>19.40</b>	Sales per sh <sup>E</sup>	<b>22.00</b>
.51	.66	.74	.85	.97	1.18	1.16	1.31	1.46	1.63	1.77	1.89	2.06	2.26	2.56	2.77	<b>3.10</b>	<b>3.25</b>	"Cash Flow" per sh	<b>3.80</b>
.34	.46	.52	.62	.72	.87	.99	1.11	1.23	1.40	1.51	1.63	1.77	1.94	2.27	2.44	<b>2.80</b>	<b>2.95</b>	Earnings per sh <sup>A</sup>	<b>3.50</b>
.06	.06	.07	.07	.09	.12	.16	.34	.48	.56	.62	.67	.71	.76	.87	.91	<b>.96</b>	<b>1.00</b>	Div's Decl'd per sh <sup>B</sup>	<b>1.20</b>
.14	.15	.18	.18	.35	.48	.22	.27	.27	.24	.26	.24	.20	.18	.24	.30	<b>.35</b>	<b>.30</b>	Cap'l Spending per sh	<b>.50</b>
2.22	2.76	3.30	4.08	4.75	5.68	6.57	7.17	7.43	8.28	7.88	7.78	7.79	8.96	9.94	10.87	<b>11.50</b>	<b>14.20</b>	Book Value per sh <sup>C</sup>	<b>17.00</b>
252.75	252.75	261.44	264.98	280.29	282.20	284.82	284.57	277.56	277.93	266.70	259.91	253.96	247.63	246.89	245.42	<b>247.50</b>	<b>248.00</b>	Common Shs Outst'g <sup>D</sup>	<b>250.00</b>
21.4	19.4	18.1	19.9	19.8	15.8	16.6	18.4	21.2	22.3	23.1	26.0	26.5	25.3	24.1	29.3	<b>Bold figures are Value Line estimates</b>		Avg Ann'l P/E Ratio	<b>22.0</b>
1.13	1.03	.98	1.06	1.19	1.05	1.06	1.15	1.35	1.25	1.22	1.31	1.39	1.27	1.30	1.59			Relative P/E Ratio	<b>1.20</b>
.8%	.7%	.7%	.5%	.6%	.8%	.9%	1.7%	1.9%	1.8%	1.8%	1.6%	1.5%	1.5%	1.6%	1.3%			Avg Ann'l Div'd Yield	<b>1.6%</b>

CAPITAL STRUCTURE as of 3/31/20				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
Total Debt \$2782.7 mill. Due in 5 Yrs \$550 mill.				2589.2	2749.3	2921.9	3194.3	3297.6	3394.8	3493.1	3776.2	4145.9	4357.7	<b>4585</b>	<b>4815</b>	Sales (\$mill) <sup>E</sup>	<b>5500</b>						
LT Debt \$1810.8 mill. LT Interest \$85.0 mill.				18.9%	20.3%	20.6%	21.3%	21.2%	22.2%	22.6%	22.1%	20.6%	20.7%	<b>20.0%</b>	<b>20.0%</b>	Operating Margin	<b>22.0%</b>						
(Total interest coverage: 11.5x) (39% of Cap'l)				44.1	49.8	56.0	59.7	57.1	58.3	59.7	60.9	64.4	63.8	<b>65.0</b>	<b>68.0</b>	Depreciation (\$mill) <sup>E</sup>	<b>75.0</b>						
Leases, Uncapitalized Annual rentals \$23.4 mill. No Defined Benefit Plan				285.9	324.2	349.8	394.4	413.9	432.3	463.9	497.9	568.6	615.9	<b>700</b>	<b>740</b>	Net Profit (\$mill)	<b>875</b>						
Pfd Stock None				34.1%	36.3%	35.5%	34.0%	33.8%	34.2%	34.7%	32.3%	21.0%	20.4%	<b>25.0%</b>	<b>25.0%</b>	Income Tax Rate	<b>25.0%</b>						
Common Stock 245,892,719 shares as of 4/28/20				11.0%	11.8%	12.0%	12.3%	12.6%	12.7%	13.3%	13.2%	13.7%	14.1%	<b>15.3%</b>	<b>15.4%</b>	Net Profit Margin	<b>15.9%</b>						
MARKET CAP: \$18.4 billion (Large Cap)				202.4	371.6	208.2	464.6	127.2	33.3	d245.1	65.2	d248.1	d135.9	<b>50.0</b>	<b>150</b>	Working Cap'l (\$mill)	<b>750</b>						
CURRENT POSITION (SMILL.)				249.7	249.7	649.4	649.5	698.6	692.8	693.4	2103.4	1508.8	1810.2	<b>1800</b>	<b>1800</b>	Long-Term Debt (\$mill)	<b>1800</b>						
Cash Assets				1870.9	2040.8	2299.9	2299.9	2101.9	2023.2	1977.9	2218.0	2453.8	2667.8	<b>2850</b>	<b>3525</b>	Shr. Equity (\$mill)	<b>4250</b>						
Receivables				14.1%	14.3%	13.2%	13.8%	15.3%	16.5%	17.9%	12.1%	15.3%	14.6%	<b>15.0%</b>	<b>14.0%</b>	Return on Total Cap'l	<b>14.5%</b>						
Inventory (LIFO)				15.3%	15.9%	17.0%	17.1%	19.7%	21.4%	23.5%	22.4%	23.2%	23.1%	<b>24.5%</b>	<b>21.0%</b>	Return on Shr. Equity	<b>20.5%</b>						
Other				12.9%	11.1%	10.4%	10.4%	11.7%	12.7%	14.2%	13.9%	14.5%	14.7%	<b>16.0%</b>	<b>14.0%</b>	Retained to Com Eq	<b>13.5%</b>						
Current Assets				15%	30%	38%	39%	40%	41%	39%	38%	38%	36%	<b>34%</b>	<b>34%</b>	All Div'ds to Net Prof	<b>34%</b>						
Accts Payable				<b>BUSINESS:</b> Church & Dwight Co., Inc. develops, manufactures, and markets a broad range of consumer goods. Household Products (42% of 2019 sales), Personal Care (34%), Consumer International (17%), and Specialty Care (7%). Brands include ARM & HAMMER, Trojan, OxiClean, SpinBrush, First Response, Nair, Orajel, XTRA, L'il Critters, VitaFusion, Simply Saline, Flawless, Batiste, and Waterpik. Wal-Mart accounted for 24% of 2019 sales. Has approximately 48,000 employees. Officers/directors own 2.0% of stock; Vanguard, 12.0%; BlackRock, 9.0%; State Street, 5.0% (3/20 proxy). Inc.: DE. Chairman, President, and CEO: Matthew T. Farrell. Address: 500 Charles Ewing Boulevard, Ewing, NJ 08628. Telephone: 609-683-5900. Internet: www.churchdwright.com.																			
Debt Due				<b>Church &amp; Dwight began the year on an impressive note.</b> Share earnings jumped 31%, on a 12% sales gain, handily beating our estimates, due to the demand for many of the company's products in the wake of the global coronavirus pandemic. In fact, domestic consumption increased 30% across most of its brands in March, owing to pantry loading. The following month, Church & Dwight focused on replenishing inventories and store shelves. A better product mix and pricing initiatives, on top of contributions from recent acquisitions, should continue to lift results in the coming quarters.																			
Other				<b>The coronavirus pandemic will likely influence operations in the near term.</b> Management ought to prioritize the health and safety of its employees. Too, it has ramped up the manufacturing of its higher-in-demand cleaning products, such as baking soda, laundry detergent, and cleaners, and healthcare offerings, such as vitamins and nasal hygiene. Meanwhile, Church & Dwight has implemented cost controls, and worked to bolster operating efficiencies, and reallocated resources to support much-needed brands.																			
Current Liab.				<b>The company is well positioned this year and next.</b> We have raised our near-term estimates, and now look for share profits to grow 15%, on a 5% sales advance in 2020. We anticipate stronger consumer demand will counter supply-chain disruptions and other uncertainties due to the ongoing coronavirus pandemic, or headwinds from commodity costs or foreign currency fluctuations. Next year, the company will probably resume other growth efforts, including product innovation, or ramping up marketing expenditures to boost its brand equity. Too, it may pursue other bolt-on acquisitions to strengthen its asset roster. All told, we look for the top and bottom lines to expand at a mid- to upper-single-digit clip through 2021.																			

Cal-ender	QUARTERLY SALES (\$ mill.) <sup>E</sup>				Full Year
	Mar.	Jun.	Sep.	Dec.	
2017	877.2	898.0	967.9	1033.1	3776.2
2018	1006.0	1027.9	1037.6	1074.4	4145.9
2019	1044.7	1079.4	1089.4	1144.2	4357.7
2020	1165.2	<b>1125</b>	<b>1140</b>	<b>1154.8</b>	<b>4585</b>
2021	<b>1180</b>	<b>1200</b>	<b>1210</b>	<b>1225</b>	<b>4815</b>

Cal-ender	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.	Jun.	Sep.	Dec.	
2017	.52	.41	.49	.52	1.94
2018	.63	.49	.58	.57	2.27
2019	.70	.55	.62	.58	2.44
2020	.92	<b>.60</b>	<b>.65</b>	<b>.63</b>	<b>2.80</b>
2021	<b>.95</b>	<b>.65</b>	<b>.65</b>	<b>.70</b>	<b>2.95</b>

Cal-ender	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.178	.178	.178	.178	.71
2017	.19	.19	.19	.19	.76
2018	.218	.218	.218	.218	.87
2019	.228	.228	.228	.228	.91
2020	.24	.24			

(A) Dil. earnings. Excl. nonrecurring gains/(losses): '08, 4c; '09, 3c; '10, (10c); '11, (5c); '16, (2c). EPS may not sum due to rounding. Incl. acquisition related charges: '04, 15c. (B) Dividends are hist. paid in Mar., June, Sep., and Dec. ■ Dividend reinvestment plan available. (C) Incl. intangibles. In '19: \$4829.0 mill., \$24.05 p/sh. (D) In mill., adj. for splits. (E) Sales excl. amort. after 2009.

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# COCA-COLA NYSE-KO

RECENT PRICE **46.67** P/E RATIO **23.2** (Trailing: 22.1; Median: 20.0) RELATIVE P/E RATIO **1.73** DIV'D YLD **3.5%**

**VALUE LINE**

**TIMELINESS** 1 Raised 3/13/20  
**SAFETY** 1 New 7/27/90  
**TECHNICAL** 2 Raised 4/10/20  
**BETA** .65 (1.00 = Market)

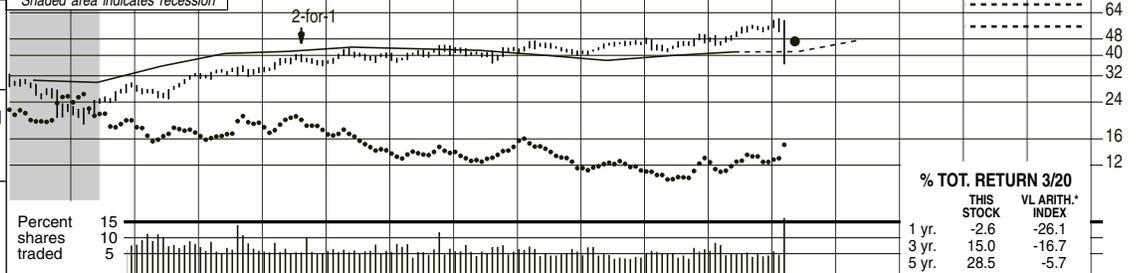
High: 29.7 32.9 35.9 40.7 43.4 45.0 43.9 47.1 47.5  
 Low: 18.7 24.7 30.6 33.3 36.5 36.9 36.6 39.9 40.2

LEGENDS  
 — 17.0 x "Cash Flow" p sh  
 ... Relative Price Strength  
 2-for-1 split 8/12  
 Options: Yes  
 Shaded area indicates recession

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$45-\$62 \$54 (15%)

**2023-25 PROJECTIONS**  
 Price Gain Ann'l Total  
 High 70 (+50%) 13%  
 Low 55 (+20%) 8%

**Institutional Decisions**  
 202019 3Q2019 4Q2019  
 to Buy 885 919 1088  
 to Sell 959 943 888  
 Hld's(000)292265929151662968437



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
4.56	4.88	5.20	6.22	6.91	6.73	7.66	10.29	10.74	10.64	10.54	10.24	9.76	8.31	7.46	8.71	<b>8.65</b>	<b>9.40</b>	Sales per sh	<b>11.05</b>
1.23	1.29	1.40	1.54	1.79	1.75	2.09	2.41	2.46	2.58	2.53	2.49	2.37	2.23	2.35	2.45	<b>2.45</b>	<b>2.80</b>	"Cash Flow" per sh	<b>3.50</b>
1.03	1.09	1.19	1.29	1.51	1.47	1.75	1.92	1.97	2.08	2.04	2.00	1.91	1.91	2.08	2.11	<b>2.05</b>	<b>2.35</b>	Earnings per sh <sup>A</sup>	<b>3.00</b>
.50	.56	.62	.68	.76	.82	.88	.94	1.02	1.12	1.22	1.32	1.40	1.48	1.56	1.60	<b>1.64</b>	<b>1.72</b>	Div'ds Decl'd per sh <sup>B</sup>	<b>2.00</b>
.16	.19	.30	.36	.43	.43	.48	.65	.62	.58	.55	.59	.53	.39	.32	.48	<b>.45</b>	<b>.50</b>	Cap'l Spending per sh	<b>.55</b>
3.31	3.45	3.65	4.69	4.43	5.38	6.76	6.99	7.34	7.54	6.94	5.91	5.38	4.01	3.98	4.43	<b>4.70</b>	<b>5.05</b>	Book Value per sh <sup>C</sup>	<b>5.50</b>
4818.7	4738.0	4636.0	4636.0	4624.0	4606.0	4584.0	4526.0	4469.0	4402.0	4366.0	4324.0	4288.0	4259.0	4268.0	4280.0	<b>4275.0</b>	<b>4250.0</b>	Common Shs Outst'g <sup>D</sup>	<b>4100.0</b>
22.6	19.7	18.5	21.0	17.8	16.6	16.2	17.4	18.8	19.1	20.0	20.6	22.8	23.2	21.9	24.1	<b>Bold figures are Value Line estimates</b>		Avg Ann'l P/E Ratio	<b>21.0</b>
1.19	1.05	1.00	1.11	1.07	1.11	1.03	1.09	1.20	1.07	1.05	1.04	1.20	1.17	1.18	1.31			Relative P/E Ratio	<b>1.15</b>
2.2%	2.6%	2.8%	2.5%	2.8%	3.4%	3.1%	2.8%	2.8%	2.8%	3.0%	3.2%	3.2%	3.3%	3.4%	3.1%			Avg Ann'l Div'd Yield	<b>3.2%</b>

**CAPITAL STRUCTURE as of 12/31/19**  
 Total Debt \$42.763 bill. Due in 5 Yrs. \$28.9 bill.  
 LT Debt \$27.516 bill. Total Int. \$860.0 mill.  
 (Total interest coverage: 12.9x)

(59% of Cap'l)

**Pension Assets-12/19** \$8.1 bill. **Oblig.** \$8.8 bill.

**Pfd Stock** None

**Common Stock** 4,280,000,000 shs.

**MARKET CAP: \$200 billion (Large Cap)**

35123	46554	48017	46854	45998	44294	41863	35410	31856	37266	<b>37000</b>	<b>40000</b>	Sales (\$mill)	<b>45250</b>
31.4%	27.9%	26.6%	28.3%	28.1%	27.9%	28.1%	30.9%	34.2%	31.6%	<b>32.0%</b>	<b>34.0%</b>	Operating Margin	<b>35.0%</b>
1443.0	1954.0	1982.0	1977.0	1976.0	1970.0	1787.0	1260.0	1086.0	1365.0	<b>1650</b>	<b>1700</b>	Depreciation (\$mill)	<b>1850</b>
8144.0	8932.0	9019.0	9374.0	9091.0	8797.0	8354.0	8240.0	8935.0	9104.0	<b>8870</b>	<b>10240</b>	Net Profit (\$mill)	<b>12510</b>
22.7%	23.9%	23.1%	23.0%	22.5%	22.5%	24.0%	24.0%	18.7%	19.4%	<b>20.0%</b>	<b>20.0%</b>	Income Tax Rate	<b>20.0%</b>
23.2%	19.2%	18.8%	20.0%	19.8%	19.9%	20.0%	23.3%	28.0%	24.4%	<b>24.0%</b>	<b>25.6%</b>	Net Profit Margin	<b>27.6%</b>
3071.0	1214.0	2507.0	3493.0	612.0	6465.0	7478.0	9351.0	1411.0	d6562	<b>d5250</b>	<b>d5000</b>	Working Cap'l (\$mill)	<b>d4750</b>
14041	13656	14736	19154	19063	28407	29684	31182	25364	27516	<b>28000</b>	<b>28000</b>	Long-Term Debt (\$mill)	<b>28500</b>
31003	31635	32790	33173	30320	25554	23062	17072	16981	18981	<b>20075</b>	<b>21380</b>	Shr. Equity (\$mill)	<b>22590</b>
18.5%	20.2%	19.4%	18.3%	18.7%	16.5%	16.3%	17.6%	21.8%	20.2%	<b>19.5%</b>	<b>21.5%</b>	Return on Total Cap'l	<b>25.5%</b>
26.3%	28.2%	27.5%	28.3%	30.0%	34.4%	36.2%	48.3%	52.6%	48.0%	<b>44.0%</b>	<b>48.0%</b>	Return on Shr. Equity	<b>55.5%</b>
13.1%	14.6%	13.5%	13.3%	12.3%	12.0%	10.0%	11.2%	13.5%	11.9%	<b>9.0%</b>	<b>13.0%</b>	Retained to Com Eq	<b>18.5%</b>
50%	48%	51%	53%	59%	65%	72%	77%	74%	75%	<b>80%</b>	<b>73.0%</b>	All Div'ds to Net Prof	<b>67%</b>

**CURRENT POSITION** 2017 2018 12/31/19 (\$MILL.)

Cash Assets	20675	15964	11175
Receivables	3667	3396	3971
Inventory (Avg Cst)	2655	2766	3379
Other	9548	8508	1886
Current Assets	36545	30634	20411
Accts Payable	2288	2498	3804
Debt Due	16503	18191	15247
Other	8403	8534	7922
Current Liab.	27194	29223	26973

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

of change (per sh)	10 Yrs.	5 Yrs.	to '23-'25
Sales	2.0%	-5.0%	5.0%
"Cash Flow"	3.5%	-1.5%	7.0%
Earnings	3.5%	-	6.5%
Dividends	7.5%	6.5%	4.5%
Book Value	-1.5%	-10.5%	5.0%

**QUARTERLY SALES (\$ mill.)**

Cal-endar	Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2017	9118	9702	9078	7512	35410
2018	7626	8927	8245	7058	31856
2019	8694	9997	9507	9068	37266
2020	<b>8400</b>	<b>9500</b>	<b>9900</b>	<b>9200</b>	<b>37000</b>
2021	<b>9500</b>	<b>10750</b>	<b>10250</b>	<b>9500</b>	<b>40000</b>

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2017	.43	.59	.50	.39	1.91
2018	.46	.61	.58	.43	2.08
2019	.48	.63	.56	.44	2.11
2020	<b>.42</b>	<b>.54</b>	<b>.61</b>	<b>.48</b>	<b>2.05</b>
2021	<b>.50</b>	<b>.68</b>	<b>.65</b>	<b>.52</b>	<b>2.35</b>

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	--	.35	.35	.70	1.40
2017	--	.37	.37	.74	1.48
2018	--	.39	.39	.78	1.56
2019	--	.40	.40	.80	1.60
2020	--	.41	.41	.82	1.64

**BUSINESS:** The Coca-Cola Company is the world's largest non-alcoholic beverage company. Markets over 500 beverage brands through a network of company-owned and independent bottlers/distributors, wholesalers, and retailers. Leading company/licensed brands include *Coca-Cola*, *Diet Coke*, *Sprite*, *Fanta*, *Fresca*, *Dasani*, *glaceau vitaminwater*, *Powerade*, and *Minute Maid*.

**The Coca-Cola Company has withdrawn its guidance for 2020.** Previously, it was expecting earnings per share to climb 7%, to roughly \$2.25. The gains were to be underpinned by another year of healthy growth in organic revenues, which clocked in at 6% in 2019 and were targeted at 5% this year. Such a scenario, though, has been derailed by the coronavirus, which has taken a big bite out of on-premise sales. These customers, such as restaurants and sports and entertainment venues, represent about 40% of industry sales. For Coke, the financial impact is likely to be particularly pronounced in North America, where the fountain business has a high degree of vertical integration compared to the rest of the world. Elsewhere, most of the company's operations in China, where the pandemic originated, are back up and running, and consumer demand is on the upswing, though not yet to pre-crisis levels.

**The flagship brand has been making solid progress.** Retail value increased 6% globally for *Coca-Cola* products in 2019. The growth is being aided by newer additions to the portfolio, particularly *Zero*

*Sugar*, which enjoyed another year of double-digit growth. And the company continues to roll out additional offerings to more markets. In particular, *Plus Coffee* is now available in more than 40 countries, while *Coca-Cola Energy* was introduced to U.S. consumers over the winter. Overall, once current pandemic-related disruptions are in the past, we expect the encouraging trends in organic revenue growth across Coke's portfolio to resume. And our initial 2021 estimate calls for earnings to reach \$2.35 a share.

**These timely shares carry our Highest rank (1) for Safety.** Granted, this equity has actually modestly underperformed the broader market since late February, likely reflecting concerns about Coke's exposure to the restaurant and foodservice industries. KO stock, though, still has a number of attributes that make it well suited for conservative accounts, including top scores for Price Stability and Earnings Predictability. Too, the recent 3% hike in the quarterly dividend helped to push the yield up to 3.5%, 40 basis points higher than the *Value Line* median.

Robert M. Greene April 17, 2020

(A) Based on diluted shares. Next earnings report due April 21st. Excludes nonrecurring gain/(losses): '04, (3c); '05, (7c); '06, (11c); '08, (27c); '10, 79c; '11, (8c); '13, (18c); '14, (44c); '15, (33c); '16, (42c); '17, (\$1.64); '18, (51c); '19, (4c). (B) Div'ds historically paid about the first April, July, Oct., Dec. ■ Div'd reinvestment plan available.

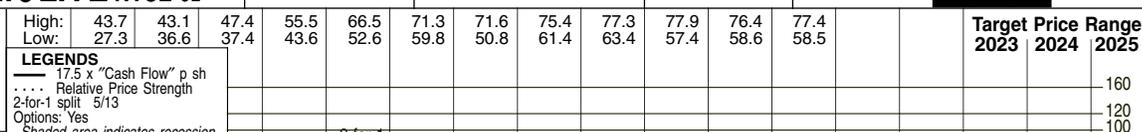
(C) Includes intangibles. In '19: \$26.8 bill., \$6.25/sh. (D) In millions, adjusted for stock split.

Company's Financial Strength	A++
Stock's Price Stability	100
Price Growth Persistence	30
Earnings Predictability	100

# COLGATE-PALMOLIVE NYSE-CL

RECENT PRICE **73.51** P/E RATIO **24.9** (Trailing: 25.1; Median: 25.0) RELATIVE P/E RATIO **1.16** DIV'D YLD **2.4%** VALUE LINE **1189**

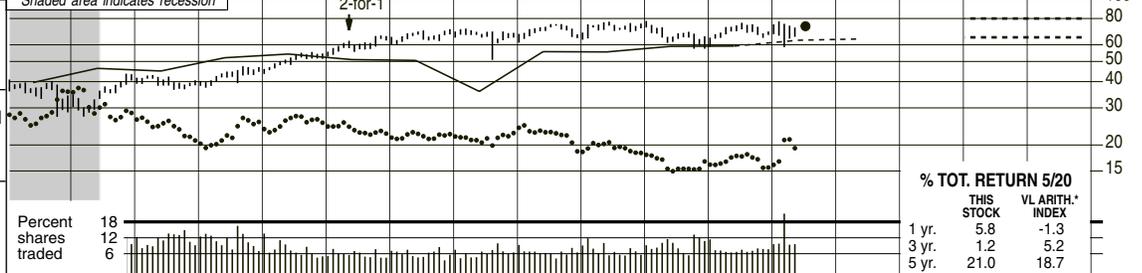
**TIMELINESS 1** Raised 6/19/20  
**SAFETY 1** Raised 10/11/02  
**TECHNICAL 2** Lowered 6/12/20  
**BETA .75** (1.00 = Market)



**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$58-\$93 \$76 (5%)

**2023-25 PROJECTIONS**  
 Price High 80 Low 65  
 Gain (+10%) 5% (-10%) Nil  
 Ann'l Total Return Nil

**Institutional Decisions**  
 3Q2019 4Q2019 1Q2020  
 to Buy 565 616 589  
 to Sell 635 677 735  
 Hlds(000) 668748 671882 649499



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
10.05	11.04	11.94	13.55	15.29	15.51	15.73	17.43	18.26	18.94	19.05	17.96	16.76	17.67	18.01	18.36	18.60	18.85	Sales per sh	21.20
1.59	1.71	1.85	2.10	2.27	2.64	2.57	2.97	3.10	2.91	2.89	2.05	3.18	3.17	3.37	3.38	3.60	3.65	"Cash Flow" per sh	4.40
1.21	1.32	1.46	1.69	1.83	2.19	2.16	2.47	2.58	2.38	2.36	1.52	2.72	2.59	2.75	2.75	2.95	3.00	Earnings per sh A	3.65
.48	.56	.63	.70	.78	.86	1.02	1.14	1.22	1.33	1.42	1.50	1.55	1.59	1.66	1.71	1.75	1.85	Div'ds Decl'd per sh B	2.05
.33	.38	.46	.57	.68	.58	.56	.56	.60	.73	.83	.77	.65	.63	.51	.39	.40	.40	Cap'l Spending per sh	.65
.92	1.06	1.16	2.05	1.74	2.98	2.70	2.47	2.34	2.51	1.26	d.34	d.27	d.07	d.12	.14	1.25	2.05	Book Value per sh C	5.40
1053.3	1032.3	1025.3	1018.1	1002.8	988.33	989.70	960.04	935.73	919.95	906.71	892.74	906.71	874.70	862.91	854.70	853.00	848.00	Common Shs Outst'g D	837.00
21.8	19.7	20.6	20.5	19.8	16.1	18.6	17.3	19.6	25.1	28.0	44.1	25.8	27.9	24.2	25.1	25.0	25.0	Avg Ann'l P/E Ratio	20.0
1.15	1.05	1.11	1.09	1.19	1.07	1.18	1.09	1.25	1.41	1.47	2.22	1.35	1.40	1.31	1.37	1.37	1.37	Relative P/E Ratio	1.10
1.8%	2.1%	2.1%	2.0%	2.2%	2.5%	2.5%	2.7%	2.4%	2.2%	2.2%	2.2%	2.2%	2.2%	2.5%	2.5%	2.5%	2.5%	Avg Ann'l Div'd Yield	2.6%

**CAPITAL STRUCTURE as of 3/31/20**  
 Total Debt \$7846 mill. Due in 5 Yrs \$3670 mill.  
 LT Debt \$7336 mill. LT Interest \$400 mill.  
 (Total int. cov.: 23.8x) (96% of Cap'l)  
 Leases, Uncapitalized Annual rentals \$167 mill.

**Pension Assets-12/19** \$2.1 bill. **Oblig.** \$2.9 bill.  
**Pfd Stock** None  
**Common Stock** 856,528,455 shs.

**MARKET CAP: \$63.0 billion (Large Cap)**

CURRENT POSITION (SMILL.)	2018	2019	3/31/20
Cash Assets	726	883	854
Receivables	1400	1440	1551
Inventory (FIFO)	1250	1400	1301
Other	417	456	542
Current Assets	3793	4179	4248
Accts Payable	1222	1237	1216
Debt Due	12	514	510
Other	2107	2287	2717
Current Liab.	3341	4038	4443

ANNUAL RATES of change (per sh)	Past 10 Yrs	Past 5 Yrs	Est'd '17-'19 to '23-'25
Sales	2.0%	-1.0%	3.0%
"Cash Flow"	3.5%	2.0%	5.0%
Earnings	3.5%	2.0%	5.0%
Dividends	8.0%	4.5%	3.5%
Book Value	--	--	NMF

Cal-endar	QUARTERLY SALES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	3762	3826	3974	3892	15454
2018	4002	3886	3845	3811	15544
2019	3884	3866	3928	4015	15693
2020	4097	3825	3950	3978	15850
2021	3900	3950	4050	4100	16000

Cal-endar	EARNINGS PER SHARE A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.64	.59	.68	.68	2.59
2018	.72	.73	.60	.70	2.75
2019	.65	.68	.67	.75	2.75
2020	.83	.69	.67	.76	2.95
2021	.70	.73	.72	.85	3.00

Cal-endar	QUARTERLY DIVIDENDS PAID B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.38	.39	.39	.39	1.55
2017	.39	.40	.40	.40	1.59
2018	.42	.42	.42	.42	1.68
2019	.42	.43	.43	.43	1.71
2020	.43	.44	.44	.44	1.71

**BUSINESS:** Colgate-Palmolive Company is the second-largest domestic maker of toiletries, and other household products. Major brands: *Ajax, Fab, Murphy, Palmolive* cleansers; *Colgate* toothpaste; *Irish Spring, Palmolive, Sanex, Softsoap* soaps; *Mennen* shave cream; *Hill's* pet food brands—*Science Diet* and *Prescription Diet*. Foreign operations: About 62% of 2019 sales. 2019 depreciation rate: 6.1%. Company has about 34,300 employees. ESOP controls 7.6% of common equivalent shares. Vanguard owns 9.1% of common; BlackRock, 7.0%. Officers & Directors, 0.8% (3/20 proxy). CEO., and Pres., Noel Wallace; Chrmm., Ian Cook. Inc. Delaware. Address: 300 Park Avenue, New York, New York 10022. Tele.: 212-310-2000. Internet: www.colgatepalmolive.com.

**Colgate-Palmolive started the year on a good note.** Sales just over \$4 billion and earnings of \$0.83 a share both easily topped our respective estimates of \$4.035 billion and \$0.70 a share as well as the Wall Street consensus. The company benefited from a solid performance in most markets, though Latin America and the Asia/Pacific region failed to impress. Leadership cited higher pricing and cost-reduction efforts as other reasons for the strong performance in the March quarter. **Management withdrew its guidance in light of the economic uncertainty associated with COVID-19.** The company intends to reintroduce its outlook when it has better visibility. In response, investors briefly bid this equity down despite the outperformance that accompanied the conservative stance. **We have reined in our top- and bottom-line targets.** The lag effect of pantry stocking ought to lower demand for a quarter or so. Additionally, the economic challenges may result in conservative consumer spending. Colgate's offerings are widely essential, so these challenges ought to be limited. Still, we lowered our sales

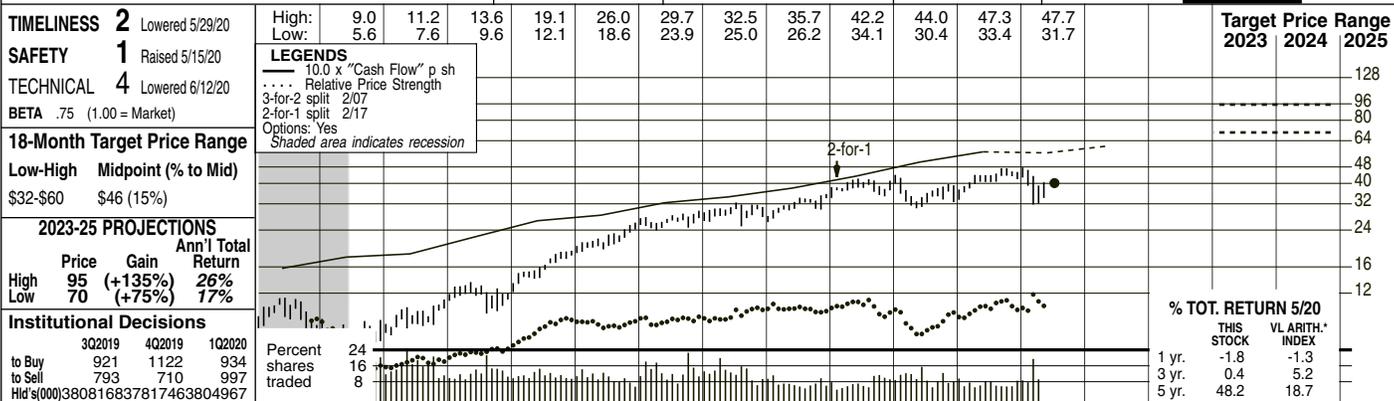
estimate from \$16.4 billion to \$15.85 billion, but are keeping our share-net target intact at \$2.95 this year, though our numbers for the rest of the year are lower following the earnings beat. **The company will probably remain stockholder friendly.** As many pause their stock repurchase and dividend plans, Colgate-Palmolive ought to buck the trend. In fact, we look for increases in the payout in the years ahead. **We are cautiously optimistic about the long term.** Market conditions ought to be more favorable. The strategic efforts should start to bear fruit in that time frame. Colgate will likely remain active on the mergers and acquisitions front, which provides some upside. For example, the addition of oral care brand Hello represents a nice growth opportunity. **Conservative investors may want to consider this stock.** Timely shares of CL hold our Highest rank for Safety and a strong rating for Financial Strength (A+). The consumer products giant has weathered downturns before and is well positioned to deal with the challenges. *Richard J. Gallagher June 19, 2020*

(A) Diluted earnings. Excludes nonrec. gains/(losses): '09, (\$0.27); '10, (\$0.26). Includes non-rec gain/(loss): '08, (\$0.11); '15, \$0.08; '17, (\$0.31). Next egs. report due late July.  
 (B) Dividends historically paid in mid-February, mid-May, mid-August, and mid-November. Div'd reinvestment plan available.  
 (C) Inc. intang. In '19: \$6,175 mill., \$7.22/sh. In mill., adjusted for stock split.  
 (D) In mill., adjusted for stock split.

# COMCAST CORP. NDQ-CMCSA

RECENT PRICE **40.18** P/E RATIO **16.7** (Trailing: 13.1; Median: 16.0) RELATIVE P/E RATIO **0.85** DIV'D YLD **2.3%**

**VALUE LINE**



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
3.06	3.47	2.62	5.13	5.95	6.30	6.83	10.32	11.90	12.45	13.58	15.25	16.92	18.20	20.88	23.93	<b>22.90</b>	<b>26.20</b>	Revenues per sh	<b>31.40</b>
.84	.92	.74	1.41	1.58	1.79	1.85	2.22	2.66	2.83	3.24	3.45	3.80	4.33	5.05	5.66	<b>4.95</b>	<b>6.10</b>	"Cash Flow" per sh	<b>7.60</b>
.14	.17	.23	.37	.46	.63	.65	.79	1.14	1.28	1.47	1.63	1.74	2.06	2.55	3.13	<b>2.40</b>	<b>3.45</b>	Earnings per sh <sup>A</sup>	<b>4.50</b>
--	--	--	--	.13	.15	.19	.23	.33	.39	.45	.50	.55	.61	.76	.84	<b>.90</b>	<b>.98</b>	Div'ds Decl'd per sh <sup>B</sup>	<b>1.20</b>
.55	.56	.46	1.02	1.00	.90	.89	.98	1.09	1.27	1.47	1.74	1.92	2.06	2.26	2.43	<b>2.20</b>	<b>2.20</b>	Cap'l Spending per sh	<b>1.85</b>
6.24	6.27	4.31	6.86	7.02	7.53	7.99	8.74	9.38	9.76	10.41	10.70	11.35	14.77	15.82	18.17	<b>19.85</b>	<b>22.55</b>	Book Value per sh <sup>E</sup>	<b>29.05</b>
6636.2	6415.9	9545.9	6022.1	5761.3	5675.1	5553.0	5411.9	5260.1	5194.2	5063.2	4884.8	4751.6	4644.5	4526.0	4553.0	<b>4500.0</b>	<b>4450.0</b>	Common Shs Outst'g <sup>C</sup>	<b>4300.0</b>
NMF	NMF	47.5	34.1	20.9	11.8	14.3	14.9	14.0	16.9	18.2	18.1	18.2	18.6	14.0	13.5	<b>Bold figures are Value Line estimates</b>		Avg Ann'l P/E Ratio	<b>18.0</b>
NMF	NMF	2.56	1.81	1.26	.79	.91	.93	.89	.95	.96	.91	.96	.94	.76	.74			Relative P/E Ratio	<b>1.00</b>
--	--	--	--	1.3%	2.0%	2.1%	1.9%	2.0%	1.8%	1.7%	1.7%	1.7%	1.6%	2.1%	2.0%			Avg Ann'l Div'd Yield	<b>1.5%</b>

CAPITAL STRUCTURE as of 3/31/20		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Revenues (\$mill)	135000
Total Debt \$108.8 bill. Due in 5 Yrs \$33.6 bill.		37937	55842	62570	64657	68775	74510	80403	84526	94507	108942	<b>103000</b>	<b>116500</b>	Revenues (\$mill)	<b>135000</b>						
LT Debt \$105.8 bill. LT Interest \$4.4 bill.		38.5%	33.2%	31.9%	33.2%	33.3%	33.1%	32.9%	33.4%	32.1%	31.2%	<b>31.0%</b>	<b>31.5%</b>	Operating Margin	<b>34.0%</b>						
(Total interest coverage: 4.7x) (56% of Cap'l)		6616.0	7636.0	7798.0	7871.0	8019.0	8680.0	9558.0	10267	11017	11372	<b>11450</b>	<b>11650</b>	Depreciation (\$mill)	<b>13125</b>						
Leases, Uncapitalized \$877.0 mill.		3635.0	4377.0	6203.0	6816.0	8380.0	8171.0	8485.0	9850.0	11844	14417	<b>10850</b>	<b>15440</b>	Net Profit (\$mill)	<b>19575</b>						
Pfd Stock None		39.9%	35.8%	32.3%	35.8%	31.1%	37.1%	37.0%	33.7%	23.1%	20.6%	<b>21.0%</b>	<b>21.0%</b>	Income Tax Rate	<b>21.0%</b>						
Common Stock 4,564,093,200 shares		9.6%	7.8%	9.9%	10.5%	12.2%	11.0%	10.6%	11.7%	12.5%	13.2%	<b>10.5%</b>	<b>13.3%</b>	Net Profit Margin	<b>14.5%</b>						
(4,554,648,825 Class A shs.; 9,444,375 Class B shs.) <sup>D</sup>		652.0	d4668	3277.0	d4837	d3879	d5875	d5174	d5501	d5755	d4900	<b>d4750</b>	<b>d4300</b>	Working Cap'l (\$mill)	<b>d3000</b>						
MARKET CAP: \$183 billion (Large Cap)		29615	37942	38082	44567	44017	48994	55566	59422	107345	102931	<b>95000</b>	<b>93000</b>	Long-Term Debt (\$mill)	<b>90000</b>						
		44354	47274	49356	50694	52271	52269	53943	68606	71613	82726	<b>89250</b>	<b>100300</b>	Shr. Equity (\$mill)	<b>125000</b>						
		6.4%	6.6%	8.5%	8.5%	10.0%	9.4%	9.1%	8.9%	7.6%	9.0%	<b>7.0%</b>	<b>9.0%</b>	Return on Total Cap'l	<b>10.0%</b>						
		8.2%	9.3%	12.6%	13.4%	15.9%	15.6%	15.7%	14.4%	16.5%	17.4%	<b>12.0%</b>	<b>15.5%</b>	Return on Shr. Equity	<b>15.5%</b>						
		5.8%	6.7%	9.3%	9.6%	11.6%	11.0%	10.9%	10.2%	11.9%	12.9%	<b>7.5%</b>	<b>11.0%</b>	Retained to Com Eq	<b>11.5%</b>						
		29%	27%	26%	29%	27%	30%	31%	29%	28%	26%	<b>38%</b>	<b>28%</b>	All Div'ds to Net Prof	<b>27%</b>						

**BUSINESS:** Comcast Corp. is the nation's leading cable TV provider, with 21.3 million video subscribers in 39 states and the District of Columbia (as of 12/19). Internet service has 28.6 million subs; phone service, 11.3 million. Also has sole ownership of NBCUniversal, which includes major broadcast and cable networks (NBC, Bravo, USA), film studios (Universal Pictures), digital media, and resort parks. Acquired European pay-TV provider SKY plc, 12/18. Has 190,000 employees. Offs./dirs. own 100% of Class B stock and less than 1% of regular Class A shares; Vanguard Group, 8.9% of Class A (4/20 proxy). Chairman, Pres., & CEO: Brian Roberts. Inc.: PA. Address: One Comcast Center, Philadelphia, PA, 19103. Tel.: 215-665-1700. Internet: www.comcast.com.

**Comcast was recently set to reopen its Florida theme park.** Notably, Universal Studios Orlando planned to once again host visitors sometime in June, albeit on a limited basis and with various new safety protocols in place due to the coronavirus. The cable and entertainment giant shut down Universal Orlando and its other amusement parks in the U.S., beginning in early March. Management initially warned that the theme park business would be a \$500 million drag on Comcast's operating income in the June quarter, should Universal Orlando and other attractions remain closed for the entire three-month period.

**Continued social distancing is hurting other businesses, as well.** With movie theaters around the world still closed due to COVID-19 pandemic, Universal Pictures recently announced that it was delaying the release of the latest installment in the Fast and the Furious franchise, whose eight movies to date have generated nearly \$6.0 billion at the box office. At the same time, advertising revenue is sure to take a hit, as sporting events, including many in which NBCUniversal

holds the broadcast rights, have been canceled. That said, in the case of the Olympic games in Tokyo, which have been postponed until 2021, advertising revenue will just be pushed back a year.

**There is some good news here.** In the U.S., Comcast is on a pace to add more than one million broadband customers for the 14th-straight year. Importantly, the high-speed Internet business enjoys much higher profit margins than the traditional video bundle, as the latter includes programming costs. At the same time, it provides a hedge, as more and more American households are cutting the cord and opting for inexpensive streaming services.

**Shares of Comcast are a timely selection for relative year-ahead price performance.** At the stock's recent quotation, we think that buy-and-hold investors will also do well here. Still, in the near term, conservative accounts may want to take a pass, given the continued uncertainty surrounding the coronavirus. Notably, we suspect that it could take longer than expected for the theme park business to regain its pre-COVID-19 footing.

(A) Earnings based on diluted average class A and class B shares. Excl. n/r gains/(losses): '05, (\$.08); '06, (\$.32); '07, \$0.09; '08, \$0.06; '14, \$0.26; '16, \$0.04; '17, \$2.69; '18, (\$.02); '19, (\$.30). Earnings may not sum due to rounding. Next earnings report due late July.	(B) Div'd reinstated 4/08. Divs. paid in March, June, Sept., and Dec. (C) In millions, adjusted for stock split. (D) Class A stockholders entitled to 0.1173 votes per share; class B stockholders entitled to 15 votes per sh. (E) Incl. intang. In '19, \$164.2 bill., \$36.06/sh.	Company's Financial Strength	A+
		Stock's Price Stability	100
		Price Growth Persistence	90
		Earnings Predictability	100

To subscribe call 1-800-VALUELINE

June 12, 2020

Nils C. Van Liew

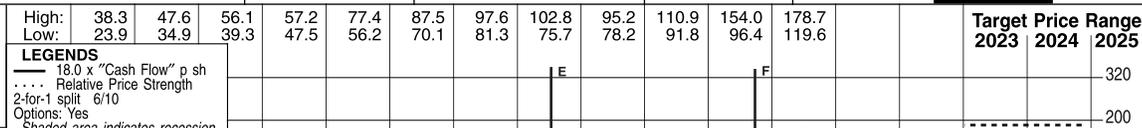




# DANAHER CORP. NYSE-DHR

RECENT PRICE **172.38** P/E RATIO **34.8** (Trailing: 47.6; Median: 21.0) RELATIVE P/E RATIO **1.70** DIV'D YLD **0.4%** **VALUE LINE**

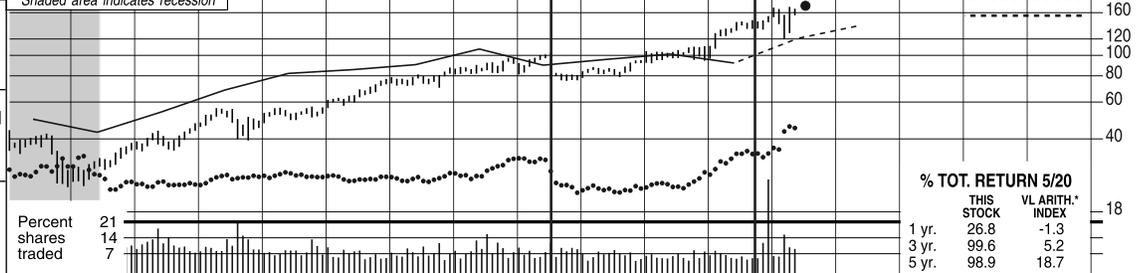
**TIMELINESS** — Suspended 7/12/19  
**SAFETY** **1** Raised 7/10/20  
**TECHNICAL** — Suspended 7/12/19  
**BETA** .85 (1.00 = Market)



**18-Month Target Price Range**  
**Low-High** Midpoint (% to Mid)  
 \$135-\$262 \$199 (15%)

**2023-25 PROJECTIONS**  
 High Price **190** Gain **(+10%)** Ann'l Total Return **3%**  
 Low Price **155** Gain **(-10%)** Return **-2%**

**Institutional Decisions**  
 3Q2019 4Q2019 1Q2020  
 to Buy 600 653 604  
 to Sell 635 666 786  
 Hlds(000) 560833 556775 547475



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
11.15	13.07	15.57	17.32	19.92	17.29	20.03	23.40	26.56	27.39	28.27	29.94	24.39	26.31	28.36	25.75	<b>29.45</b>	<b>32.95</b>	Revenues per sh	<b>42.05</b>
1.46	1.76	2.08	2.39	2.76	2.39	2.98	3.80	4.57	4.76	5.02	5.96	5.00	5.32	5.64	5.21	<b>6.70</b>	<b>7.75</b>	"Cash Flow" per sh	<b>10.35</b>
1.15	1.38	1.65	1.92	2.12	1.81	2.31	2.83	3.23	3.42	3.63	4.30	3.34	3.50	3.74	3.26	<b>4.95</b>	<b>5.90</b>	Earnings per sh <sup>A</sup>	<b>7.95</b>
.03	.04	.04	.05	.06	.06	.08	.09	.13	.08	.33	.54	.58	.55	.62	.67	<b>.71</b>	<b>.80</b>	Div'ds Decl'd per sh <sup>B</sup>	<b>1.20</b>
.19	.20	.22	.25	.30	.29	.33	.49	.67	.79	.85	.92	.85	.89	.93	.91	<b>.85</b>	<b>.90</b>	Cap'l Spending per sh	<b>1.30</b>
7.48	8.31	10.78	14.27	15.39	17.98	20.80	24.58	27.66	32.07	33.19	34.49	33.23	37.84	40.22	43.52	<b>47.50</b>	<b>52.25</b>	Book Value per sh <sup>C</sup>	<b>64.95</b>
617.84	611.14	616.48	636.60	637.40	646.96	659.18	687.73	687.50	698.10	704.30	686.80	692.20	696.60	701.50	695.50	<b>695.00</b>	<b>695.00</b>	Common Shs Outst'g <sup>D</sup>	<b>690.00</b>
21.8	19.5	19.8	20.1	17.0	17.1	17.3	17.3	16.4	19.3	21.3	20.4	25.8	24.5	27.0	41.0	<b>Bold figures are Value Line estimates</b>		Avg Ann'l P/E Ratio	<b>22.0</b>
1.15	1.04	1.07	1.07	1.02	1.14	1.10	1.09	1.04	1.08	1.12	1.03	1.35	1.23	1.46	2.23			Relative P/E Ratio	<b>1.20</b>
.1%	.1%	.1%	.1%	.2%	.2%	.2%	.2%	.2%	.1%	.4%	.6%	.7%	.6%	.6%	.5%			Avg Ann'l Div'd Yield	<b>.7%</b>

**CAPITAL STRUCTURE as of 4/3/20**  
 Total Debt \$25971.5 mill. Due in 5 Yrs \$12500.0 mill.  
 LT Debt \$22737.2 mill. LT Interest \$1250.0 mill. (41% of Cap'l)  
 Leases, Uncapitalized Annual rentals \$179.5 mill.  
 Pension Assets-12/19 \$3.0 bill.  
 Pfd Stock \$1.6 bill.  
 Common Stock 697,511,185 shs. as of 5/1/20  
 MARKET CAP: \$120.2 billion (Large Cap)

13203	16091	18260	19118	19914	20563	16882	18330	19893	17911	<b>20470</b>	<b>22910</b>	Revenues (\$mill)	<b>29000</b>
19.2%	20.7%	21.5%	22.0%	21.9%	24.4%	23.0%	23.2%	23.7%	24.9%	<b>24.3%</b>	<b>24.8%</b>	Operating Margin	<b>26.7%</b>
397.1	634.9	839.8	895.0	938.5	1051.3	1128.1	1238.3	1307.7	1189.5	<b>1200</b>	<b>1300</b>	Depreciation (\$mill)	<b>1650</b>
1568.9	1979.1	2299.3	2426.0	2598.4	3045.2	2332.2	2469.8	2650.9	2432.3	<b>3440</b>	<b>4100</b>	Net Profit (\$mill)	<b>5485</b>
23.5%	24.9%	23.6%	23.4%	25.4%	20.2%	16.4%	16.0%	19.5%	26.4%	<b>22.0%</b>	<b>22.0%</b>	Income Tax Rate	<b>22.0%</b>
11.9%	12.3%	12.6%	12.7%	13.0%	14.8%	13.8%	13.5%	13.3%	13.6%	<b>16.8%</b>	<b>17.9%</b>	Net Profit Margin	<b>18.9%</b>
2424.7	2100.4	3381.7	4586.3	4034.9	1666.3	2028.9	2057.7	2252.3	20665	<b>3000</b>	<b>3500</b>	Working Cap'l (\$mill)	<b>4700</b>
2783.9	5206.8	5287.6	3436.7	3401.5	12025	9674.2	10327	9688.5	21517	<b>22500</b>	<b>21850</b>	Long-Term Debt (\$mill)	<b>19700</b>
13711	16905	19017	22385	23378	23690	23003	26358	28214	30271	<b>33000</b>	<b>36000</b>	Shr. Equity (\$mill)	<b>44800</b>
9.9%	9.3%	9.8%	9.7%	9.9%	8.8%	7.4%	6.9%	7.2%	4.8%	<b>7.5%</b>	<b>8.0%</b>	Return on Total Cap'l	<b>8.5%</b>
11.4%	11.7%	12.1%	10.8%	11.1%	12.9%	10.1%	9.4%	9.4%	8.0%	<b>10.5%</b>	<b>11.5%</b>	Return on Shr. Equity	<b>12.5%</b>
3%	3%	4%	2%	9%	12%	17%	15%	16%	22%	<b>14%</b>	<b>10.0%</b>	Retained to Com Eq	<b>10.5%</b>
												All Div'ds to Net Prof	<b>15%</b>

**CURRENT POSITION** 2018 2019 4/3/20 (SMILL.)  
 Cash Assets 787.8 1992.3 4367.7  
 Receivables 3489.6 3191.4 3433.3  
 Inventory (LIFO) 1910.1 1628.3 2575.0  
 Other 906.3 864.6 766.6  
 Current Assets 7093.8 25596.6 11142.6  
 Accts Payable 1712.8 1514.4 1748.3  
 Debt Due 51.8 212.4 3234.3  
 Other 3076.9 3205.3 3483.0  
 Current Liab. 4841.5 4932.1 8465.6

**BUSINESS:** Danaher Corp. designs, manufactures, and markets life sciences/diagnostic/environmental & applied solutions products and services. Spun off Fortive (instrum./ind. tech.) 7/16 and Envista (dental) 9/19. Acquired five companies in 2019 for \$331 mill.; 2 in 2018 (\$2.2 billion); 10 in 2017 (\$386 mill.); 9 in 2016 (\$5.4 bill.) (Cepheid/\$4.0 bill.); 12 in 2015 (\$14.3 bill.) (Pall/\$13.6 bill.); 17 in '14 (\$3.2 bill.); 14 in '13 (\$957 mill.). Foreign sales were 63% of 2019 revenues. Offs. and dirs. own 11.7% of common (11.4% is Rales brothers); Vanguard, 7.1%; BlackRock, 6.5%; T. Rowe Price, 5.8% (3/20 Proxy). Pres. & CEO: Tom Joyce. Inc.: DE. Addr.: 2200 Pennsylvania Avenue, N.W., Suite 800W, Washington, D.C. 20037-1701. Tel.: 202-828-0850. Internet: www.danaher.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. to '23-'25 of change (per sh)

Revenues	3.5%	-1.5%	8.0%
"Cash Flow"	7.5%	1.0%	12.0%
Earnings	6.0%	5%	15.0%
Dividends	27.0%	28.5%	12.0%
Book Value	9.0%	4.0%	8.5%

**Danaher's share price is actually up nearly 25% over the last three months.** Wall Street is high on the company's acquisition of General Electric's Biopharma unit, which closed on March 31st. The purchased business will be part of the life sciences segment and has been named Cytiva. Earnings accretion of \$0.60 per share is expected in 2020. This figure is a dime or so higher than initial in-house calculations, as its biologics workflow solutions should strengthen dramatically. On the strength of these positives, the quotation reached an all-time high of \$178 since our April review, and has since settled in around the \$170 mark of late.

the trend. This is certainly a driving force behind the stock's recent gains. **Cepheid has announced a next-generation test to assist in the battle against COVID-19.** The screen is called the Xpert Xpress and it detects SARS CoV-2, Flu A, Flu B, and RSV using a single sample. An emergency use authorization pathway from regulators is set to be taken in order to secure global usage. Instruments are available for near patient point-of-care and high volume laboratory testing needs.

**QUARTERLY REVENUES (\$ mill.)<sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	4206	4510	4528	5086	18330
2018	4695	4981	4853	5364	19893
2019	4220	4445	4378	4868	17911
2020	4343	<b>4930</b>	<b>5230</b>	<b>5967</b>	<b>20470</b>
2021	<b>4950</b>	<b>5540</b>	<b>5840</b>	<b>6580</b>	<b>22910</b>

**Our earnings outlook for 2020 and 2021 has hardly changed.** Our revenue calls for those years are dropping by \$1 billion and \$500 million, respectively, to display the impact of the coronavirus. However, share-net expectations are only a nickel lower for each year. As stated, the gains from the GE Biopharma pact should negate losses suffered due to the slow-downs brought on by the pandemic. At a time when sizable downward earnings revisions are rampant, Danaher is bucking

**This top-quality selection continues to be suspended for Timeliness.** The GE Biopharma pact is recently completed, and the dental exchange offer (Envista) is only about nine months removed. Separately, this equity's runup over the past three months has placed its quotation securely inside our 3- to 5-year Target Price Range. Thus, capital appreciation potential over that span is limited. The dividend here is best viewed as an enhancer, as funding allocation will always be earmarked first to fuel DHR's growth-via-acquisition strategy.

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.69	.79	.81	1.21	3.50
2018	.80	.95	.93	1.05	3.74
2019	.45	.90	.84	1.07	3.26
2020	.81	<b>1.10</b>	<b>1.30</b>	<b>1.74</b>	<b>4.95</b>
2021	<b>1.05</b>	<b>1.35</b>	<b>1.55</b>	<b>1.95</b>	<b>5.90</b>

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.135	.16	.16	.125	.58
2017	.125	.14	.14	.14	.545
2018	.14	.16	.16	.16	.62
2019	.16	.17	.17	.17	.67
2020	.17	.18			

(A) Diluted eggs. May not sum due to rounding. 2016 restated to reflect Fortive spinoff. Excl. nonrecurr. gains/(losses): '05, 2c; '06, 9c; '07, (6c); '08, (14c); '09, (16c); '10, 33c; '15, (63c); '16, (26c). Excl. gains/(loss) from discount. ops.; '07, 24c; '15, \$1.07; '16, 57c; '17, 3c; '19, 79c. Next eggs. report due between July 16th and 20th. (B) Dividends paid in late March, June, Sept., and Dec. (C) Incl. intang.'19: \$32.47 mill., \$46.67/sh. (D) In mills., adj. for stock splits. (E) Spun off Fortive (FTV) 7/16. (F) Spunoff Envista (NVST) 9/19.

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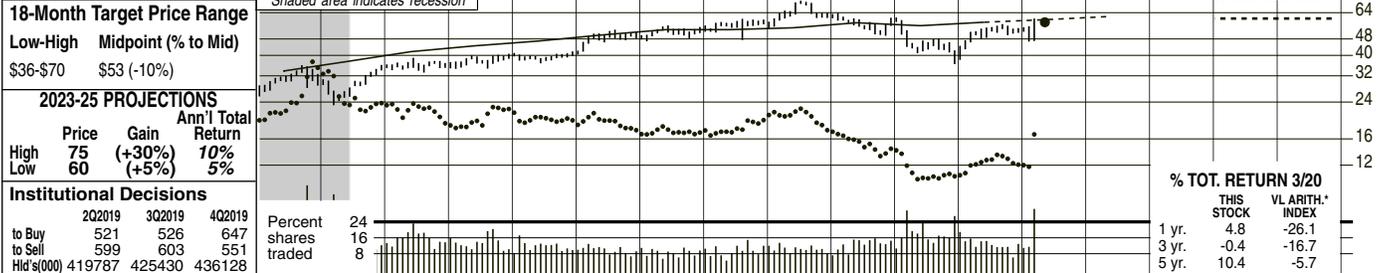
**Company's Financial Strength** A+  
**Stock's Price Stability** 100  
**Price Growth Persistence** NMF  
**Earnings Predictability** 75

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July 10, 2020

Erik M. Manning

<b>TIMELINESS</b> 3 Lowered 3/27/20	High: 36.0 39.0 40.8 41.9 53.1 55.6 59.9 72.9 63.7 60.7 56.4 60.0	Low: 23.2 33.1 34.5 36.8 40.4 46.7 47.4 53.5 49.7 36.4 38.1 46.6	<b>Target Price Range</b>
<b>SAFETY</b> 1 Raised 11/5/04	<b>LEGENDS</b> — 13.5 x "Cash Flow" p sh ... Relative Price Strength 2-for-1 split 6/10 Options: Yes Shaded area indicates recession		2023 2024 2025
<b>TECHNICAL</b> 4 Raised 4/3/20			128
<b>BETA</b> .70 (1.00 = Market)			96



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC		23-25
14.60	15.24	16.35	18.30	20.23	22.40	22.54	23.08	25.69	27.74	29.25	29.45	27.75	27.08	26.54	28.02	<b>28.35</b>	<b>28.60</b>	Sales per sh <sup>A</sup>		<b>30.25</b>
1.97	2.09	2.13	2.30	2.50	2.78	3.09	3.30	3.47	3.71	3.94	3.93	4.01	4.24	4.11	4.26	<b>4.40</b>	<b>4.55</b>	"Cash Flow" per sh		<b>5.00</b>
1.43	1.37	1.45	1.59	1.76	1.99	2.30	2.48	2.56	2.69	2.83	2.86	2.92	3.08	3.11	3.22	<b>3.35</b>	<b>3.50</b>	Earnings per sh <sup>A B</sup>		<b>3.95</b>
.55	.62	.67	.72	.79	.86	.96	1.12	1.22	1.32	1.55	1.67	1.78	1.92	1.96	1.96	<b>1.96</b>	<b>2.00</b>	Div's Decl'd per sh <sup>C</sup>		<b>2.30</b>
.83	.56	.51	.68	.77	.86	.99	1.01	1.04	.96	1.08	1.19	1.22	1.19	1.05	.89	<b>.70</b>	<b>.80</b>	Cap'l Spending per sh		<b>.95</b>
6.92	7.69	8.11	7.82	9.21	7.89	8.23	9.87	9.90	10.41	10.67	8.35	8.26	7.50	10.35	11.72	<b>13.35</b>	<b>15.00</b>	Book Value per sh <sup>D</sup>		<b>19.80</b>
758.00	738.00	712.00	680.00	675.00	656.00	656.50	644.80	648.50	640.80	612.30	598.70	596.80	576.90	593.10	601.90	<b>606.50</b>	<b>607.00</b>	Common Shs Outst'g <sup>F</sup>		<b>610.00</b>
16.2	17.5	16.8	17.6	16.5	15.2	14.3	14.7	15.1	15.7	17.8	18.6	20.0	20.5	17.0	14.1	<b>14.1</b>	<b>14.1</b>	Avg Ann'l P/E Ratio		<b>17.0</b>
.86	.93	.91	.93	.99	1.01	.91	.92	.96	.88	.94	.94	1.05	1.03	.92	.77	<b>.92</b>	<b>.77</b>	Relative P/E Ratio		<b>.95</b>
2.4%	2.6%	2.8%	2.6%	2.7%	2.9%	2.9%	3.1%	3.2%	3.1%	3.1%	3.1%	3.1%	3.0%	3.7%	4.3%	<b>4.3%</b>	<b>4.3%</b>	Avg Ann'l Div'd Yield		<b>3.4%</b>

CAPITAL STRUCTURE as of 2/23/20				2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC		23-25	
Total Debt \$13627.9 mill. Due in 5 Yrs \$8.35 bill.				14797	14880	16658	17774	17910	17630	16563	15620	15740	16865	<b>17200</b>	<b>17350</b>	Sales (Smill) <sup>A</sup>		<b>18450</b>			
LT Debt \$11589.6 mill. LT Interest \$390.0 mill.				21.0%	20.8%	19.5%	19.5%	19.4%	18.2%	20.6%	21.6%	21.2%	20.4%	<b>20.7%</b>	<b>21.0%</b>	Operating Margin		<b>21.5%</b>			
(Total interest coverage: 6.4X) (59% of Cap'l)				457.1	472.6	541.5	588.0	585.4	588.3	608.1	603.6	618.8	620.1	<b>615</b>	<b>615</b>	Depreciation (Smill)		<b>600</b>			
Leases, Uncapitalized Annual rentals \$120.0 mill.				1571.5	1652.0	1707.3	1788.7	1824.4	1765.2	1787.4	1842.9	1820.6	1946.4	<b>2055</b>	<b>2140</b>	Net Profit (Smill)		<b>2440</b>			
Plan Assets-5/19 \$7.0 bill. Oblig. \$7.6 bill.				34.3%	31.6%	30.2%	31.9%	33.3%	25.4%	30.3%	27.0%	24.7%	21.7%	<b>21.7%</b>	<b>21.7%</b>	Income Tax Rate		<b>22.0%</b>			
Pfd Stock None				10.6%	11.1%	10.2%	10.1%	10.2%	10.0%	10.8%	11.8%	11.6%	11.5%	<b>11.9%</b>	<b>12.3%</b>	Net Profit Margin		<b>13.2%</b>			
Common Stock 606,138,918 shs.				d289.1	242.8	d151.8	d995.0	d1030	d1104	d1078	d1269	d3218	d2901	<b>d1950</b>	<b>d1660</b>	Working Cap'l (Smill)		<b>150</b>			
as of 3/10/20				5268.5	5542.5	6161.9	5926.1	6423.5	7607.7	7057.7	7642.9	12669	11625	<b>11400</b>	<b>10250</b>	Long-Term Debt (Smill)		<b>8250</b>			
MARKET CAP: \$35.0 billion (Large Cap)				5402.9	6365.5	6421.7	6672.2	6534.8	4996.7	4930.2	4327.9	6141.1	7054.5	<b>8085</b>	<b>9110</b>	Shr. Equity (Smill)		<b>12065</b>			
CURRENT POSITION				16.2%	15.3%	14.9%	15.5%	15.3%	15.2%	16.1%	16.6%	10.4%	11.4%	<b>11.5%</b>	<b>12.0%</b>	Return on Total Cap'l		<b>13.0%</b>			
2018 2019 2/23/20				29.1%	26.0%	26.6%	26.8%	27.9%	35.3%	36.3%	42.6%	29.6%	27.6%	<b>25.5%</b>	<b>23.5%</b>	Return on Shr. Equity		<b>20.0%</b>			
(SMILL)				17.2%	14.5%	14.1%	13.8%	12.9%	15.0%	14.5%	16.4%	11.1%	10.8%	<b>10.5%</b>	<b>10.0%</b>	Retained to Com Eq		<b>8.5%</b>			
Cash Assets				41%	44%	47%	49%	54%	58%	60%	62%	63%	61%	<b>58%</b>	<b>57%</b>	All Div'ds to Net Prof		<b>58%</b>			
Receivables				<b>BUSINESS:</b> General Mills, Inc. is a manufacturer of branded consumer foods that are sold through retail stores. Sales breakdown (excl. joint ventures): North America Retail (58% of fiscal 2019 sales); Convenience Stores & Foodservice (12%); Europe & Australia (11%); Asia & Latin America (10%); and Pet (9%). Brands include: <i>Cheerios, Wheaties, Total, Betty Crocker, Bisquick, Annie's,</i>																	
Inventory (LIFO)				<i>Yoplait, Haagen-Dazs, Old El Paso, Blue Buffalo, Cinnamon Toast Crunch, and Progresso.</i> Acquired Blue Buffalo 4/18. Has 40,000 emplys. Off./dir. own less than 1.0% of common stock; Vanguard Grp., Inc. 7.6% (8/19 Proxy). Chrmn. & CEO: Jeffrey Harmening, Inc.: DE. Addr.: Number One General Mills Blvd., Minneapolis, MN 55426. Tel.: 763-764-7600. Internet: www.generalmills.com.																	
Other				<b>General Mills stock has done well during a difficult stretch for the broader market.</b> The move higher since our last report has come at a time when the U.S. equity market's volatility has spiked on fears about the COVID-19 pandemic. This is not overly surprising, given the consumer staples stock's defensive characteristics. Individuals have to eat even during times of crisis, and many households loaded up on food products and essential items ahead of the outbreak of the coronavirus stateside. The company has been a beneficiary of heavy buying of consumer food products at mass merchandisers, club stores, and grocery stores. This increased volume should help offset lost business to the foodservice sector. Based on these factors, management again reiterated its fiscal 2020 top- and bottom-line guidance. Thus . . .																	
Current Assets				<b>We still expect General Mills to earn \$3.35 a share in fiscal 2020.</b> This is slightly below the company's reaffirmed range of 6% to 8% growth, owing to the unknown impact of the coronavirus on near-term results. The February-quarter result (General Mills earned \$0.77 a share,																	
Accts Payable				a penny short of our estimate, on a slight top-line reduction) was what we expected, as we noted that a slower second-half performance was anticipated. The positives included continued strength in the pet segment, with strong growth driven by Blue Buffalo's top-two products. The jump in pet sales offset continued sluggishness in cereal, snacks, and yogurt sales. As noted above, we think General Mills will benefit from more individuals and families working and eating at home as the nation looks to defeat the coronavirus in the coming months.																	
Debt Due				<b>This food processing issue has provided a nice place for equity investors to put their funds during the recent volatile stretch for stocks.</b> General Mills shares offer many of the attributes that appeal to investors when times are turbulent. The stock is ranked 1 (Highest) for Safety and has a Beta coefficient of 0.70, which means that it is far less risky than the overall market. The well-covered dividend also provides an additional level of comfort when investors are worried about the value of their portfolios.																	
Other				<i>William G. Ferguson</i> April 17, 2020																	
Current Liab.																					

ANNUAL RATES	Past 10 Yrs	Past 5 Yrs	Est'd '17-'19
of change (per sh)	10 Yrs	5 Yrs	to '23-'25
Sales	3.0%	-5%	2.0%
"Cash Flow"	5.0%	2.5%	3.0%
Earnings	6.0%	3.0%	4.0%
Dividends	9.5%	7.5%	3.0%
Book Value	1.5%	-1.0%	12.5%

Fiscal Year Ends	QUARTERLY SALES (\$ mill.) <sup>A</sup>				Full Fiscal Year
	Aug.Per	Nov.Per	Feb.Per	May Per	
2017	3909	4112	3793	3806	15620
2018	3769	4198	3882	3891	15740
2019	4094	4411	4198	4161	16865
2020	4003	4421	4180	<b>4596</b>	<b>17200</b>
2021	<b>4030</b>	<b>4470</b>	<b>4225</b>	<b>4625</b>	<b>17350</b>

Fiscal Year Ends	EARNINGS PER SHARE <sup>ABE</sup>				Full Fiscal Year
	Aug.Per	Nov.Per	Feb.Per	May Per	
2017	.78	.85	.72	.73	3.08
2018	.71	.82	.79	.79	3.11
2019	.71	.85	.83	.83	3.22
2020	.79	.95	.77	<b>.84</b>	<b>3.35</b>
2021	<b>.81</b>	<b>.99</b>	<b>.84</b>	<b>.86</b>	<b>3.50</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>C</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.44	.46	.48	.48	1.86
2017	.48	.48	.49	.49	1.94
2018	.49	.49	.49	.49	1.96
2019	.49	.49	.49	.49	1.96
2020	.49	.49	.49	.49	1.96

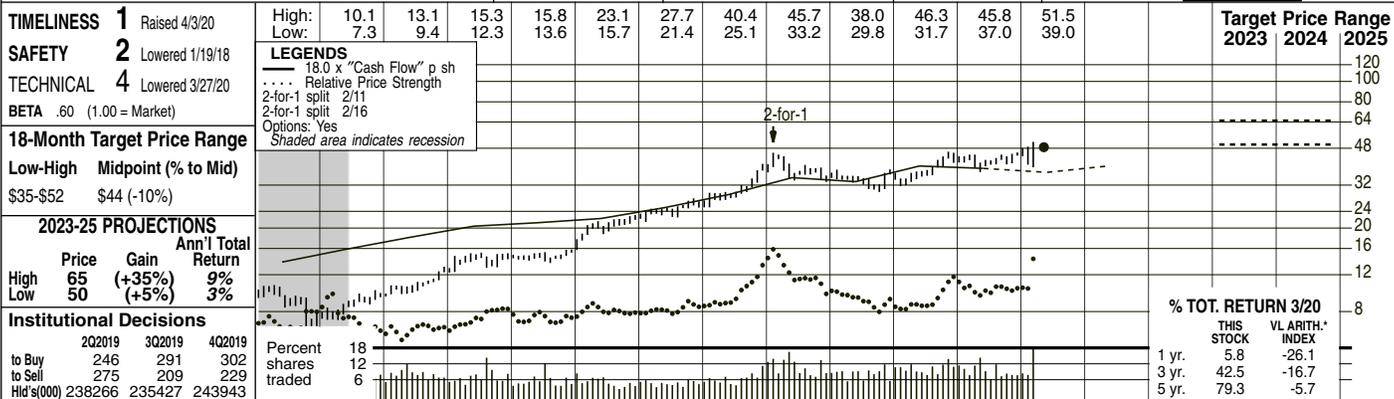
(A) Fiscal year ends last Sun. in May. (B) Diluted eggs. Excl. nonrecurring items: '04, (5c); '05, (17c); '08, 10c; '09, (9c); '10, (6c); '11, 22c; '12, (21c); '13, 10c; '15, (89c); '16, (15c); '17, (31c); '18, 53c; '19, (32c); '20 Q1-Q3, 3c. Next earnings report due late June. (C) Div'ds. historically paid in Feb, May, Aug., and Nov. ■ Div'd reinvest. plan available. (D) Incl. intang. At 2/23/20: \$21.6 bill. or \$34.74/sh. (E) Qtrly. eggs. may not sum to total due to change in shares outstanding. (F) In mill., adj. for split.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	35
Earnings Predictability	100

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# HORMEL FOODS NYSE:HRL

RECENT PRICE **48.55** P/E RATIO **27.7** (Trailing: 26.8 Median: 21.0) RELATIVE P/E RATIO **2.07** DIV'D YLD **2.0%** VALUE LINE



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
8.67	9.82	10.46	11.41	12.55	12.23	13.57	14.96	15.65	16.60	17.67	17.53	18.02	17.35	17.87	17.77	18.20	18.75	Sales per sh <sup>A</sup>	20.75
.57	.67	.74	.78	.77	.88	1.01	1.13	1.18	1.23	1.39	1.60	1.93	1.85	2.20	2.14	2.05	2.14	"Cash Flow" per sh	3.20
.39	.46	.51	.54	.52	.63	.76	.87	.93	.98	1.12	1.32	1.64	1.57	1.86	1.80	1.75	1.90	Earnings per sh <sup>A B</sup>	2.85
.11	.13	.14	.15	.19	.19	.21	.26	.30	.34	.40	.50	.58	.68	.75	.84	.93	1.02	Div's Decl'd per sh <sup>C</sup>	1.20
.15	.19	.26	.23	.23	.18	.17	.18	.25	.20	.30	.27	.48	.42	.73	.55	.65	.70	Cap'l Spending per sh	.85
2.54	2.86	3.28	3.47	3.73	3.97	4.52	5.04	5.37	6.29	6.85	7.57	8.42	9.34	10.49	11.08	11.95	12.65	Book Value per sh <sup>D</sup>	15.00
551.50	551.37	549.36	542.71	538.08	534.37	531.93	527.93	526.09	527.32	527.23	528.41	528.48	528.42	534.14	534.49	538.00	538.00	Common Shs Outst'g <sup>E</sup>	540.00
18.1	16.9	17.0	17.3	18.2	13.0	13.7	15.7	15.6	19.8	21.3	21.6	23.4	21.8	19.6	23.4	23.4	23.4	Avg Ann'l P/E Ratio	20.0
.96	.90	.92	.92	1.10	.87	.87	.98	.99	1.11	1.12	1.09	1.23	1.10	1.06	1.28	1.28	1.28	Relative P/E Ratio	1.10
1.6%	1.7%	1.6%	1.6%	2.0%	2.3%	2.0%	1.9%	2.1%	1.8%	1.7%	1.8%	1.5%	2.0%	2.1%	2.0%	2.1%	2.0%	Avg Ann'l Div'd Yield	2.1%

CAPITAL STRUCTURE as of 1/26/20				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
Total Debt \$317.3 mill. Due in 5 Yrs \$250.0 mill.				7220.7	7895.1	8230.7	8751.7	9316.3	9263.9	9523.2	9167.5	9545.7	9497.3	9800	10100	Sales (\$mill) <sup>A</sup>	11200						
LT Debt \$309.0 mill. LT Interest \$15.0 mill.				10.6%	10.6%	10.3%	10.4%	11.2%	13.0%	14.9%	15.0%	13.8%	13.9%	13.5%	14.0%	Operating Margin	17.5%						
(5% of Cap'l)				125.6	124.2	119.5	124.9	130.0	133.4	132.0	131.0	161.9	165.2	170	175	Depreciation (\$mill)	190						
Leases, Uncapitalized Annual rentals \$15.6 mill.				409.0	474.2	500.1	526.2	602.7	713.8	890.1	846.7	1012.1	978.8	940	1020	Net Profit (\$mill)	1540						
Pension Assets-10/19 \$1477.3 mill. Oblig. \$1616.2 mill.				34.9%	33.3%	33.4%	33.6%	34.3%	34.3%	32.4%	33.8%	14.3%	19.1%	21.5%	21.5%	Income Tax Rate	21.5%						
Pfd Stock None				5.7%	6.0%	6.1%	6.0%	6.5%	7.7%	9.3%	9.2%	10.6%	10.3%	9.6%	10.1%	Net Profit Margin	13.8%						
Common Stock 537,776,130 shs. as of 3/1/20				757.0	1220.0	1534.4	1263.4	1178.1	849.0	976.7	968.3	911.2	1256.4	1375	1500	Working Cap'l (\$mill)	2000						
MARKET CAP: \$26.1 billion (Large Cap)				--	250.0	250.0	250.0	250.0	250.0	250.0	250.0	624.8	250.0	310	325	Long-Term Debt (\$mill)	500						
CURRENT POSITION				2406.6	2659.8	2824.9	3316.6	3612.1	3998.2	4448.0	4935.9	5600.8	5921.5	6425	6800	Shr. Equity (\$mill) <sup>D</sup>	8100						
CASH ASSETS				17.0%	16.7%	16.5%	14.9%	15.8%	16.9%	19.1%	16.4%	16.5%	16.0%	14.0%	14.5%	Return on Total Cap'l	18.0%						
RECEIVABLES				17.0%	17.8%	17.7%	15.9%	16.7%	17.9%	20.0%	17.2%	18.1%	16.5%	14.5%	15.0%	Return on Shr. Equity	19.0%						
INVENTORY (FIFO)				12.4%	12.9%	12.3%	10.6%	11.1%	11.6%	13.3%	10.1%	11.1%	9.1%	7.0%	7.0%	Retained to Com Eq	11.0%						
OTHER				27%	27%	30%	33%	34%	35%	33%	41%	38%	45%	53%	54%	All Div'ds to Net Prof	42%						

**BUSINESS:** Hormel Foods Corporation is an international manufacturer and marketer of consumer-branded meat and food products, which are sold fresh, frozen, cured, smoked, cooked, and canned. Well-known brand names include: *Hormel, Always Tender, Cure 81, SPAM, Dinty Moore, Jennie-O, Mary Kitchen, Little Sizzlers, Chi-Chi's, Kid's Kitchen, and Skippy*. Distributes products to supermarkets and independent food stores in all 50 states as well as overseas. Has approximately 18,800 employees. The Hormel Foundation owns 48.0% of common stock; all officers/directors as a group, 1.2% (12/19 Proxy). President and CEO: James P. Snee, Inc.: DE. Address: 1 Hormel Place, Austin, MN 55912-3680. Telephone: 507-437-5611. Internet: www.hormel.com.

**Hormel Foods stock has exerted its safe-haven status over the past three months.** Indeed, since our last review in January, the stock has climbed 9% in value, while the broader S&P 500 Index has plunged into bear market territory amidst the coronavirus outbreak. We attribute this to a flight to quality on the part of jittery investors, with many shifting out of volatile growth names into more-defensive, dividend-paying issues. Consumers, being asked to "shelter in place" in select communities across the country, have also been hunkering down and stockpiling canned goods.

**This hoarding behavior augurs well for the company's Grocery Products segment as we look out through fiscal 2020 (ends October 31st).** That division has been struggling of late (first-quarter organic volume and segment profit fell 4% and 28%, respectively), hampered by heightened raw material costs, lower contract manufacturing earnings, weakness in the *SKIPPY* peanut butter line, and the recently completed *CytoSport* divestiture. And a recovery there would be encouraging, adding to the momentum that Hormel is seeing in its *Jennie-O* turkey business and Refrigerated Foods (especially foodservice) unit. As things stand presently... **We expect the Refrigerated and rejuvenated Jennie-O segments to do most of the heavy lifting in the coming periods.** Indeed, strength in those areas should offset coronavirus-related softness in China and other international markets, along with any lingering pressures on the Grocery Products division. Acquisitions ought to bolster results, as well. This includes a just-announced deal to purchase Sadler's Smokehouse, a pit-smoked meats outfit based in Texas, for \$270 million. Sadler's should help Hormel build on its foodservice momentum and better capitalize on the growing demand for authentic barbecue fare. All in all, while the bottom line seems apt to retreat a bit this year, we envision share net rebounding to \$1.90 in fiscal 2021 and about \$2.85 by the 2023-2025 horizon. **This equity is timely (1), and should still provide long-term investors with decent risk-adjusted returns.** Steady dividend growth is a plus here, too.

*Justin Hellman*  
April 17, 2020

Fiscal Year Ends	Jan.Per	Apr.Per	Jul.Per	Oct.Per	Full Fiscal Year
2017	2280.2	2187.3	2207.4	2492.6	9167.5
2018	2331.3	2330.6	2359.1	2524.7	9545.7
2019	2360.4	2344.7	2290.7	2501.5	9497.3
2020	2384.4	2355.6	2410	2650	9800
2021	2450	2450	2475	2725	10100

(A) Fiscal year ends on last Saturday in Oct. (B) Based on diluted shares outstanding. Excludes nonrecurring gain: '04, 3c. Next earnings report due late May. (C) Dividends have historically been paid in the middle of Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available. (D) Includes intangibles. In '19: \$3515.5 mill., \$6.58/sh. (E) In millions, adjusted for splits.

Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	90
Earnings Predictability	95



# INT'L FLAVORS & FRAG. NYSE:IFF

RECENT PRICE **131.90** P/E RATIO **20.9** (Trailing: 21.2; Median: 20.0) RELATIVE P/E RATIO **1.15** DIV'D YLD **2.4%** **VALUE LINE**



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
21.52	21.97	23.43	28.10	30.38	29.39	32.68	34.45	34.57	36.28	38.24	37.78	39.34	43.05	37.31	48.13	49.55	52.90	Sales per sh	69.00
3.04	3.04	3.39	3.94	3.77	3.70	4.27	4.71	4.95	5.54	6.26	6.45	6.87	7.43	6.15	7.77	7.85	8.45	"Cash Flow" per sh	12.00
2.08	1.96	2.34	2.70	2.76	2.69	3.26	3.74	3.98	4.47	5.08	5.25	5.51	5.89	6.00	6.17	6.30	6.80	Earnings per sh <sup>A</sup>	9.50
.67	.72	.74	.88	.96	1.00	1.04	1.16	1.30	1.46	1.72	2.06	2.40	2.66	2.84	2.96	3.06	3.26	Div's Decl'd per sh <sup>B</sup>	4.76
.75	1.03	.65	.81	1.09	.84	1.32	1.58	1.55	1.65	1.77	1.26	1.60	1.63	1.60	2.21	2.10	2.50	Cap'l Spending per sh	2.70
9.63	10.09	10.12	7.62	7.29	9.71	12.45	13.65	15.30	17.98	18.80	19.87	20.53	21.33	56.58	58.22	57.55	59.60	Book Value per sh <sup>C</sup>	69.00
94.52	90.74	89.42	81.02	78.66	79.16	80.26	80.92	81.63	81.38	80.78	80.02	79.21	78.95	106.62	106.79	106.00	104.00	Common Shs Outst'g <sup>D</sup>	100.00
18.1	18.9	16.3	18.4	14.3	12.7	14.4	15.7	14.8	17.7	19.1	21.6	22.6	23.1	22.7	21.3	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	22.0
.96	1.01	.88	.98	.86	.85	.92	.98	.94	.99	1.01	1.09	1.19	1.16	1.23	1.15			Relative P/E Ratio	1.20
1.8%	1.9%	1.9%	1.8%	2.4%	2.9%	2.2%	2.0%	2.2%	1.8%	1.8%	1.8%	1.9%	2.0%	2.1%	2.3%			Avg Ann'l Div'd Yield	2.3%

CAPITAL STRUCTURE as of 3/31/20				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
Total Debt \$4332.5 mill. Due in 5 Yrs \$1490 mill.				2622.9	2788.0	2821.4	2952.9	3088.5	3023.2	3116.4	3398.7	3977.5	5140.1	5250	5500	Sales (\$mill)	6900						
LT Debt \$3946.9 mill. LT Interest \$220.0 mill.				19.3%	19.7%	20.0%	21.1%	22.4%	22.8%	23.9%	22.8%	23.3%	21.7%	22.0%	22.5%	Operating Margin	24.0%						
(Interest coverage: 7.3x)				79.2	75.3	76.7	83.2	89.4	89.6	102.5	118.0	125.7	130.2	150	160	Depreciation (\$mill)	230						
(40% of Capital)				263.6	306.2	327.5	368.0	416.3	426.6	441.4	468.3	529.6	699.6	680	720	Net Profit (\$mill)	970						
Pension Assets-12/19 \$1.6 bill. Oblig.\$1.8 bill.				26.7%	27.1%	26.4%	25.7%	25.3%	24.2%	23.8%	20.7%	18.8%	19.5%	20.0%	22.0%	Income Tax Rate	23.0%						
				10.0%	11.0%	11.6%	12.5%	13.5%	14.1%	14.2%	13.8%	13.3%	13.6%	13.0%	13.1%	Net Profit Margin	14.1%						
Pfd Stock None				664.2	752.6	949.9	1092.5	1191.2	713.8	710.7	1127.7	1813.6	1390.3	1400	1450	Working Cap'l (\$mill)	1500						
				787.7	778.2	881.1	932.7	934.2	937.8	1066.9	1632.2	4504.4	3997.4	4000	4000	Long-Term Debt (\$mill)	3500						
Common Stock 106,851,144 shs. as of 5/1/20				999.4	1104.4	1248.8	1463.1	1518.6	1580.3	1626.2	1684.2	6033.0	6217.3	6100	6200	Shr. Equity (\$mill) <sup>C</sup>	6900						
MARKET CAP: \$14.1 billion (Large Cap)				16.1%	17.4%	16.4%	16.3%	17.9%	17.8%	17.4%	15.1%	5.7%	7.5%	7.5%	8.0%	Return on Total Cap'l	9.0%						
				26.4%	27.7%	26.2%	25.1%	27.4%	26.8%	27.1%	27.8%	8.8%	11.3%	11.0%	11.5%	Return on Shr. Equity	14.0%						

CURRENT POSITION (SMILL.)				2018	2019	3/31/20
Cash Assets	634.9	606.8	433.2			
Receivables	946.9	884.4	943.1			
Inventory	1078.5	1123.1	1075.9			
Other	281.6	328.2	366.1			
Current Assets	2941.9	2942.5	2818.3			
Accts Payable	471.4	510.4	456.2			
Debt Due	48.6	385.0	385.6			
Other	608.3	656.8	585.2			
Current Liab.	1128.3	1552.2	1427.0			

ANNUAL RATES				Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
of change (per sh)	4.0%	3.5%	8.5%			
Sales	6.5%	5.0%	9.0%			
"Cash Flow"	8.5%	6.0%	8.0%			
Earnings	11.5%	13.5%	9.0%			
Dividends	18.5%	21.0%	7.0%			
Book Value						

QUARTERLY SALES (\$ mill.)						Full Year
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31		
2017	828.3	842.9	872.9	854.6		3398.7
2018	930.9	920.0	907.5	1219.0		3977.5
2019	1297.4	1292.6	1266.3	1283.8		5140.1
2020	1347.3	1290	1280	1332.7		5250
2021	1360	1380	1400	1360		5500

EARNINGS PER SHARE <sup>A</sup>						Full Year
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31		
2017	1.52	1.50	1.47	1.40		5.89
2018	1.69	1.66	1.54	1.22		6.00
2019	1.57	1.61	1.53	1.46		6.17
2020	1.62	1.60	1.55	1.53		6.30
2021	1.70	1.75	1.70	1.65		6.80

QUARTERLY DIVIDENDS PAID <sup>B</sup>						Full Year
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31		
2016	.56	.56	.56	.64		2.32
2017	.64	.64	.64	.69		2.61
2018	.69	.69	.69	.73		2.80
2019	.73	.73	.73	.75		2.94
2020	.75	.75				

**INTERNATIONAL FLAVORS & FRAGRANCES (IFF) has been holding up relatively well lately.** During the first quarter, sales advanced 4%, to \$1.35 billion, with profits of \$1.62 per share. These figures were slightly better than we had anticipated. Of note, both of the company's business segments made contributions. The Scent unit benefited from strength in the consumer fragrance and the fragrance ingredients categories. In the fine fragrance area, demand was sluggish, owing to softness in the perfumes and cosmetics lines. Elsewhere, the Taste segment also made progress, and the ongoing integration of the Frutarom business should help.

**IFF has been operational, despite the coronavirus pandemic.** The company's business has been deemed necessary, and has carried on with few disruptions. In some cases, business has even benefited from stronger demand for ingredients used in highly coveted personal hygiene and disinfectant products. Nonetheless, IFF, along with many other companies, has withdrawn its guidance due to limited visibility. We have lowered our 2020 forecast, which calls for sales of \$5.25 billion,

foods, pharmaceuticals, and confectionery and tobacco products. In '19, North America generated 23% of sales. R&D spending accounted for 7% of 2019 sales. Has about 13,600 employees. Off. and dir. own less than 1% of stock; 3 institutions own 41% (3/20 proxy). CEO: Andreas Fibig. Inc.: NY. Address: 521 W. 57th St., New York, NY 10019. Tele.: 212-765-5500. Internet: www.iff.com.

with earnings of \$6.30 per share. **The company is in solid financial shape.** At the end of March, IFF had cash of \$433 million on its balance sheet, and a fully available \$1 billion credit facility. To conserve funds, the capital spending budget will likely be trimmed, as projects, where travel is required, will likely be postponed. Too, the company may be more conservative about repurchasing shares. **The acquisition of DuPont's Nutrition and Biosciences business is moving forward.** The merger is on track to close in early 2021. It has cleared regulatory hurdles in the U.S., and is awaiting approvals in Europe and China. IFF has been working on plans to integrate the two businesses. The combined company will have strong R&D capabilities and will be strongly dedicated to innovation. **IFF stock is unranked for Timeliness due to the pending transaction.** The deal should close as planned, and we will update our numbers at that time. Meanwhile, our projections suggest that IFF, as currently configured, holds decent risk-adjusted returns for the next 3 to 5 years.

Adam Rosner  
May 29, 2020

**To subscribe call 1-800-VALUELINE**



# KELLOGG CO. NYSE-K

RECENT PRICE **63.51** P/E RATIO **17.4** (Trailing: 16.1; Median: 16.0) RELATIVE P/E RATIO **1.30** DIV'D YLD **3.6%**

**VALUE LINE**

**TIMELINESS** 3 Lowered 4/5/19  
**SAFETY** 1 Raised 1/30/09  
**TECHNICAL** 3 Lowered 3/20/20  
**BETA** .60 (1.00 = Market)

High: 54.1 56.0 57.7 57.2 68.0 69.5 73.7 87.2 76.7 75.0 69.3 71.1  
 Low: 35.6 47.3 48.1 46.3 56.0 55.7 61.1 68.7 58.8 55.1 51.3 52.7

**LEGENDS**  
 — 12.5 x "Cash Flow" p sh  
 ... Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$49-\$78 \$64 (0%)

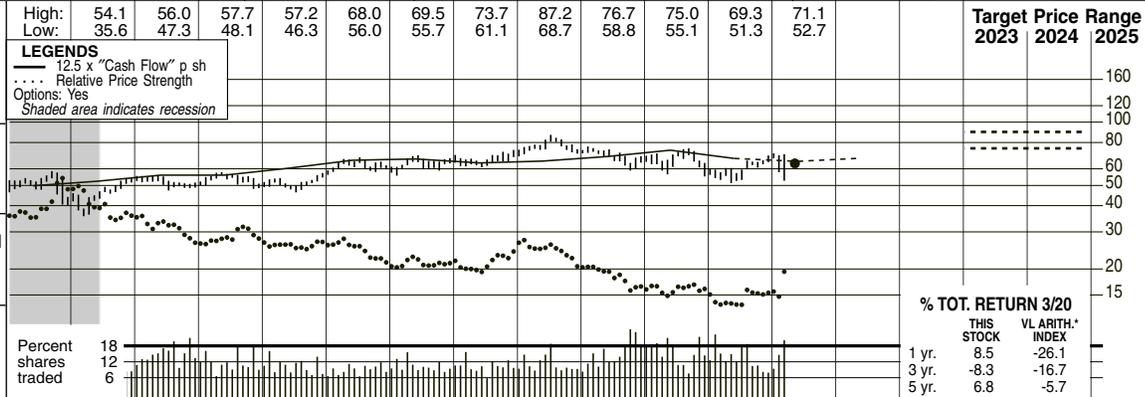
**2023-25 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	90	(+40%)	12%
Low	75	(+20%)	8%

**Institutional Decisions**

	2020	2021	2022
to Buy	283	327	384
to Sell	344	314	306
Hlds(000)	302559	296884	297378

Percent shares traded: 18, 12, 6



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
23.28	25.11	27.42	30.19	33.58	32.97	33.91	36.94	39.30	40.77	40.95	38.64	37.07	37.39	39.40	39.75	39.25	39.60	Sales per sh	44.75
3.15	3.39	3.41	3.78	3.99	4.18	4.48	4.48	4.83	5.27	5.34	5.12	5.22	5.49	5.89	5.37	5.20	5.40	"Cash Flow" per sh	6.50
2.16	2.36	2.51	2.76	2.99	3.16	3.30	3.38	3.37	3.77	3.87	3.53	3.72	4.04	4.33	3.94	3.80	4.00	Earnings per sh A	4.95
1.01	1.06	1.14	1.20	1.30	1.43	1.56	1.67	1.74	1.80	1.90	1.98	2.04	2.12	2.20	2.26	2.28	2.36	Div'ds Decl'd per sh B	2.66
.67	.92	1.14	1.21	1.21	.99	1.30	1.66	1.48	1.76	1.63	1.58	1.44	1.45	1.68	1.72	1.75	1.70	Cap'l Spending per sh	1.80
5.47	5.63	5.20	6.48	3.79	5.96	5.90	4.93	6.70	9.77	7.83	6.08	5.44	6.40	7.56	8.04	9.55	11.05	Book Value per sh C	15.50
413.02	405.33	397.70	390.05	381.86	381.38	365.60	357.30	361.27	362.80	356.00	350.02	351.07	345.60	343.87	341.54	342.00	341.00	Common Shs Outst'g D	330.00
19.2	18.9	18.9	19.0	17.0	14.5	15.7	15.8	15.3	16.5	16.5	18.7	20.5	17.1	15.4	15.2	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	16.5
1.01	1.01	1.02	1.01	1.02	.97	1.00	.99	.97	.93	.87	.94	1.08	.86	.83	.83			Relative P/E Ratio	.90
2.4%	2.4%	2.4%	2.3%	2.6%	3.1%	3.0%	3.1%	3.4%	2.9%	3.0%	3.0%	2.7%	3.1%	3.3%	3.8%			Avg Ann'l Div'd Yield	3.3%

**CAPITAL STRUCTURE as of 12/28/19**  
 Total Debt \$8036 mill. Due in 5 Yrs \$4163 mill.  
 LT Debt \$7195 mill. LT Interest \$264 mill.  
 (Long-term interest earned: 7.4X)

(72% of Cap'l)  
**Pension Assets-12/19** \$5.17 bill. **Oblig.** \$5.65 bill.  
**Leases, Uncapitalized:** Annual Rentals \$129.0 mill.  
**Pfd Stock** None  
**Common Stock** 341,543,030 shs.

**MARKET CAP: \$21.7 billion (Large Cap)**

**CURRENT POSITION (SMILL.)**

	2017	2018	12/28/19
Cash Assets	281	321	397
Receivables	1389	1375	1576
Inventory (Avg Cst)	1217	1330	1226
Other	149	131	232
Current Assets	3036	3157	3431
Accts Payable	2269	2427	2387
Debt Due	779	686	841
Other	1431	1416	1550
Current Liab.	4479	4529	4778

12397	13198	14197	14792	14580	13525	13014	12923	13547	13578	13425	13500	Sales (\$mill)	14775
19.2%	17.8%	16.7%	18.2%	18.2%	16.3%	19.5%	19.9%	17.7%	16.8%	16.5%	16.8%	Operating Margin	17.5%
392.0	369.0	448.0	532.0	503.0	534.0	517.0	481.0	516.0	484.0	480	475	Depreciation (\$mill)	510
1247.0	1231.0	1297.2	1379.7	1397.3	1258.0	1317.0	1416.0	1510.0	1351.0	1300	1370	Net Profit (\$mill)	1630
28.8%	29.0%	22.7%	28.4%	28.2%	11.2%	15.0%	22.6%	12.0%	18.9%	21.0%	21.0%	Income Tax Rate	21.0%
10.1%	9.3%	9.1%	9.3%	9.6%	9.3%	10.1%	11.0%	11.1%	10.0%	9.7%	10.1%	Net Profit Margin	11.0%
d269.0	d286.0	d1143	d568.0	d1024	d2503	d1534	d1443	d1372	d1347	d1400	d1350	Working Cap'l (\$mill)	d100
4908.0	5037.0	6082.0	6330.0	5935.0	5289.0	6698.0	7836.0	8207.0	7195.0	6500	5850	Long-Term Debt (\$mill)	4850
2158.0	1760.0	2419.0	3545.0	2789.0	2128.0	1910.0	2212.0	2601.0	2747.0	3265	3770	Shr. Equity (\$mill)	5120
19.9%	20.1%	16.8%	15.1%	17.3%	18.6%	17.5%	15.3%	15.2%	14.9%	14.5%	15.5%	Return on Total Cap'l	17.5%
57.8%	69.9%	53.6%	38.9%	50.1%	59.1%	69.0%	64.0%	58.1%	49.2%	40.0%	36.5%	Return on Shr. Equity	32.0%
47%	49%	48%	47%	49%	56%	54%	52%	50%	57%	60%	59.0%	Retained to Com Eq	14.5%
												All Div'ds to Net Prof	54%

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

Sales	2.0%	-0.5%	2.5%
"Cash Flow"	4.0%	2.5%	2.5%
Earnings	4.0%	3.0%	3.0%
Dividends	5.5%	4.0%	3.5%
Book Value	2.5%	-2.0%	13.5%

**QUARTERLY SALES (\$ mill.)**

Cal-ender	Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2017	3254	3187	3273	3209	12923
2018	3401	3360	3469	3317	13547
2019	3522	3461	3372	3223	13578
2020	3300	3325	3350	3450	13425
2021	3350	3365	3400	3385	13500

**EARNINGS PER SHARE A**

Cal-ender	Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2017	1.06	.97	1.05	.96	4.04
2018	1.23	1.14	1.06	.90	4.33
2019	1.01	.99	1.03	.91	3.94
2020	.85	.90	1.00	1.05	3.80
2021	.92	.99	1.05	1.04	4.00

**QUARTERLY DIVIDENDS PAID B**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.50	.50	.52	.52	2.04
2017	.52	.52	.54	.54	2.12
2018	.54	.54	.56	.56	2.20
2019	.56	.56	.57	.57	2.26
2020	.57				

**BUSINESS:** Kellogg Company and its subsidiaries manufacture and market ready-to-eat cereals and convenience foods, such as savory snacks, toaster pastries, cereal bars, fruit-flavored snacks, frozen waffles, and veggie foods. Brand names include: Kellogg's, Pringles, Cheez-It, Special K, Rice Krispies, Pop-Tarts, Eggo, Kashi, RXBAR, Morningstar Farms, and Nutri-Grain. Foreign operations: 42% of sales in 2019. Adv. costs: 5.0% of sales. Acquired Pringles, 5/12. Has about 31,000 employees. W.K. Kellogg Foundation controls 19.4% of common; BlackRock, Inc., 7.9%; off/dir., 1.1% (3/20 Proxy). Chairman, CEO, and Pres.: Steven A. Cahillane, Inc. DE. Address: One Kellogg Square, Battle Creek, MI 49016-3599. Tel.: 269-961-2000. Internet: www.kelloggs.com.

**Kellogg shares held up better than most stocks during the recent highly volatile stretch that saw the broader market fall into bear territory in mid-March.** This is not overly surprising, given the consumer staples stock's defensive-oriented nature and its Safety rank of 1 (Highest). (Note: Stocks ranked 1 or 2 for Safety have historically outperformed the overall market when it was in bear market territory.) The fact that individuals and families still have to eat during tough economic times is keeping demand for packaged foods healthy, especially as consumers load up on such essential items as they stay at home during the ongoing coronavirus pandemic. That said, **Our near-term outlook for Kellogg has clouded since our last report in mid-January.** There are a number of factors behind our downward revision (we have cut our 2020 share-net estimate from \$4.05 to \$3.80). At the forefront was a disappointing end to 2019 and management's reduced full-year 2020 guidance. The company's operating margin is likely to narrow some, as Kellogg increases its marketing and brand-building investments, particularly behind the refrigerated foods operations and the struggling cereal business; Kellogg sold a number of noncore businesses last year. Brand building remains a key initiative for Kellogg, especially given years of sluggish top-line performances. Investors also should note that foreign sales account for more than 40% of Kellogg's annual sales, which bears watching because of the global coronavirus pandemic. The impact of COVID-19 on global sales was not yet known as we went to press with this report. **This neutrally ranked stock has appeal during volatile times for the U.S. stock market.** As noted, it is top ranked for Safety, and the Beta coefficient of 0.60 suggests that Kellogg shares are far less risky than the overall market. The main attribute is the issue's competitive and well-covered dividend. That said, those with a longer-term investment horizon and a willingness to withstand the likely continued volatility in the market may want to look elsewhere as recovery potential to 2023-2025 falls well below the Value Line median.

*William G. Ferguson*  
 April 17, 2020

(A) Based on diluted shares. Excludes non-recurring gains (losses): '12, (\$0.09); '13, \$1.17; '14, (\$2.12); '15, (\$1.81); '16, (\$1.76); '17, (\$0.42); '18, (\$0.50); '19, (\$1.14). Quarterly earnings may not sum to total due to a change in the share count. Next earnings report due early May. (B) Dividends historically paid mid-Mar, June, Sept., and Dec. Div'd reinvestment plan available. (C) Includes intangibles. In '19: \$8.437 billion, \$24.70/sh. (D) In millions.

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**Company's Financial Strength** A  
**Stock's Price Stability** 95  
**Price Growth Persistence** 15  
**Earnings Predictability** 95

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# ELI LILLY AND CO. NYSE:LLY

RECENT PRICE **119.05** P/E RATIO **17.7** (Trailing: 19.7; Median: 17.0) RELATIVE P/E RATIO **1.61** DIV'D YLD **2.5%** VALUE LINE **1626**

**TIMELINESS** 3 Lowered 6/14/19  
**SAFETY** 1 Raised 10/21/05  
**TECHNICAL** 3 Lowered 3/13/20  
**BETA** .75 (1.00 = Market)

High: 40.8 38.1 41.9 54.0 58.4 75.1 92.9 85.4 89.1  
 Low: 27.2 32.0 33.5 38.3 47.5 50.5 68.3 64.2 73.5

LEGENDS  
 — 14.0 x "Cash Flow" p sh  
 ... Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

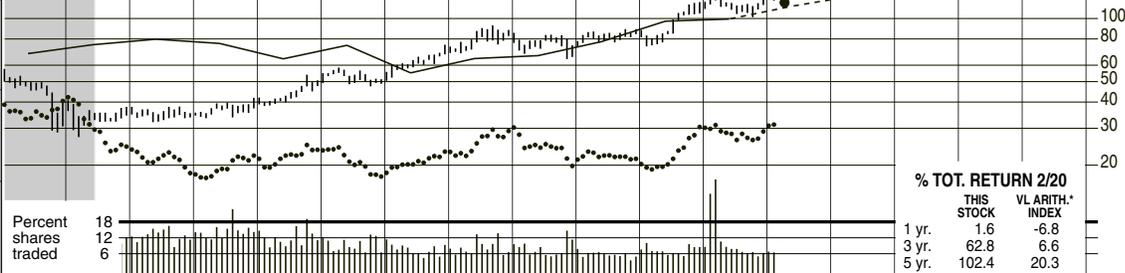
**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$113-\$180 \$147 (25%)

**2023-25 PROJECTIONS**

Price	Gain	Ann'l Total Return
High 190	(+60%)	14%
Low 155	(+30%)	9%

**Institutional Decisions**

	2Q2019	3Q2019	4Q2019
to Buy	556	583	719
to Sell	800	694	639
Hlds(000)	743960	742756	744828



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>F</sup>	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
12.24	12.96	13.87	16.43	17.94	19.00	20.03	20.98	19.76	20.70	17.66	18.06	19.28	20.79	23.23	23.31	25.55	27.70	Sales per sh	33.35
3.24	3.43	3.76	4.33	4.86	5.35	5.70	5.43	4.59	5.33	3.93	4.60	4.75	5.54	6.95	7.10	8.20	9.20	"Cash Flow" per sh	11.40
2.82	2.88	3.18	3.54	4.02	4.42	4.74	4.41	3.39	4.15	2.78	3.43	3.52	4.28	5.55	6.04	6.80	7.70	Earnings per sh <sup>A</sup>	9.50
1.42	1.52	1.60	1.70	1.88	1.96	1.96	1.96	1.96	1.96	1.96	2.00	2.04	2.08	2.25	2.58	2.96	3.16	Div'ds Decl'd per sh <sup>B</sup>	3.76
1.68	1.15	.95	.95	.83	.67	.60	.58	.79	.91	1.05	.96	.94	.98	1.15	1.08	1.10	1.10	Cap'l Spending per sh	1.15
9.65	9.55	9.70	12.05	5.93	8.29	10.77	11.69	12.92	15.80	13.86	13.18	12.72	10.54	9.30	2.72	4.25	6.50	Book Value per sh	13.35
1131.9	1130.1	1131.7	1134.3	1136.1	1149.0	1152.3	1157.8	1143.6	1116.8	1110.6	1105.3	1100.9	1100.0	1057.0	957.53	940.00	920.00	Common Shs Outst'g <sup>C</sup>	900.00
23.4	19.1	17.3	15.7	11.4	7.8	7.4	8.4	12.9	12.7	22.2	22.9	21.7	19.1	16.9	19.4	19.4	19.4	Avg Ann'l P/E Ratio	18.0
1.24	1.02	.93	.83	.69	.52	.47	.53	.82	.71	1.17	1.15	1.14	.96	.91	1.05	1.05	1.05	Relative P/E Ratio	1.00
2.2%	2.8%	2.9%	3.1%	4.1%	5.7%	5.6%	5.3%	4.5%	3.7%	3.2%	2.5%	2.7%	2.5%	2.4%	2.2%	2.2%	2.2%	Avg Ann'l Div'd Yield	2.2%

**CAPITAL STRUCTURE as of 12/31/19**  
 Total Debt \$15317.2 mill. Due in 5 Yrs \$3551 mill.  
 LT Debt \$13817.9 mill. LT Interest \$400 mill.  
 (84% of Cap'l)

**Leases, Uncapitalized** Annual rentals \$138.1 mill.

**Pension Assets-12/19** \$12.9 bill. **Oblig.** \$16.3 bill.

**Pfd Stock** None

**Common Stock** 956,382,203 shs. as of 2/13/20

**MARKET CAP:** \$114 billion (Large Cap)

23076	24287	22603	23113	19616	19959	21222	22871	24556	22320	24000	25500	Sales (\$mill)	30000
36.2%	31.7%	29.4%	30.3%	24.0%	25.2%	25.3%	28.4%	31.7%	31.5%	32.0%	32.5%	Operating Margin	33.5%
1328.2	1373.6	1462.2	1445.6	1379.0	1427.7	1496.6	1567.3	1609.0	1232.6	1300	1400	Depreciation (\$mill)	1700
5239.5	4913.5	3784.0	4502.6	2987.6	3656.3	3735.6	4530.4	5734.6	5568.2	6390	7080	Net Profit (\$mill)	8550
22.6%	20.0%	22.8%	19.2%	19.2%	20.9%	20.1%	20.5%	16.0%	11.8%	15.0%	11.8%	Income Tax Rate	15.0%
22.7%	20.2%	16.7%	19.5%	15.2%	18.3%	17.6%	19.8%	23.4%	24.9%	26.6%	27.8%	Net Profit Margin	28.5%
7738.6	5317.3	4649.2	4188.1	972.3	4344.0	4114.8	4666.2	8661.5	1934.4	3000	4000	Working Cap'l (\$mill)	5000
6770.5	5464.7	5519.4	4200.3	5367.7	7972.4	8367.8	9940.5	11640	13818	13000	12000	Long-Term Debt (\$mill)	10000
12413	13536	14774	17641	15388	14571	14008	11592	9828.7	2606.9	4000	6000	Shr. Equity (\$mill)	12000
27.6%	26.1%	18.9%	20.8%	14.6%	16.5%	17.1%	21.6%	27.3%	35.1%	39.0%	40.5%	Return on Total Cap'l	40.0%
42.2%	36.3%	25.6%	25.5%	19.4%	25.1%	26.7%	39.1%	58.3%	NMF	NMF	NMF	Return on Shr. Equity	71.5%
24.8%	20.2%	10.8%	13.5%	5.8%	10.5%	11.3%	20.2%	34.8%	NMF	90.0%	70.0%	Retained to Com Eq	43.0%
41%	44%	58%	47%	70%	58%	58%	48%	40%	43%	44%	41%	All Div'ds to Net Prof	40%

**CURRENT POSITION** 2017 2018 12/31/19 (\$MILL.)

Cash Assets	8034.1	8086.4	2438.5
Receivables	4546.3	5246.5	4547.3
Inventory (LIFO)	4458.3	4111.8	3190.7
Other	2163.4	3104.9	3533.1
Current Assets	19202.1	20549.6	13709.6
Accts Payable	1410.7	1412.3	1405.3
Debt Due	3706.6	1131.2	1499.3
Other	9418.6	9344.6	8870.6
Current Liab.	14535.9	11888.1	11775.2

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

of change (per sh)				
Sales	2.5%	3.0%	7.0%	7.0%
"Cash Flow"	3.0%	7.0%	9.5%	9.5%
Earnings	3.0%	9.0%	10.0%	10.0%
Dividends	2.0%	3.5%	8.5%	8.5%
Book Value	-1.5%	-12.0%	10.0%	10.0%

**QUARTERLY SALES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	5228	5824	5658	6161	22871
2018	5700	6355	6062	6439	24556
2019	5092	5637	5477	6114	22320
2020	5450	6010	5920	6620	24000
2021	5830	6390	6290	6990	25500

**EARNINGS PER SHARE <sup>A, D</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.98	1.11	1.05	1.14	4.28
2018	1.34	1.50	1.39	1.33	5.55
2019	1.33	1.50	1.48	1.73	6.04
2020	1.51	1.71	1.77	1.81	6.80
2021	1.78	1.92	1.97	2.03	7.70

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.51	.51	.51	.51	2.04
2017	.52	.52	.52	.52	2.08
2018	.563	.563	.563	.563	2.25
2019	.645	.645	.645	.645	2.58
2020	.74				

**BUSINESS:** Eli Lilly and Company discovers, develops, manufactures, and markets human pharmaceutical products. Completed spinoff of Elanco Animal Health business (3/19). Pharmaceutical segments include Diabetes/Endocrinology, Neuroscience, Oncology, Immunology, and Other. Manufacturing and distribution facilities located in the U.S., Puerto Rico, and 8 other countries.

**Eli Lilly is poised for some bottom-line acceleration in 2020.** Management's current guidance calls for full-year adjusted earnings in a range of \$6.70-\$6.80 a share, implying annual growth of 12% at the midpoint. We anticipate much of the improvement will be driven by continued momentum in the drugmaker's top-selling *Trulicity* franchise (roughly 20% of the top line), where sales surged 29% year over year in 2019 on the back of strong volume trends in several key markets. Further development of Lilly's other diabetes asset *Basaglar* (+39%) and standout psoriasis drug *Taltz* (+46%) ought to provide additional support to comparisons in 2020.

**The rapid spread of the coronavirus has created a degree of uncertainty.** At this time, it's difficult to determine what, if any, type of impact the virus will have on Lilly's underlying business. In our view, consumers are unlikely to stop buying prescription pharmaceuticals, however, recent lockdown initiatives could lead to potential delays or logistical issues. **The company closed its acquisition of Dermira in late February.** The two sides agreed to merge earlier this year in

an all-cash transaction valued at about \$1.1 billion. The move helps strengthen Lilly's immunology pipeline with the addition of *lebrikizumab*, which is currently being evaluated in Phase 3 trials for the treatment of atopic dermatitis. Analysts are forecasting peak annual sales in the range of \$500 million-\$600 million.

**We are encouraged with the long-term story.** Lilly has a relatively young portfolio with many of its top assets still in their early growth phases. As a result, we believe that the strong volume trends seen in the fourth quarter should be sustainable over the next three to five years. The pipeline is also well stocked and appears poised to produce several meaningful contributors during the pull to 2025. Management expects up to three new product launches this year.

**The stock is ranked 3 (Average) for Timeliness.** Based on our system, LLY shares are pegged as market performers in the year ahead. For longer-term investors, price appreciation potential over the 18-month and 3- to 5-year time frames is below the current *Value Line* medians.

(A) Diluted earnings (adjusted). Excludes non-recurring gains/(losses): '08, (\$5.91); '11, (\$0.51); '12, \$0.27; '13, \$0.17; '14, (\$0.55); '15, (\$1.17); '16, (\$0.94); '17, (\$4.47); '18, (\$2.42); '19, \$2.85. Next earnings report due April 23rd.  
 (B) Dividends historically paid in mid-March, June, Sept. and Dec. ■ Div'd reinvestment plan available.  
 (C) In millions.  
 (D) Earnings may not sum due to rounding.  
 (E) Data post-2018 reflect completed spinoff of Elanco Animal Health business.

# LOCKHEED MARTIN NYSE-LMT

RECENT PRICE **369.00** P/E RATIO **15.4** (Trailing: 16.7; Median: 15.0) RELATIVE P/E RATIO **0.83** DIV'D YLD **2.7%** VALUE LINE

**TIMELINESS** 1 Raised 5/8/20  
**SAFETY** 1 Raised 3/24/06  
**TECHNICAL** 1 Raised 5/29/20  
**BETA** .95 (1.00 = Market)

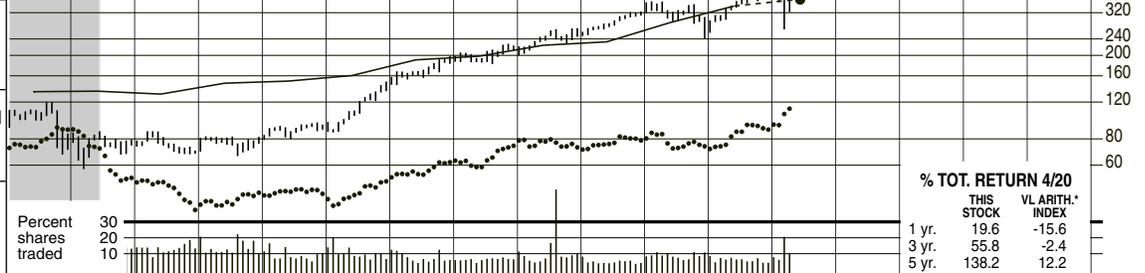
High: 87.1 87.2 82.4 95.9 150.0 198.7 227.9 269.9 323.9 363.0 400.0 442.5  
 Low: 57.4 67.7 66.4 79.1 85.9 144.7 181.9 200.5 248.0 241.2 256.8 266.1

LEGENDS  
 — 13.0 x "Cash Flow" p sh  
 ... Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$308-\$631 \$470 (25%)

**2023-25 PROJECTIONS**  
 High Price 510 Gain (+40%) Ann'l Total Return 11%  
 Low Price 420 Gain (+15%) 6%

**Institutional Decisions**  
 202019 3Q2019 4Q2019  
 to Buy 801 856 920  
 to Sell 654 624 688  
 Hld's(000) 225121 225204 229237



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
81.11	86.14	94.11	102.35	108.81	121.18	132.38	143.80	146.98	142.19	145.22	152.25	163.49	179.75	191.32	213.61	<b>230.20</b>	<b>248.75</b>	Sales per sh	274.05
4.39	5.60	7.36	9.10	10.34	10.08	11.36	11.63	12.35	14.68	15.28	17.85	22.09	26.50	28.45	31.05	28.45	31.05	"Cash Flow" per sh	35.05
2.83	3.85	5.36	6.86	7.86	7.78	7.23	7.82	8.36	9.57	11.21	11.46	12.38	13.33	17.59	21.95	24.00	25.60	Earnings per sh A	29.00
.91	1.05	1.25	1.47	1.83	2.34	2.64	3.25	4.15	4.78	5.49	6.15	6.77	7.46	8.20	9.00	9.80	10.60	Div'ds Decl'd per sh B	13.00
1.76	2.00	2.12	2.30	2.36	2.28	2.37	2.52	2.93	2.62	2.69	3.10	3.68	4.14	4.55	5.30	4.50	4.50	Cap'l Spending per sh C	3.70
16.03	18.21	16.35	23.97	7.30	11.07	10.72	3.10	.12	15.42	10.83	10.22	5.23	d2.41	4.96	11.17	18.00	28.35	Book Value per sh C	66.65
438.00	432.00	421.00	409.00	392.70	372.90	346.00	323.37	321.00	319.00	314.00	303.00	289.00	284.00	281.00	280.00	278.00	275.00	Common Shs Outst'g D	270.00
18.4	15.9	14.7	14.7	12.7	9.8	10.5	9.9	10.6	11.8	15.1	17.7	19.2	21.5	18.2	15.9	<b>16.0</b>	<b>16.0</b>	Avg Ann'l P/E Ratio	16.0
.97	.85	.79	.78	.76	.65	.67	.62	.67	.66	.79	.89	1.01	1.08	.98	.87	<b>.90</b>	<b>.90</b>	Relative P/E Ratio	.90
1.8%	1.7%	1.6%	1.5%	1.8%	3.1%	3.5%	4.2%	4.7%	4.2%	3.2%	3.0%	2.8%	2.6%	2.6%	2.6%	<b>2.8%</b>	<b>2.8%</b>	Avg Ann'l Div'd Yield	2.8%

**CAPITAL STRUCTURE as of 3/29/20**  
 Total Debt \$12689 mill. Due in 5 Yrs \$3400 mill.  
 LT Debt \$11439 mill. LT Interest \$592 mill.  
 (Total interest coverage '19: 10.5x)

Leases, Uncapitalized Annual rentals \$239 million (77% of Cap'l)

Pension Assets-12/19 \$35.4 bill. Oblig. \$48.7 bill.

Preferred Stock None

Common Stock 280,435,314 shares out. as of 4/17/20  
 MARKET CAP: \$103 billion (Large Cap)

45803	46499	47182	45358	45600	46132	47248	51048	53762	59812	64000	68400	Sales (\$mill)	74000
12.3%	10.1%	11.0%	14.1%	13.7%	13.5%	13.3%	13.2%	12.8%	16.0%	15.0%	15.0%	Operating Margin	15.5%
841.0	1008.0	988.0	990.0	994.0	1026.0	1215.0	1195.0	1161.0	1189.0	1210	1235	Depreciation (\$mill)	1325
2645.0	2667.0	2745.0	2950.0	3614.0	3605.0	3753.0	3873.0	5046.0	6230.0	6700	7300	Net Profit (\$mill)	8140
30.9%	26.5%	32.6%	29.0%	31.3%	28.2%	23.2%	26.5%	13.6%	14.0%	14.0%	14.0%	Income Tax Rate	14.0%
5.8%	5.7%	5.8%	6.5%	7.9%	7.8%	7.9%	7.6%	9.4%	10.4%	10.5%	10.7%	Net Profit Margin	11.0%
1694.0	1964.0	1700.0	2209.0	1217.0	2141.0	2566.0	4824.0	1705.0	3123.0	6200	8250	Working Cap'l (\$mill)	14000
5019.0	6460.0	6158.0	6152.0	6169.0	14305	14282	13513	12604	11404	11000	10000	Long-Term Debt (\$mill)	10000
3708.0	1001.0	39.0	4918.0	3400.0	3097.0	1511.0	d683.0	1394.0	3127.0	5000	7800	Shr. Equity (\$mill)	18000
32.3%	38.1%	47.4%	28.2%	39.5%	22.0%	25.9%	32.7%	38.4%	45.1%	41.0%	42.5%	Return on Total Cap'l	30.0%
71.3%	NMF	NMF	60.0%	NMF	NMF	NMF	--	NMF	NMF	NMF	93.5%	Return on Shr. Equity	45.0%
45.2%	NMF	NMF	28.7%	54.5%	54.0%	NMF	--	NMF	NMF	79.0%	53.0%	Retained to Com Eq	24.0%
37%	41%	49%	52%	49%	54%	55%	56%	47%	41%	41%	41%	All Div'ds to Net Prof	45%

**CURRENT POSITION** 2018 2019 3/29/20 (\$MILL.)

Cash Assets	772	1514	1988
Receivables	11916	11431	13081
Inventory (FIFO)	2997	3619	3539
Other	418	531	614
Current Assets	16103	17095	19222
Accts Payable	2402	1281	3166
Debt Due	1500	1250	1250
Other	10496	11441	11236
Current Liab.	14398	13972	15652

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

of change (per sh)	10 Yrs.	5 Yrs.	to '23-'25
Sales	6.0%	6.0%	6.0%
"Cash Flow"	8.5%	11.5%	8.0%
Earnings	9.0%	12.5%	8.5%
Dividends	16.0%	11.5%	8.0%
Book Value	-10.5%	-12.0%	NMF

**QUARTERLY SALES (\$ mill.)**

Cal-endar	Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2017	11057	12685	12169	15137	51048
2018	11635	13398	14318	14411	53762
2019	14336	14427	15171	15878	59812
2020	15651	15500	16150	16699	64000
2021	16500	16600	17300	18000	68400

**EARNINGS PER SHARE A**

Cal-endar	Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year
2017	2.61	3.23	3.24	4.30	13.33
2018	4.02	4.05	5.14	4.39	17.59
2019	5.99	5.00	5.66	5.29	21.95
2020	6.08	5.90	6.10	5.92	24.00
2021	5.75	6.25	6.60	7.00	25.60

**QUARTERLY DIVIDENDS PAID B**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	1.65	1.65	1.65	1.82	6.77
2017	1.82	1.82	1.82	2.00	7.46
2018	2.00	2.00	2.00	2.20	8.20
2019	2.20	2.20	2.20	2.40	9.00
2020	2.40				

**BUSINESS:** Lockheed Martin provides a broad range of products and services to the world's governments and commercial customers. Areas of concentration include space and missile systems, electronics, and aeronautics. Program base includes F-16, F-22, F-35 aircraft, ballistic and other missile systems, C-130 transport, and Titan launch vehicles. Sold its IS&GS business to Leidos 8/16. In

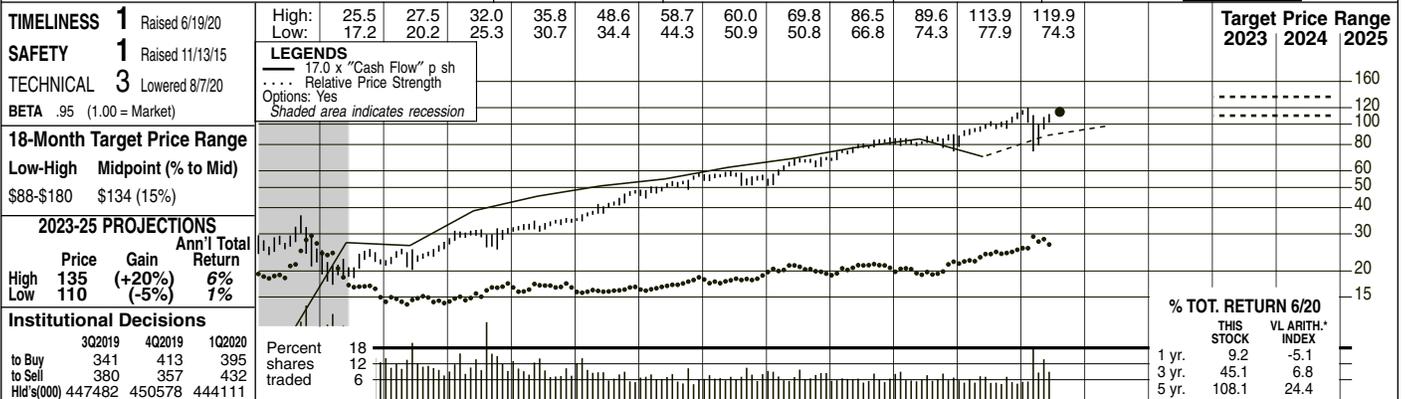
**Lockheed Martin continues to perform well.** In fact, the company's March-quarter financial results came in better than our already bullish expectations, thanks to the continued success of its Aeronautics division. This segment manufactures the F-35 fighter aircraft and, during the quarter, delivered 22 of these aircraft to the U.S. military and international partner countries. The F-35 program now accounts for roughly 30% of Lockheed's total revenues and, when it is all said and done, it will be the largest (in terms of total dollars spent) military project in history (discussed further below).

**COVID-19 will likely hurt the company going forward, but we think that the damage will be relatively minor.** As a defense contractor, Lockheed's business has been deemed essential, and its manufacturing facilities have remained open during the pandemic. However, it may experience supply chain problems and other delays that could push back deliveries and/or receipt of payments from its government customers. All told, we think that the disruption will be rather mild and just a bump in the road for this

historically excellently run company. **Our outlook for the business remains positive.** Although defense spending by the United States and many of its allies may not increase materially over the next several years, we do not see this as much a problem for Lockheed. Several of its platforms, in our view, are vital for the U.S. military and should remain fully funded. For instance, the Pentagon still plans to have 2,456 F-35 aircraft in its arsenal and this platform will fuel Lockheed's financial results for many years to come. For full-year 2020, we expect the top and bottom lines to come in at \$64 billion and \$24.00 per share, respectively. Our estimates are at the high end of management's recently updated guidance. Looking further out, we project steady annual revenue and profit advances in 2021 and to 2023-2025. **Although we don't expect wide appreciation, the stock has appeal.** The issue is now trading 18% below its 52-week high. That, coupled with its defensive attributes, including a top rank for Safety, and the stock would make a fine core holding, especially for conservative accounts.

*Ian Gendler*  
 June 5, 2020

(A) Diluted eps. Excl. nonrecur. gains/(losses): '05, 25c; '06, 44c; '07, 25c; '10, 76c; '11, (4c); '13, (50.44); '17, (\$6.69). Excludes discontinued ops.: '16, \$5.11. Earnings may not sum to total due to rounding. Next eps. rpt. due late July.	(C) Incl. intang. In 2019: \$13.8 bill., \$49.35/sh.	Company's Financial Strength	A++
(B) Dividends historically paid in late March, June, September, and December.	(D) In millions.	Stock's Price Stability	90
		Price Growth Persistence	95
		Earnings Predictability	90



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
21.69	21.30	21.60	21.81	22.53	19.80	19.52	21.38	21.88	22.42	23.98	24.70	25.68	27.57	29.67	33.06	<b>33.35</b>	<b>36.35</b>	Revenues per sh <sup>A</sup>	44.00
1.13	2.03	2.37	1.88	.50	1.60	1.55	2.28	2.67	2.99	3.22	3.67	4.04	4.56	5.01	4.12	<b>5.20</b>	<b>5.80</b>	"Cash Flow" per sh	7.45
.33	1.33	1.45	.99	d.14	1.02	1.00	1.76	2.16	2.42	2.60	2.98	3.38	3.88	4.33	3.40	<b>4.45</b>	<b>5.00</b>	Earnings per sh <sup>B</sup>	6.50
1.30	.68	.68	.76	.80	.80	.81	.86	.90	.96	1.06	1.18	1.30	1.43	1.58	1.74	<b>1.85</b>	<b>1.90</b>	Div'ds Decl'd per sh <sup>C</sup>	2.20
.67	.63	.56	.73	.75	.58	.50	.52	.59	.73	.68	.62	.49	.59	.62	.84	<b>.65</b>	<b>.65</b>	Cap'l Spending per sh	.70
9.02	9.80	10.54	15.03	11.13	11.06	11.87	11.02	12.12	14.58	13.21	12.48	12.04	14.47	14.91	15.47	<b>18.50</b>	<b>21.70</b>	Book Value per sh <sup>D</sup>	32.20
560.64	547.00	551.91	520.39	514.27	530.00	540.51	539.18	545.00	547.00	540.00	521.90	514.49	508.71	503.84	503.63	<b>505.00</b>	<b>505.00</b>	Common Shs Outst'g <sup>E</sup>	500.00
NMF	22.4	20.1	28.7	--	21.0	23.8	16.7	15.3	17.0	19.7	18.9	18.8	19.9	19.2	28.6	<b>Bold figures are Value Line estimates</b>		Avg Ann'l P/E Ratio	19.0
NMF	1.19	1.09	1.52	--	1.40	1.51	1.05	.97	.96	1.04	.95	.99	1.00	1.04	1.55			Relative P/E Ratio	1.05
3.1%	2.3%	2.3%	2.7%	2.9%	3.7%	3.4%	2.9%	2.7%	2.3%	2.1%	2.1%	2.0%	1.9%	1.9%	1.8%			Avg Ann'l Div'd Yield	1.8%

CAPITAL STRUCTURE as of 3/31/20																				
Total Debt \$13640 mill. Due in 5 Yrs \$4762 mill.																				
LT Debt \$11231 mill. LT Int. \$520 mill.																				
(60% of Cap'l)																				
Leases, Uncapitalized Annual rentals \$413 mill.																				
Pension Assets - 12/19 \$17.0 bill.																				
Oblig. \$17.4 bill.																				
Pfd Stock None																				
Common Stock 506,118,813 shs.																				
as of 4/24/20																				
MARKET CAP: \$58.0 billion (Large Cap)																				
CURRENT POSITION (SMILL)																				
Cash Assets 1066 1155 1480																				
Receivables 4317 5236 5558																				
Other 551 677 711																				
Current Assets 5934 7068 7749																				
Accts Payable 2234 2746 2611																				
Debt Due 314 1215 2409																				
Other 2376 2718 1839																				
Current Liab. 4924 6679 6859																				

**BUSINESS:** Marsh & McLennan Companies, Inc. is a global professional services holding company. Its subsidiary, Marsh, is a leading insurance broker for corporations while taking no underwriting risk. Other subsidiaries include Guy Carpenter (Re-insurance), Mercer (Human Resources and Consulting), and Oliver Wyman (Management Consulting). 2019 revenue: Insurance Services, 58%; Consulting, 42%. Sold The Putnam Group in '07; Kroll Inc. (risk mitigation), 8/10. Has about 76,000 employees. Off./Dir. own less than 1.0% of common shares out; BlackRock, 8.3%; The Vanguard Group, 7.7%; T.Rowe Price Assoc., 7.0% (4/20 Proxy). Pres./CEO: Daniel Glaser. Inc.: DE. Addr.: 1166 Ave. of the Americas, NY, NY 10036. Tel.: 212-345-5000. Internet: www.mmc.com.

**Marsh McLennan likely posted mixed results in the June interim.** The consulting business was probably a drag on the top line. However, the bottom line was likely bolstered by expense-reduction efforts and synergies from the Jardine Lloyd Thompson merger. Thus, we estimate revenues of \$4.2 billion and share net of \$1.10 for the second quarter.

**We look for more of the same in the second half of 2020.** Indeed, the challenging market conditions ought to persist owing to COVID-19's effect on the broader economy. Therefore, we expect weakness on the top line while the bottom line should exceed easy comparisons.

**Acquisitions ought to remain a key part of Marsh's strategy.** The Oliver Wyman unit acquired a minority stake in Corridor Platforms, a workflow governance and automation software provider. This addition follows the company's purchase of Assurance earlier this year and the sizable merger with JLT last year. Looking ahead, we expect Marsh to be opportunistic in the M&A arena, given the difficult market conditions.

**The company should get back on track next year.** The business environment should improve, assuming there is progress on the coronavirus front. Further, the JLT integration, as well as other recent purchases, should provide a boost to results. Thus, we estimate revenues of \$18.35 billion and earnings of \$5.00 a share for 2021. The long-term picture looks even more positive. Marsh's investment in growth opportunities will likely continue to bear fruit over this time frame.

**Finances are no cause for concern.** The company has plenty of capital available to weather the current challenges. Moreover, the debt load is manageable, given Marsh's steady cash flow. What's more, the board recently raised the quarterly dividend, which is a positive sign when many companies have suspended their payouts.

**This issue holds our Highest ranks for Timeliness and Safety.** Conservative investors may want to consider MMC stock. However, we recommend long-term investors look elsewhere. At the recent quotation, total return potential is unimpressive for the 3- to 5-year pull.

Richard J. Gallagher August 7, 2020

(A) Gross commissions, fees, & other income.  
 (B) Diluted eps. Excludes nonrecurring gains/(losses): '05, (59c); '06, 31c; '07, \$3.44; '09, (60c); '10, 55c; '11, 6c. May not sum to total due to rounding. Next earnings report due late October.  
 (C) Div'ds historically paid mid-Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.  
 (D) Includes intangibles. In 2019: \$17.4 billion, \$34.55/sh.  
 (E) In millions.

Company's Financial Strength		A
Stock's Price Stability		100
Price Growth Persistence		100
Earnings Predictability		85



# MCDONALD'S CORP. NYSE-MCD

RECENT PRICE **204.12** P/E RATIO **33.6** (Trailing: 32.9; Median: 20.0) RELATIVE P/E RATIO **1.53** DIV'D YLD **2.4%** VALUE LINE **363**

**TIMELINESS** 3 Lowered 5/4/18  
**SAFETY** 1 New 7/27/90  
**TECHNICAL** 5 Lowered 8/21/20  
**BETA** .95 (1.00 = Market)

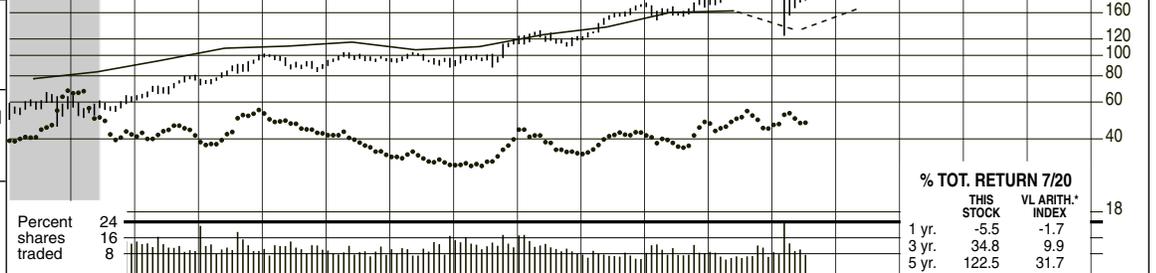
High: 64.8 80.9 101.0 102.2 103.7 103.8 120.2 132.0 175.8  
 Low: 50.4 61.1 72.1 83.3 89.3 87.6 87.5 110.3 118.2  
 190.9 221.9 218.4  
 146.8 173.4 124.2

LEGENDS  
 — 16.0 x "Cash Flow" p sh  
 ... Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$154-\$296 \$225 (10%)

**2023-25 PROJECTIONS**  
 Price Gain Ann'l Total  
 High 275 (+35%) 10%  
 Low 225 (+10%) 5%

**Institutional Decisions**  
 3Q2019 4Q2019 1Q2020  
 to Buy 944 1133 986  
 to Sell 869 882 1069  
 Hlds(000) 512477 501159 501227



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
15.01	16.20	17.93	19.55	21.09	21.12	22.85	26.44	27.49	28.38	28.50	28.03	30.05	28.74	27.41	28.24	<b>25.60</b>	<b>29.45</b>	Revenues per sh	<b>40.00</b>
2.88	2.98	3.43	4.06	4.85	5.22	5.92	6.77	6.93	7.24	6.65	6.89	7.86	8.54	10.02	10.20	<b>8.25</b>	<b>10.60</b>	"Cash Flow" per sh	<b>14.90</b>
1.93	1.97	2.30	2.91	3.67	3.98	4.60	5.27	5.36	5.55	4.82	4.97	5.71	6.66	7.90	7.84	<b>5.80</b>	<b>8.00</b>	Earnings per sh <sup>A</sup>	<b>12.00</b>
.55	.67	1.00	1.50	1.63	2.05	2.26	2.53	2.87	3.12	3.28	3.44	3.61	3.83	4.19	4.73	<b>5.00</b>	<b>5.20</b>	Div'ds Decl'd per sh <sup>B</sup>	<b>6.75</b>
1.12	1.27	1.45	1.67	1.92	1.81	2.03	2.67	3.04	2.85	2.68	2.00	2.22	2.33	3.57	3.21	<b>2.15</b>	<b>3.30</b>	Cap'l Spending per sh	<b>3.40</b>
11.18	11.99	12.84	13.11	12.00	13.03	13.89	14.09	15.25	16.16	13.35	7.82	d2.69	d4.12	d8.16	d11.00	<b>d13.45</b>	<b>d14.40</b>	Book Value per sh <sup>C</sup>	<b>d20.00</b>
1269.9	1263.2	1203.7	1165.3	1115.3	1076.7	1053.6	1021.4	1002.7	990.40	962.90	906.80	819.30	794.10	767.10	746.30	<b>744.00</b>	<b>730.00</b>	Common Shs Outst'g <sup>D</sup>	<b>650.00</b>
14.4	16.2	16.0	17.6	15.8	14.4	15.4	15.9	17.3	17.5	20.0	20.2	21.1	22.3	21.1	25.2	<b>21.1</b>	<b>25.2</b>	Avg Ann'l P/E Ratio	<b>21.0</b>
.76	.86	.86	.93	.95	.96	.98	1.00	1.10	.98	1.05	1.02	1.11	1.12	1.14	1.37	<b>1.14</b>	<b>1.37</b>	Relative P/E Ratio	<b>1.15</b>
2.0%	2.1%	2.7%	2.9%	2.8%	3.6%	3.2%	3.0%	3.1%	3.2%	3.4%	3.4%	3.0%	2.6%	2.5%	2.4%	<b>2.5%</b>	<b>2.4%</b>	Avg Ann'l Div'd Yield	<b>2.7%</b>

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$38762.2 mill Due in 5 Yrs \$13267 mill  
 LT Debt \$34675.6 mill LT Interest \$1415 mill  
 (LT interest earned: 8.2x; total interest coverage: 8.2x) (138% of Cap'l)  
 Leases, Uncapitalized Annual rentals \$1162 mill.

**No Defined Benefit Pension Plan**  
 Pfd Stock None

**Common Stock** 744,102,514 shs.

**MARKET CAP: \$152 billion (Large Cap)**

**CURRENT POSITION (SMILL.)**

	2018	2019	6/30/20
Cash Assets	866.0	898.5	3255.7
Receivables	2441.5	2224.2	2852.6
Inventory (FIFO)	51.1	50.2	42.6
Other	694.6	385.0	458.5
Current Assets	4053.2	3557.9	6909.4
Accts Payable	1207.9	988.2	538.4
Debt Due	-	59.1	4086.6
Other	1765.6	2573.7	2621.1
Current Liab.	2973.5	3621.0	7246.1

24075	27006	27567	28106	27441	25413	24622	22820	21025	21077	<b>19050</b>	<b>21500</b>	Revenues (\$mill)	<b>26000</b>
35.6%	35.9%	35.7%	35.9%	35.0%	35.1%	39.0%	42.7%	49.5%	49.8%	<b>47.0%</b>	<b>49.0%</b>	Operating Margin	<b>51.0%</b>
1276.2	1415.0	1488.5	1585.1	1644.5	1555.7	1516.5	1363.4	1482.0	1617.9	<b>1690</b>	<b>1750</b>	Depreciation (\$mill)	<b>1875</b>
4961.9	5503.1	5464.8	5585.9	4757.8	4693.3	4920.2	5415.0	6205.3	5997.0	<b>4430</b>	<b>6000</b>	Net Profit (\$mill)	<b>7800</b>
29.3%	31.3%	32.4%	31.9%	35.5%	30.5%	31.7%	31.2%	25.9%	24.1%	<b>24.0%</b>	<b>24.1%</b>	Income Tax Rate	<b>26.0%</b>
20.6%	20.4%	19.8%	19.9%	17.3%	18.5%	20.0%	23.7%	29.5%	28.5%	<b>23.3%</b>	<b>27.9%</b>	Net Profit Margin	<b>30.0%</b>
1443.8	893.8	1519.0	1880.1	1437.6	6692.6	1380.3	2436.6	1079.7	d63.1	<b>2000</b>	<b>1000</b>	Working Cap'l (\$mill)	<b>1000</b>
11497	12134	13633	14130	14990	24122	25879	29536	31075	34118	<b>35000</b>	<b>37000</b>	Long-Term Debt (\$mill)	<b>41000</b>
14634	14390	15294	16010	12853	7087.9	d2204	d3268	d6258	d8210	<b>d10000</b>	<b>d10500</b>	Shr. Equity (\$mill)	<b>d13000</b>
19.8%	21.6%	19.8%	19.4%	18.1%	16.1%	22.7%	22.4%	27.0%	25.3%	<b>20.0%</b>	<b>25.0%</b>	Return on Total Cap'l	<b>29.5%</b>
33.9%	38.2%	35.7%	34.9%	37.0%	66.2%	-	-	-	-	<b>NMF</b>	<b>NMF</b>	Return on Shr. Equity	<b>NMF</b>
49%	47%	53%	56%	68%	69%	62%	57%	52%	60%	<b>86%</b>	<b>65%</b>	Retained to Com Eq	<b>NMF</b>
												All Div'ds to Net Prof	<b>56%</b>

**BUSINESS:** McDonald's Corporation operated, franchised, or licensed 39,020 fast-food restaurants in the United States, Canada, and overseas under the McDonald's banner (as of 6/30/20). About 93% are operated by franchisees or affiliates, with the remainder under the control of the company. Foreign operations contributed 63% of systemwide sales and 55% of consolidated operating income in 2019. The company sold a stake in Pret A Manger in 2008. Spun off Chipotle Mexican Grill in 2006 and Boston Market in 2007. Has about 205,000 employees. Officers/directors own less than 1% of common stock (4/20 Proxy). CEO: Chris Kempczinski. Inc.: Delaware. Address: 110 North Carpenter Street, Chicago, Illinois 60607. Telephone: 630-623-3000. Internet: www.mcdonalds.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

Revenues	3.0%	-	6.0%
"Cash Flow"	7.5%	6.5%	7.5%
Earnings	8.0%	7.5%	8.0%
Dividends	9.5%	6.5%	8.0%
Book Value	-	-	NMF

**QUARTERLY REVENUES (\$ mill.)<sup>E</sup>**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	5675	6049	5754	5340	22820
2018	5139	5354	5369	5163	21025
2019	4956	5341	5431	5349	21077
2020	4714	3762	<b>5225</b>	<b>5349</b>	<b>19050</b>
2021	<b>5050</b>	<b>5425</b>	<b>5525</b>	<b>5500</b>	<b>21500</b>

**EARNINGS PER SHARE<sup>AE</sup>**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	1.47	1.70	1.76	1.71	6.66
2018	1.79	1.99	2.10	1.97	7.90
2019	1.72	2.05	2.11	1.97	7.84
2020	1.47	.65	<b>1.80</b>	<b>1.88</b>	<b>5.80</b>
2021	<b>1.75</b>	<b>2.05</b>	<b>2.15</b>	<b>2.05</b>	<b>8.00</b>

**QUARTERLY DIVIDENDS PAID<sup>B</sup>**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.89	.89	.89	.94	3.61
2017	.94	.94	.94	1.01	3.83
2018	1.01	1.01	1.01	1.16	4.19
2019	1.16	1.16	1.16	1.25	4.73
2020	1.25	1.25			

**McDonald's second-quarter results topped our estimates but fell a bit shy of consensus forecasts, which had risen in recent weeks, along with the equity's price.** Specifically, the top line fell 30% from a year earlier. Global same-store sales tumbled 23.9%, but management noted that sales strengthened as the quarter progressed and economies reopened. Comps fell 39.0% in April, but only 12.3% in June. The U.S. was a relative bright spot, as comps were down just 2.3% in June and turned positive in July. International markets have been slower to rebound due to stricter lockdown measures and a less robust drive-through presence (nearly 95% of U.S. locations offer the service, while the number is closer to 70% in Europe). That said, breakfast sales took a hit as fewer people ventured out to work and school in the early morning hours. Along with lower sales, higher costs for items such as franchisee support (mostly in the form of marketing), obsolete inventory, and bad debt reserves also weighed on the bottom line. Adjusted share earnings fell 68% from a year earlier, to \$0.65. **Results should improve moving forward.**

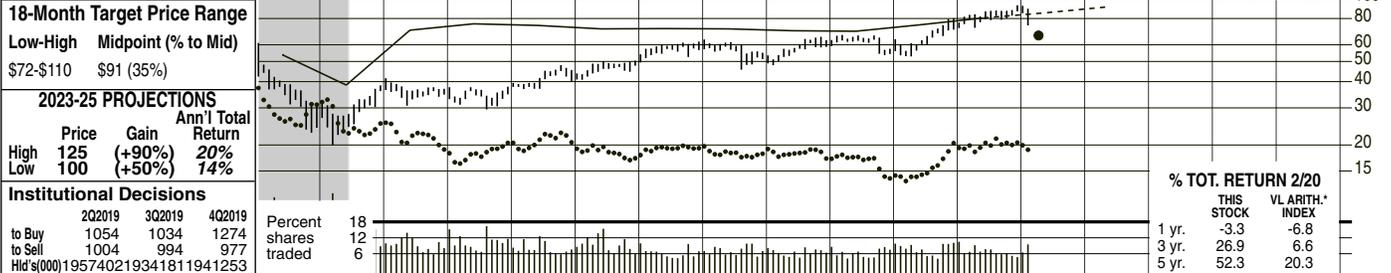
Despite a surge in COVID-19 cases in some parts of the United States, we don't envision another full-scale lockdown. At the end of June, 96% of the company's restaurants were open in some form. MCD has adapted well to changing consumer behavior during the pandemic. While drive-throughs have been a cornerstone for decades, simplified menus helped to shave 15-20 seconds off of the average drive-through order, enabling McDonald's to serve more customers. Investments made in recent years in delivery and mobile order/pay technology have also been paying off. Of course, challenges remain. In addition to the aforementioned weakness at breakfast, many dining rooms are still closed and locations that depend on foot traffic (malls, airports, etc.) are suffering, as are those in urban areas that rely on office workers. The surge in COVID-19 cases in parts of the U.S. is also concerning. **While capital gains potential appears somewhat limited at the recent quotation, these shares still have appeal for conservative income-oriented accounts, in our view.** *Matthew E. Spencer, CFA August 21, 2020*

(A) Based on diluted shares. Excl. nonrecur. gain/(loss): '04, (6c); '05, 3c; '06, 53c; '07, (93c); '08, 9c; '09, 13c; '10, (2c); '15, (17c); '16, (27c); '17, (29c); '18, (16c); '19, 4c; '20, (1c). Excl. cum. effect of acting change: '04, (8c). Incl. tax benefit: '04, 7c. Excl. tax benefit '05, 4c. Next egs. report due late Oct. (B) Div'ds paid mid-Mar., Jun., Sep., Dec. (C) Incl. intang. At 12/31/19: \$2,677.4 mill., \$3.59/share. (D) In mill., adj. for splits. (E) May not sum due to rounding. Company's Financial Strength A++ Stock's Price Stability 95 Price Growth Persistence 65 Earnings Predictability 85

# MERCK & CO. NYSE-MRK

RECENT PRICE **66.40** P/E RATIO **12.1** (Trailing: 12.8 Median: 15.0) RELATIVE P/E RATIO **1.10** DIV'D YLD **3.7%** VALUE LINE **1627**

TIMELINESS <b>2</b> Lowered 11/22/19	High: 38.4	41.6	37.9	48.0	50.4	62.2	63.6	65.5	66.8	80.2	92.6	92.1		Target Price Range
SAFETY <b>1</b> Raised 4/15/11	Low: 20.0	30.7	29.5	36.9	40.8	49.3	45.7	48.0	53.6	52.8	72.1	65.3		2023 2024 2025
TECHNICAL <b>3</b> Lowered 3/13/20	LEGENDS — 12.0 x "Cash Flow" p sh ... Relative Price Strength Options: Yes Shaded area indicates recession													
BETA .90 (1.00 = Market)														



18-Month Target Price Range														Low-High Midpoint (% to Mid)		\$72-\$110 \$91 (35%)			
2023-25 PROJECTIONS														Ann'l Total Return		20% 14%			
High	125	Gain (+90%)	20%																
Low	100	Gain (+50%)	14%																
Institutional Decisions														Percent shares traded		18 12 6			
202019	302019	402019																	
to Buy	1054	1034	1274																
to Sell	1004	994	977																
Hlds(000)	1957402	1934181	1941253																
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	

10.39	10.09	10.44	11.14	11.32	8.82	14.92	15.80	15.62	15.04	14.88	14.20	14.48	14.88	16.31	18.45	20.00	21.15	Sales per sh	24.25
3.29	3.34	3.59	2.42	4.48	3.21	5.87	6.29	6.19	5.95	5.98	5.96	5.83	5.79	6.23	6.71	7.10	7.60	"Cash Flow" per sh	8.80
2.61	2.53	2.52	1.49	3.64	3.25	3.42	3.77	3.82	3.49	3.49	3.59	3.78	3.98	4.34	5.19	5.75	6.30	Earnings per sh <sup>A</sup>	7.50
1.49	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.68	1.72	1.76	1.80	1.84	1.88	1.92	2.20	2.44	2.60	Div'ds Decl'd per sh <sup>B</sup>	3.08
.78	.64	.45	.47	.62	.47	.54	.57	.65	.53	.46	.46	.59	.70	1.01	1.37	1.20	1.20	Cap'l Spending per sh	1.25
7.83	8.21	8.10	8.37	8.90	19.00	17.64	17.93	17.52	17.00	17.14	16.06	14.58	12.73	10.30	10.20	10.80	11.80	Book Value per sh	15.30
2208.6	2181.9	2167.8	2172.5	2107.7	3108.2	3082.1	3040.8	3026.6	2927.5	2838.1	2781.1	2748.7	2696.6	2592.6	2539.0	2500.0	2460.0	Common Shs Outst'g <sup>C</sup>	2350.0
16.2	12.1	15.2	34.1	10.2	9.1	10.5	9.1	10.8	13.3	16.4	15.8	15.2	15.6	14.8	15.9	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	15.0
.86	.64	.82	1.81	.61	.61	.67	.57	.69	.75	.86	.80	.80	.78	.80	.86			Relative P/E Ratio	.85
3.5%	5.0%	4.0%	3.0%	4.1%	5.1%	4.2%	4.4%	4.1%	3.7%	3.1%	3.2%	3.2%	3.0%	3.0%			Avg Ann'l Div'd Yield	2.7%	

CAPITAL STRUCTURE as of 12/31/19				45987	48047	47267	44033	42237	39498	39807	40122	42294	46840	50000	52000	Sales (\$mill)	57000
Total Debt \$26346 mill. Due in 5 Yrs \$11210 mill.				23.3%	32.4%	32.9%	31.6%	32.4%	33.9%	34.4%	33.8%	32.9%	34.0%	34.0%	35.0%	Operating Margin	36.0%
LT Debt \$22736 mill. LT Interest \$893 mill. (47% of Cap'l)				7381.0	7427.0	6978.0	6988.0	6691.0	6375.0	5441.0	4637.0	4519.0	3652.0	3400	3200	Depreciation (\$mill)	3000
Leases, Uncapitalized Annual rentals \$264 mill.				10715	11697	11743	10443	10271	10195	10580	10981	11625	13382	14380	15500	Net Profit (\$mill)	17630
Pension Assets-12/19 \$21.5 bill. Oblig. \$23.6 bill.				20.0%	23.4%	23.8%	21.7%	24.3%	21.7%	22.3%	19.1%	19.8%	16.6%	18.0%	18.0%	Income Tax Rate	18.0%
Common Stock 2,536,268,760 shs. as of 1/30/20				23.3%	24.3%	24.8%	23.7%	24.3%	25.8%	26.6%	27.4%	27.5%	28.6%	28.8%	29.8%	Net Profit Margin	30.9%
MARKET CAP: \$168 billion (Large Cap)				13423	16936	16509	17817	14407	10561	13410	6152.0	3669.0	5263.0	7000	8000	Working Cap'l (\$mill)	10000
CURRENT POSITION (SMILL.)				15482	15525	16254	20539	18699	23929	24274	21353	19806	22736	21000	20000	Long-Term Debt (\$mill)	19000
Cash Assets				54376	54517	53020	49765	48647	44676	40088	34336	26701	25907	27000	29000	Shr. Equity (\$mill)	36000
Receivables				15.8%	17.2%	17.4%	15.4%	15.8%	15.3%	17.0%	20.4%	25.8%	28.4%	31.0%	32.5%	Return on Total Cap'l	33.0%
Inventory (LIFO)				19.7%	21.5%	22.1%	21.0%	21.1%	22.8%	26.4%	32.0%	43.5%	51.7%	53.5%	53.5%	Return on Shr. Equity	49.0%
Other				44%	40%	44%	49%	50%	50%	48%	47%	44%	43%	42%	41%	All Div'ds to Net Prof	41%
Current Assets				<p><b>BUSINESS:</b> Merck &amp; Co., Inc. is a global health care company that delivers innovative health solutions through its prescription medicines, vaccines, biologic therapies, and animal health products, which it markets directly and through joint ventures. Operations comprised of four segments: Pharmaceutical, Animal Health, Alliances and Healthcare Services. Top-grossing drugs in 2019 included <i>Keytruda</i> (cancer), <i>Januvia</i> (diabetes), and <i>Gardasil</i> (HPV). Acquired Schering-Plough, 11/09. Has 71,000 employees. Officers and directors own less than 1% of common stock; Vanguard, 7.9%; BlackRock, 7.5% (4/19 proxy). Chairman and CEO: Kenneth Frazier. Inc.: NJ. Addr.: 2000 Galloping Hill Road., Kenilworth, NJ 07033. Tel.: 908-740-4000. Internet: www.merck.com.</p>													
Accts Payable				<p><b>Merck &amp; Co. is well positioned to keep the ball rolling in 2020.</b> Management is guiding for full-year adjusted earnings of \$5.62-\$5.77 a share on sales of \$48.8 billion-\$50.3 billion, implying midpoint annual growth of 10% and 6%, respectively. Continued momentum in the blockbuster <i>Keytruda</i> franchise (2019 sales +55%) will likely remain a key catalyst, fueled by further gains in the non-small-cell lung cancer market and growing uptake across other indications. We are also encouraged with several of Merck's complementary assets, including <i>Bridion</i> and <i>Lynparza</i>, both of which are poised to be more meaningful contributors in the year ahead. Cost-cutting initiatives and favorable trends in the animal health business should provide additional support to comps. All told, we are targeting 2020 adjusted earnings of \$5.75 a share on sales of \$50.0 billion.</p>													
Debt Due				<p><b>There are a few challenges on the horizon.</b> Continued generic erosion on cardiovascular drugs <i>Zetia/Vytorin</i> and respiratory products <i>Singular</i> and <i>Nasonex</i> will remain somewhat of a drag in 2020. Merck is also facing increased competitive pressure on other key assets</p>													
Other				<p>including <i>Isentress</i> and <i>Remicade</i>, and the immuno-oncology space is quickly becoming crowded. The recent and rapid spread of the coronavirus (COVID-19) adds a substantial degree of uncertainty near term. <b>The company is looking to get leaner.</b> Merck recently announced plans to spin off its women's health business, biosimilar drugs and legacy products into a new publicly traded company. Management indicated that the move would enable the drugmaker to sharpen its focus on key growth drivers, namely <i>Keytruda</i>. The strategy seems to mirror that of rival Pfizer, who has also been trimming certain aspects of its business to concentrate on higher-margin pharmaceuticals. Merck expects the transaction to wrap up during the first half of 2021. It is forecasting cost savings of over \$1.5 billion by 2024. <b>The stock is ranked 2 (Above Average) for Timeliness.</b> Based on our system, MRK shares are currently pegged to outperform the broader market in the year ahead. The equity also boasts a decent dividend yield (3.7%) and scores well across all of our proprietary risk metrics.</p>													
Current Liab.				<p><b>Michael Ratty</b> <span style="float: right;">April 3, 2020</span></p>													

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25																
of change (per sh)	4.5%	1.5%	6.5%																
Sales	6.5%	.5%	6.0%																
"Cash Flow"	5.0%	4.5%	9.0%																
Earnings	3.0%	3.0%	7.5%																
Dividends	-1.0%	-8.5%	5.5%																
Book Value																			

Cal-endar	QUARTERLY SALES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	9434	9930	10325	10433	40122
2018	10037	10465	10794	10998	42294
2019	10816	11760	12397	11868	46840
2020	11700	12500	12800	13000	50000
2021	12400	12900	13300	13400	52000

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.88	1.01	1.11	.98	3.98
2018	1.05	1.06	1.19	1.04	4.34
2019	1.22	1.30	1.51	1.16	5.19
2020	1.39	1.43	1.52	1.41	5.75
2021	1.53	1.57	1.65	1.55	6.30

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.46	.46	.46	.46	1.84
2017	.47	.47	.47	.47	1.88
2018	.48	.48	.48	.48	1.92
2019	.55	.55	.55	.55	2.20
2020	.61	.61			

(A) Diluted earnings (adjusted). Quarters may not sum due to rounding. Excludes nonrecurring gains (losses): '05, (43c); '06, (13c); '09, \$2.40; '10, (\$3.16); '11, (\$1.75); '12, (\$1.66); '13, (\$2.02); '14, 58c; '15, (\$2.03); '16, (\$2.37); '17, (\$3.11); '18, (\$2.02); '19, (\$1.38). Next egs. report due April 28th. (B) Dividends historically paid in early January, April, July, and October. ■ Dividend reinvestment plan available. (C) In millions.

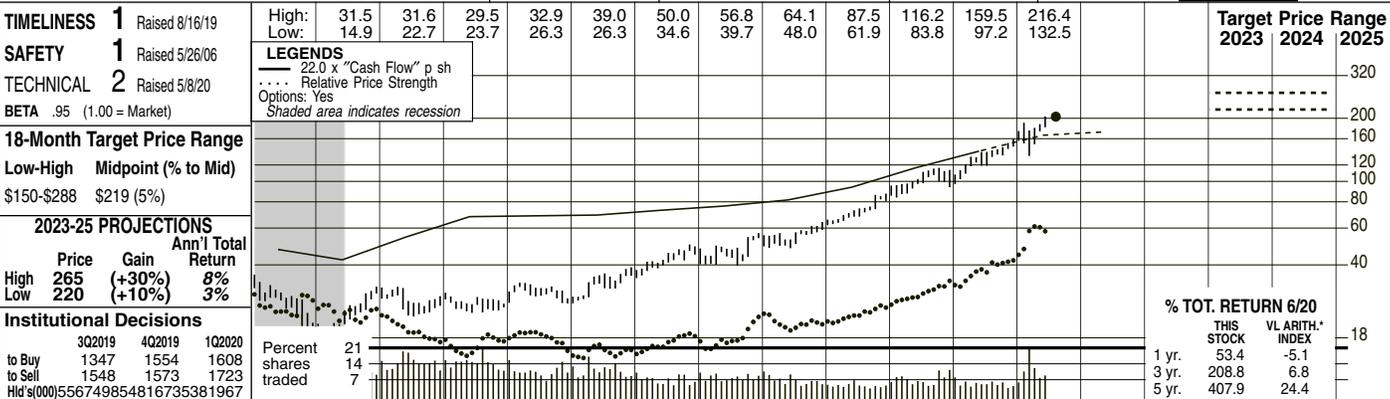
**Company's Financial Strength** A++  
**Stock's Price Stability** 90  
**Price Growth Persistence** 60  
**Earnings Predictability** 95

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# MICROSOFT NDQ-MSFT

RECENT PRICE **203.85** P/E RATIO **34.0** (Trailing: 35.5; Median: 16.0) RELATIVE P/E RATIO **1.55** DIV'D YLD **1.0%**

**VALUE LINE**



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
3.39	3.72	4.40	5.45	6.60	6.56	7.21	8.35	8.80	9.34	10.54	11.66	11.78	12.54	14.38	16.47	18.89	<b>20.85</b>	Revenues per sh <sup>A</sup>	<b>29.00</b>
1.15	1.27	1.34	1.65	2.16	1.92	2.47	3.09	3.12	3.15	3.31	3.47	3.71	4.26	5.28	6.35	7.54	<b>7.85</b>	"Cash Flow" per sh	<b>11.00</b>
1.04	1.16	1.20	1.42	1.87	1.62	2.10	2.69	2.72	2.65	2.63	2.65	2.79	3.08	3.88	4.75	5.76	<b>6.45</b>	Earnings per sh <sup>B</sup>	<b>9.00</b>
.16	.32	.34	.40	.44	.52	.52	.64	.80	.89	1.12	1.24	1.44	1.56	1.68	1.80	1.99	<b>2.19</b>	Div'ds Decl'd per sh <sup>E</sup>	<b>3.10</b>
.10	.08	.16	.24	.35	.35	.23	.28	.28	.51	.67	.74	1.07	1.05	1.52	1.82	2.04	<b>2.00</b>	Cap'l Spending per sh	<b>2.00</b>
6.89	4.49	3.99	3.32	3.97	4.44	5.33	6.82	7.92	9.48	10.90	9.98	9.22	9.39	10.77	13.39	15.63	<b>18.70</b>	Book Value per sh <sup>D</sup>	<b>27.00</b>
10862	10710	10062	9380.0	9151.0	8908.0	8668.0	8376.0	8381.0	8328.0	8239.0	8027.0	7808.0	7708.0	7677.0	7643.0	7571.0	<b>7525.0</b>	Common Shs Outst'g <sup>C</sup>	<b>7375.0</b>
25.8	22.9	21.7	19.9	16.3	13.4	13.1	9.6	10.4	11.2	14.0	17.0	18.1	20.2	22.1	23.7	27.4		Avg Ann'l P/E Ratio	<b>27.0</b>
1.36	1.22	1.17	1.06	.98	.89	.83	.60	.66	.63	.74	.86	.95	1.02	1.19	1.29	1.37		Relative P/E Ratio	<b>1.50</b>
.6%	1.2%	1.3%	1.4%	1.4%	2.4%	1.9%	2.5%	2.8%	3.0%	3.0%	2.7%	2.9%	2.5%	2.0%	1.6%	1.3%		Avg Ann'l Div'd Yield	<b>1.3%</b>

CAPITAL STRUCTURE as of 6/30/20		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Debt \$63327 mill. Due in 5 Yrs \$19720 mill.		62484	69943	73723	77811	86833	93580	91964	96657	110360	125843	143015	157000						
LT Debt \$59578 mill. LT Interest \$2050 mill. (34% of Cap'l)		42.9%	42.8%	41.9%	40.3%	38.0%	36.5%	37.6%	39.4%	41.1%	43.4%	46.0%	44.0%						
Leases, Uncapitalized \$1678 mill.		2673.0	2766.0	2967.0	3755.0	5212.0	5957.0	6622.0	8778.0	10261	11682	12796	10000						
No Defined Benefit Pension Plan Pfd Stock None		18760	23150	23171	22453	22074	21885	22329	24084	30267	36830	44281	49050						
Common Stock 7,571,000,000 shs.		25.0%	17.5%	18.6%	19.6%	20.7%	23.3%	18.8%	20.2%	17.0%	15.7%	16.5%	17.0%						
MARKET CAP: \$1543 billion (Large Cap)		30.0%	31.5%	25.3%	19.0%	14.7%	15.0%	15.7%	16.9%	21.2%	22.5%	24.6%	23.0%						
CURRENT POSITION (SMILL.)		24%	22%	28%	33%	40%	45%	49%	49%	42%	37%	34%	34%						
Cash Assets		133768	133819	136527															
Receivables		26481	29524	32011															
Inventory (Avg Cst)		2662	2063	1895															
Other		6751	10146	11482															
Current Assets		169662	175552	181915															
Accts Payable		8617	9382	12530															
Debt Due		3998	5516	3749															
Unearned Revenue		28905	32676	36000															
Other		16968	21846	20031															
Current Liab.		58488	69420	72310															

**BUSINESS:** Microsoft Corp. is the largest independent maker of software. It develops and sells software products for a wide range of computing environments in consumer and enterprise markets. Hardware products include the Xbox video game console and Surface laptops. Revenue sources in fiscal 2020: Productivity & Business Processes, 32%; Intelligent Cloud, 34%; More Personal Computing, 34%. R&D, 13.5% of 2020 revenues. Employed 144,000 at 6/30/19. Stock owners: William H. Gates, 1.34%, other offs. & dirs., 0.05%; The Vanguard Group, 7.8%; BlackRock, Inc., 6.6%; (10/19 proxy). Chrmn: John W. Thompson. CEO: Satya Nadella. Inc.: Washington. Addr.: One Microsoft Way, Redmond, Washington 98052-6399. Tel.: 425-882-8080. Internet: www.microsoft.com.

**Microsoft finished fiscal 2020 on a strong note.** Revenues and earnings easily exceeded our estimates for the June period, once again benefiting from a strong performance from the company's commercial business and the move to cloud services. In addition, most of the important performance metrics continued showing improvement in the fourth quarter, making the latest financial report a good read, in our view. That said, although revenue growth from the Azure platform remained rapid, the pace took a step down in the fiscal fourth quarter. Leadership noted that consumption-based services were strong in the interim, suggesting that demand for Azure and related services was healthy. There are a number of factors at work here, including the mix of services and customer size, with small and midsize businesses often less able (willing) than larger enterprises to contract for a broad range of cloud services. Microsoft is working to meet the needs of small and midsize businesses, and we think it will continue to fare very well in the competitive public and hybrid cloud arena in coming quarters and over the longer term.

**We like Microsoft's prospects for the year ahead and beyond.** The rapid surge in contracting that was evident as companies rushed to conform with stay-at-home orders and to adopt a remote-work environment in the early stages of the coronavirus pandemic is probably best considered as a singular event. That said, businesses of all sizes have found that productivity was largely sustained as employees worked from home, and in many cases there were operating cost advantages to be had. As the economy reopens, businesses are likely to maintain the flexibility of work-from-home, benefiting companies such as Microsoft that have a strong position in cloud computing and cloud services. This reorganization of work should enhance the general adoption of cloud services, underpinning Microsoft's longer-term prospects.

**What about Microsoft shares?** The company's prospects have not gone unnoticed, with the stock's relative valuation moving up markedly so far this year. Accordingly, new commitments to these high-quality shares are best made carefully.

*Charles Clark*  
August 7, 2020

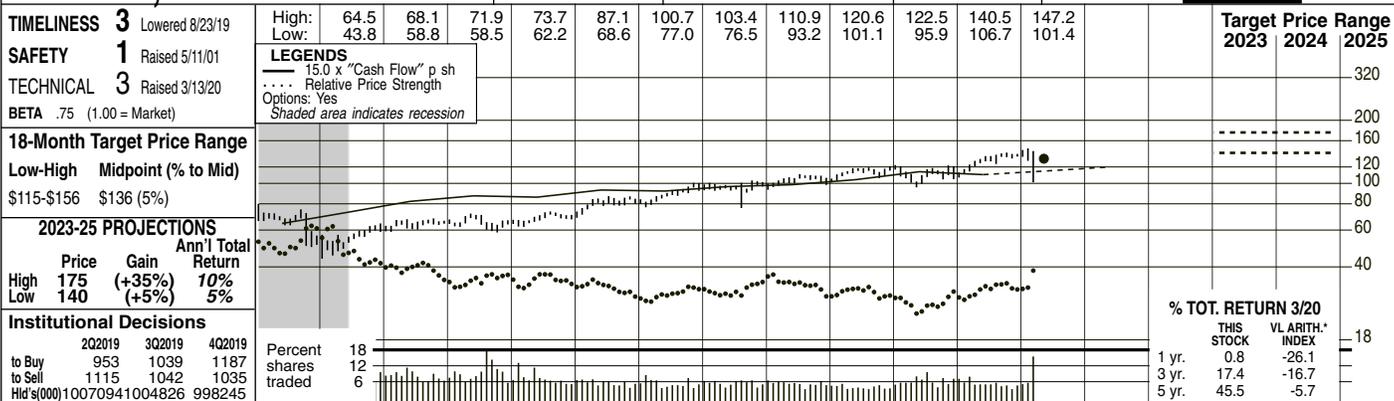
(A) Fiscal year ends June 30th.	(E) Dividends historically paid in March, June, Sept., and Dec. ■Dividend reinvestment plan available. Special dividend of \$3.00 a share paid December 2, 2004.	Company's Financial Strength	A++
(B) Diluted earnings. Quarters may not add to total. Excl. nonrec. items: '04, d29c; '05, d4c; '12, d72c; '13, d7c; '15, d\$1.17; '16, d70c;		Stock's Price Stability	95
(C) '17, d37c; '18, d\$1.75; '19, d33c. Next earnings report late Oct. (C) In mill.		Price Growth Persistence	90
(D) Includes intangibles. In fiscal 2020: \$43.4 billion, \$5.73 a share.		Earnings Predictability	85





# PEPSICO, INC. NDQ-PEP

RECENT PRICE **131.16** P/E RATIO **22.8** (Trailing: 23.8 Median: 20.0) RELATIVE P/E RATIO **1.70** DIV'D YLD **3.1%** VALUE LINE



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
17.43	19.66	21.45	24.59	27.85	27.62	36.58	42.52	42.42	43.44	44.81	43.55	43.98	44.74	45.89	48.28	<b>49.55</b>	<b>51.90</b>	Sales per sh <sup>A</sup>	<b>59.45</b>
3.14	3.65	3.95	4.38	4.30	4.84	5.47	5.83	5.74	6.20	6.14	6.45	6.59	6.96	7.58	7.34	<b>7.65</b>	<b>8.00</b>	"Cash Flow" per sh	<b>9.95</b>
2.32	2.69	3.00	3.34	3.21	3.77	3.91	3.98	3.92	4.37	4.27	4.66	4.85	5.23	5.81	5.53	<b>5.80</b>	<b>6.10</b>	Earnings per sh <sup>A B</sup>	<b>7.85</b>
.85	1.01	1.16	1.43	1.60	1.75	1.89	2.03	2.13	2.24	2.53	2.79	2.96	3.17	3.46	3.76	<b>3.82</b>	<b>4.09</b>	Div'ds Decl'd per sh <sup>C</sup>	<b>4.40</b>
.83	1.05	1.26	1.51	1.58	1.36	2.06	2.14	1.76	1.83	1.92	1.90	2.13	2.09	2.33	3.04	<b>2.35</b>	<b>2.45</b>	Cap'l Spending per sh	<b>2.75</b>
8.03	8.58	9.36	10.71	7.77	11.12	13.56	13.34	14.41	15.85	11.69	8.28	7.81	7.64	10.30	10.63	<b>10.85</b>	<b>11.80</b>	Book Value per sh <sup>D</sup>	<b>14.80</b>
1679.0	1656.0	1638.0	1605.0	1553.0	1565.0	1581.0	1564.0	1544.0	1529.0	1488.0	1448.0	1428.0	1420.0	1409.0	1391.0	<b>1385.0</b>	<b>1375.0</b>	Common Shs Outst'g <sup>E</sup>	<b>1350.0</b>
22.1	20.6	20.4	20.5	20.5	14.7	16.5	16.4	17.4	18.4	20.8	20.7	21.4	21.6	19.1	23.1	<b>20.0</b>	<b>25.0</b>	Avg Ann'l P/E Ratio	<b>20.0</b>
1.17	1.10	1.10	1.09	1.23	.98	1.05	1.03	1.11	1.03	1.09	1.04	1.12	1.09	1.03	1.25	<b>1.09</b>	<b>1.25</b>	Relative P/E Ratio	<b>1.10</b>
1.7%	1.8%	1.9%	2.1%	2.4%	3.2%	2.9%	3.1%	3.1%	2.8%	2.8%	2.9%	2.9%	2.8%	3.1%	2.9%	<b>2.8%</b>	<b>2.9%</b>	Avg Ann'l Div'd Yield	<b>2.8%</b>

CAPITAL STRUCTURE as of 12/28/19				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	
Total Debt \$32068 mill. Due in 5 Yrs \$3473 mill.				57838	66504	65492	66415	66683	63056	62799	63525	64661	67161	<b>68650</b>	<b>71400</b>	Sales (\$mill)	<b>80250</b>						
LT Debt \$29148 mill. LT Interest \$960 mill.				18.4%	18.5%	18.0%	19.3%	18.4%	20.3%	21.0%	25.7%	28.2%	19.8%	<b>22.5%</b>	<b>23.0%</b>	Operating Margin	<b>22.5%</b>						
(Total interest coverage: 11.1x) (66% of Cap'l)				2327.0	2737.0	2689.0	2663.0	2625.0	2416.0	2368.0	2399.0	2432.0	<b>2500</b>	<b>2550</b>	Depreciation (\$mill)	<b>2700</b>							
Leases, Uncapitalized \$459 mill.				6320.0	6379.1	6178.0	6823.0	6513.0	6922.0	7040.5	7517.0	8283.0	7778.3	<b>8125</b>	<b>8450</b>	Net Profit (\$mill)	<b>10725</b>						
Pension Assets-12/19 \$18.3 bill. Oblig. \$19.9 bill.				23.0%	26.9%	25.2%	25.7%	25.1%	26.1%	25.4%	42.1%	42.0%	<b>21.0%</b>	<b>21.0%</b>	Income Tax Rate	<b>25.0%</b>							
Common Stock 1,389,544,618 shs. as of 2/6/20				10.9%	9.6%	9.4%	10.3%	9.8%	11.0%	11.2%	11.8%	12.8%	11.6%	<b>11.8%</b>	<b>11.8%</b>	Net Profit Margin	<b>13.3%</b>						
MARKET CAP: \$182 billion (Large Cap)				1677.0	d713.0	1631.0	4364.0	2571.0	5453.0	5954.0	10525	d245.0	d2816	<b>7500</b>	<b>8200</b>	Working Cap'l (\$mill)	<b>9000</b>						
CURRENT POSITION (SMILL.)				19999	20568	23544	24333	23821	29213	30053	33796	28295	29148	<b>28000</b>	<b>27500</b>	Long-Term Debt (\$mill)	<b>20000</b>						
Cash Assets				21476	20899	22294	24279	17438	12030	11199	10889	14518	14786	<b>15000</b>	<b>16250</b>	Shr. Equity (\$mill)	<b>20000</b>						
Receivables				16.3%	16.4%	14.5%	15.0%	16.9%	18.0%	18.7%	18.1%	21.1%	17.9%	<b>20.0%</b>	<b>20.5%</b>	Return on Total Cap'l	<b>27.5%</b>						
Inventory (FIFO)				29.4%	30.5%	27.7%	28.1%	37.3%	57.5%	62.9%	69.0%	57.1%	52.6%	<b>54.0%</b>	<b>52.0%</b>	Return on Shr. Equity	<b>53.5%</b>						
Other				15.6%	15.4%	12.9%	14.0%	16.0%	24.0%	25.2%	28.1%	23.1%	16.7%	<b>19.0%</b>	<b>18.0%</b>	Retained to Com Eq	<b>24.0%</b>						
Current Assets				47%	49%	53%	50%	57%	58%	60%	59%	60%	68%	<b>65%</b>	<b>65%</b>	All Div'ds to Net Prof	<b>55%</b>						
Accts Payable				<b>BUSINESS:</b> PepsiCo, Inc. operates four major businesses: Frito-Lay North America, 25% of sales and 51% of operating profits in '19; PepsiCo Beverages NA, 32% and 21%; Quaker Foods NA, 4% and 5%; and PepsiCo Int'l. (snacks and beverages), 39% and 23%. Quaker Oats acq., 8/01; Pepsi Bottling Group and PepsiAmericas acq. 2/10. Beverages: <i>Pepsi-Cola</i> , <i>Gatorade</i> , and <i>Tropicana</i> . Snack																			
Debt Due				foods: <i>Frito-Lay</i> (brand names include <i>Doritos</i> , <i>Ruffles</i> , and <i>Lay's</i> ), <i>Walker's</i> , <i>Smith's</i> , <i>Sabritas</i> . Has about 267,000 employees, Insiders own less than 1% of stock, The Vanguard Group: 8.3%, BlackRock Inc.; 7.7% (3/20 Proxy). Chairman and CEO: Ramon Laguarta. Inc.: NC. Add.: 700 Anderson Hill Road, Purchase, NY 10577. Telephone: 914-253-2000. Internet: www.pepsico.com.																			
Other				<b>PepsiCo delivered a mixed 2019 performance.</b> For the full year, the company generated a 3.8% sales increase, versus the previous year's result. Top-line progress was driven by pockets of strength in a well-diversified snack and drink portfolio, which was created through a combination of product innovation and acquisitions. Earnings, however, did not fare as well. In, fact, share net of \$5.53 (on an adjusted basis) represented a 5% decline in 2019. Although sales were decent, higher operating costs, particularly in the Quaker Foods and Pepsi Beverages segments, weighed on profitability. <b>We remain optimistic that the company's bottom-line results will improve over the next two years.</b> Sales are estimated to grow at a single-digit pace in 2020 and 2021. PepsiCo's vast array of well-established snack and drink offerings, alongside ongoing innovation efforts and acquisition targets (more below), should help offset weakness in core markets such as sodas. Healthy revenue expansion combined with higher-margin products, cost-containment programs, and share repurchases ought to enhance near-term profita-																			
Current Liab.				bility, too. This is reflected in our forecasts for roughly 5% share-net growth over this year and next. <b>PepsiCo intends to acquire Rockstar energy drinks in a deal valued at roughly \$3.85 billion.</b> Acquisitions are a favored expansion strategy, and it is a good approach to Pepsi's intentions to focus on the creation of a more consumer-centric business. The pending deal for <i>Rockstar</i> would give the company a more competitive presence in the energy drink market, which is currently dominated by industry rivals Monster Beverage and Red Bull. Assuming regulatory approval is achieved, the deal is expected to close during the second half of 2020. <b>Although COVID-19 has led to investor caution, shares of PepsiCo have held up relatively well during the market correction, declining nominally since our January report.</b> Still, capital appreciation potential over the 2023-2025 pull is unexciting and investors may want to wait for a better entry point. However, the dividend may entice income-oriented accounts. <i>Nira Maharaj</i>																			

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25	Full Year
of change (per sh)	10 Yrs.	5 Yrs.	to '23-'25	Full Year
Sales	5.5%	1.0%	4.5%	63525
"Cash Flow"	5.0%	4.0%	5.5%	64661
Earnings	5.0%	5.5%	6.0%	67161
Dividends	8.0%	8.5%	4.0%	68650
Book Value	-5%	-7.5%	7.5%	71400

Cal-endar	QUARTERLY SALES (\$ mill.) <sup>A</sup>				Full Year
	Mar.Per	Jun.Per	Sep.Per	Dec.Per	
2017	12049	15710	16240	19526	63525
2018	12562	16090	16485	19524	64661
2019	12884	16449	17188	20640	67161
2020	<b>12900</b>	<b>16900</b>	<b>18150</b>	<b>20700</b>	<b>68650</b>
2021	<b>13500</b>	<b>17250</b>	<b>18500</b>	<b>22150</b>	<b>71400</b>

Cal-endar	EARNINGS PER SHARE <sup>A B</sup>				Full Year
	Mar.Per	Jun.Per	Sep.Per	Dec.Per	
2017	.94	1.50	1.48	1.31	5.23
2018	.96	1.61	1.75	1.49	5.81
2019	.97	1.54	1.56	1.45	5.53
2020	<b>1.00</b>	<b>1.60</b>	<b>1.70</b>	<b>1.50</b>	<b>5.80</b>
2021	<b>1.05</b>	<b>1.70</b>	<b>1.80</b>	<b>1.55</b>	<b>6.10</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>C</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	1.41	.752	.752	--	2.91
2017	1.51	.805	.805	--	3.12
2018	1.61	.927	.927	--	3.46
2019	1.85	.955	.955	--	3.76
2020	1.91				

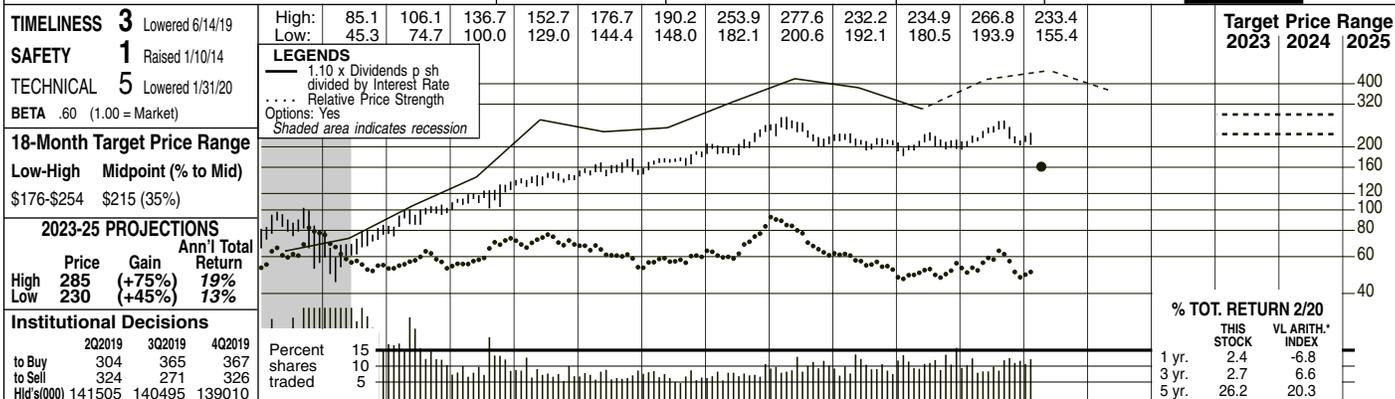
(A) Qtrs. are 12, 12, 12 and 16 wks. (B) Dil. egs. Excl. nonrecur. gains (losses): '04, (12c); '05, (27c); '06, 34c; '07, 7c; '11, 4c; '13, (5c); '15, (99c); '16, (49c); '17, (\$1.85); '18, \$2.97; '19, (33c). May not sum due to rounding. '10 Jun. and Sept. ■ Reinvest. plan. avail. (D) Incl. egs. reflect costs associated with the acquisitions of its two largest bottlers. Next egs. report due mid-May. (C) Div'ds. hist. paid Jan., Mar., and Sept. ■ Reinvest. plan. avail. (D) Incl. intang. In '19: \$31.55 bill., \$22.68/sh. (E) In mill.





# PUBLIC STORAGE NYSE-PSA

RECENT PRICE **160.61** P/E RATIO **21.5** (Trailing: 22.0 Median: NMF) RELATIVE P/E RATIO **1.95** DIV'D YLD **5.0%** VALUE LINE **1540**



Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	23-25
Book Value per sh <sup>D</sup>	31.20	30.41	30.62	30.44	29.90	29.58	29.11	28.27	29.26	28.65	<b>28.80</b>	<b>28.95</b>	33.35
Funds from Ops per sh <sup>A,E</sup>	5.22	5.93	6.31	7.53	7.98	8.79	9.70	10.45	10.58	<b>10.75</b>	<b>11.10</b>		12.85
Earnings per sh <sup>A</sup>	2.31	3.29	3.83	4.89	5.25	6.07	6.81	7.79	8.54	7.29	<b>7.50</b>	<b>7.70</b>	9.50
Div's Decl'd per sh <sup>B</sup>	3.05	3.65	4.40	5.15	5.60	6.50	7.30	8.00	8.00	8.00	<b>8.00</b>	<b>8.00</b>	9.00
Real Estate per sh	44.51	43.35	42.71	47.97	49.20	49.49	51.49	53.09	54.22	56.23	<b>57.70</b>	<b>59.25</b>	67.80
Common Shs Outst'g <sup>C</sup>	169.25	170.24	171.66	171.78	172.45	172.92	173.29	173.85	174.13	174.42	<b>175.00</b>	<b>175.50</b>	177.00
Premium Over Book	200%	282%	357%	428%	475%	600%	721%	651%	610%	704%			670%
Avg Ann'l P/E Ratio	39.8	35.3	35.9	32.8	34.1	34.1	35.1	31.5	24.3	31.6	<b>29.00</b>	<b>30.00</b>	NMF
Avg Ann'l P/FFO Ratio <sup>E</sup>	17.9	19.6	22.2	21.3	23.6	23.6	24.6	21.9	19.9	21.8			20.0
Avg Ann'l Div'd Yield	3.3%	3.1%	3.1%	3.2%	3.1%	3.1%	3.1%	3.8%	3.9%	3.5%			3.5%
Revenues (\$mill)	1646.7	1752.1	1826.7	1981.7	2195.4	2381.7	2560.5	2668.5	2754.3	2846.8	<b>2900</b>	<b>3000</b>	3500
Other Income (\$mill)	--	--	--	--	--	--	--	--	--	--	<b>Nil</b>	<b>Nil</b>	Nil
Operating Margin	63.6%	64.6%	67.3%	68.1%	69.6%	69.6%	70.6%	70.4%	67.7%	67.9%	<b>68.0%</b>	<b>68.0%</b>	70.0%
Net Profit (\$mill)	672.0	823.8	669.7	844.7	908.2	1053.1	1183.9	1171.6	1488.9	1272.8	<b>1315</b>	<b>1350</b>	1680
Net Profit Margin	40.8%	47.0%	36.7%	42.6%	41.4%	44.2%	46.2%	43.9%	54.1%	44.7%	<b>45.3%</b>	<b>45.0%</b>	48.0%
Capital Gains (mill)	7.5	2.4	12.9	--	--	--	--	--	--	--	<b>Nil</b>	<b>Nil</b>	Nil
Real Estate (\$mill)	7532.8	7379.2	7331.9	8239.8	8485.3	8557.7	8922.6	9230.1	9442.1	9807.6	<b>10100</b>	<b>10400</b>	12000
Total Debt (\$mill)	568.4	398.3	468.8	839.1	64.4	319.0	390.7	1431.3	1412.3	1902.5	<b>1955</b>	<b>2010</b>	2325
Shr. Equity (\$mill)	8676.6	8288.2	8093.8	8791.7	9480.8	9170.6	9411.9	8940.0	9119.5	9062.9	<b>9100</b>	<b>9150</b>	10600
Div's Decl'd to FFO	43.7%	61.6%	69.7%	68.4%	70.2%	73.9%	75.3%	82.5%	76.6%	75.6%	<b>74.5%</b>	<b>72.0%</b>	70.0%
Expenses to Assets	10.0%	10.0%	10.9%	10.3%	11.5%	8.5%	8.5%	8.6%	9.4%	9.3%	<b>9.5%</b>	<b>9.5%</b>	9.5%
Return on Total Cap'l	7.4%	9.5%	11.0%	8.8%	9.6%	11.1%	12.1%	11.4%	14.3%	<b>11.8%</b>	<b>12.0%</b>	<b>12.5%</b>	13.0%
Return on Shr. Equity	7.7%	9.9%	11.5%	9.6%	9.6%	11.5%	12.6%	13.1%	16.3%	14.0%	<b>14.5%</b>	<b>15.0%</b>	16.0%

Public Storage was formed and qualified as a real estate investment trust (REIT) in 1980. It reorganized into its current form in June of 2007. It offers storage spaces for lease, generally on a month-to-month basis, for personal and business use, and also has interest in commercial facilities.

**CAPITAL STRUCTURE as of 12/31/19**  
 Tot. Debt \$1902.5 mill. Due in 5 Years \$638.0 mill.  
 Total Interest \$45.0 mill.  
 (Total interest coverage: over 25x) (17% of Cap'l)

**No Defined Benefit Pension Plan**  
 Prfd. Stock \$4065.0 mill. Prfd. Div'd \$242.9 mill.  
 (37% of Cap'l)

**Common Stock** 174,758,632 shares

Cal-endar	2017	2018	2019	2020	2021
Net Profit Plus	1903.0	2200.9	2038.6		
Noncash Charges	6.1	146.1	12.4		
Investments Repaid	1040.6	-19.0	490.2		
Net New Debt	-471.9	179.5	-56.6		
New Equity	746.0	659.9	909.8		
Investments Funded	1630.3	1612.7	1608.7		
Dividends Declared					

**MARKET CAP: \$28.1 billion (Large Cap)**

**FUNDS FLOW (\$mill.)**

**FINANCIAL POSITION**

Senior Debt (\$mill.) 1412.3 1902.5  
 Subordinated Debt (\$mill.) -- --  
 Sr Debt/Cap'l Funds 13:1 17:1  
 Total Debt/Equity 15:1 21:1

Cal-endar	2017	2018	2019	2020	2021
Q1	645.5	664.3	686.4	672.3	2668.5
Q2	669.9	685.5	706.4	692.5	2754.3
Q3	689.0	711.0	729.3	717.5	2846.8
Q4	710	725	740	725	2900
2021	730	745	770	755	3000

Cal-endar	2017	2018	2019	2020	2021
Q1	1.62	1.59	1.61	1.92	6.73
Q2	1.65	2.00	1.85	3.04	8.54
Q3	1.73	1.76	1.93	1.87	7.29
Q4	1.75	1.85	2.00	1.90	7.50
2021	1.80	1.90	2.05	1.95	7.70

Cal-endar	2016	2017	2018	2019	2020
Q1	1.70	1.80	1.80	2.00	7.30
Q2	2.00	2.00	2.00	2.00	8.00
Q3	2.00	2.00	2.00	2.00	8.00
Q4	2.00	2.00	2.00	2.00	8.00

Cal-endar	2017	2018	2019	2020	2021
Q1	2.34	2.31	2.35	2.70	9.70
Q2	2.37	2.65	2.66	2.77	10.45
Q3	2.52	2.57	2.76	2.72	10.58
Q4	2.55	2.62	2.81	2.77	10.75
2021	2.64	2.70	2.90	2.86	11.10

**The ongoing coronavirus pandemic will almost certainly have a harmful effect on operating results for Public Storage, and the REIT industry as a whole.** A good portion of demand for self-storage facilities is caused by job turnover, as individuals move from one location to another for better employment opportunities. Although the draconian measures taken to slow the spread of the virus are a necessary evil, job growth, household formation, and demand for storage facilities will likely suffer in the year ahead, and perhaps longer.

**Meanwhile, we expect the company to have modest portfolio growth over the next two years.** The number of properties in service and total square footage expanded 2% and 4%, respectively, in 2019, to 2,483 facilities and 169 million square feet. However, with fears of a potential domestic recession on the rise, a more judicious approach to portfolio expansion may be in order. We now look for the number of properties in service to increase 1%–2% annually in 2020 and 2021.

**Its operating metrics may come under pressure in the near term.** At year-end 2019, occupancy was 91.8%, a 50-basis-point improvement from the previous year. Too, the average realized rent edged up 1% for the full year, to \$17.60 per square foot. We would not be surprised to see occupancy regress to the 90.0%–91.0% range in 2020, perhaps followed by a modest uptick in 2021, while rents may be flattish for the next two years.

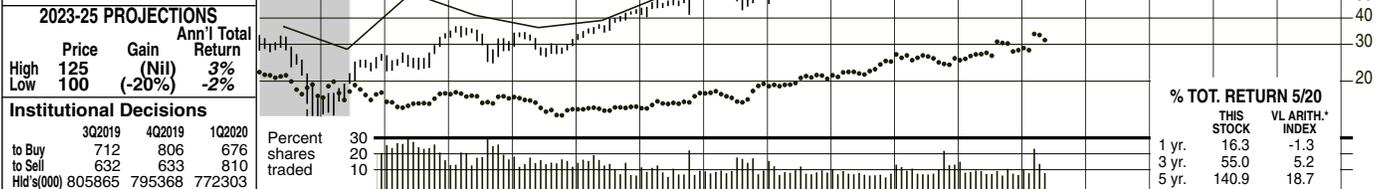
**We're trimming \$0.50 per share from our 2020 funds from operations (FFO) target, and introducing an estimate for 2021.** Our revenue and FFO forecasts for the current year would each mark an increase of 1%–2% from 2019. Our initial revenue and FFO calls for 2021, at \$3 billion and \$11.10 per share, respectively, would both represent year-over-year growth of 3%–4%.

**Public Storage shares should appeal to conservative income-oriented investors (Safety: 1).** The stock earns high marks for Price Stability and Earnings Predictability. In addition, the balance sheet remains strong (debt-to-total capital at 17%), and the company garners an excellent rating for Financial Strength (A+).

Sharif Abdou  
 April 3, 2020

<b>TIMELINESS</b> 3 Lowered 11/9/18	High: 27.0	33.9	36.7	34.2	44.1	56.0	60.0	75.3	105.3	120.8	132.2	135.7	Target Price Range 2023 2024 2025	
<b>SAFETY</b> 1 Raised 7/8/11	Low: 13.7	22.3	24.3	26.1	31.4	40.3	43.5	46.7	72.5	87.7	88.7	93.1		200
<b>TECHNICAL</b> 3 Lowered 4/3/20	<b>LEGENDS</b> — 15.0 x "Cash Flow" p sh ... Relative Price Strength Options: Yes Shaded area indicates recession													

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$92-\$167 \$130 (5%)



2023-25 PROJECTIONS		Price	Gain	Ann'l Total	© VALUE LINE PUB. LLC													23-25						
High	Low	125	(Nil)	Return	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
		100	(-20%)	3%	7.32	8.37	9.83	10.30	9.78	8.41	11.96	12.05	11.33	11.12	12.25	12.86	13.42	15.22	16.70	15.43	<b>14.85</b>	<b>15.90</b>	Sales per sh	18.45
					1.94	2.25	2.54	2.73	2.43	1.89	3.51	2.76	2.40	2.60	3.45	3.71	4.22	5.06	6.53	6.14	<b>5.85</b>	<b>6.40</b>	"Cash Flow" per sh	7.55
					1.05	1.34	1.69	1.83	1.57	1.15	2.62	1.88	1.51	1.75	2.57	2.82	3.48	4.35	5.59	5.24	<b>4.80</b>	<b>5.25</b>	Earnings per sh <sup>B</sup>	5.90
					.09	.11	.13	.30	.40	.45	.49	.56	.72	1.07	1.24	1.40	1.64	2.12	2.63	3.21	<b>3.60</b>	<b>3.64</b>	Div'ds Decl'd per sh <sup>C</sup>	3.84
					.76	.83	.88	.51	.60	.61	1.03	.72	.44	.38	.36	.54	.53	.71	1.20	.91	<b>.55</b>	<b>.55</b>	Cap'l Spending per sh	.55
					7.60	7.46	7.83	7.43	7.30	7.84	8.94	9.61	9.68	9.84	9.76	9.84	10.52	10.51	9.52	9.56	<b>10.75</b>	<b>12.45</b>	Book Value per sh	18.25
					1718.1	1600.3	1450.0	1343.2	1277.9	1240.1	1167.4	1139.5	1132.0	1098.0	1065.0	1011.3	995.98	983.16	945.15	932.03	<b>930.00</b>	<b>929.00</b>	Common Shs Outst'g <sup>A</sup>	925.00
					24.0	21.4	18.4	18.3	16.0	18.0	10.0	16.9	19.9	21.6	18.5	19.1	18.1	19.4	19.0	22.1	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	19.0
					1.27	1.14	.99	.97	.96	1.20	.64	1.06	1.27	1.21	.97	.96	.95	.98	1.03	1.20			Relative P/E Ratio	1.05
					.3%	.4%	.4%	.9%	1.6%	2.2%	1.9%	1.8%	2.4%	2.8%	2.6%	2.6%	2.6%	2.5%	2.5%	2.8%			Avg Ann'l Div'd Yield	2.5%

CAPITAL STRUCTURE as of 3/31/20		© VALUE LINE PUB. LLC													23-25
Total Debt \$6.6 bill.	Due in 5 Years 3.1 bill.	13966	13735	12825	12205	13045	13000	13370	14961	15784	14383	<b>13800</b>	<b>14750</b>	Sales (\$mill)	17075
LT Debt \$5.5 bill.	LT Interest \$170 mill.	37.5%	31.5%	28.4%	30.1%	38.9%	40.8%	42.7%	44.3%	46.3%	44.7%	<b>45.0%</b>	<b>46.50</b>	Operating Margin	46.5%
(42% of capital)		865.0	904.0	957.0	879.0	850.0	766.0	605.0	539.0	590.0	708.0	<b>750</b>	<b>850</b>	Depreciation (\$mill)	1250
		3228.0	2236.0	1759.0	1971.0	2821.0	2986.0	3595.0	4437.3	5580.0	5017.0	<b>4680</b>	<b>5115</b>	Net Profit (\$mill)	5730
		29.1%	24.3%	9.1%	23.1%	27.2%	29.2%	27.1%	27.0%	16.5%	12.4%	<b>12.0%</b>	<b>12.0%</b>	Income Tax Rate	12.0%
		23.1%	16.3%	13.7%	16.1%	21.6%	23.0%	26.9%	29.7%	35.4%	34.9%	<b>33.9%</b>	<b>34.7%</b>	Net Profit Margin	33.5%
		5079.0	4329.0	4800.0	5272.0	5106.0	4519.0	5193.0	6476.0	5623.0	6638.0	<b>8060</b>	<b>10105</b>	Working Cap'l (\$mill)	17325
		--	4211.0	4186.0	4158.0	3641.0	3120.0	2978.0	3577.0	4319.0	5303.0	<b>5400</b>	<b>5500</b>	Long-Term Debt (\$mill)	5500
		10437	10952	10961	10807	10390	9946.0	10473	10337	8994.0	8907.0	<b>9980</b>	<b>11575</b>	Share Equity (\$mill)	16900
		30.9%	14.9%	11.9%	13.5%	20.4%	23.2%	27.0%	32.2%	42.4%	35.9%	<b>30.5%</b>	<b>30.0%</b>	Return on Total Cap'l	25.5%
		30.9%	20.4%	16.0%	18.2%	27.2%	30.0%	34.3%	42.9%	62.0%	56.3%	<b>49.0%</b>	<b>44.0%</b>	Return on Shr. Equity	34.0%
		25.3%	14.5%	8.6%	7.4%	14.4%	15.5%	18.6%	22.6%	33.6%	22.6%	<b>13.5%</b>	<b>15.0%</b>	Retained to Com Eq	13.0%
		18%	29%	47%	60%	47%	48%	46%	47%	46%	60%	<b>72%</b>	<b>66%</b>	All Div'ds to Net Prof	62%

**Leases, Uncapitalized:** Annual Rentals: \$75 mill.  
**Pension Assets-12/19** \$4004 mill. **Oblig.** \$3900 mill.  
**Pfd Stock** None  
**Common Stock** 917,772,641 shs. as of 4/14/20  
**MARKET CAP:** \$114 billion (Large Cap)

**CURRENT POSITION (SMILL.)**

	2018	2019	3/31/20
Cash Assets	4233	5387	4742
Receivables	1207	1074	1316
Inventory (Avg Cst)	2217	2001	2003
Other	440	299	249
Current Assets	8097	8761	8310
Accts Payable	478	388	363
Debt Due	749	500	1100
Other	1247	1235	918
Current Liab.	2474	2123	2181

**BUSINESS:** Texas Instruments Incorporated is a global manufacturer of semiconductors and electronic products. The company is the leading supplier of digital signal processors and analog devices. Markets electrical controls, educational and productivity solutions, and metallurgical materials. Royalty income from licensing proprietary technology is significant. Acquired Burr-Brown, 8/00; Unitrode, 10/99. Sold DRAM business, 10/1/98; defense business, 7/1/97. R&D, 10.7% of 2019 revenues. Has 29,768 empls. The Vanguard Group owns 9.5% of common stock; Off. and dir. own less than 1% of stock (3/20 proxy). CEO & Pres.: Richard K. Templeton. Inc.: DE. Address: 12500 TI Boulevard, P.O. Box 660199, Dallas, TX 75266-0199. Telephone: 972-995-3773. Internet: www.ti.com.

ANNUAL RATES		Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19
of change (per sh)		10 Yrs.	5 Yrs.	to '23-'25
Sales	5.0%	6.5%	2.5%	
"Cash Flow"	9.5%	16.0%	3.0%	
Earnings	13.0%	21.0%	2.5%	
Dividends	21.5%	21.5%	6.5%	
Book Value	2.5%	--	11.0%	

QUARTERLY SALES (\$ mill.)		Full Year			
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	3402	3693	4116	3750	14961
2018	3789	4017	4261	3717	15784
2019	3594	3668	3771	3350	14383
2020	3329	<b>3100</b>	<b>3800</b>	<b>3571</b>	<b>13800</b>
2021	<b>3565</b>	<b>3335</b>	<b>4035</b>	<b>3815</b>	<b>14750</b>

EARNINGS PER SHARE <sup>B</sup>		Full Year			
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.97	1.03	1.26	1.09	4.35
2018	1.35	1.40	1.58	1.27	5.59
2019	1.26	1.36	1.49	1.12	5.24
2020	1.24	<b>1.00</b>	<b>1.40</b>	<b>1.16</b>	<b>4.80</b>
2021	<b>1.35</b>	<b>1.10</b>	<b>1.50</b>	<b>1.30</b>	<b>5.25</b>

QUARTERLY DIVIDENDS PAID <sup>C</sup>		Full Year			
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.38	.38	.38	.50	1.64
2017	.50	.50	.50	.62	2.12
2018	.62	.62	.62	.77	2.63
2019	.77	.77	.77	.90	3.21
2020	.90	.90			

**Since our March review, shares of Texas Instruments have rebounded nicely.** Indeed, over that time frame, the equity's price advanced more than 17%. This likely reflected the general uptrend in the broader market averages, with the S&P 500 Index rebounding sharply over the past three months.

**Conversely, the chip maker's March-quarter results were lackluster.** The widespread economic slowdown stemming from the COVID-19 pandemic weighed on volumes across all business units. In fact, the Analog, Embedded Processing, and Other segments experienced drops in sales of 2.3%, 17.9%, and 22.9%, respectively. All told, these figures equated to a 7.4% slide in the overall top line, to \$3.329 billion. Meanwhile, on the profitability front, cost of goods sold and operating expenses increased 20 basis points, and 90 basis points, as a percentage of sales, respectively. After accounting for a 30% decline in other income and an 18% rise in interest costs, TXN's first-quarter earnings receded 1.6%, to \$1.24 a share. This was modestly below our call of \$1.30.

**Consequently, we have reduced our**

**outlook for this year and next.** Texas Instruments now appears poised to register a roughly 4% drop in sales, to \$13.8 billion. The anticipated decline in its business will likely stem from a downturn in its Signal Chain, High Volume, Connected Microcontrollers, Processors, and other offerings, partially offset by strength in its Power product line. The reduced volumes will undoubtedly weigh on fixed-cost absorption. As a result, we have sliced \$0.60 off our 2020 earnings estimate, to \$4.80 a share. Our revised call would represent a year-over-year decline of almost 8.5%.

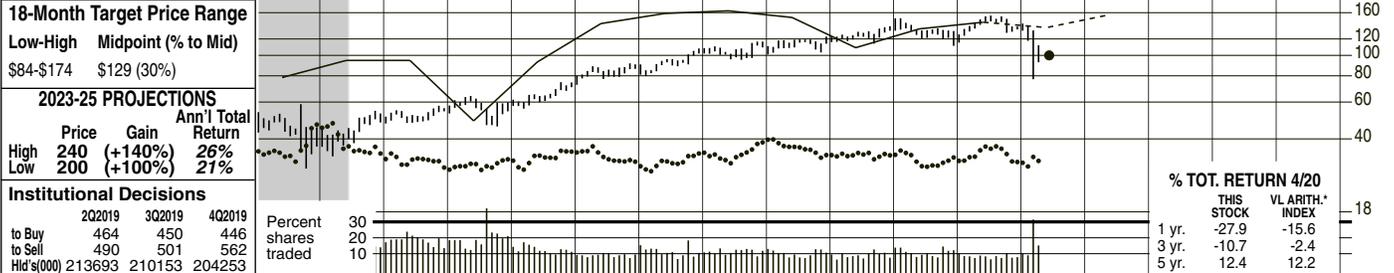
**At this juncture, these shares do not stand out.** The equity's quotation is trading above our 3- to 5-year Target Price Range suggesting that it is overvalued at the moment. Consequently, investors looking to get a toehold into Texas Instruments shares would be wise to wait for some sort of price correction to afford a more-attractive entry point. In the near term, our Timeliness Ranking System has this stock pegged to mirror the broader market averages for the year-ahead time frame (Timeliness: 3).

*Bryan J. Fong* June 26, 2020

# THE TRAVELERS CO NYSE-TRV

RECENT PRICE **100.10** P/E RATIO **11.1** (Trailing: 10.7 Median: 11.0) RELATIVE P/E RATIO **0.60** DIV'D YLD **3.4%** VALUE LINE

TIMELINESS <b>3</b> Lowered 5/29/20	High: 54.5 57.6 64.2 74.7 91.7 107.9 116.5 123.1 138.0 150.5 155.1 141.9	Low: 33.1 47.3 46.0 55.9 72.5 79.9 95.2 101.2 113.8 111.1 115.1 77.0	Target Price Range 2023 2024 2025
SAFETY <b>1</b> Raised 9/16/11	LEGENDS — 15.0 x Earnings p sh ... Relative Price Strength Options: Yes Shaded area indicates recession		320 200 160 120 100 80 60 40
TECHNICAL <b>3</b> Raised 5/15/20			
BETA .95 (1.00 = Market)			



2023-25 PROJECTIONS		Ann'l Total Return	
Price	Gain	Return	Return
High <b>240</b>	<b>(+140%)</b>	<b>26%</b>	
Low <b>200</b>	<b>(+100%)</b>	<b>21%</b>	

Institutional Decisions		Percent shares traded	
202019	3Q2019	4Q2019	
to Buy	464	450	446
to Sell	490	501	562
Hld's(000)	213693	210153	204253

2004	2005	2006	2007F	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC 23-25	
28.40	29.34	30.61	34.20	36.88	41.16	49.31	56.24	59.24	64.04	73.60	80.68	87.75	94.63	102.61	110.65	<b>114.15</b>	<b>118.15</b>	P/C Prem Earned per sh	<b>140.00</b>
3.97	4.56	5.19	5.99	4.77	5.34	7.04	7.33	7.66	7.68	8.65	8.04	8.23	8.83	9.38	9.66	<b>10.25</b>	<b>11.00</b>	Investment Inc per sh	<b>13.00</b>
d2.75	d.82	3.01	3.68	3.06	4.19	3.06	d3.59	1.10	6.54	7.44	8.43	4.98	1.99	.93	3.01	<b>Nil</b>	<b>1.90</b>	Underwriting Inc per sh	<b>4.90</b>
1.93	2.90	5.88	6.72	5.24	6.32	6.31	3.25	6.21	9.46	10.56	10.87	10.13	7.27	8.94	9.60	<b>9.05</b>	<b>10.45</b>	Earnings per sh <sup>B</sup>	<b>14.65</b>
.95	.91	1.01	1.13	1.19	1.26	1.44	1.64	1.79	1.96	2.15	2.38	2.68	2.83	3.03	3.23	<b>3.37</b>	<b>3.41</b>	Div'ds Decl'd per sh <sup>C</sup>	<b>3.60</b>
31.35	31.94	36.87	42.22	43.12	52.54	58.39	62.31	67.32	70.14	77.08	79.75	83.05	87.44	86.82	101.54	<b>105.90</b>	<b>115.70</b>	Book Value per sh <sup>D</sup>	<b>136.05</b>
670.30	693.40	678.30	627.80	585.10	520.30	434.60	392.80	377.40	353.50	322.20	295.90	279.60	271.40	263.70	255.50	<b>255.00</b>	<b>255.00</b>	Common Shs Outst'g <sup>E</sup>	<b>250.00</b>
122%	127%	125%	124%	105%	84%	89%	91%	95%	119%	120%	132%	137%	143%	151%	137%			Price to Book Value	<b>160%</b>
19.9	14.0	7.8	7.8	8.7	7.0	8.2	17.4	10.3	8.8	8.8	9.7	11.2	17.2	14.7	14.5			Avg Ann'l P/E Ratio	<b>15.0</b>
1.05	.75	.42	.41	.52	.47	.52	1.09	.66	.49	.46	.49	.59	.87	.79	.78			Relative P/E Ratio	<b>.85</b>
2.5%	2.2%	2.2%	2.2%	2.6%	2.8%	2.8%	2.9%	2.8%	2.3%	2.3%	2.3%	2.4%	2.3%	2.3%	2.3%			Avg Ann'l Div'd Yield	<b>1.5%</b>

CAPITAL STRUCTURE as of 3/31/20		2018		2019		3/31/20	
Total Debt	\$6,559 mill.	21432	22090	22357	22637	23713	23874
Due in 5 Yrs	\$2,555 mill.	61.1%	73.7%	65.6%	58.8%	58.5%	57.5%
Leases, Uncapitalized	\$108 mill.	32.7%	32.7%	32.5%	31.0%	31.4%	32.1%
Pension Assets	12/19-\$4,270 mill.	6.2%	-6.4%	1.9%	10.2%	10.1%	10.4%
Oblig.	\$3954 mill.	24.1%	--	21.7%	25.7%	27.3%	27.6%
Pfd Stock	None	3066.0	1379.2	2439.0	3549.5	3644.6	3429.7
Common Stock	252,835,833 shs.	4.6%	4.2%	4.1%	3.9%	4.0%	3.6%
as of 4/17/20		105181	104602	104938	103812	103078	100184
MARKET CAP: \$25.3 billion (Large Cap)		25445	24477	25405	24796	24836	23598
FINANCIAL POSITION (SMILL)		12.0%	5.6%	9.6%	14.3%	14.7%	14.5%
Fixed Maturities	53464	9.4%	2.9%	6.9%	11.4%	11.7%	11.4%
Stocks	368	22%	48%	28%	21%	20%	22%
Premiums Due	7506						
Other	32895						
Total Assets	104233						
Unearned Prems	13555						
Reserves	50668						
Other	17116						
Total Liabilities	81339						

**BUSINESS:** The Travelers Companies, Inc. (formerly St. Paul Travelers) is a leading provider of commercial property/casualty insurance and asset management services. Following the April 1, 2004 acquisition of Travelers, the company is now a leading underwriter of homeowners insurance and automobile insurance through independent agents. Has approximately 30,800 employees.

Officers and directors own approximately .8% of common stock outstanding; The Vanguard Group, 8.7%; BlackRock, 8.6%; State Street Corporation, 6.8% (4/20 Proxy). Chief Executive Officer: Alan D. Schnitzer. Chairman: John H. Dasburg. Incorporated: Minnesota. Address: 485 Lexington Ave, New York, NY 10017. Telephone: 917-778-6000. Internet: www.travelers.com.

ANNUAL RATES		Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
of change (per sh)		10.5%	9.5%	5.5%
Premium Inc		5.5%	3.0%	6.0%
Invest Income		3.5%	.5%	9.5%
Earnings		10.0%	9.0%	3.0%
Dividends		7.0%	5.0%	7.0%
Book Value				

Cal-ender	NET PREMIUMS EARNED (\$ mill.) <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	6183	6351	6523	6626	25683
2018	6537	6695	6882	6945	27059
2019	6855	6988	7179	7250	28272
2020	7229	<b>7250</b>	<b>7300</b>	<b>7336</b>	<b>29115</b>
2021	<b>7400</b>	<b>7475</b>	<b>7550</b>	<b>7700</b>	<b>30125</b>

Cal-ender	EARNINGS PER SHARE <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	2.16	1.92	.91	2.28	7.27
2018	2.46	1.81	2.54	2.13	8.94
2019	2.83	2.02	1.43	3.32	9.60
2020	2.62	<b>1.55</b>	<b>2.35</b>	<b>2.53</b>	<b>9.05</b>
2021	<b>2.55</b>	<b>2.70</b>	<b>2.45</b>	<b>2.75</b>	<b>10.45</b>

Cal-ender	QUARTERLY DIVIDENDS PAID <sup>C</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.67	.67	.67	.67	2.68
2018	.67	.72	.72	.72	2.83
2019	.72	.77	.77	.77	3.03
2020	.77	.82	.82	.82	3.23
2021	.82	.85			

**Travelers posted decent results during the March quarter.** Looking at it with more granularity, operating earnings per share, which excludes capital gains and losses from the investment portfolio, dialed in at \$2.62 during the interim. While this represented a decline from the year-ago tally and our \$2.75 estimate, it was a solid showing on an absolute basis, nevertheless. The combined ratio checked in at 95.5%, which was a 180-basis-point deterioration from the previous year's figure. This was still quite profitable, however, and implied that the industry leader generated \$4.50 in pretax profits for every \$100 in policies insured. Management notes that it did have some COVID-related exposure (\$68 million aftertax), though it considers the company to be in a position to support those affected by the pandemic.

**We look for a moderate bottom-line decline this year, before earnings growth resumes in 2021.** Rate increases will likely be difficult to come by, at least through the remainder of 2020, due to a sputtering domestic economy. What's more, investment income is a variable that's worth keeping an eye on. Not only

have equity markets been quite volatile over the past few months due to COVID-related concerns, very low interest rates have also constrained bond reinvestment rates. Conditions ought to improve next year, as the coronavirus is hopefully largely behind us.

**Share earnings ought to climb at a mid- to high single-digit rate over the 3 to 5 years ahead.** Our optimism is based on a decent economic backdrop over that period.

**These shares are neutrally ranked for the year ahead.** Too, price recovery potential is above the Value Line median out to 2023-2025, following the sharp price decrease since our March review. The P/C industry, in aggregate, has been fairly hard hit by COVID-19-related fears. We believe that some of the pricing pressure appears to be an overreaction. The insurance industry as a whole should be spared the worst of COVID-related losses. Indeed, TRV stock offers solid risk-adjusted total return potential over the 3 to 5 years ahead. Conservative accounts should note the solid and increasing dividend.

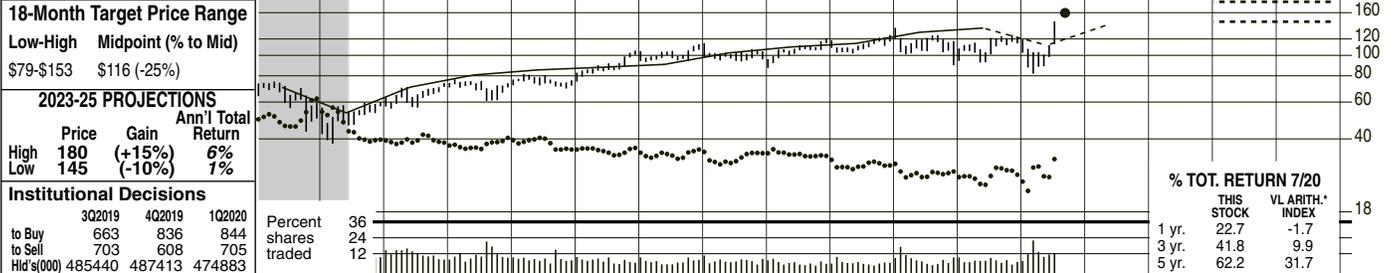
Alan G. House June 5, 2020

(A) P/C only. (B) Dil. egs. Excl. cap gains and losses after '02. Excl. nonrec. (charges)/gains in '06, '3c; '07, '14c; '08, (42c); '09, '1c; '10, '31c; '11, '11c; '12, '9c; '13, '28c; '14, '14c; '15, '3c; '16, '15c; '17, '6c; '19, '35c. Excl. losses from disc. ops.: '03, '7c; '04, '62c. Next egs. rpt. late July. (C) Div'ds. paid in late March, June, Sept., Dec. Excl. spec. div'ds of 21c/sh. paid 3/04 and 4/04. (D) Div'd reinv. plan avail. (E) Intang. '19: \$4,291 mill., \$16.76/sh. (F) St. Paul only until '04.	Company's Financial Strength A++ Stock's Price Stability 100 Price Growth Persistence 80 Earnings Predictability 70
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# UNITED PARCEL SVC. NYSE-UPS

RECENT PRICE **159.59** P/E RATIO **21.7** (Trailing: 21.4 Median: 18.0) RELATIVE P/E RATIO **0.99** DIV'D YLD **2.5%** VALUE LINE **316**

TIMELINESS <b>2</b> Raised 8/21/20	High: 59.8 73.9 77.0 81.8 105.4 113.1 114.4 120.4 125.2 135.5 125.3 162.7	Target Price Range 2023 2024 2025
SAFETY <b>1</b> Raised 5/15/20	Low: 38.0 55.8 60.7 69.6 75.0 93.2 93.6 87.3 102.1 89.9 92.6 82.0	320
TECHNICAL <b>4</b> Raised 8/21/20	LEGENDS — 13.0 x "Cash Flow" p sh ... Relative Price Strength Options: Yes Shaded area indicates recession	200
BETA .80 (1.00 = Market)		160



2023-25 PROJECTIONS		Ann'l Total Return		Institutional Decisions		Percent shares traded		% TOT. RETURN 7/20	
High	Low	Price	Gain	3Q2019	4Q2019	10/2020	1 yr.	3 yr.	5 yr.
180	145	(+15%)	(-10%)	663	836	844	22.7	41.8	62.2
				703	608	705	-1.7	9.9	31.7
				Hld's(000)	485440	487413	474883		

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
32.40	38.82	44.44	48.04	51.72	45.62	50.19	55.15	56.80	60.00	64.34	65.87	70.17	76.68	83.75	86.50	<b>85.85</b>	<b>91.15</b>	Revenues per sh	103.75
4.23	5.03	5.56	5.91	5.42	4.09	5.43	6.20	6.56	6.75	6.97	7.91	8.44	8.78	9.92	10.39	<b>8.60</b>	<b>10.90</b>	"Cash Flow" per sh	13.15
2.85	3.47	3.86	4.11	3.50	2.31	3.56	4.23	4.53	4.61	4.75	5.43	5.75	6.01	7.24	7.53	<b>7.00</b>	<b>7.70</b>	Earnings per sh <sup>A</sup>	9.50
1.12	1.32	1.52	1.64	1.77	1.80	1.88	2.08	2.28	2.48	2.68	2.92	3.12	3.12	3.64	3.84	<b>4.04</b>	<b>4.20</b>	Div'ds Decl'd per sh <sup>B</sup>	5.15
1.88	1.99	2.88	2.73	2.65	1.61	1.41	2.08	2.26	2.23	2.57	2.69	3.42	6.09	7.32	7.45	<b>6.25</b>	<b>7.00</b>	Cap'l Spending per sh	8.25
14.51	15.39	14.47	11.78	6.81	7.69	8.08	7.31	4.88	7.01	2.37	2.79	4.7	1.16	3.52	3.81	<b>5.35</b>	<b>6.30</b>	Book Value per sh <sup>C</sup>	9.70
1129.0	1097.0	1070.0	1034.4	995.44	992.85	987.12	963.00	953.00	924.00	905.00	886.00	868.00	859.00	858.00	856.60	<b>862.00</b>	<b>860.00</b>	Common Shs Outst'g <sup>D</sup>	850.00
26.1	21.1	19.8	17.8	18.4	22.6	18.1	16.7	16.7	19.3	21.2	18.5	18.4	18.6	15.6	14.7	<b>14.7</b>	<b>14.7</b>	Avg Ann'l P/E Ratio	17.0
1.38	1.12	1.07	.94	1.11	1.51	1.15	1.05	1.06	1.08	1.12	.93	.97	.94	.84	.79	<b>.84</b>	<b>.79</b>	Relative P/E Ratio	.95
1.5%	1.8%	2.0%	2.2%	2.7%	3.5%	2.9%	2.9%	3.0%	2.8%	2.7%	2.9%	2.9%	2.8%	3.2%	3.5%	<b>3.2%</b>	<b>3.5%</b>	Avg Ann'l Div'd Yield	3.1%

CAPITAL STRUCTURE as of 6/30/20		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021	
Total Debt	\$26948 mill.	16.1%	15.9%	16.5%	16.1%	15.5%	16.9%	17.0%	16.1%	13.3%	14.2%	13.5%	14.0%	Revenues (\$mill)	88200														
LT Debt	\$23199 mill.	1792.0	1782.0	1858.0	1867.0	1923.0	2084.0	2224.0	2282.0	2207.0	2360.0	2600	2750	Operating Margin	14.5%														
Leases, Uncapitalized:	Annual rentals \$454 mill.	3570.0	4193.0	4389.0	4372.0	4389.0	4923.0	5104.0	5259.0	6301.0	6543.0	6035	6625	Depreciation (\$mill)	3080														
Pension Assets-12/19	\$47730 mill.	35.0%	34.3%	34.5%	34.5%	35.5%	34.0%	34.5%	33.8%	21.3%	22.0%	23.0%	23.0%	Net Profit (\$mill)	8100														
Oblig.	\$57553 mill.	7.2%	7.9%	8.1%	7.9%	7.5%	8.4%	8.4%	8.0%	8.8%	8.8%	8.2%	8.5%	Income Tax Rate	23.0%														
Pfd Stock	None	5667.0	5770.0	7201.0	6256.0	3169.0	2512.0	2119.0	2840.0	2123.0	1690.0	850	450	Net Profit Margin	9.2%														
Common Stock	862,176,537 shs.	10491	11095	11089	10824	9864.0	11316	12394	20278	19931	21818	24200	24000	Working Cap'l (\$mill)	1000														
156,294,266 class A shares	(10 votes each)	7979.0	7035.0	4653.0	6474.0	2141.0	2470.0	405.0	1000.0	3021.0	3267.0	4600	5400	Long-Term Debt (\$mill)	20500														
707,081,218 class B shares	(1 vote each)	20.2%	24.0%	28.9%	26.4%	38.0%	36.9%	41.4%	25.8%	28.8%	27.4%	21.0%	22.5%	Shr. Equity (\$mill)	8250														
as of 7/20/20		44.7%	59.6%	NMF	67.5%	NMF	NMF	NMF	NMF	208.6%	200.3%	NMF	NMF	Return on Total Cap'l	28.0%														
MARKET CAP: \$138.0 billion (Large Cap)		22.0%	31.2%	NMF	32.6%	NMF	NMF	NMF	NMF	108.9%	102.5%	55%	55%	Return on Shr. Equity	NMF														
CURRENT POSITION	2018 2019 6/30/20	51%	48%	49%	52%	54%	51%	52%	53%	48%	49%	60%	55%	Retained to Com Eq	44.5%														
(SMILL.)		51%	48%	49%	52%	54%	51%	52%	53%	48%	49%	60%	55%	All Div'ds to Net Prof	54%														
Cash Assets	5035	5741	9216	<b>BUSINESS:</b> United Parcel Service, Inc. is the world's largest integrated air and ground package delivery carrier. Also provides specialized transportation and logistics services. Service is offered throughout the U.S. and in over 220 other countries and territories. Domestic package operations accounted for 61% of '19 revenues; international (20%); supply chain & freight (19%). Fleet owned and leased (at 12/31/19): 572 planes and 125,000 ground vehicles. Has about 495,000 employees (over 62% unionized). Officers and directors own less than 1.0% of common stock; BlackRock Inc., 6.3%; Vanguard, 8.1% (3/20 Proxy). Chairman and CEO: David Abney. Incorporated: Delaware. Address: 55 Glenlake Pkwy., NE, Atlanta GA 30328. Telephone: 404-828-6000. Internet: www.ups.com.																									
Receivables	8958	9645	9383																										
Other	2217	1717	1627																										
Current Assets	16210	17103	20226																										
Accts Payable	5188	5555	5271																										
Debt Due	2805	3420	3749																										
Other	6094	6438	7251																										
Current Liab.	14087	15413	16271																										

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	5.5%	6.5%	6.5%
"Cash Flow"	6.5%	7.5%	6.5%
Earnings	7.5%	8.5%	6.0%
Dividends	7.5%	7.5%	6.5%
Book Value	-10.5%	-10.0%	35.5%

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	15315	15750	15978	18829	65872
2018	17113	17456	17444	19848	71861
2019	17160	18048	18318	20568	74094
2020	18035	20549	18100	18316	75000
2021	18500	19200	19700	21000	78400

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	1.32	1.58	1.45	1.67	6.01
2018	1.55	1.94	1.82	1.94	7.24
2019	1.39	1.96	2.07	2.11	7.53
2020	1.15	2.13	1.80	1.92	7.00
2021	1.50	2.00	2.05	2.15	7.70

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.78	.78	.78	.78	3.12
2017	.83	.83	.83	.83	3.32
2018	.91	.91	.91	.91	3.64
2019	.96	.96	.96	.96	3.84
2020	1.01	1.01			

**United Parcel Service experienced unprecedented demand and record high volume in the second quarter.** The company managed to push the top and bottom lines up 13.4% and 8.7%, respectively, in the quarter. The impressive results were driven by ongoing coronavirus-related sheltering-in-place activity, retail store closures, and economic stimulus measures. This helped the U.S. e-commerce market jump 34.3%, propelling total average daily volume up 22.8% to 21.1 million packages. Too, the company's ability to shift air capacity enabled it to meet a demand surge out of Asia. *SurePost* (last-mile residential service) volume increased 96.6% and represented 53% of total U.S. domestic growth. Ground residential volume excluding *SurePost* was up 63.8%. Business-to-consumer volume jumped 65.2% and represented 69% of total volume versus 54% in 2019. Given the downturn in the industrial sector, business-to-business volume declined 21.9%, but UPS did see this begin to ease toward the end of the quarter. **The near-term outlook is mostly favorable.** Residential demand ought to remain healthy, but domestic average daily volume growth is expected to be lower in the second half compared to the second quarter due to difficult comparisons. Asian outbound demand and yields ought to be positive, but should moderate versus the second quarter. It's difficult to predict exactly how the B2B market will unfold, but most likely scenarios suggest a gradual recovery along with the global economy. **UPS wants to become "better not bigger."** Plans are under way to make the U.S. ground network faster in thousands of lanes by the end of this year. Meanwhile, UPS will continue to expand weekend operations, *SurePost*, and commercial delivery and pickup services. We expect prices to also rise in the quarters ahead, as underlying demand remains strong and capacity is tight. **These timely shares no longer possess compelling long-term price appreciation potential.** The stock price has risen 70% since our last report, and the price-to-earnings multiple is now nearly 50% higher compared to this time a year ago. Thus, value investors should probably pass. *Kevin Downing August 21, 2020*

(A) Diluted earnings. Excludes nonrecurring gains (losses): '04, (\$0.08); '07, (\$3.77); '08, (\$0.56); '09, (\$0.17); '10, (\$0.08); '11, (\$3.70). May not sum due to changes in share count. (B) Dividends historically paid February, May, August, and November. ■ Dividend reinvestment plan available. (C) Includes intangibles. In 2019: \$5980 mill., \$6.92 per share. (D) In millions. **Company's Financial Strength** A+ **Stock's Price Stability** 95 **Price Growth Persistence** 65 **Earnings Predictability** 100 **To subscribe call 1-800-VALUELINE**

<b>TIMELINESS</b> 3 Lowered 6/12/20	High: 34.8 36.0 40.3 48.8 54.3 53.7 50.9 56.9 54.8 61.6 62.2 61.4	<b>LEGENDS</b> 1.35 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession		<b>Target Price Range</b> 2023 2024 2025
<b>SAFETY</b> 1 Raised 9/28/07	Low: 26.1 26.0 32.3 36.8 41.5 45.1 38.1 43.8 42.8 46.1 52.3 48.8			
<b>TECHNICAL</b> 2 Raised 6/5/20				
<b>BETA</b> .65 (1.00 = Market)				

**18-Month Target Price Range**

Low-High	Midpoint (% to Mid)
\$48-\$76	\$62 (10%)

**2023-25 PROJECTIONS**

High	Price	Gain (+95%)	Ann'l Total Return
Low	110	+45%	21%
	80	+45%	13%

**Institutional Decisions**

	3Q2019	4Q2019	1Q2020
to Buy	1249	1440	1345
to Sell	968	933	1112
Hld's (\$mm)	273829927664762720314		

**% TOT. RETURN 5/20**

	THIS STOCK	VL ARITH. INDEX
1 yr.	9.0	-1.3
3 yr.	39.3	5.2
5 yr.	43.9	18.7

2004	2005	2006 <sup>E</sup>	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
25.73	25.59	30.29	32.56	34.27	38.02	37.68	39.10	40.53	29.11	30.58	32.31	30.90	30.89	31.67	31.88	<b>31.80</b>	<b>32.90</b>	Revenues per sh	34.95
7.64	7.24	7.07	7.40	7.65	8.12	8.01	7.96	7.85	6.79	7.19	7.94	7.79	7.91	8.88	8.85	<b>9.00</b>	<b>9.05</b>	"Cash Flow" per sh	9.25
2.59	2.56	2.54	2.34	2.54	2.40	2.21	2.15	2.32	4.00	3.35	3.99	3.87	3.74	4.71	4.81	<b>4.90</b>	<b>5.05</b>	Earnings per sh (A)	5.55
1.54	1.62	1.62	1.65	1.78	1.87	1.93	1.96	2.02	2.08	2.16	2.23	2.29	2.29	2.37	2.42	<b>2.47</b>	<b>2.52</b>	Div'ds Decl'd per sh (B)	2.62
4.79	5.24	5.88	6.11	6.07	6.01	5.82	5.73	5.66	4.01	4.14	4.36	4.18	4.23	4.03	4.34	<b>4.25</b>	<b>4.25</b>	Cap'l Spending per sh	4.40
13.56	13.56	16.68	17.62	14.68	14.67	13.64	12.69	11.60	9.38	2.96	4.03	5.53	10.95	12.86	14.84	<b>15.25</b>	<b>15.25</b>	Book Value per sh	13.65
2770.0	2926.8	2909.9	2871.0	2840.6	2835.7	2828.1	2835.5	2858.3	4141.1	4155.4	4073.2	4076.7	4079.5	4132.0	4135.8	<b>4140.0</b>	<b>4145.0</b>	Common Shs Outst'g (C)	4000.0
14.8	13.2	13.4	17.6	13.7	12.7	13.8	17.1	18.1	12.2	14.5	11.8	13.3	12.9	11.1	12.1	<b>12.0</b>	<b>12.0</b>	Avg Ann'l P/E Ratio	17.5
.78	.70	.72	.93	.82	.85	.88	1.07	1.15	.69	.76	.59	.70	.65	.60	.65	<b>.65</b>	<b>.65</b>	Relative P/E Ratio	.95
4.0%	4.8%	4.8%	4.0%	5.1%	6.1%	6.3%	5.3%	4.8%	4.3%	4.4%	4.7%	4.5%	4.7%	4.5%	4.2%	<b>4.2%</b>	<b>4.2%</b>	Avg Ann'l Div'd Yield	2.8%

**CAPITAL STRUCTURE as of 3/31/20**

LT Debt \$117736 mill. Due in 5 Yrs \$36704mill.	106565	110875	115846	120550	127079	131620	125980	126034	130863	131868	131550	136275	Revenues (\$mill)	139750
LT Debt \$106561 mill. LT Interest \$3725 mill.	6256.6	6086.8	5970.4	11497	13337	16324	15809	15297	19279	19920	20285	20930	Net Profit (\$mill)	22200
Incl. \$366.0 mill. capitalized leases.	19.5%	2.7%	--	19.6%	29.9%	34.6%	33.7%	32.9%	18.3%	23.3%	25.0%	25.0%	Income Tax Rate	25.0%
(Total interest coverage: 7.1x)	5.9%	5.5%	5.2%	9.5%	10.5%	12.4%	12.1%	12.1%	14.7%	15.1%	15.4%	15.4%	Net Profit Margin	16.0%
(63% of Total Cap'l.)	34.2%	36.9%	35.8%	48.4%	89.0%	85.3%	81.4%	71.1%	65.9%	61.6%	80.0%	80.0%	Long-Term Debt Ratio	79.0%
Leases, Uncapitalized Annual rentals \$4099 mill.	29.2%	26.4%	24.9%	21.0%	9.9%	13.5%	17.4%	27.9%	33.1%	37.5%	20.0%	20.0%	Common Equity Ratio	21.0%
Pension Assets-12/19 \$19.4 bill.	132164	136211	133151	185074	124212	121547	129465	159920	160583	163547	122250	122500	Total Capital (\$mill)	126000
Obliq. \$21.2 bill.	87711	88434	88642	88956	89947	83541	84751	88568	89286	91915	86700	86900	Net Plant (\$mill)	89000
Pfd Stock None	7.6%	7.2%	7.5%	9.0%	11.0%	13.7%	12.4%	9.7%	12.2%	12.4%	17.0%	17.0%	Return on Total Cap'l	16.0%
Common Stock 4,137,995,405 shs.	16.2%	16.9%	18.0%	29.6%	108.4%	99.4%	70.2%	34.2%	36.3%	32.4%	37.0%	37.0%	Return on Shr. Equity	40.0%
MARKET CAP: \$231 billion (Large Cap)	16.2%	16.9%	18.0%	29.6%	108.4%	99.4%	70.2%	34.2%	36.3%	32.4%	37.0%	37.0%	Return on Com Equity	40.0%
	2.2%	1.5%	2.2%	14.3%	45.0%	47.4%	29.1%	13.0%	17.9%	16.1%	37.0%	37.0%	Retained to Com Eq	40.0%
	87%	91%	88%	52%	59%	52%	59%	62%	51%	50%	50%	50%	All Div'ds to Net Prof	50%

**BUSINESS:** Verizon Communications was created by the merger of Bell Atlantic and GTE in June of 2000. It is a diversified telecom company with a network that covers a population of about 298 million and provides service to nearly 98.2 million. Acquired MCI, 1/06; Alltel, 1/09; Verizon Wireless, 2/14. Also the largest provider of print and on-line directory information. Has a wireline presence in 28 states & Washington, D.C.; a wireless presence in 50 states & D.C.; operations in 19 countries. 2019 revenue breakdown: Consumer Group, 69%; Business Group, 24%; corporate & other, 7%. Has about 135,000 employees. Chairman: Lowell McAdam; CEO: Hans Vestberg, Inc.: Delaware. Addr.: 1095 Avenue of the Americas, NY, NY 10036. Tel.: 212-395-1000. Internet: www.verizon.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

of change (per sh)	10 Yrs.	5 Yrs.	Est'd '17-'19	to '23-'25
Revenues	-1.0%	-1.0%	1.5%	
"Cash Flow"	1.0%	3.5%	2.0%	
Earnings	6.0%	6.5%	4.0%	
Dividends	3.0%	2.5%	2.0%	
Book Value	-2.0%	10.0%	5.5%	

**Verizon's first-quarter performance was better than expected.** The telecommunications giant and Dow-30 component reported first-quarter earnings of \$1.26 a share, four cents above our estimate and a 5% improvement versus the year-ago figure, on a 1.6% drop in the top line. Management estimated that first-quarter earnings were tempered by about four cents a share due to COVID-19-related net impacts, mostly driven by an increase in its bad debt reserve. Bad debt expense increases in the March quarter were the result of changing expectations around customer payments due to the coronavirus pandemic. Notably, Verizon upped its bad debt reserve in the March quarter by \$228 million, based on the expected number of customers who would seek payment relief under the Keep Americans Connected pledge. In addition, the decrease in year-over-year revenues came about due to sharp reductions in equipment revenue, after social distancing measures were adopted in March, which significantly curtailed in-store customer interaction.

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	29814	30548	31717	33955	126034
2018	31772	32203	32607	34281	130863
2019	32128	32071	32894	34775	131868
2020	31610	31490	33450	35000	131550
2021	33330	33330	34020	35595	136275

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.95	.96	.98	.85	3.74
2018	1.17	1.20	1.22	1.12	4.71
2019	1.20	1.23	1.25	1.13	4.81
2020	1.26	1.18	1.30	1.16	4.90
2021	1.24	1.29	1.32	1.20	5.05

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.565	.565	.58	.58	2.29
2017	.58	.58	.58	.59	2.33
2018	.59	.59	.59	.6025	2.37
2019	.6025	.6025	.6025	.615	2.42
2020	.615	.615			

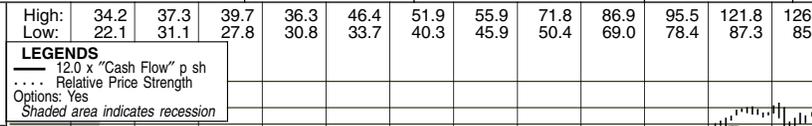
**But we have reined in our top- and bottom-line expectations for the year.** Indeed, in light of the ongoing coronavirus pandemic, Verizon updated its sales and earnings guidance, and now looks for share-net growth of -2% to +2%, versus its earlier expectation of growth of 2% to 4% for the year, with significant headwinds expected in the June interim. Additionally, the company has withdrawn its consolidated revenues guidance for the time being. All told, we have pared our 2020 earnings call by a nickel, to \$4.90 a share, and we are cautiously optimistic that Verizon will post earnings of \$5.05 a share next year. **The investment community seems enthused by the company's long-term prospects.** To wit, VZ stock is currently trading more or less on par with where it was at the time of our mid-March review, versus a modest 1.4% uptick in the S&P 500 Index over the same period. **At the recent quotation, this blue-chip equity offers worthwhile capital-appreciation potential through the early years of this decade.** Moreover, VZ stock could well be the darling of the income-seeking set, as its dividend yield is well above that of the Value Line median. *Kenneth A. Nugent June 12, 2020*



# WASTE MANAGEMENT NYSE-WM

RECENT PRICE **111.61** P/E RATIO **29.2** (Trailing: 26.6; Median: 20.0) RELATIVE P/E RATIO **1.33** DIV'D YLD **2.0%** VALUE LINE **414**

**TIMELINESS** 2 raised 8/21/20  
**SAFETY** 1 Raised 11/28/14  
**TECHNICAL** 4 Lowered 8/21/20  
**BETA** .80 (1.00 = Market)



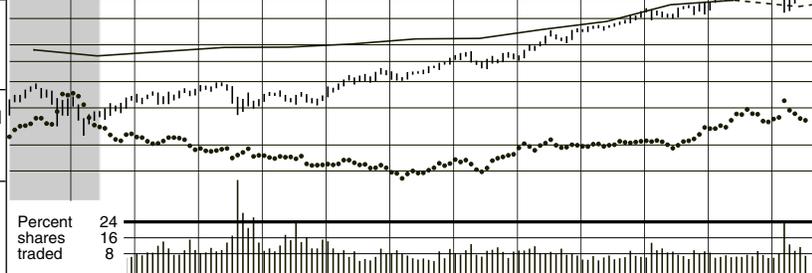
Target Price Range	2023	2024	2025

**18-Month Target Price Range**  
 Low-High Midpoint (% to Mid)  
 \$89-\$157 \$123 (10%)

**2023-25 PROJECTIONS**  
 High Price Gain Ann'l Total  
 Low 130 (+15%) Return  
 110 (Nil) 6%  
 2%

**Institutional Decisions**

	3Q2019	4Q2019	1Q2020
to Buy	586	642	595
to Sell	530	549	628
Hlds(000)	312537	314447	311577



**% TOT. RETURN 7/20**

	THIS STOCK	VL ARITH. INDEX
1 yr.	-4.6	-1.7
3 yr.	54.9	9.9
5 yr.	139.9	31.7

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
21.95	23.67	25.04	26.61	27.28	24.26	26.34	29.05	29.40	30.12	30.52	28.98	30.98	33.43	35.18	36.42	<b>35.05</b>	<b>37.65</b>	Revenues per sh	<b>40.50</b>
3.78	4.05	4.36	4.68	4.74	4.43	4.64	4.86	4.87	5.04	5.34	5.36	5.91	6.46	7.76	8.14	<b>8.30</b>	<b>8.30</b>	"Cash Flow" per sh	<b>9.50</b>
1.41	1.55	1.82	2.07	2.19	2.00	2.10	2.14	2.08	2.15	2.48	2.53	2.91	3.22	4.20	4.40	<b>3.80</b>	<b>4.35</b>	Earnings per sh <sup>A</sup>	<b>5.45</b>
.75	.85	.88	.96	1.08	1.16	1.26	1.36	1.42	1.46	1.50	1.54	1.64	1.70	1.86	2.05	<b>2.18</b>	<b>2.40</b>	Div'ds Decl'd per sh <sup>B</sup>	<b>2.70</b>
2.21	2.14	2.49	2.42	2.49	2.43	2.32	2.88	3.25	2.74	2.51	2.76	3.05	3.48	4.00	4.28	<b>3.90</b>	<b>3.90</b>	Cap'l Spending per sh	<b>4.40</b>
10.47	11.08	11.66	11.58	12.03	12.93	13.18	13.18	13.69	12.29	12.79	11.95	12.06	13.89	14.80	16.66	<b>16.55</b>	<b>17.05</b>	Book Value per sh <sup>C</sup>	<b>18.45</b>
570.21	552.25	533.68	500.12	490.74	486.12	475.05	460.53	464.22	464.32	458.54	447.18	439.32	433.32	423.98	424.33	<b>422.40</b>	<b>422.40</b>	Common Shs Outst'g <sup>D</sup>	<b>420.00</b>
20.4	18.7	19.4	17.7	15.4	14.6	16.3	16.4	16.2	18.9	18.2	20.4	21.3	23.4	20.7	24.8	<b>20.7</b>	<b>24.8</b>	Avg Ann'l P/E Ratio	<b>22.0</b>
1.08	1.00	1.05	.94	.93	.97	1.04	1.03	1.03	1.06	.96	1.03	1.12	1.18	1.12	1.34	<b>1.12</b>	<b>1.34</b>	Relative P/E Ratio	<b>1.20</b>
2.6%	2.9%	2.5%	2.6%	3.2%	4.0%	3.7%	3.9%	4.2%	3.6%	3.3%	3.0%	2.6%	2.3%	2.1%	1.9%	<b>2.1%</b>	<b>1.9%</b>	Avg Ann'l Div'd Yield	<b>2.2%</b>

**CAPITAL STRUCTURE as of 6/30/20**  
 Total Debt \$12788 mill. Due in 5 Yrs \$3500 mill.  
 LT Debt \$9598 mill. LT Interest \$450 mill.  
 (LT int. earned: 6.4x)  
 (58% of Cap'l)

**Leases, Uncapitalized** Annual rentals \$63.0 mill.

**No Defined Benefit Pension Plan**

**Pfd Stock None.**

**Common Stock** 422,461,187 shs. as of 7/27/20  
**MARKET CAP: \$47.2 billion (Large Cap)**

12515	13378	13649	13983	13996	12961	13609	14485	14914	15455	<b>14800</b>	<b>15900</b>	Revenues (\$mill)	<b>17000</b>
25.8%	24.9%	24.7%	24.3%	25.1%	26.1%	27.3%	27.6%	28.2%	28.0%	<b>28.0%</b>	<b>28.5%</b>	Operating Margin	<b>29.5%</b>
1194.0	1229.0	1297.0	1333.0	1292.0	1245.0	1301.0	1376.0	1477.0	1574.0	<b>1600</b>	<b>1670</b>	Depreciation (\$mill)	<b>1700</b>
1011.0	1007.0	966.0	1008.0	1155.0	1153.0	1297.3	1425.0	1813.0	1881.0	<b>1605</b>	<b>1840</b>	Net Profit (\$mill)	<b>2300</b>
35.0%	33.6%	34.0%	30.0%	29.8%	32.7%	34.3%	36.0%	22.1%	20.2%	<b>21.0%</b>	<b>21.0%</b>	Income Tax Rate	<b>21.0%</b>
8.1%	7.5%	7.1%	7.2%	8.3%	8.9%	9.5%	9.8%	12.2%	12.2%	<b>10.8%</b>	<b>11.6%</b>	Net Profit Margin	<b>13.5%</b>
d3.0	d689.0	d613.0	d515.0	156.0	d165.0	d418.0	d638.0	d463.0	3065.0	<b>d650</b>	<b>d500</b>	Working Cap'l (\$mill)	<b>500</b>
8674.0	9125.0	9173.0	9500.0	8345.0	8728.0	8893.0	8752.0	9594.0	13280	<b>9500</b>	<b>9000</b>	Long-Term Debt (\$mill)	<b>8500</b>
6260.0	6070.0	6354.0	5707.0	5866.0	5345.0	5297.0	6019.0	6275.0	7068.0	<b>7000</b>	<b>7200</b>	Shr. Equity (\$mill)	<b>7750</b>
8.4%	8.2%	7.8%	8.2%	9.8%	9.6%	10.5%	10.9%	12.6%	10.3%	<b>11.0%</b>	<b>12.5%</b>	Return on Total Cap'l	<b>15.5%</b>
16.2%	16.6%	15.2%	17.7%	19.7%	21.6%	24.5%	23.7%	28.9%	26.6%	<b>23.0%</b>	<b>25.5%</b>	Return on Shr. Equity	<b>29.5%</b>
6.5%	6.1%	4.8%	5.7%	7.9%	8.6%	10.8%	11.2%	16.1%	14.2%	<b>10.0%</b>	<b>11.5%</b>	Retained to Com Eq	<b>15.0%</b>
60%	63%	68%	68%	60%	60%	56%	53%	44%	47%	<b>57%</b>	<b>55%</b>	All Div'ds to Net Prof	<b>49%</b>

**Business:** Waste Management is North America's largest provider of comprehensive waste management environmental services. It serves residential, commercial, industrial, & municipal customers. Sold waste-to-energy service business in 12/14. Owns/operates about 249 landfills, 103 material recovery facilities (MRFs), and 302 transfer stations; '19 sales mix consisted of collection (66%), landfill fees (25%), and recycling and transfer (9%); commercial and industrial customers account for approximately 46% of revenues. Has 44,900 employees. Off./Dirs. control less than 1.0% of stock (3/20 proxy). Chairman: Thomas Weidemeyer. CEO: James Fish. Inc.: DE. Addr.: 1001 Fannin St., Ste 4000, Houston, TX 77002. Tel.: 713-512-6200. Internet: www.wm.com.

**CURRENT POSITION (\$MILL)**

	2018	2019	6/30/20
Cash Assets	61	3561	2663
Receivables	1931	2319	1888
Other	653	329	555
Current Assets	2645	6209	5106
Accts Payable	1037	903	904
Debt Due	432	218	3190
Other	1639	2023	1678
Current Liab.	3108	3144	5772

**Waste Management posted modest results for the second quarter.** While the top and bottom lines declined about 10% and 21% year over year, to \$3.56 billion and \$0.88 per share, respectively, these figures topped our expectations and consensus forecasts. Total company volumes declined over 10% in the second quarter, mostly pressured by the pandemic. The commercial business line experienced an 11% drop in volumes, along with 16% in industrial, and 18% in landfill operations. Meanwhile, core pricing also remained weak, as the company halted price increases amid the health crisis. On the cost side, management adopted tight expense controls. Some initiatives included labor and route optimization in response to reduced volumes, along with the elimination of nonessential spending.

ating environment well, owing to its resilient business model. All told, share net for 2020 will probably take a step back before improving next year.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

Revenues	3.0%	3.0%	2.5%
"Cash Flow"	5.0%	8.0%	4.0%
Earnings	6.5%	12.0%	5.5%
Dividends	6.0%	5.0%	6.5%
Book Value	2.0%	3.0%	3.5%

**The trash hauler's near-term profit picture looks favorable.** Overall operations seem to be recovering. According to the latest report, commercial volumes are picking up, albeit slowly. The company noted healthy rebounds across the board. We think Waste Management will likely continue to navigate this challenging operating environment well, owing to its resilient business model. All told, share net for 2020 will probably take a step back before improving next year.

**The company remains on track to close its Advanced Disposal acquisition.** The transaction is expected to be finalized in the third quarter. These waste companies have decided to revise the terms of the agreement and sell all anticipated divestitures to GFL Environmental. Waste Management recently entered into an additional \$3 billion revolving credit facility to fund a portion of the aforesaid acquisition.

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	3440	3677	3716	3652	14485
2018	3511	3739	3822	3842	14914
2019	3696	3946	3967	3846	15455
2020	3729	3561	<b>3700</b>	<b>3810</b>	<b>14800</b>
2021	<b>3750</b>	<b>3850</b>	<b>4000</b>	<b>4300</b>	<b>15900</b>

**Shares of Waste Management have risen a notch on the Timeliness scale and are now ranked 2 (Above Average) for year-ahead relative price performance.** At the recent quotation, WM has limited long-term capital appreciation potential. On the bright side, the company continues to pay dividends amid the pandemic when many businesses have suspended payments. Plus, it appears that management will continue to reward shareholders through these distributions.

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**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.66	.82	.90	.85	3.22
2018	.91	1.01	1.15	1.13	4.20
2019	.94	1.11	1.19	1.19	4.40
2020	.93	.88	.95	<b>1.04</b>	<b>3.80</b>
2021	<b>.95</b>	<b>1.05</b>	<b>1.10</b>	<b>1.25</b>	<b>4.35</b>

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.41	.41	.41	.41	1.64
2017	.425	.425	.425	.425	1.70
2018	.465	.465	.465	.465	1.86
2019	.5125	.5125	.5125	.5125	2.05
2020	.545	.545			

(A) Based on diluted shares. Next earnings report due mid-Oct. Egs. may not sum due to rdg./shs. out. Excludes extraord. losses: '10, \$0.12; '11, \$0.10; '12, \$0.22; '13, \$1.94; '15, \$0.88. Excl. extraord. gains: '04, \$0.20; '05, \$0.54; '06, \$0.28; '07, \$0.16; '09, \$0.01; '14, \$0.31; '15, \$0.10; '16, \$0.26; '17, \$1.19; '18, \$0.25; '19, \$0.49.

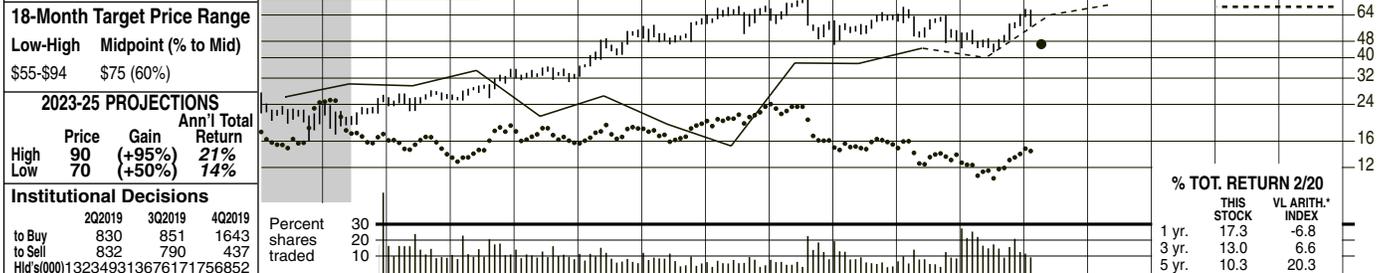
(B) Dividends usually paid in late March, June, Sept., and Dec. ■ Div. reinvestment plan avail. (C) Incl. intangs. At '19: 7.053 bill., \$16.62/sh. (D) In millions.

**Company's Financial Strength** A  
**Stock's Price Stability** 100  
**Price Growth Persistence** 75  
**Earnings Predictability** 100

# BRISTOL-MYERS SQ. NYSE-BMY

RECENT PRICE **46.40** P/E RATIO **21.9** (Trailing: 21.2, Median: 24.0) RELATIVE P/E RATIO **1.99** DIV'D YLD **3.9%** VALUE LINE **1618**

TIMELINESS <b>3</b> Raised 2/16/18	High: 26.6 28.0 35.4 36.3 54.5 61.8 70.9 77.1 66.1 70.1 64.8 68.3	Target Price Range 2023 2024 2025
SAFETY <b>2</b> Lowered 4/7/17	Low: 17.2 22.2 25.0 30.6 32.5 46.3 51.8 49.0 46.0 46.9 42.5 45.8	128
TECHNICAL <b>1</b> Raised 3/27/20	LEGENDS 13.0 x "Cash Flow" p sh Relative Price Strength Options: Yes Shaded area indicates recession	96
BETA .80 (1.00 = Market)		80



<b>2023-25 PROJECTIONS</b>	Price <b>90</b> Gain <b>(+95%)</b> Ann'l Total Return <b>21%</b>	
High <b>90</b> Low <b>70</b>	Gain <b>(+95%)</b> Ann'l Total Return <b>21%</b>	
<b>Institutional Decisions</b>		
2Q2019 3Q2019 4Q2019	Percent shares traded	30 20 10
to Buy 830 851 1643		
to Sell 832 790 437		
Hld's(000)132349313676171756852		

<p>Bristol-Myers Squibb was incorporated in Delaware in August 1933 as successor to a New York business started in 1887. The company was formed by a merger between Bristol-Myers Company and Squibb Corporation on October 4, 1989. The combination was effected through an exchange of 2.4 shares of Bristol-Myers for each share of Squibb. The merger was effected utilizing the pooling-of-interests accounting method.</p> <p><b>CAPITAL STRUCTURE as of 12/31/19</b> Total Debt \$46733 mill. Due in 5 Yrs \$3346 mill. LT Debt \$43387 mill. LT Interest \$654.1 mill. (46% of Cap'l)</p> <p>(Total interest coverage: .7x) Leases, Capitalized \$19.5 mill.</p> <p>Pension Assets-12/19 \$7.6 bill. Oblig. \$9.2 bill.</p> <p>Pfd Stock None Common Stock 1,635,389,026 shs. as of 1/21/20</p> <p>MARKET CAP: \$75.9 billion (Large Cap)</p>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
	11.47	12.61	10.81	9.98	9.55	9.97	11.67	12.79	13.89	15.28	24.40	26.45	Sales per sh	31.90
	2.26	2.68	1.62	2.03	1.49	1.17	2.91	2.89	3.42	3.05	4.90	5.50	"Cash Flow" per sh	6.15
	1.79	2.16	1.16	1.54	1.20	.93	2.65	2.32	3.01	2.01	3.85	4.45	Earnings per sh A	5.00
	1.28	1.33	1.37	1.41	1.45	1.49	1.53	1.57	1.60	1.63	1.80	1.84	Div'ds Decl'd per sh B	2.04
	.25	.22	.34	.33	.32	.49	.73	.65	.59	.50	.55	.60	Cap'l Spending per sh	.75
	9.20	9.42	8.36	9.28	9.01	8.59	9.72	7.23	8.64	30.15	31.25	32.40	Book Value per sh C	33.85
	1699.3	1685.3	1630.4	1641.3	1662.1	1661.0	1664.0	1625.0	1624.0	1711.4	1700.0	1700.0	Common Shs Outst'g D	1690.0
	14.3	13.4	28.7	28.6	43.6	69.3	23.9	24.8	19.1	28.4	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	16.0
	.91	.84	1.83	1.61	2.30	3.49	1.25	1.25	1.03	1.54			Relative P/E Ratio	.90
5.0%	4.6%	4.1%	3.2%	2.8%	2.3%	2.4%	2.7%	2.8%	2.9%			Avg Ann'l Div'd Yield	2.6%	
19484	21244	17621	16385	15879	16560	19427	20776	22561	26145	41450	45000	Sales (\$mill)	53880	
35.7%	37.9%	20.0%	23.9%	19.3%	16.0%	23.8%	17.4%	22.7%	17.5%	19.5%	21.0%	Operating Margin	19.0%	
744.0	801.0	681.0	763.0	467.0	376.0	382.0	789.0	637.0	1746	1750	1800	Depreciation (\$mill)	1965	
3102.0	3709.0	1960.0	2563.0	2004.0	1565.0	4457.0	3907.0	4920.0	3439	6545	7565	Net Profit (\$mill)	8450	
48.9%	46.9%	16.2%	11.3%	15.8%	24.7%	24.6%	23.9%	17.6%	30.4%	25.0%	23.0%	Income Tax Rate	20.0%	
15.9%	17.5%	11.1%	15.6%	12.6%	9.5%	22.9%	18.8%	21.8%	13.2%	15.8%	16.8%	Net Profit Margin	15.7%	
6534.0	7538.0	1242.0	6476.0	6147.0	2398.0	4863.0	5291.0	8839.0	11041	11000	11000	Working Cap'l (\$mill)	11800	
5328.0	5376.0	6568.0	7981.0	7242.0	6550.0	5716.0	6975.0	5646.0	43387	43300	43000	Long-Term Debt (\$mill)	48100	
15638	15867	13638	15236	14983	14266	16177	11741	14031	51598	53120	55100	Shr. Equity (\$mill) C	57230	
15.6%	18.3%	10.7%	12.0%	9.8%	8.3%	21.1%	21.9%	26.0%	4.0%	8.5%	9.0%	Return on Total Cap'l	12.5%	
19.8%	23.4%	14.4%	16.8%	13.4%	11.0%	27.6%	33.3%	35.1%	6.7%	12.5%	13.5%	Return on Shr. Equity	15.0%	
5.8%	9.2%	NMF	1.7%	NMF	NMF	11.8%	11.3%	16.4%	1.3%	6.5%	8.0%	Retained to Com Eq	8.5%	
71%	61%	117%	90%	120%	NMF	57%	66%	53%	81%	47%	41%	All Div'ds to Net Prof	41%	

**BUSINESS:** Bristol-Myers Squibb manufactures proprietary medical products, ethical pharmaceuticals, diagnostics, infant formula, orthopedic implants, health and beauty aids. Major brand names include: *Plavix, Avapro, Pravachol, Coumadin, Reyataz, Sustiva, Baraclude, Erbitux, Taxol, Sprycel, Ixempra, Abilify, Enfamil, Engagrow, and Nivolumab*. Foreign sales represent 61% of '19 total, (45% of op. profit); R&D, 27.2%. '19 depreciation rate: 10.4%. Estimated plant age: 20 years. Has about 26,200 employees. Off. & dir. own less than 1% of stock; Wellington, 8.2%; Vanguard, 7.7%; BlackRock, 7.4% (3/20 proxy). Chairman and CEO: Giovanni Caforio MD. Incorp.: DE. Address: 430 East 29th street, 14th floor, New York, NY 10016. Tel.: 212-546-4000. Internet: www.bms.com.

<b>ANNUAL RATES</b>	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '23-'25
of change (per sh)			
Sales	2.5%	3.0%	7.5%
"Cash Flow"	6.5%	8.0%	7.5%
Earnings	8.5%	10.5%	9.0%
Dividends	3.0%	2.5%	1.5%
Book Value	4.0%	-1.0%	4.0%

Cal-endar	QUARTERLY SALES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	4929	5144	5254	5449	20776
2018	5193	5704	5691	5973	22561
2019	5920	6273	6007	7945	26145
2020	9850	10200	10500	10900	41450
2021	11000	11200	11500	11300	45000

Cal-endar	EARNINGS PER SHARE A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.94	.58	.51	.29	2.32
2018	.91	.23	1.16	.73	3.03
2019	1.04	.87	.83	.73	2.01
2020	1.00	.95	.90	1.00	3.85
2021	1.10	1.15	1.10	1.10	4.45

Cal-endar	QUARTERLY DIVIDENDS PAID B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.38	.38	.38	.39	1.53
2017	.39	.39	.39	.40	1.57
2018	.40	.40	.40	.40	1.60
2019	.40	.41	.41	.41	1.63
2020	.45				

(A) Based on GAAP diluted shares outstanding. Next earnings report due late April. Includes extraordinary charge of \$0.83 in 2012; \$1.10 in 2017. (B) Dividends historically paid in the first week of February, May, August, and November. (C) Includes intangibles. In '19: \$8.22 million, \$5.02/sh. (D) In millions.

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**Company's Financial Strength** A++  
**Stock's Price Stability** 65  
**Price Growth Persistence** 55  
**Earnings Predictability** 40

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drugs are passing through their clinical trials untainted. Should all three medicines pass muster with the FDA, shareholders would receive a contingent value right worth \$9 a share. This should stoke share-price ascension. It should be remembered, though, that this industry treats setbacks harshly. Any failure to launch would likely result in a stock price dip. Readers ought to be reminded of the stock's precipitous 23% drop in August, 2016 after rising star *Opdivo* failed a key clinical trial.

**Bristol-Myers is one of the rare drug stocks that has a Beta below 1.00.** It is therefore worth considering for relative safety, even if the equity's long-term total return potential is below average. Our projections are based on at least two of the three Celgene treatments acquiring FDA approval. We are skeptical as to whether all three will achieve that milestone. Statistics weigh heavily against such a scenario. Meantime, the well-covered and growing dividend ought to provide some comfort. We advise investors to consider this issue.

Jeremy J. Butler  
April 3, 2020

Advertisement

**Air Products and Chemicals, Inc. (APD)** ☆ Add to watchlist 📈 Visitors trend 2W ↓ 10W ↑ 3M ↑ Quote Lookup

**NYSE - Nasdaq Real Time Price** Currency in USD

**288.59** +2.15 (+0.75%)  
As of 1:07PM EDT, Market open

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options

Earnings Estimate	Currency in USD			
	Current Qtr (Sep 2020)	Next Qtr (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	17	9	22	23
Avg. Estimate	2.19	2.39	8.38	9.8
Low Estimate	2.06	2.23	8.25	9.09
High Estimate	2.44	2.6	8.65	10.4
Year Ago EPS	2.27	2.14	8.21	8.38

Revenue Estimate	Currency in USD			
	Current Qtr (Sep 2020)	Next Qtr (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	12	5	20	20
Avg. Estimate	2.25B	2.33B	8.78B	9.57B
Low Estimate	2.18B	2.28B	8.67B	9.18B
High Estimate	2.42B	2.47B	8.96B	10.44B
Year Ago Sales	2.28B	2.25B	8.92B	8.78B
Sales Growth (year/est)	-1.50%	3.40%	-1.50%	8.90%

Earnings History	Currency in USD			
	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	2.29	2.08	2.06	1.99
EPS Actual	2.27	2.14	2.04	2.01
Difference	-0.02	0.06	-0.02	0.02
Surprise %	-0.90%	2.95%	-1.00%	1.00%

EPS Trend	Currency in USD			
	Current Qtr (Sep 2020)	Next Qtr (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	2.19	2.39	8.38	9.8
7 Days Ago	2.19	2.39	8.38	9.8
30 Days Ago	2.18	2.38	8.36	9.81
60 Days Ago	2.21	2.42	8.42	9.82
90 Days Ago	2.21	2.42	8.38	9.85

EPS Revisions	Currency in USD			
	Current Qtr (Sep 2020)	Next Qtr (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	1	N/A	1
Up Last 30 Days	4	4	9	9
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	Currency in USD			
	APD	Industry	Sector(s)	S&P 500
Current Qtr.	-3.50%	N/A	N/A	N/A
Next Qtr.	11.70%	N/A	N/A	N/A
Current Year	2.10%	N/A	N/A	N/A
Next Year	16.90%	N/A	N/A	N/A
Next 5 Years (per annum)	10.33%	N/A	N/A	N/A
Past 5 Years (per annum)	4.80%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
ECL Ecolab Inc.	196.54	+1.69	+0.87%
DOV Dover Corporation	110.28	+0.34	+0.31%
PPG PPG Industries, Inc.	120.23	+2.00	+1.69%
BDX Baxter International Inc.	255.88	-1.85	-0.72%
ITW Illinois Tool Works Inc.	195.62	+0.48	+0.25%



**Upgrades & Downgrades**

Maintains	BMO Capital to Outperform	8/14/2020
Maintains	Morgan Stanley to Overweight	7/28/2020
Maintains	BMO Capital to Outperform	7/24/2020
Maintains	Credit Suisse to Outperform	7/24/2020
Maintains	Barclays to Overweight	7/24/2020
Maintains	UBS to Neutral	7/9/2020

More Upgrades & Downgrades

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**Amdocs Limited (DOX)**  
 NasdaqGS - NasdaqGS Delayed Price. Currency in USD  
**60.29 +0.63 (+1.06%)**  
 As of 1:08PM EDT. Market open.

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Earnings Estimate				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	7	4	7	7
Avg. Estimate	1.18	1.14	4.4	4.72
Low Estimate	1.17	1.1	4.39	4.54
High Estimate	1.2	1.19	4.41	4.96
Year Ago EPS	1.08	1.06	4.31	4.4

Revenue Estimate				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	6	4	6	6
Avg. Estimate	1.03B	1.06B	4.15B	4.28B
Low Estimate	1.03B	1.05B	4.15B	4.21B
High Estimate	1.04B	1.08B	4.15B	4.35B
Year Ago Sales	1.03B	1.04B	4.09B	4.15B
Sales Growth (year/est)	0.50%	1.80%	1.60%	3.20%

Earnings History				
	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	1.08	1.05	1.06	1.05
EPS Actual	1.08	1.06	1.08	1.07
Difference	0	0.01	0.02	0.02
Surprise %	0.00%	1.00%	1.90%	1.90%

EPS Trend				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.18	1.14	4.4	4.72
7 Days Ago	1.18	1.14	4.4	4.72
30 Days Ago	1.16	1.15	4.35	4.69
60 Days Ago	1.16	1.15	4.35	4.69
90 Days Ago	1.18	1.16	4.47	4.8

EPS Revisions				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	5	1	7	5
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates				
	DOX	Industry	Sector(s)	S&P 500
Current Qtr.	9.30%	N/A	N/A	N/A
Next Qtr.	7.50%	N/A	N/A	N/A
Current Year	2.10%	N/A	N/A	N/A
Next Year	7.30%	N/A	N/A	N/A
Next 5 Years (per annum)	4.40%	N/A	N/A	N/A
Past 5 Years (per annum)	6.34%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
CSGS	43.46	-0.05	-0.11%
NICE	217.07	-8.30	-3.68%
CHKP	129.84	+1.47	+1.15%
DSPG	14.63	+0.14	+0.97%
AUDC	32.83	-1.44	-4.20%

**Recommendation Trends >**



**Analyst Price Targets (7) >**



**Upgrades & Downgrades >**

Maintains	Citigroup: to Buy	5/11/2020
Maintains	Baird: to Neutral	2/5/2020
Maintains	Citigroup: to Buy	1/15/2020
Maintains	JP Morgan: to Neutral	11/13/2019
Maintains	JP Morgan: to Neutral	8/8/2019
Maintains	Citigroup: Buy to Buy	8/2/2018

[More Upgrades & Downgrades](#)



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**Amgen Inc. (AMGN)**

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

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**234.81** -2.83 (-1.19%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	23	23	28	29
Avg. Estimate	3.8	3.57	15.76	16.84
Low Estimate	3.46	3.13	15.36	15.63
High Estimate	4.18	4.1	16.61	19.94
Year Ago EPS	3.66	3.64	14.82	15.76

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	20	20	27	27
Avg. Estimate	6.35B	6.63B	25.44B	26.52B
Low Estimate	5.92B	6.42B	25.02B	25.46B
High Estimate	6.6B	7B	26B	27.77B
Year Ago Sales	5.74B	6.2B	23.75B	25.44B
Sales Growth (year/est)	10.70%	7.00%	7.10%	4.30%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	3.53	3.46	3.76
EPS Actual	3.66	3.64	4.17	4.25
Difference	0.13	0.18	0.41	0.43
Surprise %	3.70%	5.20%	10.90%	11.30%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	3.8	3.57	15.76	16.84
7 Days Ago	3.8	3.57	15.76	16.84
30 Days Ago	3.93	3.68	15.63	16.92
60 Days Ago	3.89	3.67	15.56	16.91
90 Days Ago	3.93	3.68	15.58	17

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	5	5	18	12
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	AMGN	Industry	Sector(s)	S&P 500
	Current Qtr.	3.80%	N/A	N/A
Next Qtr.	-1.90%	N/A	N/A	N/A
Current Year	6.30%	N/A	N/A	N/A
Next Year	6.90%	N/A	N/A	N/A
Next 5 Years (per annum)	6.87%	N/A	N/A	N/A
Past 5 Years (per annum)	10.84%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>BIIB</b> Biogen Inc.	276.34	-0.73	-0.26%
<b>GILD</b> Gilead Sciences, Inc.	65.73	-0.77	-1.16%
<b>BMJ</b> Bristol-Myers Squibb Company	61.96	-0.23	-0.38%
<b>MRK</b> Merck & Company, Inc.	84.99	+0.01	+0.01%
<b>LLY</b> Eli Lilly and Company	148.79	-0.47	-0.31%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (25) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	SunTrust Robinson Humphrey: to Buy	7/30/2020
<b>Maintains</b>	JP Morgan: to Neutral	7/29/2020
<b>Maintains</b>	Piper Sandler: to Overweight	7/29/2020
<b>Maintains</b>	Jefferies: to Buy	7/29/2020
<b>Maintains</b>	Cantor Fitzgerald: to Overweight	7/29/2020
<b>Maintains</b>	Morgan Stanley: to Overweight	7/29/2020

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**Amphenol Corporation (APH)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**108.48** +0.24 (+0.22%)

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	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
<b>Earnings Estimate</b>				
No. of Analysts	15	15	16	16
Avg. Estimate	0.86	0.94	3.31	3.95
Low Estimate	0.84	0.85	3.15	3.7
High Estimate	0.89	1.01	3.4	4.06
Year Ago EPS	0.95	0.98	3.74	3.31
<b>Revenue Estimate</b>				
No. of Analysts	13	13	15	15
Avg. Estimate	2.01B	2.11B	7.95B	8.62B
Low Estimate	1.98B	2.02B	7.78B	8.38B
High Estimate	2.07B	2.17B	8.03B	8.93B
Year Ago Sales	2.1B	2.15B	8.23B	7.95B
Sales Growth (year/est)	-4.40%	-2.10%	-3.40%	8.40%
<b>Earnings History</b>				
	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	0.87	0.91	0.73	0.62
EPS Actual	0.95	0.98	0.71	0.81
Difference	0.08	0.07	-0.02	0.19
Surprise %	9.20%	7.70%	-2.70%	30.60%
<b>EPS Trend</b>				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.86	0.94	3.31	3.95
7 Days Ago	0.86	0.94	3.31	3.95
30 Days Ago	0.85	0.93	3.27	3.92
60 Days Ago	0.75	0.86	2.96	3.69
90 Days Ago	0.75	0.86	2.95	3.67
<b>EPS Revisions</b>				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	2	2	2	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
<b>Growth Estimates</b>				
	APH	Industry	Sector(s)	S&P 500
Current Qtr.	-9.50%	N/A	N/A	N/A
Next Qtr.	-4.10%	N/A	N/A	N/A
Current Year	-11.50%	N/A	N/A	N/A
Next Year	19.30%	N/A	N/A	N/A
Next 5 Years (per annum)	3.00%	N/A	N/A	N/A
Past 5 Years (per annum)	12.84%	N/A	N/A	N/A

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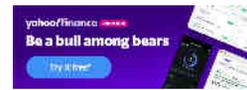


Aqueon Aquarium 20 Gallon Long

(86)

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>AME</b> AMETEK, Inc.	99.98	-0.26	-0.26%
<b>AIZ</b> Assurant, Inc.	122.84	+2.20	+1.82%
<b>TEL</b> TE Connectivity Ltd. New Switze	94.21	+0.67	+0.72%
<b>AON</b> Aon plc	190.89	-2.75	-1.42%
<b>BLL</b> Ball Corporation	77.22	+0.60	+0.78%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (13) >**



**Upgrades & Downgrades >**

<b>Downgrade</b>	Morgan Stanley: Overweight to Equal-Weight	8/24/2020
<b>Maintains</b>	Morgan Stanley: to Overweight	7/23/2020
<b>Maintains</b>	Stifel: to Hold	6/23/2020
<b>Maintains</b>	Morgan Stanley: to Overweight	6/16/2020
<b>Maintains</b>	JP Morgan: to Neutral	4/23/2020
<b>Maintains</b>	Wells Fargo: to Overweight	4/23/2020

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**Apple Inc. (AAPL)**

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

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**507.11** +9.63 (+1.94%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	28	24	35	35
Avg. Estimate	2.8	5.45	12.97	15.52
Low Estimate	2.18	4.76	12.36	12.67
High Estimate	3.19	6.82	13.52	18
Year Ago EPS	3.03	4.99	11.89	12.97

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	26	24	33	33
Avg. Estimate	63.51B	100.36B	273.38B	307.34B
Low Estimate	52.55B	89.92B	262.36B	272.68B
High Estimate	68.5B	115.7B	280.89B	331.53B
Year Ago Sales	64.04B	88.5B	260.17B	273.38B
Sales Growth (year/est)	-0.80%	13.40%	5.10%	12.40%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	2.84	4.55	2.26
EPS Actual	3.03	4.99	2.55	2.58
Difference	0.19	0.44	0.29	0.54
Surprise %	6.70%	9.70%	12.80%	26.50%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	2.8	5.45	12.97	15.52
7 Days Ago	2.84	5.44	13	15.54
30 Days Ago	2.79	5.22	12.41	14.94
60 Days Ago	2.82	5.21	12.39	14.86
90 Days Ago	2.8	5.22	12.32	14.73

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	11	10	27	24
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	AAPL	Industry	Sector(s)	S&P 500
	Current Qtr.	-7.60%	N/A	N/A
Next Qtr.	9.20%	N/A	N/A	N/A
Current Year	9.10%	N/A	N/A	N/A
Next Year	19.70%	N/A	N/A	N/A
Next 5 Years (per annum)	12.46%	N/A	N/A	N/A
Past 5 Years (per annum)	8.42%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
AMZN	3,316.12	+31.40	+0.96%
GOOG	1,589.43	+9.01	+0.57%
FB	270.82	+3.80	+1.43%
TSLA	2,035.99	-13.99	-0.68%
NFLX	489.43	-2.88	-0.58%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (37) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	Morgan Stanley: to Overweight	8/24/2020
<b>Maintains</b>	Wedbush: to Outperform	8/10/2020
<b>Maintains</b>	Wells Fargo: to Overweight	8/5/2020
<b>Downgrade</b>	B of A Securities: Buy to Neutral	8/5/2020
<b>Maintains</b>	Cascend: to Buy	7/31/2020
<b>Maintains</b>	Canaccord Genuity: to Buy	7/31/2020

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AT&T Inc. (T)

NYSE - Nasdaq Real Time Price, Currency in USD

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29.91 +0.22 (+0.73%)

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Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials Analysis Options ...

Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	23	21	24	25
Avg. Estimate	0.77	0.75	3.19	3.24
Low Estimate	0.72	0.68	3.12	3.02
High Estimate	0.82	0.83	3.29	3.45
Year Ago EPS	0.94	0.89	3.57	3.19

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	21	19	23	23
Avg. Estimate	41.67B	44.07B	169.56B	171.62B
Low Estimate	40.24B	41.3B	166.2B	166.75B
High Estimate	42.57B	45.42B	171.55B	177.84B
Year Ago Sales	44.59B	46.82B	181.26B	169.56B
Sales Growth (year/est)	-6.50%	-5.90%	-6.50%	1.20%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	0.93	0.87	0.85
EPS Actual	0.94	0.89	0.84	0.83
Difference	0.01	0.02	-0.01	0.04
Surprise %	1.10%	2.30%	-1.20%	5.10%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.77	0.75	3.19	3.24
7 Days Ago	0.77	0.75	3.2	3.25
30 Days Ago	0.79	0.75	3.18	3.26
60 Days Ago	0.81	0.76	3.2	3.31
90 Days Ago	0.81	0.77	3.23	3.35

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	1	1	1	1
Up Last 30 Days	5	5	6	8
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	T	Industry	Sector(s)	S&P 500
	Current Qtr.	-18.10%	N/A	N/A
Next Qtr.	-15.70%	N/A	N/A	N/A
Current Year	-10.60%	N/A	N/A	N/A
Next Year	1.60%	N/A	N/A	N/A
Next 5 Years (per annum)	0.29%	N/A	N/A	N/A
Past 5 Years (per annum)	8.93%	N/A	N/A	N/A

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Aquaponic Aquarium 20 Gallon Long (86) \$124.99 [Shop now](#)

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People Also Watch

Symbol	Last Price	Change	% Change
MCD	212.59	+1.01	+0.48%
GE	6.55	+0.24	+3.72%
VZ	59.44	+0.45	+0.77%
KO	47.78	+0.50	+1.05%
INTC	48.97	-0.31	-0.62%

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (25) >



Upgrades & Downgrades >

Maintains	Deutsche Bank: to Buy	8/4/2020
Maintains	ScotiaBank: to Sector Perform	7/24/2020
Maintains	Morgan Stanley: to Overweight	7/1/2020
Maintains	Deutsche Bank: to Buy	4/28/2020
Downgrade	DZ Bank: Hold to Sell	4/24/2020
Maintains	Guggenheim: to Buy	4/23/2020

More Upgrades & Downgrades

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**Baxter International Inc. (BAX)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**83.62 +0.53 (+0.64%)**

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	16	16	17	17
Avg. Estimate	0.72	0.88	3.06	3.69
Low Estimate	0.68	0.83	3.01	3.49
High Estimate	0.76	0.93	3.16	3.94
Year Ago EPS	0.74	0.97	3.31	3.06

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	15	15	17	17
Avg. Estimate	2.83B	3.06B	11.42B	12.13B
Low Estimate	2.77B	2.99B	11.33B	11.79B
High Estimate	2.89B	3.13B	11.53B	12.54B
Year Ago Sales	2.85B	3.04B	11.36B	11.42B
Sales Growth (year/est)	-0.70%	0.80%	0.50%	6.30%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	0.84	0.88	0.72
EPS Actual	0.74	0.97	0.82	0.64
Difference	-0.1	0.09	0.1	-0.07
Surprise %	-11.90%	10.20%	13.90%	-9.90%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.72	0.88	3.06	3.69
7 Days Ago	0.72	0.88	3.06	3.69
30 Days Ago	0.82	0.94	3.3	3.8
60 Days Ago	0.82	0.94	3.31	3.82
90 Days Ago	0.84	0.96	3.35	3.88

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	2	N/A	1
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	BAX	Industry	Sector(s)	S&P 500
	Current Qtr.	-2.70%	N/A	N/A
Next Qtr.	-9.30%	N/A	N/A	N/A
Current Year	-7.60%	N/A	N/A	N/A
Next Year	20.60%	N/A	N/A	N/A
Next 5 Years (per annum)	10.00%	N/A	N/A	N/A
Past 5 Years (per annum)	-4.79%	N/A	N/A	N/A

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People Also Watch

Symbol	Last Price	Change	% Change
<b>BDX</b>	255.94	-1.78	-0.69%
Becton, Dickinson and Company			
<b>CAH</b>	49.61	-0.24	-0.48%
Cardinal Health, Inc.			
<b>EW</b>	78.51	-0.20	-0.25%
Edwards Lifesciences Corporation			
<b>BSX</b>	38.60	+0.17	+0.44%
Boston Scientific Corporation			
<b>ABT</b>	101.44	-0.96	-0.94%
Abbott Laboratories			

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (16) >



Upgrades & Downgrades >

<b>Maintains</b>	Raymond James: to Outperform	7/31/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	7/31/2020
<b>Maintains</b>	UBS: to Buy	5/1/2020
<b>Maintains</b>	SVB Leerink: to Outperform	5/1/2020
<b>Maintains</b>	Credit Suisse: to Outperform	5/1/2020
<b>Maintains</b>	KeyBanc: to Overweight	5/1/2020

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**Bristol-Myers Squibb Company (BMJ)**

NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**61.96** -0.23 (-0.37%)

As of 1:13PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options ...

Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	9	9	11	12
Avg. Estimate	1.49	1.43	6.27	7.4
Low Estimate	1.36	1.34	6.19	6.83
High Estimate	1.57	1.54	6.36	7.81
Year Ago EPS	1.17	1.22	4.69	6.27

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	7	7	12	12
Avg. Estimate	10.31B	10.71B	41.91B	45.42B
Low Estimate	10.2B	10.58B	41.7B	44.81B
High Estimate	10.48B	10.94B	42.13B	46.39B
Year Ago Sales	6.01B	7.95B	26.14B	41.91B
Sales Growth (year/est)	71.70%	34.80%	60.30%	8.40%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	1.07	0.88	1.49
EPS Actual	1.17	1.22	1.72	1.63
Difference	0.1	0.34	0.23	0.15
Surprise %	9.30%	38.60%	15.40%	10.10%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.49	1.43	6.27	7.4
7 Days Ago	1.49	1.43	6.27	7.4
30 Days Ago	1.52	1.49	6.2	7.42
60 Days Ago	1.51	1.49	6.19	7.41
90 Days Ago	1.57	1.5	6.17	7.38

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	2	1	11	8
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	BMJ	Industry	Sector(s)	S&P 500
	Current Qtr.	27.40%	N/A	N/A
Next Qtr.	17.20%	N/A	N/A	N/A
Current Year	33.70%	N/A	N/A	N/A
Next Year	18.00%	N/A	N/A	N/A
Next 5 Years (per annum)	18.40%	N/A	N/A	N/A
Past 5 Years (per annum)	21.58%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>MRK</b>	84.97	-0.01	-0.01%
Merck & Company, Inc.			
<b>LLY</b>	148.93	-0.33	-0.22%
Eli Lilly and Company			
<b>ABT</b>	101.50	-0.90	-0.87%
Abbott Laboratories			
<b>PFE</b>	38.62	-0.26	-0.66%
Pfizer, Inc.			
<b>JNJ</b>	151.39	-0.36	-0.23%
Johnson & Johnson			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (12) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	Morgan Stanley: to Overweight	8/14/2020
<b>Maintains</b>	Morgan Stanley: to Overweight	8/12/2020
<b>Maintains</b>	CFRA: to Buy	5/7/2020
<b>Maintains</b>	B of A Securities: to Buy	4/2/2020
<b>Downgrade</b>	Societe Generale: Buy to Hold	3/23/2020
<b>Upgrade</b>	Argus Research: Hold to Buy	12/13/2019

More Upgrades & Downgrades



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**Brown & Brown, Inc. (BRO)**

NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**45.68 +0.16 (+0.35%)**

As of 1:10PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials Analysis Options ...

Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	9	8	8	9
Avg. Estimate	0.41	0.28	1.53	1.63
Low Estimate	0.35	0.25	1.45	1.5
High Estimate	0.46	0.3	1.6	1.71
Year Ago EPS	0.39	0.28	1.4	1.53

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	8	8	9	9
Avg. Estimate	637.15M	601.74M	2.54B	2.68B
Low Estimate	605.86M	577.48M	2.48B	2.55B
High Estimate	653.3M	613.61M	2.56B	2.76B
Year Ago Sales	618.7M	579M	2.39B	2.54B
Sales Growth (year/est)	3.00%	3.90%	6.10%	5.60%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	0.38	0.26	0.46
EPS Actual	0.39	0.28	0.51	0.34
Difference	0.01	0.02	0.05	0.06
Surprise %	2.60%	7.70%	10.90%	21.40%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.41	0.28	1.53	1.63
7 Days Ago	0.41	0.28	1.53	1.63
30 Days Ago	0.39	0.26	1.44	1.55
60 Days Ago	0.38	0.25	1.42	1.54
90 Days Ago	0.4	0.27	1.43	1.56

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	3	2	N/A
Up Last 30 Days	2	9	11	11
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	BRO	Industry	Sector(s)	S&P 500
	Current Qtr.	5.10%	N/A	N/A
Next Qtr.	N/A	N/A	N/A	N/A
Current Year	9.30%	N/A	N/A	N/A
Next Year	6.50%	N/A	N/A	N/A
Next 5 Years (per annum)	8.93%	N/A	N/A	N/A
Past 5 Years (per annum)	12.70%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
AJG	103.20	-0.27	-0.26%
EV	39.14	+0.73	+1.90%
RNR	175.81	+3.20	+1.85%
ATR	118.97	+1.17	+0.99%
GGG	57.73	+0.50	+0.87%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (9) >**



**Upgrades & Downgrades >**

Maintains	Morgan Stanley: to Equal-Weight	7/29/2020
Maintains	Morgan Stanley: to Equal-Weight	5/18/2020
Maintains	Morgan Stanley: to Equal-Weight	5/1/2020
Maintains	Morgan Stanley: to Equal-Weight	4/23/2020
Maintains	Wells Fargo: to Equal-Weight	4/2/2020
Maintains	Raymond James: to Outperform	3/24/2020

[More Upgrades & Downgrades](#)



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**Brown-Forman Corporation (BF-B)**

NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**72.56 +0.48 (+0.67%)**

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Earnings Estimate		Current Qtr. (Jul 2020)	Next Qtr. (Oct 2020)	Current Year (2021)	Next Year (2022)
No. of Analysts		15	14	18	15
Avg. Estimate		0.31	0.51	1.64	1.83
Low Estimate		0.26	0.4	1.44	1.67
High Estimate		0.41	0.56	1.88	2.07
Year Ago EPS		0.39	0.59	1.72	1.64

Revenue Estimate		Current Qtr. (Jul 2020)	Next Qtr. (Oct 2020)	Current Year (2021)	Next Year (2022)
No. of Analysts		10	10	15	14
Avg. Estimate		689.32M	937M	3.29B	3.48B
Low Estimate		653M	830.9M	3.08B	3.25B
High Estimate		734.3M	1.01B	3.48B	3.71B
Year Ago Sales		N/A	989M	3.36B	3.29B
Sales Growth (year/est)		N/A	-5.30%	-2.30%	6.00%

Earnings History		7/30/2019	10/30/2019	1/30/2020	4/29/2020
EPS Est.		0.37	0.52	0.5	0.28
EPS Actual		0.39	0.59	0.48	0.27
Difference		0.02	0.07	-0.02	-0.01
Surprise %		5.40%	13.50%	-4.00%	-3.60%

EPS Trend		Current Qtr. (Jul 2020)	Next Qtr. (Oct 2020)	Current Year (2021)	Next Year (2022)
Current Estimate		0.31	0.51	1.64	1.83
7 Days Ago		0.31	0.51	1.64	1.83
30 Days Ago		0.31	0.51	1.64	1.83
60 Days Ago		0.31	0.51	1.65	1.86
90 Days Ago		0.36	0.54	1.72	1.91

EPS Revisions		Current Qtr. (Jul 2020)	Next Qtr. (Oct 2020)	Current Year (2021)	Next Year (2022)
Up Last 7 Days		N/A	N/A	N/A	N/A
Up Last 30 Days		1	1	1	2
Down Last 7 Days		N/A	N/A	N/A	N/A
Down Last 30 Days		N/A	N/A	N/A	N/A

Growth Estimates		BF-B	Industry	Sector(s)	S&P 500
Current Qtr.		-20.50%	N/A	N/A	N/A
Next Qtr.		-13.60%	N/A	N/A	N/A
Current Year		-4.70%	N/A	N/A	N/A
Next Year		11.60%	N/A	N/A	N/A
Next 5 Years (per annum)		3.33%	N/A	N/A	N/A
Past 5 Years (per annum)		5.47%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>CINF</b>	78.98	+1.64	+2.12%
<small>Cincinnati Financial Corporation</small>			
<b>DOV</b>	110.18	+0.24	+0.22%
<small>Dover Corporation</small>			
<b>CTAS</b>	324.82	+4.43	+1.38%
<small>Cintas Corporation</small>			
<b>MKC</b>	202.82	-0.33	-0.16%
<small>McCormick &amp; Company, Incorporated</small>			
<b>BF-A</b>	66.33	+0.30	+0.45%
<small>Brown Forman Inc</small>			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (15) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	Morgan Stanley: to Underweight	6/10/2020
<b>Maintains</b>	Deutsche Bank: to Hold	6/10/2020
<b>Maintains</b>	Morgan Stanley: to Underweight	6/8/2020
<b>Downgrade</b>	UBS: Neutral to Sell	5/27/2020
<b>Maintains</b>	Deutsche Bank: to Hold	5/22/2020
<b>Maintains</b>	Morgan Stanley: to Underweight	3/16/2020

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**Church & Dwight Co., Inc. (CHD)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**96.36** -0.14 (-0.15%)

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Earnings Estimate				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	16	16	17	18
Avg. Estimate	0.67	0.55	2.81	2.99
Low Estimate	0.6	0.51	2.72	2.68
High Estimate	0.7	0.6	2.86	3.2
Year Ago EPS	0.66	0.55	2.47	2.81

Revenue Estimate				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	12	12	14	15
Avg. Estimate	1.19B	1.23B	4.78B	4.92B
Low Estimate	1.17B	1.21B	4.75B	4.79B
High Estimate	1.21B	1.25B	4.82B	5.07B
Year Ago Sales	1.09B	1.14B	4.36B	4.78B
Sales Growth (year/est)	9.50%	7.30%	9.70%	2.90%

Earnings History				
	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	0.61	0.55	0.77	0.63
EPS Actual	0.66	0.55	0.83	0.77
Difference	0.05	0	0.06	0.14
Surprise %	8.20%	0.00%	7.80%	22.20%

EPS Trend				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.67	0.55	2.81	2.99
7 Days Ago	0.67	0.55	2.81	2.99
30 Days Ago	0.7	0.58	2.73	2.92
60 Days Ago	0.69	0.57	2.72	2.9
90 Days Ago	0.69	0.57	2.71	2.89

EPS Revisions				
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	3	3	14	14
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates				
	CHD	Industry	Sector(s)	S&P 500
Current Qtr.	1.50%	N/A	N/A	N/A
Next Qtr.	N/A	N/A	N/A	N/A
Current Year	13.80%	N/A	N/A	N/A
Next Year	6.40%	N/A	N/A	N/A
Next 5 Years (per annum)	9.48%	N/A	N/A	N/A
Past 5 Years (per annum)	10.93%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>MKC</b>	202.82	-0.33	-0.16%
McCormick & Company, Incorporated			
<b>HRL</b>	52.60	-0.08	-0.15%
Hormel Foods Corporation			
<b>ECL</b>	196.57	+1.72	+0.88%
Ecolab Inc.			
<b>CLX</b>	223.42	-2.91	-1.29%
Clorox Company (The)			
<b>SJM</b>	113.23	+1.14	+1.02%
J.M. Smucker Company (The) New			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (15) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	Citigroup: to Neutral	8/4/2020
<b>Maintains</b>	Deutsche Bank: to Hold	8/3/2020
<b>Maintains</b>	Jefferies: to Buy	8/3/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	8/3/2020
<b>Maintains</b>	Credit Suisse: to Outperform	8/3/2020
<b>Maintains</b>	RBC Capital: to Sector Perform	8/3/2020

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**The Coca-Cola Company (KO)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**47.76 +0.49 (+1.03%)**

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	16	16	22	22
Avg. Estimate	0.46	0.42	1.82	2.06
Low Estimate	0.42	0.36	1.69	1.88
High Estimate	0.49	0.46	1.89	2.25
Year Ago EPS	0.56	0.44	2.11	1.82

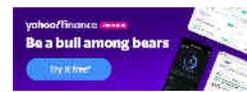
Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	12	12	16	17
Avg. Estimate	8.35B	8.65B	32.76B	36.13B
Low Estimate	7.97B	8.31B	31.94B	34.01B
High Estimate	8.7B	9.04B	33.59B	38.31B
Year Ago Sales	9.5B	9.09B	37.28B	32.76B
Sales Growth (year/est)	-12.10%	-4.80%	-12.10%	10.30%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	0.56	0.44	0.44
EPS Actual	0.56	0.44	0.51	0.42
Difference	0	0	0.07	0.02
Surprise %	0.00%	0.00%	15.90%	5.00%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.46	0.42	1.82	2.06
7 Days Ago	0.46	0.42	1.82	2.06
30 Days Ago	0.46	0.42	1.83	2.07
60 Days Ago	0.48	0.45	1.87	2.1
90 Days Ago	0.49	0.45	1.88	2.11

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	1	N/A	1	1

Growth Estimates	KO	Industry	Sector(s)	S&P 500
	Current Qtr.	-17.90%	N/A	N/A
Next Qtr.	-4.50%	N/A	N/A	N/A
Current Year	-13.70%	N/A	N/A	N/A
Next Year	13.20%	N/A	N/A	N/A
Next 5 Years (per annum)	2.94%	N/A	N/A	N/A
Past 5 Years (per annum)	1.91%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>PG</b>	137.87	+0.43	+0.31%
Procter & Gamble Company (The)			
<b>DIS</b>	129.98	+2.54	+1.99%
Walt Disney Company (The)			
<b>JNJ</b>	151.40	-0.35	-0.23%
Johnson & Johnson			
<b>VZ</b>	59.42	+0.43	+0.74%
Verizon Communications Inc.			
<b>HD</b>	285.95	+2.72	+0.96%
Home Depot, Inc. (The)			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (20) >**



**Upgrades & Downgrades >**

<b>Upgrade</b>	Morgan Stanley: Equal-Weight to Overweight	7/22/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	6/8/2020
<b>Maintains</b>	Citigroup: to Neutral	4/22/2020
<b>Maintains</b>	Jefferies: to Hold	4/22/2020
<b>Maintains</b>	UBS: to Buy	4/22/2020
<b>Maintains</b>	RBC Capital: to Outperform	4/22/2020

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**Colgate-Palmolive Company (CL)**

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

**79.14 +0.45 (+0.57%)**

As of 1:16PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials Analysis Options Holders Sustainability

Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	15	15	20	20
Avg. Estimate	0.7	0.76	2.96	3.13
Low Estimate	0.67	0.72	2.88	3.05
High Estimate	0.72	0.8	3.05	3.25
Year Ago EPS	0.71	0.73	2.83	2.96

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	10	10	16	16
Avg. Estimate	3.97B	4.03B	16B	16.46B
Low Estimate	3.91B	3.94B	15.8B	16.15B
High Estimate	4.04B	4.11B	16.15B	16.75B
Year Ago Sales	3.93B	4.01B	15.69B	16B
Sales Growth (year/est)	1.10%	0.30%	1.90%	2.90%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	0.7	0.73	0.74
EPS Actual	0.71	0.73	0.75	0.74
Difference	0.01	0	0.01	0.05
Surprise %	1.40%	0.00%	1.40%	7.20%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.7	0.76	2.96	3.13
7 Days Ago	0.7	0.76	2.96	3.13
30 Days Ago	0.69	0.76	2.9	3.06
60 Days Ago	0.68	0.75	2.88	3.04
90 Days Ago	0.68	0.74	2.87	3.05

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	10	7	18	16
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	CL	Industry	Sector(s)	S&P 500
	Current Qtr.	-1.40%	N/A	N/A
Next Qtr.	4.10%	N/A	N/A	N/A
Current Year	4.60%	N/A	N/A	N/A
Next Year	5.70%	N/A	N/A	N/A
Next 5 Years (per annum)	5.91%	N/A	N/A	N/A
Past 5 Years (per annum)	0.22%	N/A	N/A	N/A

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People Also Watch

Symbol	Last Price	Change	% Change
CLX	223.51	-2.82	-1.24%
KMB	157.44	+0.14	+0.09%
GIS	64.07	+0.06	+0.09%
PEP	137.19	+0.73	+0.53%
EMR	68.54	+0.68	+1.00%

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (19) >



Upgrades & Downgrades >

Maintains	Deutsche Bank: to Hold	8/3/2020
Maintains	Morgan Stanley: to Equal-Weight	8/3/2020
Maintains	Deutsche Bank: to Hold	7/27/2020
Downgrade	Morgan Stanley: Overweight to Equal-Weight	7/22/2020
Maintains	SunTrust Robinson Humphrey: to Buy	5/15/2020
Maintains	Stifel: to Buy	5/4/2020

[More Upgrades & Downgrades](#)

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### Comcast Corporation (CMCSA)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

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# 43.59 +0.52 (+1.21%)

As of 1:17PM EDT. Market open.

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	27	23	27	27
Avg. Estimate	0.47	0.53	2.4	2.96
Low Estimate	0.38	0.39	2.25	2.42
High Estimate	0.5	0.64	2.56	3.38
Year Ago EPS	0.79	0.79	3.13	2.4

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	25	22	27	26
Avg. Estimate	24.6B	27.15B	102.12B	110.72B
Low Estimate	22.99B	26.09B	100.09B	106.79B
High Estimate	25.22B	28.36B	103.7B	115.09B
Year Ago Sales	26.83B	28.4B	108.94B	102.12B
Sales Growth (year/est)	-8.30%	-4.40%	-6.30%	8.40%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	0.75	0.76	0.68
EPS Actual	0.79	0.79	0.71	0.69
Difference	0.04	0.03	0.03	0.14
Surprise %	5.30%	3.90%	4.40%	25.50%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.47	0.53	2.4	2.96
7 Days Ago	0.47	0.53	2.4	2.96
30 Days Ago	0.44	0.63	2.33	2.92
60 Days Ago	0.46	0.63	2.33	2.91
90 Days Ago	0.47	0.64	2.37	2.93

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	1	N/A	1	1
Up Last 30 Days	18	N/A	23	17
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	N/A	N/A

Growth Estimates	CMCSA	Industry	Sector(s)	S&P 500
	Current Qtr.	-40.50%	N/A	N/A
Next Qtr.	-32.90%	N/A	N/A	N/A
Current Year	-23.30%	N/A	N/A	N/A
Next Year	23.30%	N/A	N/A	N/A
Next 5 Years (per annum)	4.95%	N/A	N/A	N/A
Past 5 Years (per annum)	16.90%	N/A	N/A	N/A



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#### People Also Watch

Symbol	Last Price	Change	% Change
VZ	59.42	+0.43	+0.74%
CVS	63.50	-0.44	-0.69%
VOD	15.28	+0.30	+1.97%
PEP	137.17	+0.71	+0.52%
COST	343.47	-1.14	-0.33%

#### Recommendation Trends >



#### Recommendation Rating >



#### Analyst Price Targets (30) >



#### Upgrades & Downgrades >

Maintains	Citigroup: to Buy	8/4/2020
Maintains	Morgan Stanley: to Overweight	7/31/2020
Maintains	Rosenblatt: to Buy	7/31/2020
Upgrade	Bernstein: Market Perform to Outperform	7/1/2020
Maintains	Wells Fargo: to Overweight	6/24/2020
Maintains	Morgan Stanley: to Overweight	6/24/2020

[More Upgrades & Downgrades](#)





**Commerce Bancshares, Inc. (CBSH)**

NasdaqGS - NasdaqGS Delayed Price. Currency in USD

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Visitors trend 2W ↓ 10W ↑ 9M ↑

Quote Lookup

**59.71** +1.22 (+2.09%)

As of 1:17PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials Analysis Options Holders Sustainability

Earnings Estimate Current Qtr. (Sep 2020) Next Qtr. (Dec 2020) Current Year (2020) Next Year (2021) Currency in USD

No. of Analysts	10	10	10	10
Avg. Estimate	0.7	0.79	2.27	3.01
Low Estimate	0.56	0.61	2.06	2.83
High Estimate	0.88	0.98	2.64	3.36
Year Ago EPS	0.93	0.85	3.5	2.27

Revenue Estimate Current Qtr. (Sep 2020) Next Qtr. (Dec 2020) Current Year (2020) Next Year (2021)

No. of Analysts	7	7	8	8
Avg. Estimate	339.94M	340.92M	1.32B	1.32B
Low Estimate	328.81M	329M	1.29B	1.28B
High Estimate	349.2M	357M	1.35B	1.35B
Year Ago Sales	336.25M	346.12M	1.35B	1.32B
Sales Growth (year/est)	1.10%	-1.50%	-1.90%	-0.10%

Earnings History 9/29/2019 12/30/2019 3/30/2020 6/29/2020

EPS Est.	0.88	0.87	0.55	0.53
EPS Actual	0.93	0.85	0.44	0.34
Difference	0.05	-0.02	-0.11	-0.19
Surprise %	5.70%	-2.30%	-20.00%	-35.80%

EPS Trend Current Qtr. (Sep 2020) Next Qtr. (Dec 2020) Current Year (2020) Next Year (2021)

Current Estimate	0.7	0.79	2.27	3.01
7 Days Ago	0.7	0.79	2.27	3.01
30 Days Ago	0.77	0.78	2.48	2.97
60 Days Ago	0.72	0.69	2.41	2.95
90 Days Ago	0.72	0.74	2.48	2.98

EPS Revisions Current Qtr. (Sep 2020) Next Qtr. (Dec 2020) Current Year (2020) Next Year (2021)

Up Last 7 Days	1	N/A	1	1
Up Last 30 Days	1	3	2	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates CBSH Industry Sector(s) S&P 500

Current Qtr.	-24.70%	N/A	N/A	N/A
Next Qtr.	-7.10%	N/A	N/A	N/A
Current Year	-35.10%	N/A	N/A	N/A
Next Year	32.60%	N/A	N/A	N/A
Next 5 Years (per annum)	-8.70%	N/A	N/A	N/A
Past 5 Years (per annum)	15.37%	N/A	N/A	N/A

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People Also Watch

Symbol	Last Price	Change	% Change
<b>UMBF</b>	54.52	+1.77	+3.36%
UMB Financial Corporation			
<b>CFR</b>	71.68	+1.97	+2.83%
Cullen/Frost Bankers, Inc.			
<b>BOKF</b>	57.22	+2.39	+4.36%
BOK Financial Corporation			
<b>CTBI</b>	32.85	+0.90	+2.83%
Community Trust Bancorp, Inc.			
<b>UBSI</b>	27.17	+0.83	+3.13%
United Bankshares, Inc.			

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (9) >



Upgrades & Downgrades >

<b>Maintains</b>	Morgan Stanley: to Underweight	6/8/2020
<b>Maintains</b>	Piper Sandler: to Neutral	4/29/2020
<b>Maintains</b>	Morgan Stanley: to Underweight	4/7/2020
<b>Upgrade</b>	Raymond James: Underperform to Market Perform	4/6/2020
<b>Maintains</b>	Wells Fargo: to Underweight	3/30/2020
<b>Maintains</b>	Morgan Stanley: to Underweight	3/17/2020

More Upgrades & Downgrades

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**Costco Wholesale Corporation (COST)**

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

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Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

**343.48** -1.13 (-0.33%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Aug 2020)	Next Qtr. (Nov 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	28	20	20	33
Avg. Estimate	2.77	1.89	8.55	9.36
Low Estimate	2.58	1.67	8.3	8.4
High Estimate	3.01	2.12	8.9	10.63
Year Ago EPS	2.69	1.73	8.19	8.55

Revenue Estimate	Currency in USD			
	Current Qtr. (Aug 2020)	Next Qtr. (Nov 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	23	18	28	28
Avg. Estimate	51.82B	39.36B	165B	175.55B
Low Estimate	47.61B	37.56B	160.99B	165.12B
High Estimate	54.89B	40.52B	168.06B	182.16B
Year Ago Sales	47.5B	N/A	152.7B	165B
Sales Growth (year/est)	9.10%	N/A	8.10%	6.40%

Earnings History	8/30/2019	11/29/2019	2/28/2020	5/30/2020
	EPS Est.	2.54	1.71	2.06
EPS Actual	2.69	1.73	2.1	1.89
Difference	0.15	0.02	0.04	-0.06
Surprise %	5.90%	1.20%	1.90%	-3.10%

EPS Trend	Currency in USD			
	Current Qtr. (Aug 2020)	Next Qtr. (Nov 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	2.77	1.89	8.55	9.36
7 Days Ago	2.77	1.89	8.55	9.39
30 Days Ago	2.71	1.86	8.45	9.3
60 Days Ago	2.67	1.85	8.42	9.26
90 Days Ago	2.8	1.88	8.67	9.37

EPS Revisions	Currency in USD			
	Current Qtr. (Aug 2020)	Next Qtr. (Nov 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	1	N/A	1	1
Up Last 30 Days	13	5	15	16
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	COST	Industry	Sector(s)	S&P 500
	Current Qtr.	3.00%	N/A	N/A
Next Qtr.	9.20%	N/A	N/A	N/A
Current Year	4.40%	N/A	N/A	N/A
Next Year	9.50%	N/A	N/A	N/A
Next 5 Years (per annum)	7.15%	N/A	N/A	N/A
Past 5 Years (per annum)	11.80%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
WMT	130.66	-0.97	-0.74%
TGT	153.45	-0.18	-0.12%
SBUX	78.74	+1.67	+2.16%
HD	285.97	+2.74	+0.97%
V	205.63	+1.50	+0.73%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (26) >**



**Upgrades & Downgrades >**

Maintains	Raymond James: to Outperform	8/12/2020
Maintains	Stifel: to Buy	8/6/2020
Maintains	Citigroup: to Neutral	8/6/2020
Maintains	Deutsche Bank: to Hold	7/30/2020
Maintains	Oppenheimer: to Outperform	7/9/2020
Maintains	Deutsche Bank: to Hold	7/9/2020

[More Upgrades & Downgrades](#)





**CVS Health Corporation (CVS)**  
NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**63.53** -0.40 (-0.63%)  
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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	21	21	25	25
Avg. Estimate	1.32	1.36	7.22	7.54
Low Estimate	1.22	1.27	7.14	7.31
High Estimate	1.39	1.44	7.32	7.75
Year Ago EPS	1.84	1.73	7.08	7.22

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	15	15	19	19
Avg. Estimate	66.53B	68.59B	267.07B	276.88B
Low Estimate	65.08B	66.2B	261.7B	267.59B
High Estimate	68.14B	70.24B	270.42B	287.01B
Year Ago Sales	64.81B	66.89B	256.78B	267.07B
Sales Growth (year/est)	2.70%	2.50%	4.00%	3.70%

Earnings History	Currency in USD			
	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	1.77	1.68	1.63	1.93
EPS Actual	1.84	1.73	1.91	2.64
Difference	0.07	0.05	0.28	0.71
Surprise %	4.00%	3.00%	17.20%	36.80%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.32	1.36	7.22	7.54
7 Days Ago	1.32	1.36	7.22	7.54
30 Days Ago	1.66	1.67	7.14	7.54
60 Days Ago	1.68	1.68	7.13	7.53
90 Days Ago	1.79	1.8	7.04	7.54

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	21	11
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	CVS	Industry	Sector(s)	S&P 500
	Current Qtr.	-28.30%	N/A	N/A
Next Qtr.	-21.40%	N/A	N/A	N/A
Current Year	2.00%	N/A	N/A	N/A
Next Year	4.40%	N/A	N/A	N/A
Next 5 Years (per annum)	6.34%	N/A	N/A	N/A
Past 5 Years (per annum)	10.62%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>WBA</b>	39.56	+0.10	+0.24%
<small>Walgreens Boots Alliance, Inc.</small>			
<b>UNH</b>	309.16	-4.98	-1.59%
<small>UnitedHealth Group Incorporated</small>			
<b>TGT</b>	153.49	-0.14	-0.09%
<small>Target Corporation</small>			
<b>ABBV</b>	94.33	-0.53	-0.56%
<small>AbbVie Inc.</small>			
<b>BMJ</b>	61.99	-0.20	-0.32%
<small>Bristol-Myers Squibb Company</small>			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (24) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	Credit Suisse: to Outperform	8/7/2020
<b>Maintains</b>	SVB Leerink: to Market Perform	8/6/2020
<b>Upgrade</b>	Credit Suisse: Neutral to Outperform	5/14/2020
<b>Maintains</b>	Citigroup: to Buy	5/7/2020
<b>Maintains</b>	UBS: to Buy	5/7/2020
<b>Maintains</b>	Baird: to Neutral	5/7/2020

[More Upgrades & Downgrades](#)





**Danaher Corporation (DHR)**  
NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**206.06** -1.74 (-0.84%)  
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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	16	16	19	19
Avg. Estimate	1.36	1.62	5.49	6.42
Low Estimate	1.3	1.52	5.3	5.99
High Estimate	1.44	1.78	5.88	7.02
Year Ago EPS	1.06	1.28	4.42	5.49

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	15	15	17	17
Avg. Estimate	5.49B	6.15B	21.31B	24.19B
Low Estimate	5.32B	5.9B	20.93B	22.6B
High Estimate	5.73B	6.65B	22.02B	25.8B
Year Ago Sales	5.04B	4.87B	17.91B	21.31B
Sales Growth (year/est)	9.10%	26.30%	19.00%	13.50%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	1.15	1.25	1.02
EPS Actual	1.06	1.28	1.05	1.44
Difference	-0.09	0.03	0.03	0.35
Surprise %	-7.80%	2.40%	2.90%	32.10%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.36	1.62	5.49	6.42
7 Days Ago	1.36	1.62	5.49	6.42
30 Days Ago	1.31	1.61	5.24	6.18
60 Days Ago	1.27	1.58	4.96	5.88
90 Days Ago	1.28	1.61	5.03	5.82

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	4	4	6	5
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	DHR	Industry	Sector(s)	S&P 500
	Current Qtr.	28.30%	N/A	N/A
Next Qtr.	26.60%	N/A	N/A	N/A
Current Year	24.20%	N/A	N/A	N/A
Next Year	16.90%	N/A	N/A	N/A
Next 5 Years (per annum)	13.02%	N/A	N/A	N/A
Past 5 Years (per annum)	2.93%	N/A	N/A	N/A



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**People Also Watch**

Symbol	Last Price	Change	% Change
TMO	419.52	-9.05	-2.11%
FTV	71.68	-0.04	-0.05%
BDX	255.86	-1.86	-0.72%
ECL	196.54	+1.69	+0.87%
DOV	110.17	+0.22	+0.20%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (15) >**



**Upgrades & Downgrades >**

Maintains	UBS: to Buy	7/27/2020
Maintains	Needham: to Buy	7/27/2020
Maintains	Stifel: to Hold	7/24/2020
Maintains	Jefferies: to Buy	7/24/2020
Maintains	B of A Securities: to Buy	7/20/2020
Maintains	Credit Suisse: to Outperform	5/21/2020

[More Upgrades & Downgrades](#)





**Hormel Foods Corporation (HRL)**  
NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**52.60** -0.08 (-0.15%)  
As of 1:20PM EDT. Market open.

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Earnings Estimate	Currency in USD			
	Current Qtr. (Jul 2020)	Next Qtr. (Oct 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	11	11	12	12
Avg. Estimate	0.34	0.45	1.66	1.82
Low Estimate	0.27	0.44	1.59	1.71
High Estimate	0.39	0.47	1.72	1.95
Year Ago EPS	0.37	0.47	1.74	1.66

Revenue Estimate	Currency in USD			
	Current Qtr. (Jul 2020)	Next Qtr. (Oct 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	9	9	10	11
Avg. Estimate	2.37B	2.6B	9.75B	10.11B
Low Estimate	2.22B	2.5B	9.54B	9.83B
High Estimate	2.5B	2.84B	10.13B	10.9B
Year Ago Sales	2.29B	2.5B	9.5B	9.75B
Sales Growth (year/est)	3.30%	3.90%	2.60%	3.70%

Earnings History	7/30/2019	10/30/2019	1/30/2020	4/29/2020
	EPS Est.	0.36	0.46	0.46
EPS Actual	0.37	0.47	0.45	0.42
Difference	0.01	0.01	-0.01	-0.01
Surprise %	2.80%	2.20%	-2.20%	-2.30%

EPS Trend	Currency in USD			
	Current Qtr. (Jul 2020)	Next Qtr. (Oct 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.34	0.45	1.66	1.82
7 Days Ago	0.34	0.45	1.66	1.82
30 Days Ago	0.34	0.45	1.65	1.82
60 Days Ago	0.34	0.45	1.65	1.82
90 Days Ago	0.4	0.47	1.74	1.84

EPS Revisions	Currency in USD			
	Current Qtr. (Jul 2020)	Next Qtr. (Oct 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	2	N/A	2	1
Up Last 30 Days	3	N/A	3	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	1	N/A	1	1

Growth Estimates	HRL	Industry	Sector(s)	S&P 500
	Current Qtr.	-8.10%	N/A	N/A
Next Qtr.	-4.30%	N/A	N/A	N/A
Current Year	-4.60%	N/A	N/A	N/A
Next Year	9.60%	N/A	N/A	N/A
Next 5 Years (per annum)	2.90%	N/A	N/A	N/A
Past 5 Years (per annum)	7.98%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>MKC</b>	202.86	-0.29	-0.14%
<small>McCormick &amp; Company, Incorporated</small>			
<b>GPC</b>	94.86	+1.58	+1.69%
<small>Genuine Parts Company</small>			
<b>GWW</b>	347.27	-5.34	-1.51%
<small>WW Grainger, Inc.</small>			
<b>DOV</b>	110.21	+0.27	+0.25%
<small>Dover Corporation</small>			
<b>LEG</b>	40.17	+0.32	+0.80%
<small>Leggett &amp; Platt, Incorporated</small>			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (10) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	CFRA: to Hold	5/21/2020
<b>Downgrade</b>	Piper Sandler: Overweight to Neutral	4/29/2020
<b>Maintains</b>	Barclays: to Equal-Weight	3/31/2020
<b>Upgrade</b>	Goldman Sachs: Sell to Neutral	3/26/2020
<b>Upgrade</b>	CFRA: Sell to Hold	3/9/2020
<b>Reiterates</b>	Stephens & Co.: to Equal-Weight	11/27/2019

[More Upgrades & Downgrades](#)





**International Flavors & Fragrances Inc. (IFF)**

NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**122.07** +1.52 (+1.26%)

As of 1:20PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials Analysis Options Holders Sustainability

Earnings Estimate	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	8	8	12	11
Avg. Estimate	1.45	1.35	5.76	6.25
Low Estimate	1.39	1.24	5.55	5.74
High Estimate	1.53	1.47	5.98	7.13
Year Ago EPS	1.53	1.46	6.17	5.76

Revenue Estimate	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	7	7	12	9
Avg. Estimate	1.29B	1.28B	5.1B	5.33B
Low Estimate	1.26B	1.25B	4.98B	5.22B
High Estimate	1.31B	1.32B	5.17B	5.5B
Year Ago Sales	1.27B	1.28B	5.14B	5.1B
Sales Growth (year/est)	1.40%	-0.00%	-0.80%	4.60%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	1.53	1.45	1.59	1.31
EPS Actual	1.53	1.46	1.62	1.36
Difference	0	0.01	0.03	0.05
Surprise %	0.00%	0.70%	1.90%	3.80%

EPS Trend	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.45	1.35	5.76	6.25
7 Days Ago	1.45	1.35	5.75	6.3
30 Days Ago	1.45	1.35	5.79	6.35
60 Days Ago	1.45	1.37	5.88	6.46
90 Days Ago	1.53	1.38	6.07	6.66

EPS Revisions	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	1	N/A	1	N/A
Up Last 30 Days	4	4	6	3
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	1	1	2

Growth Estimates	IFF	Industry	Sector(s)	S&P 500
Current Qtr.	-5.20%	N/A	N/A	N/A
Next Qtr.	-7.50%	N/A	N/A	N/A
Current Year	-6.60%	N/A	N/A	N/A
Next Year	8.50%	N/A	N/A	N/A
Next 5 Years (per annum)	0.38%	N/A	N/A	N/A
Past 5 Years (per annum)	4.94%	N/A	N/A	N/A



People Also Watch

Symbol	Last Price	Change	% Change
IPG	18.12	+0.64	+3.66%
EMN	72.66	+1.86	+2.63%
GWW	346.95	-5.66	-1.61%
MKC	202.86	-0.29	-0.14%
SEE	41.17	+0.30	+0.73%

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (13) >



Upgrades & Downgrades >

Maintains	Stifel: to Hold	8/12/2020
Downgrade	Exane BNP Paribas: Neutral to Underperform	6/22/2020
Maintains	CFRA: to Buy	5/13/2020
Maintains	Citigroup: to Neutral	5/13/2020
Maintains	UBS: to Buy	5/12/2020
Upgrade	Wells Fargo: Equal-Weight to Overweight	4/29/2020

More Upgrades & Downgrades



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**Johnson & Johnson (JNJ)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**151.52** -0.23 (-0.15%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	15	15	19	19
Avg. Estimate	1.96	1.93	7.87	9.04
Low Estimate	1.79	1.78	7.75	8.63
High Estimate	2.1	2.07	7.95	9.45
Year Ago EPS	2.12	1.88	8.68	7.87

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	13	13	17	17
Avg. Estimate	20.07B	21.41B	80.61B	87.5B
Low Estimate	19.33B	20.67B	79.73B	85.58B
High Estimate	20.53B	22.04B	81.26B	89.81B
Year Ago Sales	20.73B	20.75B	82.06B	80.61B
Sales Growth (year/est)	-3.20%	3.20%	-1.80%	8.50%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	2.01	1.87	1.99
EPS Actual	2.12	1.88	2.3	1.67
Difference	0.11	0.01	0.31	0.18
Surprise %	5.50%	0.50%	15.60%	12.10%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.96	1.93	7.87	9.04
7 Days Ago	1.96	1.93	7.87	9.04
30 Days Ago	1.96	1.93	7.87	9.04
60 Days Ago	1.92	2	7.72	9.05
90 Days Ago	1.92	2	7.72	9.06

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	JNJ	Industry	Sector(s)	S&P 500
	Current Qtr.	-7.50%	N/A	N/A
Next Qtr.	2.70%	N/A	N/A	N/A
Current Year	-9.30%	N/A	N/A	N/A
Next Year	14.90%	N/A	N/A	N/A
Next 5 Years (per annum)	5.08%	N/A	N/A	N/A
Past 5 Years (per annum)	9.93%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>PG</b>	137.94	+0.50	+0.36%
Procter & Gamble Company (The)			
<b>PFE</b>	38.64	-0.24	-0.62%
Pfizer, Inc.			
<b>MRK</b>	84.99	+0.01	+0.01%
Merck & Company, Inc.			
<b>KO</b>	47.77	+0.49	+1.04%
Coca-Cola Company (The)			
<b>XOM</b>	41.81	+0.80	+1.95%
Exxon Mobil Corporation			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (16) >**



**Upgrades & Downgrades >**

- Upgrade** Independent Research: Hold to Buy 7/20/2020
- Maintains** Barclays: to Overweight 4/29/2020
- Maintains** Morgan Stanley: to Overweight 4/29/2020
- Downgrade** UBS: Buy to Neutral 4/28/2020
- Upgrade** B of A Securities: Neutral to Buy 4/22/2020
- Maintains** Stifel: to Hold 4/15/2020

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**Kellogg Company (K)**

NYSE - Nasdaq Real Time Price, Currency in USD

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Quote Lookup

**69.36 +0.47 (+0.68%)**

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Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials Analysis Options Holders Sustainability

Earnings Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
No. of Analysts	15	17
Avg. Estimate	0.85	3.96
Low Estimate	0.78	3.61
High Estimate	1	4.2
Year Ago EPS	1.03	3.94

Revenue Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
No. of Analysts	14	15
Avg. Estimate	3.37B	13.32B
Low Estimate	3.26B	12.96B
High Estimate	3.47B	13.79B
Year Ago Sales	3.35B	13.66B
Sales Growth (year/est)	0.70%	-2.50%

Earnings History	Currency in USD			
	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	0.91	0.85	0.95	0.94
EPS Actual	1.03	0.91	0.99	1.24
Difference	0.12	0.06	0.04	0.3
Surprise %	13.20%	7.10%	4.20%	31.90%

EPS Trend	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
Current Estimate	0.85	3.96
7 Days Ago	0.85	3.96
30 Days Ago	0.94	3.89
60 Days Ago	0.93	3.89
90 Days Ago	0.94	3.91

EPS Revisions	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A
Up Last 30 Days	1	18
Down Last 7 Days	N/A	N/A
Down Last 30 Days	N/A	N/A

Growth Estimates	K		Industry		Sector(s)		S&P 500	
	Current Qtr.	Next Qtr.	Current Year	Next Year	Current Year	Next Year	Current Year	Next Year
Current Qtr.	-17.50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Next Qtr.	-6.60%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current Year	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Next Year	0.50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Next 5 Years (per annum)	1.75%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Past 5 Years (per annum)	3.73%	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>GIS</b> General Mills, Inc.	64.12	+0.11	+0.16%
<b>CPB</b> Campbell Soup Company	53.03	+0.49	+0.92%
<b>HSY</b> The Hershey Company	148.89	+1.46	+0.99%
<b>KMB</b> Kimberly-Clark Corporation	157.34	+0.04	+0.02%
<b>CL</b> Colgate-Palmolive Company	79.13	+0.44	+0.56%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (18) >**



**Upgrades & Downgrades >**

<b>Downgrade</b>	Goldman Sachs: Buy to Neutral	7/31/2020
<b>Maintains</b>	Credit Suisse: to Outperform	7/31/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	7/31/2020
<b>Downgrade</b>	Bernstein: Market Perform to Underperform	6/11/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	5/1/2020
<b>Maintains</b>	JP Morgan: to Neutral	4/17/2020

More Upgrades & Downgrades

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**Kimberly-Clark Corporation (KMB)**

NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**157.32** +0.02 (+0.01%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	11	11	14	14
Avg. Estimate	1.74	1.62	7.68	7.87
Low Estimate	1.62	1.55	7.5	7.35
High Estimate	1.84	1.76	7.94	8.28
Year Ago EPS	1.84	1.71	6.89	7.68

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	7	7	11	11
Avg. Estimate	4.57B	4.55B	18.75B	18.88B
Low Estimate	4.45B	4.44B	18.51B	18.43B
High Estimate	4.66B	4.63B	18.87B	19.56B
Year Ago Sales	4.64B	4.58B	18.45B	18.75B
Sales Growth (year/est)	-1.50%	-0.70%	1.60%	0.70%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	1.8	1.7	1.98
EPS Actual	1.84	1.71	2.13	2.2
Difference	0.04	0.01	0.15	0.4
Surprise %	2.20%	0.60%	7.60%	22.20%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.74	1.62	7.68	7.87
7 Days Ago	1.74	1.62	7.68	7.87
30 Days Ago	1.86	1.78	7.6	7.79
60 Days Ago	1.84	1.76	7.51	7.7
90 Days Ago	1.84	1.76	7.48	7.7

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	10	6
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	KMB	Industry	Sector(s)	S&P 500
	Current Qtr.	-5.40%	N/A	N/A
Next Qtr.	-5.30%	N/A	N/A	N/A
Current Year	11.50%	N/A	N/A	N/A
Next Year	2.50%	N/A	N/A	N/A
Next 5 Years (per annum)	6.20%	N/A	N/A	N/A
Past 5 Years (per annum)	3.89%	N/A	N/A	N/A



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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>CL</b>	79.13	+0.44	+0.56%
Colgate-Palmolive Company			
<b>CLX</b>	223.46	-2.87	-1.27%
Clorox Company (The)			
<b>GIS</b>	64.11	+0.10	+0.15%
General Mills, Inc.			
<b>PEP</b>	137.20	+0.74	+0.54%
PepsiCo, Inc.			
<b>EMR</b>	68.55	+0.69	+1.02%
Emerson Electric Company			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (12) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	Jefferies: to Buy	7/24/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	7/24/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	4/23/2020
<b>Maintains</b>	Deutsche Bank: to Hold	4/23/2020
<b>Maintains</b>	Jefferies: to Buy	4/22/2020
<b>Maintains</b>	Deutsche Bank: to Hold	4/16/2020

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**Eli Lilly and Company (LLY)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**149.03** -0.23 (-0.15%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	10	10	14	13
Avg. Estimate	1.72	1.91	7.24	8
Low Estimate	1.5	1.79	6.88	7.32
High Estimate	1.84	2.06	7.36	8.45
Year Ago EPS	1.48	1.73	6.04	7.24

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	8	8	13	12
Avg. Estimate	5.91B	6.55B	23.89B	25.93B
Low Estimate	5.77B	6.42B	23.72B	25.18B
High Estimate	6.08B	6.74B	24.21B	26.64B
Year Ago Sales	5.48B	6.11B	22.32B	23.89B
Sales Growth (year/est)	8.00%	7.10%	7.10%	8.50%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	1.4	1.52	1.48
EPS Actual	1.48	1.73	1.75	1.89
Difference	0.08	0.21	0.27	0.33
Surprise %	5.70%	13.80%	18.20%	21.20%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.72	1.91	7.24	8
7 Days Ago	1.72	1.91	7.24	8
30 Days Ago	1.71	1.82	6.81	7.95
60 Days Ago	1.7	1.82	6.81	7.92
90 Days Ago	1.69	1.84	6.83	7.88

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	7	8	14	4
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	LLY	Industry	Sector(s)	S&P 500
	Current Qtr.	16.20%	N/A	N/A
Next Qtr.	10.40%	N/A	N/A	N/A
Current Year	19.90%	N/A	N/A	N/A
Next Year	10.50%	N/A	N/A	N/A
Next 5 Years (per annum)	13.17%	N/A	N/A	N/A
Past 5 Years (per annum)	16.66%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>BMJ</b>	62.03	-0.16	-0.25%
Bristol-Myers Squibb Company			
<b>MRK</b>	84.96	-0.02	-0.02%
Merck & Company, Inc.			
<b>ABT</b>	101.49	-0.91	-0.89%
Abbott Laboratories			
<b>GSK</b>	40.33	+0.12	+0.30%
GlaxoSmithKline PLC			
<b>AMGN</b>	235.15	-2.49	-1.05%
Amgen Inc.			

**Recommendation Trends**



**Recommendation Rating**



**Analyst Price Targets (14)**



**Upgrades & Downgrades**

<b>Maintains</b>	Morgan Stanley: to Equal-Weight	8/14/2020
<b>Maintains</b>	JP Morgan: to Overweight	6/17/2020
<b>Maintains</b>	CFRA: to Hold	4/24/2020
<b>Downgrade</b>	UBS: Buy to Neutral	4/21/2020
<b>Maintains</b>	Cowen & Co.: to Outperform	4/15/2020
<b>Downgrade</b>	Morgan Stanley: Overweight to Equal-Weight	4/9/2020

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**Lockheed Martin Corporation (LMT)**  
NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**393.81** +4.24 (+1.09%)  
As of 1:23PM EDT. Market open.

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Earnings Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
No. of Analysts	19	23
Avg. Estimate	6.09	6.24
Low Estimate	5.85	5.83
High Estimate	6.46	6.51
Year Ago EPS	5.66	5.29

Revenue Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
No. of Analysts	16	20
Avg. Estimate	16.1B	16.65B
Low Estimate	15.79B	16.24B
High Estimate	16.46B	17.07B
Year Ago Sales	15.17B	15.88B
Sales Growth (year/est)	6.20%	4.90%

Earnings History	Currency in USD			
	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	5.02	5.03	5.8	5.72
EPS Actual	5.66	5.29	6.08	5.79
Difference	0.64	0.26	0.28	0.07
Surprise %	12.70%	5.20%	4.80%	1.20%

EPS Trend	Current Year (2020)		Next Year (2021)	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	6.09	6.24	24.17	26.65
7 Days Ago	6.09	6.24	24.17	26.65
30 Days Ago	6.09	6.24	24.17	26.66
60 Days Ago	6.13	6.26	24.15	26.44
90 Days Ago	6.13	6.26	24.15	26.46

EPS Revisions	Current Year (2020)		Next Year (2021)	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	LMT		Industry		Sector(s)		S&P 500	
	Current Qtr.	Next Qtr.	Current Year	Next Year	Current Year	Next Year	Current Year	Next Year
Current Qtr.	7.60%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Next Qtr.	18.00%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current Year	10.10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Next Year	10.30%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Next 5 Years (per annum)	9.11%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Past 5 Years (per annum)	15.84%	N/A	N/A	N/A	N/A	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>NOC</b>	342.29	+4.43	+1.31%
<small>Northrop Grumman Corporation</small>			
<b>GD</b>	152.43	+2.62	+1.75%
<small>General Dynamics Corporation</small>			
<b>BA</b>	174.74	+7.24	+4.33%
<small>Boeing Company (The)</small>			
<b>HON</b>	158.44	+0.94	+0.60%
<small>Honeywell International Inc.</small>			
<b>MMM</b>	162.38	+0.67	+0.41%
<small>3M Company</small>			



- Upgrades & Downgrades**
- Maintains** Argus Research: to Buy 7/24/2020
  - Maintains** UBS: to Buy 6/11/2020
  - Maintains** Credit Suisse: to Neutral 4/22/2020
  - Maintains** Morgan Stanley: to Equal-Weight 4/14/2020
  - Maintains** Morgan Stanley: to Equal-Weight 3/25/2020
  - Upgrade** DZ Bank: Hold to Buy 3/25/2020

[More Upgrades & Downgrades](#)





**Marsh & McLennan Companies, Inc. (MMC)**  
NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**112.36** -1.11 (-0.97%)  
As of 1:22PM EDT. Market open.

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Earnings Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
No. of Analysts	18	19
Avg. Estimate	0.72	5.11
Low Estimate	0.66	4.6
High Estimate	0.8	5.3
Year Ago EPS	0.77	4.79

Revenue Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
No. of Analysts	9	11
Avg. Estimate	3.83B	17.62B
Low Estimate	3.75B	17.07B
High Estimate	3.95B	18.15B
Year Ago Sales	3.97B	16.85B
Sales Growth (year/est)	-3.50%	4.60%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	0.7	1.18	1.57
EPS Actual	0.77	1.19	1.64	1.32
Difference	0.07	0.01	0.07	0.19
Surprise %	10.00%	0.80%	4.50%	16.80%

EPS Trend	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
Current Estimate	0.72	5.11
7 Days Ago	0.72	5.14
30 Days Ago	0.69	5.09
60 Days Ago	0.69	5.08
90 Days Ago	0.74	5.31

EPS Revisions	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A
Up Last 30 Days	6	5
Down Last 7 Days	N/A	N/A
Down Last 30 Days	1	1

Growth Estimates	MMC	Industry	Sector(s)	S&P 500
	Current Qtr.	-6.50%	N/A	N/A
Next Qtr.	-5.90%	N/A	N/A	N/A
Current Year	2.80%	N/A	N/A	N/A
Next Year	6.70%	N/A	N/A	N/A
Next 5 Years (per annum)	4.87%	N/A	N/A	N/A
Past 5 Years (per annum)	11.29%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
AON	191.08	-2.56	-1.32%
PGR	91.61	-0.21	-0.23%
LNC	36.08	+1.17	+3.34%
CB	123.13	+1.21	+0.99%
AJG	103.37	-0.10	-0.10%



**Upgrades & Downgrades**

Downgrade	B of A Securities: Neutral to Underperform	8/21/2020
Maintains	Raymond James: to Outperform	8/3/2020
Maintains	Morgan Stanley: to Equal-Weight	7/31/2020
Maintains	Morgan Stanley: to Equal-Weight	5/18/2020
Upgrade	Atlantic Equities: Neutral to Overweight	5/12/2020
Maintains	Raymond James: to Outperform	5/4/2020

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**Merck & Co., Inc. (MRK)**

NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**85.01 +0.03 (+0.04%)**

As of 1:24PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials **Analysis** Options Holders Sustainability

Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	10	10	14	15
Avg. Estimate	1.41	1.44	5.73	6.36
Low Estimate	1.19	1.27	5.54	5.62
High Estimate	1.51	1.59	5.86	6.87
Year Ago EPS	1.51	1.16	5.19	5.73

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	8	8	14	14
Avg. Estimate	12.08B	12.83B	48.03B	51.7B
Low Estimate	11.4B	12.58B	47.34B	49.19B
High Estimate	12.58B	13.42B	48.73B	54.81B
Year Ago Sales	12.4B	11.87B	46.84B	48.03B
Sales Growth (year/est)	-2.60%	8.10%	2.60%	7.60%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	1.24	1.15	1.34
EPS Actual	1.51	1.16	1.5	1.37
Difference	0.27	0.01	0.16	0.33
Surprise %	21.80%	0.90%	11.90%	31.70%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.41	1.44	5.73	6.36
7 Days Ago	1.41	1.44	5.73	6.36
30 Days Ago	1.36	1.4	5.31	6.08
60 Days Ago	1.34	1.4	5.3	6.08
90 Days Ago	1.42	1.4	5.37	6.07

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	7	4	14	13
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	MRK	Industry	Sector(s)	S&P 500
	Current Qtr.	-6.60%	N/A	N/A
Next Qtr.	24.10%	N/A	N/A	N/A
Current Year	10.40%	N/A	N/A	N/A
Next Year	11.00%	N/A	N/A	N/A
Next 5 Years (per annum)	6.25%	N/A	N/A	N/A
Past 5 Years (per annum)	8.65%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>PFE</b> Pfizer, Inc.	38.63	-0.25	-0.64%
<b>JNJ</b> Johnson & Johnson	151.47	-0.28	-0.18%
<b>PG</b> Procter & Gamble Company (The)	138.01	+0.57	+0.41%
<b>BMJ</b> Bristol-Myers Squibb Company	62.03	-0.15	-0.25%
<b>KO</b> Coca-Cola Company (The)	47.81	+0.53	+1.13%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (17) >**



**Upgrades & Downgrades >**

<b>Upgrade</b>	Goldman Sachs: Neutral to Buy	8/3/2020
<b>Downgrade</b>	Wolfe Research: Outperform to Peer Perform	6/12/2020
<b>Maintains</b>	Guggenheim: to Buy	4/29/2020
<b>Maintains</b>	Barclays: to Overweight	4/29/2020
<b>Maintains</b>	SVB Leerink: to Outperform	4/29/2020
<b>Maintains</b>	UBS: to Buy	4/13/2020

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**Microsoft Corporation (MSFT)**

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

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Quote Lookup

**213.49** +0.47 (+0.22%)

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Earnings Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
No. of Analysts	27	32
Avg. Estimate	1.54	1.61
Low Estimate	1.49	1.49
High Estimate	1.61	1.79
Year Ago EPS	1.38	1.51

Revenue Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
No. of Analysts	25	29
Avg. Estimate	35.69B	40.38B
Low Estimate	35.3B	38.84B
High Estimate	36.39B	41.78B
Year Ago Sales	33.05B	36.91B
Sales Growth (year/est)	8.00%	9.40%

Earnings History	Currency in USD	
	9/29/2019	12/30/2019
EPS Est.	1.24	1.32
EPS Actual	1.38	1.51
Difference	0.14	0.19
Surprise %	11.30%	14.40%

EPS Trend	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
Current Estimate	1.54	1.61
7 Days Ago	1.54	1.61
30 Days Ago	1.53	1.61
60 Days Ago	1.46	1.56
90 Days Ago	1.47	1.56

EPS Revisions	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
Up Last 7 Days	N/A	N/A
Up Last 30 Days	1	1
Down Last 7 Days	N/A	N/A
Down Last 30 Days	N/A	N/A

Growth Estimates	MSFT		Industry	
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Qtr.	11.60%	N/A	N/A	N/A
Next Qtr.	6.60%	N/A	N/A	N/A
Current Year	12.20%	N/A	N/A	N/A
Next Year	13.60%	N/A	N/A	N/A
Next 5 Years (per annum)	15.00%	N/A	N/A	N/A
Past 5 Years (per annum)	18.17%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>AAPL</b> Apple Inc.	505.85	+8.37	+1.68%
<b>AMZN</b> Amazon.com, Inc.	3,311.10	+26.38	+0.80%
<b>INTC</b> Intel Corporation	49.07	-0.21	-0.43%
<b>GOOG</b> Alphabet Inc.	1,588.68	+8.26	+0.52%
<b>CSCO</b> Cisco Systems, Inc.	42.15	-0.10	-0.24%

**Recommendation Trends**



**Recommendation Rating**



**Analyst Price Targets (31)**



**Upgrades & Downgrades**

- Downgrade** Oppenheimer: Outperform to Perform 7/23/2020
- Maintains** Piper Sandler: to Overweight 7/23/2020
- Maintains** Raymond James: to Strong Buy 7/20/2020
- Maintains** Jefferies: to Buy 7/20/2020
- Maintains** Barclays: to Overweight 7/20/2020
- Maintains** Morgan Stanley: to Overweight 7/9/2020

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**Northrop Grumman Corporation (NOC)**

NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

**342.73** +4.87 (+1.44%)

As of 1:30PM EDT. Market open.

Summary Company Outlook Chart Conversations Statistics Historical Data Profile Financials Analysis Options Holders Sustainability

Earnings Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
No. of Analysts	19	21
Avg. Estimate	5.65	25.28
Low Estimate	5.47	24.04
High Estimate	5.91	26.74
Year Ago EPS	5.49	22.49

Revenue Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
No. of Analysts	16	18
Avg. Estimate	8.87B	37.45B
Low Estimate	8.75B	37.01B
High Estimate	8.98B	38.15B
Year Ago Sales	8.47B	35.46B
Sales Growth (year/est)	4.70%	5.60%

Earnings History	Currency in USD			
	9/29/2019	12/30/2019	3/30/2020	6/29/2020
EPS Est.	4.77	4.77	5.51	5.32
EPS Actual	5.49	5.61	5.15	6.01
Difference	0.72	0.84	-0.36	0.69
Surprise %	15.10%	17.60%	-6.50%	13.00%

EPS Trend	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
Current Estimate	5.65	25.28
7 Days Ago	5.65	25.26
30 Days Ago	5.71	25.32
60 Days Ago	5.7	25.33
90 Days Ago	5.79	25.69

EPS Revisions	Currency in USD	
	Current Qtr. (Sep 2020)	Next Year (2021)
Up Last 7 Days	N/A	1
Up Last 30 Days	4	10
Down Last 7 Days	N/A	N/A
Down Last 30 Days	1	N/A

Growth Estimates	S&P 500			
	NOC	Industry	Sector(s)	S&P 500
Current Qtr.	2.90%	N/A	N/A	N/A
Next Qtr.	2.50%	N/A	N/A	N/A
Current Year	6.00%	N/A	N/A	N/A
Next Year	12.40%	N/A	N/A	N/A
Next 5 Years (per annum)	8.62%	N/A	N/A	N/A
Past 5 Years (per annum)	20.00%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
LMT	394.64	+5.07	+1.30%
GD	152.76	+2.95	+1.97%
HON	158.64	+1.14	+0.72%
HII	161.37	+2.74	+1.72%
BA	175.58	+8.08	+4.83%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (18) >**



**Upgrades & Downgrades >**

Maintains	Bernstein: to Outperform	7/31/2020
Maintains	UBS: to Neutral	6/11/2020
Upgrade	Cowen & Co.: Market Perform to Outperform	5/15/2020
Maintains	Morgan Stanley: to Overweight	4/14/2020
Upgrade	Bernstein: Market Perform to Outperform	3/30/2020
Maintains	Morgan Stanley: to Overweight	3/25/2020

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**Oracle Corporation (ORCL)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**55.68 +0.49 (+0.89%)**

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Earnings Estimate	Currency in USD			
	Current Qtr. (Aug 2020)	Next Qtr. (Nov 2020)	Current Year (2021)	Next Year (2022)
No. of Analysts	25	24	30	29
Avg. Estimate	0.86	0.94	4.05	4.41
Low Estimate	0.84	0.92	3.88	4.12
High Estimate	0.88	0.97	4.23	4.85
Year Ago EPS	0.81	0.9	3.85	4.05

Revenue Estimate	Currency in USD			
	Current Qtr. (Aug 2020)	Next Qtr. (Nov 2020)	Current Year (2021)	Next Year (2022)
No. of Analysts	22	21	27	26
Avg. Estimate	9.19B	9.59B	39.28B	40.1B
Low Estimate	8.99B	9.36B	38.66B	39.01B
High Estimate	9.29B	9.68B	39.95B	41.9B
Year Ago Sales	9.22B	9.62B	39.07B	39.28B
Sales Growth (year/est)	-0.30%	-0.20%	0.50%	2.10%

Earnings History	8/30/2019	11/29/2019	2/28/2020	5/30/2020
	EPS Est.	0.81	0.88	0.96
EPS Actual	0.81	0.9	0.97	1.2
Difference	0	0.02	0.01	0.05
Surprise %	0.00%	2.30%	1.00%	4.30%

EPS Trend	Currency in USD			
	Current Qtr. (Aug 2020)	Next Qtr. (Nov 2020)	Current Year (2021)	Next Year (2022)
Current Estimate	0.86	0.94	4.05	4.41
7 Days Ago	0.86	0.94	4.05	4.41
30 Days Ago	0.86	0.94	4.05	4.41
60 Days Ago	0.86	0.94	4.07	4.41
90 Days Ago	0.88	0.96	4.15	4.47

EPS Revisions	Currency in USD			
	Current Qtr. (Aug 2020)	Next Qtr. (Nov 2020)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	ORCL	Industry	Sector(s)	S&P 500
	Current Qtr.	6.20%	N/A	N/A
Next Qtr.	4.40%	N/A	N/A	N/A
Current Year	5.20%	N/A	N/A	N/A
Next Year	8.90%	N/A	N/A	N/A
Next 5 Years (per annum)	9.04%	N/A	N/A	N/A
Past 5 Years (per annum)	7.95%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>CSCO</b> Cisco Systems, Inc.	42.12	-0.13	-0.31%
<b>IBM</b> International Business Machines	125.05	+1.89	+1.53%
<b>SUNW</b> Sunworks, Inc.	0.6837	-0.0773	-10.16%
<b>DELL</b> Dell Technologies Inc.	61.60	+1.14	+1.89%
<b>QCOM</b> QUALCOMM Incorporated	115.14	+2.14	+1.89%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (23) >**



**Upgrades & Downgrades >**

Maintains	Analyst	Rating	Date
Maintains	Credit Suisse: to Outperform	Outperform	7/9/2020
Maintains	Credit Suisse: to Outperform	Outperform	6/17/2020
Maintains	JP Morgan: to Overweight	Overweight	6/17/2020
Maintains	Morgan Stanley: to Equal-Weight	Equal-Weight	6/17/2020
Maintains	Stifel: to Hold	Hold	6/17/2020
Maintains	Citigroup: to Neutral	Neutral	6/17/2020

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**Pfizer Inc. (PFE)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**38.62** -0.26 (-0.66%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	8	7	10	7
Avg. Estimate	0.71	0.63	2.93	3.34
Low Estimate	0.6	0.55	2.84	2.91
High Estimate	0.79	0.73	3.11	4.3
Year Ago EPS	0.75	0.55	2.95	2.93

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	6	5	10	7
Avg. Estimate	12.28B	13.21B	49.5B	54.36B
Low Estimate	11.8B	11.98B	48B	49.5B
High Estimate	12.75B	14.69B	51.27B	65.87B
Year Ago Sales	12.68B	12.69B	51.75B	49.5B
Sales Growth (year/est)	-3.10%	4.10%	-4.30%	9.80%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	0.62	0.57	0.73
EPS Actual	0.75	0.55	0.8	0.78
Difference	0.13	-0.02	0.07	0.12
Surprise %	21.00%	-3.50%	9.60%	18.20%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	0.71	0.63	2.93	3.34
7 Days Ago	0.71	0.63	2.93	3.34
30 Days Ago	0.73	0.68	2.88	3.19
60 Days Ago	0.73	0.66	2.85	3.02
90 Days Ago	0.73	0.67	2.86	3.08

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	13	13
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A

Growth Estimates	PFE	Industry	Sector(s)	S&P 500
	Current Qtr.	-5.30%	N/A	N/A
Next Qtr.	14.50%	N/A	N/A	N/A
Current Year	-0.70%	N/A	N/A	N/A
Next Year	14.00%	N/A	N/A	N/A
Next 5 Years (per annum)	5.37%	N/A	N/A	N/A
Past 5 Years (per annum)	8.67%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>MRK</b>	85.06	+0.07	+0.09%
Merck & Company, Inc.			
<b>JNJ</b>	151.29	-0.46	-0.30%
Johnson & Johnson			
<b>JPM</b>	99.15	+1.83	+1.89%
JP Morgan Chase & Co.			
<b>INTC</b>	49.01	-0.27	-0.54%
Intel Corporation			
<b>PG</b>	138.07	+0.62	+0.45%
Procter & Gamble Company (The)			

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (13) >**



**Upgrades & Downgrades >**

Maintains	Analyst	Action	Date
Maintains	Morgan Stanley	to Equal-Weight	7/30/2020
Maintains	UBS	to Neutral	7/29/2020
Maintains	SVB Leerink	to Market Perform	7/29/2020
Maintains	JP Morgan	to Neutral	6/1/2020
Maintains	Barclays	to Equal-Weight	4/29/2020
Maintains	Morgan Stanley	to Equal-Weight	4/2/2020

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**The Procter & Gamble Company (PG)**

NYSE - Nasdaq Real Time Price. Currency in USD

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**138.12** +0.68 (+0.49%)

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Earnings Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
No. of Analysts	16	16
Avg. Estimate	1.41	1.48
Low Estimate	1.29	1.35
High Estimate	1.44	1.52
Year Ago EPS	1.37	1.42

Revenue Estimate	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
No. of Analysts	11	11
Avg. Estimate	18.26B	18.91B
Low Estimate	17.76B	18.7B
High Estimate	18.67B	19.2B
Year Ago Sales	17.8B	18.24B
Sales Growth (year/est)	2.60%	3.70%

Earnings History	Currency in USD			
	Current Year (2021)	Next Year (2022)		
9/29/2019	12/30/2019	3/30/2020	6/29/2020	
EPS Est.	1.24	1.37	1.13	1.01
EPS Actual	1.37	1.42	1.17	1.16
Difference	0.13	0.05	0.04	0.15
Surprise %	10.50%	3.60%	3.50%	14.90%

EPS Trend	Currency in USD	
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)
Current Estimate	1.41	1.48
7 Days Ago	1.41	1.48
30 Days Ago	1.4	1.48
60 Days Ago	1.4	1.47
90 Days Ago	1.4	1.47

EPS Revisions	Currency in USD	
	Current Year (2021)	Next Year (2022)
Up Last 7 Days	N/A	N/A
Up Last 30 Days	7	5
Down Last 7 Days	N/A	N/A
Down Last 30 Days	N/A	1

Growth Estimates	Currency in USD	
	Current Year (2021)	Next Year (2022)
Current Qtr.	2.90%	N/A
Next Qtr.	4.20%	N/A
Current Year	5.30%	N/A
Next Year	6.90%	N/A
Next 5 Years (per annum)	7.72%	N/A
Past 5 Years (per annum)	3.97%	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>JNJ</b> Johnson & Johnson	151.29	-0.46	-0.30%
<b>KO</b> Coca-Cola Company (The)	47.86	+0.58	+1.23%
<b>MRK</b> Merck & Company, Inc.	85.08	+0.10	+0.12%
<b>VZ</b> Verizon Communications Inc.	59.46	+0.47	+0.80%
<b>HD</b> Home Depot, Inc. (The)	285.37	+2.14	+0.76%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (19) >**



**Upgrades & Downgrades >**

Maintains	Analyst	Target	Date
Maintains	Morgan Stanley: to Overweight		7/31/2020
Maintains	Jefferies: to Buy		7/27/2020
Maintains	Deutsche Bank: to Buy		7/27/2020
Maintains	Morgan Stanley: to Overweight		4/21/2020
Maintains	Stifel: to Buy		4/20/2020
Maintains	Citigroup: to Buy		4/20/2020

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**The Travelers Companies, Inc. (TRV)**  
NYSE - Nasdaq Real Time Price. Currency in USD

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**113.79** +1.96 (+1.75%)  
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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	19	18	20	20
Avg. Estimate	3.31	2.97	8.68	10.34
Low Estimate	2.29	2.66	7.7	9.52
High Estimate	3.98	3.31	9.57	11.25
Year Ago EPS	1.43	3.32	9.6	8.68

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	8	8	8	8
Avg. Estimate	7.55B	7.16B	29.41B	30.8B
Low Estimate	7.28B	6.85B	28.88B	29.68B
High Estimate	7.98B	7.49B	30.16B	33.04B
Year Ago Sales	7.57B	7.08B	29.15B	29.41B
Sales Growth (year/est)	-0.20%	1.20%	0.90%	4.70%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	2.35	3.29	2.85
EPS Actual	1.43	3.32	2.62	-0.2
Difference	-0.92	0.03	-0.23	0
Surprise %	-39.10%	0.90%	-8.10%	0.00%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	3.31	2.97	8.68	10.34
7 Days Ago	3.3	2.96	8.67	10.38
30 Days Ago	3.17	2.94	8.66	10.37
60 Days Ago	2.04	2.95	8.89	10.46
90 Days Ago	2.07	2.99	9.05	10.43

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	1	1	N/A
Up Last 30 Days	2	5	6	2
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	1

Growth Estimates	TRV	Industry	Sector(s)	S&P 500
	Current Qtr.	131.50%	N/A	N/A
Next Qtr.	-10.50%	N/A	N/A	N/A
Current Year	-9.60%	N/A	N/A	N/A
Next Year	19.10%	N/A	N/A	N/A
Next 5 Years (per annum)	3.05%	N/A	N/A	N/A
Past 5 Years (per annum)	-7.55%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>CB</b> Chubb Limited	123.16	+1.24	+1.02%
<b>AXP</b> American Express Company	98.72	+2.57	+2.67%
<b>ALL</b> Allstate Corporation (The)	94.44	-0.05	-0.05%
<b>UNH</b> UnitedHealth Group Incorporated	308.74	-5.40	-1.72%
<b>HIG</b> Hartford Financial Services Gro	40.91	+1.06	+2.66%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (15) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	Morgan Stanley: to Underweight	8/19/2020
<b>Maintains</b>	UBS: to Neutral	7/27/2020
<b>Maintains</b>	Deutsche Bank: to Hold	7/27/2020
<b>Maintains</b>	MKM Partners: to Buy	7/24/2020
<b>↑ Upgrade</b>	William Blair: Market Perform to Outperform	7/20/2020
<b>Maintains</b>	Morgan Stanley: to Underweight	5/18/2020

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**Verizon Communications Inc. (VZ)**

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**59.46** +0.47 (+0.80%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	22	20	24	25
Avg. Estimate	1.21	1.12	4.77	4.93
Low Estimate	1.18	1.08	4.71	4.78
High Estimate	1.27	1.17	4.84	5.13
Year Ago EPS	1.25	1.13	4.81	4.77

Revenue Estimate	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
No. of Analysts	19	18	23	23
Avg. Estimate	31.69B	34.35B	128.08B	132.39B
Low Estimate	31.14B	32.76B	125.95B	128.72B
High Estimate	32.32B	35.76B	130B	138.56B
Year Ago Sales	32.89B	34.77B	131.87B	128.08B
Sales Growth (year/est)	-3.70%	-1.20%	-2.90%	3.40%

Earnings History	9/29/2019	12/30/2019	3/30/2020	6/29/2020
	EPS Est.	1.24	1.14	1.22
EPS Actual	1.25	1.13	1.26	1.18
Difference	0.01	-0.01	0.04	0.03
Surprise %	0.80%	-0.90%	3.30%	2.60%

EPS Trend	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Current Estimate	1.21	1.12	4.77	4.93
7 Days Ago	1.21	1.12	4.77	4.93
30 Days Ago	1.21	1.13	4.75	4.89
60 Days Ago	1.22	1.12	4.75	4.89
90 Days Ago	1.21	1.13	4.76	4.9

EPS Revisions	Currency in USD			
	Current Qtr. (Sep 2020)	Next Qtr. (Dec 2020)	Current Year (2020)	Next Year (2021)
Up Last 7 Days	N/A	1	N/A	N/A
Up Last 30 Days	10	6	12	17
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	1	N/A	1	1

Growth Estimates	VZ	Industry	Sector(s)	S&P 500
	Current Qtr.	-3.20%	N/A	N/A
Next Qtr.	-0.90%	N/A	N/A	N/A
Current Year	-0.80%	N/A	N/A	N/A
Next Year	3.40%	N/A	N/A	N/A
Next 5 Years (per annum)	1.23%	N/A	N/A	N/A
Past 5 Years (per annum)	6.87%	N/A	N/A	N/A

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**People Also Watch**

Symbol	Last Price	Change	% Change
<b>T</b> AT&T Inc.	29.92	+0.23	+0.77%
<b>PG</b> Procter & Gamble Company (The)	138.26	+0.82	+0.60%
<b>KO</b> Coca-Cola Company (The)	47.85	+0.58	+1.22%
<b>JPM</b> JP Morgan Chase & Co.	99.17	+1.85	+1.90%
<b>MRK</b> Merck & Company, Inc.	85.07	+0.09	+0.11%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (24) >**



**Upgrades & Downgrades >**

<b>Maintains</b>	UBS: to Neutral	7/27/2020
<b>Maintains</b>	ScotiaBank: to Sector Outperform	7/27/2020
<b>Maintains</b>	Raymond James: to Outperform	7/27/2020
<b>Maintains</b>	Raymond James: to Outperform	4/27/2020
<b>Maintains</b>	Citigroup: to Neutral	4/27/2020
<b>Maintains</b>	Morgan Stanley: to Equal-Weight	4/17/2020

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**Walmart Inc. (WMT)**

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**130.84** -0.79 (-0.60%)

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Earnings Estimate	Currency in USD			
	Current Qtr. (Oct 2020)	Next Qtr. (Jan 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	26	26	30	32
Avg. Estimate	1.18	1.42	5.32	5.59
Low Estimate	1.06	1.34	5.01	5.22
High Estimate	1.31	1.58	5.63	6.44
Year Ago EPS	1.16	1.38	4.93	5.32

Revenue Estimate	Currency in USD			
	Current Qtr. (Oct 2020)	Next Qtr. (Jan 2021)	Current Year (2021)	Next Year (2022)
No. of Analysts	22	22	25	25
Avg. Estimate	131.83B	145.25B	549.48B	555.79B
Low Estimate	129.28B	142.52B	545.83B	541.18B
High Estimate	134.6B	147.99B	554.95B	574.85B
Year Ago Sales	127.99B	141.67B	523.96B	549.48B
Sales Growth (year/est)	3.00%	2.50%	4.90%	1.10%

Earnings History	10/30/2019	1/30/2020	4/29/2020	7/30/2020
	EPS Est.	1.09	1.43	1.12
EPS Actual	1.16	1.38	1.18	1.56
Difference	0.07	-0.05	0.06	0.31
Surprise %	6.40%	-3.50%	5.40%	24.80%

EPS Trend	Currency in USD			
	Current Qtr. (Oct 2020)	Next Qtr. (Jan 2021)	Current Year (2021)	Next Year (2022)
Current Estimate	1.18	1.42	5.32	5.59
7 Days Ago	1.15	1.41	5.01	5.44
30 Days Ago	1.15	1.41	4.99	5.42
60 Days Ago	1.15	1.4	4.98	5.42
90 Days Ago	1.17	1.44	5.07	5.42

EPS Revisions	Currency in USD			
	Current Qtr. (Oct 2020)	Next Qtr. (Jan 2021)	Current Year (2021)	Next Year (2022)
Up Last 7 Days	2	2	3	3
Up Last 30 Days	15	10	31	24
Down Last 7 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	1

Growth Estimates	WMT	Industry	Sector(s)	S&P 500
	Current Qtr.	1.70%	N/A	N/A
Next Qtr.	2.90%	N/A	N/A	N/A
Current Year	7.90%	N/A	N/A	N/A
Next Year	5.10%	N/A	N/A	N/A
Next 5 Years (per annum)	6.41%	N/A	N/A	N/A
Past 5 Years (per annum)	0.53%	N/A	N/A	N/A



**People Also Watch**

Symbol	Last Price	Change	% Change
<b>HD</b>	285.24	+2.01	+0.71%
<b>JNJ</b>	151.18	-0.57	-0.38%
<b>TGT</b>	153.34	-0.29	-0.19%
<b>KO</b>	47.86	+0.58	+1.22%
<b>PG</b>	138.24	+0.80	+0.58%

**Recommendation Trends >**



**Recommendation Rating >**



**Analyst Price Targets (32) >**



**Upgrades & Downgrades >**

- Maintains** Guggenheim: to Buy 8/19/2020
- Maintains** RBC Capital: to Sector Perform 8/19/2020
- Maintains** BMO Capital: to Outperform 8/19/2020
- Maintains** DA Davidson: to Buy 8/19/2020
- Maintains** Raymond James: to Outperform 8/19/2020
- Maintains** Citigroup: to Buy 8/19/2020

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 Broker Reports  
 Insiders  
 Earnings Transcripts  
 Charts  
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 Price & EPS Surprise  
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Air Products and Chemicals, Inc. (APD)  
 (Real Time Quote from BATS)  
**\$288.28 usd**  
 +1.84 (0.64%)  
 Updated Aug 24, 2020 01:32 PM ET

**Quote Overview**

Stock Activity	Key Earnings Data	
Open	287.65	Most Accurate Est
Day Low	287.65	Current Qtr Est
Day High	289.75	Current Yr Est
52 Wk Low	167.43	Exp Earnings Date
52 Wk High	299.82	Prior Year EPS
Avg. Volume	1,062,906	Exp EPS Growth (3-5yr)
Market Cap	63.27 B	Forward PE
Dividend	5.36 (1.87%)	PEG Ratio
Beta	0.91	

Basic Materials » Chemical - Diversified

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 Air Products and Chemicals (APD) Down 2.3% Since Last Earnings Report, General Rebound  
 Coronavirus Clouds Diversified Chemical Industry Outlook  
 08/13/20-12:00AM EST Zacks  
 APD: What are Zacks experts saying now?  
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 Air Products AP-X Liquefaction Technology Picked by Qatargas  
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 Air Products (APD) Earnings & Sales Lag Estimates in Q3  
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**Zacks Rank** Hold

**Zacks Industry Rank** Bottom 34% (166 out of 252)

**Zacks Sector Rank** Top 31% (5 out of 16)

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**Earnings ESP** 0.00%

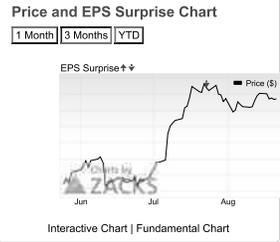
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Top Peers	Symbol	Zacks Rank
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Koppers Holdings Inc	<b>KOP</b>	
Brenntag AG	<b>BNTGY</b>	
Kronos Worldwide Inc	<b>KRO</b>	
PPG Industries Inc	<b>PPG</b>	
Stepan Company	<b>SCL</b>	
Air Liquide	<b>AIQUY</b>	

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**Company Summary**

Pennsylvania-based Air Products and Chemicals Inc. makes industrial gases as well as a variety of polymer and performance chemicals. It also supplies processing equipment. Air Products' reporting segments are as follows:

Industrial Gases - Americas (43% of fiscal 2019 sales), Industrial Gases - Europe, Middle East, and Africa/EMEA (23%) and Industrial Gases - Asia (30%) segments include the results of the company's regional industrial gases businesses. These businesses sell atmospheric gases such as oxygen, nitrogen and argon and processes gases to a number of industries. Process gases such as carbon dioxide, ...

[Read Full Company Summary for APD here](#)

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**Quote & News**  
**Quote Overview**  
 Quotes & News  
 Quote Overview  
 Zacks News  
 Partner News  
 Zacks Research

Snapshot  
 Analyst Report  
 Style Scores  
 Detailed Estimates  
 Comparison to Industry  
 Zacks Experts View

More Research  
 Broker Recommendations  
 Full Company Report  
 Earnings Announcements  
 Key Company Metrics  
 Broker Reports  
 Insiders  
 Earnings Transcripts

Charts  
 Price, Consensus and EPS Surprise  
 Fundamental Charts  
 Comparative  
 Interactive Charts  
 Price and Consensus  
 Price & EPS Surprise  
 12 Month EPS  
 Broker Recommendations

Financials  
 Financial Overview  
 Income Statements  
 Balance Sheet  
 Cash flow Statements

Options  
 Option Chain  
 Options Greek Montage

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**Amdocs Limited (DOX)**  
 (Real Time Quote from BATS)  
**\$60.25 USD**  
 +0.59 (0.99%)  
 Updated Aug 24, 2020 01:35 PM ET

Add to portfolio Trades from \$1

**Zacks Rank:**  
 3-Hold       
**Style Scores:**  
 B Value | B Growth | C Momentum | **B** VGM  
**Industry Rank:**  
 Bottom 17% (209 out of 252)

**Quote Overview**

Stock Activity	Key Earnings Data
Open <b>59.75</b>	EPS <b>0.00%</b>
Day Low <b>59.75</b>	Most Accurate Est <b>1.19</b>
Day High <b>60.63</b>	Current Qtr Est <b>1.19</b>
52 Wk Low <b>44.05</b>	Current Yr Est <b>4.40</b>
52 Wk High <b>77.29</b>	Exp Earnings Date <b>11/10/20</b>
Avg. Volume <b>642,164</b>	Prior Year EPS <b>4.31</b>
Market Cap <b>8.04 B</b>	Exp EPS Growth (3-5yr) <b>8.50%</b>
Dividend <b>1.31 ( 2.20%)</b>	Forward PE <b>13.56</b>
Beta <b>0.67</b>	PEG Ratio <b>1.60</b>

Computer and Technology » Computers - IT Services



**Research Reports For DOX**

Analyst Reports  Snapshot  All Zacks' Analyst Reports »

- News For DOX**
- Zacks News for DOX | Other News for DOX
- Amdocs (DOX) Tops Q3 Earnings & Revenue Estimates, Ups View 08/06/20-9:04AM EST Zacks
  - Amdocs (DOX) Tops Q3 Earnings and Revenue Estimates 08/05/20-6:55PM EST Zacks
  - DOX: What are Zacks experts saying now? Zacks Private Portfolio Services
  - Earnings Preview: Amdocs (DOX) Q3 Earnings Expected to Decline 07/29/20-11:33AM EST Zacks
  - Amdocs (DOX) Acquires Openet to Strengthen 5G Capabilities 07/24/20-8:14AM EST Zacks
  - Amdocs (DOX) to Support Three's Enterprise Business in UK 07/02/20-8:14AM EST Zacks
- More Zacks News for DOX »

**Premium Research for DOX**

**Zacks Rank** **Hold**

**Zacks Industry Rank** Bottom 17% (209 out of 252)

**Zacks Sector Rank** Top 25% (4 out of 16)

**Style Scores** B Value | B Growth | C Momentum | **B** VGM

**Earnings ESP** 0.00%

**Research Reports for DOX** Analyst | Snapshot

▲ ▼ = Change in last 30 days

[View All Zacks Rank #1 Strong Buys](#)

More Premium Research » »

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Amdocs Limited	<b>DOX</b>	
EPAM Systems Inc	<b>EPAM</b>	
Vertiv Holdings Co	<b>VRT</b>	
ASGN Incorporated	<b>ASGN</b>	
Baozun Inc	<b>BZUN</b>	
CDK Global Inc	<b>CDK</b>	
CDW Corporation	<b>CDW</b>	

[See all Computers - IT Services Peers »](#)

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**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series.](#) »

**Company Summary**

Founded in 1988 and headquartered in Chesterfield, MO, Amdocs Limited (DOX) is one of the leading providers of customer care, billing and order management systems for communications and internet services.

The company offers amdocsONE, a line of services designed for various stages of a service provider's lifecycle. Moreover, it provides advertising and media services for media publishers, TV networks, video streaming providers, advertising agencies and service providers.

It also provides managed, quality engineering, data and intelligence, cloud enablement, digital business operation, autonomous network service assurance and advisory services. Additionally, Amdocs offers mobile ...

[Read Full Company Summary for DOX here](#)



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- Quote & News**
- Quote Overview**
- Quotes & News**
- Quote Overview
- Zacks News
- Partner News
- Zacks Research
- Snapshot
- Analyst Report
- Style Scores
- Detailed Estimates
- Comparison to Industry
- Zacks Experts View
- More Research
- Broker Recommendations
- Full Company Report
- Earnings Announcements
- Key Company Metrics
- Broker Reports
- Insiders
- Earnings Transcripts
- Charts
- Price, Consensus and EPS Surprise
- Fundamental Charts
- Comparative
- Interactive Charts
- Price and Consensus
- Price & EPS Surprise
- 12 Month EPS
- Broker Recommendations
- Financials
- Financial Overview
- Income Statements
- Balance Sheet
- Cash flow Statements
- Options
- Option Chain
- Options Greek Montage
- Access Zacks Data Feed

**Amgen Inc. (AMGN)**  
 (Real Time Quote from BATS)  
**\$234.63 USD**  
 -3.01 (-1.27%)  
 Updated Aug 24, 2020 01:35 PM ET

Add to portfolio  **Zacks Rank:**  1  2  3  4  5  
**Style Scores:**  Value  Growth  Momentum  VGM  
**Industry Rank:** Bottom 31% (173 out of 252)

**Quote Overview**

Stock Activity	Key Earnings Data	Style Scores
Open <b>233.56</b>	Current Yr Est <b>3.75</b>	<b>0.00%</b>
Day Low <b>233.56</b>	Most Accurate Est <b>3.75</b>	
Day High <b>238.44</b>	Current Qtr Est <b>3.75</b>	
52 Wk Low <b>177.05</b>	Current Yr Est <b>15.64</b>	
52 Wk High <b>264.97</b>	Exp Earnings Date <b>11/3/20</b>	
Avg. Volume <b>1,896,699</b>	Prior Year EPS <b>14.82</b>	
Market Cap <b>139.18 B</b>	Exp EPS Growth (3-5yr) <b>7.53%</b>	
Dividend <b>6.40 (2.69%)</b>	Forward PE <b>15.19</b>	
Beta <b>0.92</b>	PEG Ratio <b>2.02</b>	

Medical » Medical - Biomedical and Genetics



**Research Reports For AMGN**

Analyst Reports | Snapshot | All Zacks' Analyst Reports >

**News For AMGN**

Zacks News for AMGN | Other News for AMGN

Amgen's New Kyprolis Combo Gets FDA Nod for Multiple Myeloma  
 08/21/20-9:47AM EST Zacks

Simple Secrets Anyone Can Use to Reach Early Retirement - August 21, 2020  
 08/21/20-12:00EST Zacks

AMGN: What are Zacks experts saying now?  
 Zacks Private Portfolio Services

Merck's Keytruda Positive in First-Line Esophageal Cancer Study  
 08/20/20-9:57AM EST Zacks

The Extreme Risks of Trading Your Own Retirement Assets - August 19, 2020  
 08/19/20-10:34AM EST Zacks

Roche Gets FDA Nod for Nervous System Disorder Drug Enspring  
 08/17/20-9:30AM EST Zacks

More Zacks News for AMGN >

**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series.](#)

**Company Summary**

Thousand Oaks, CA-based Amgen is one of the biggest biotech companies in the world, with a strong presence in the oncology/hematology, cardiovascular disease, neuroscience, inflammation, bone health and nephrology markets. The company used advances in cellular and molecular biology to develop two of the biotech industry's earliest and most successful drugs, Epogen (anemia) and Neupogen (white blood cell stimulant). Amgen successfully launched two next-generation products, Aranesp and Neulasta. Meanwhile, the acquisition of Immunex Corporation gave Amgen access to the multi-blockbuster drug, Entrel. However, all these older drugs are facing declining sales due ...

[Read Full Company Summary for AMGN here](#)

**Premium Research for AMGN**

**Zacks Rank**  1  2  3  4  5 **Hold**

**Zacks Industry Rank** Bottom 31% (173 out of 252)

**Zacks Sector Rank** Bottom 38% (10 out of 16)

**Style Scores**  Value  Growth  Momentum  VGM

**Earnings ESP** 0.00%

**Research Reports for AMGN** [Analyst](#) | [Snapshot](#)

(▲ ▼) = Change in last 30 days

[View All Zacks Rank #1 Strong Buys](#)

[More Premium Research >>](#)

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Amgen Inc	<b>AMGN</b>	
BioTechne Corp	<b>TECH</b>	
Emergent Biosolutions Inc	<b>EBS</b>	
Horizon Therapeutics Public Limited Company	<b>HZNP</b>	
QIAGEN NV	<b>QGEN</b>	
AVEO Pharmaceuticals Inc	<b>AVEO</b>	
Aileron Therapeutics Inc	<b>ALRN</b>	

[See all Medical - Biomedical and Genetics Peers >](#)

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**Quote Overview**  
 Quotes & News  
 Quote Overview  
 Zacks News  
 Partner News  
 Zacks Research

**Snapshot**  
 Analyst Report  
 Style Scores  
 Detailed Estimates  
 Comparison to Industry  
 Zacks Experts View

**More Research**  
 Broker Recommendations  
 Full Company Report  
 Earnings Announcements  
 Key Company Metrics  
 Broker Reports  
 Insiders  
 Earnings Transcripts

**Charts**  
 Price, Consensus and EPS Surprise  
 Fundamental Charts  
 Comparative  
 Interactive Charts  
 Price and Consensus  
 Price & EPS Surprise  
 12 Month EPS  
 Broker Recommendations

**Financials**  
 Financial Overview  
 Income Statements  
 Balance Sheet  
 Cash flow Statements

**Options**  
 Option Chain  
 Options Greek Montage

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**Brown Brown, Inc. (BRO)**  
 (Real Time Quote from BATS)  
**\$45.64 USD**  
 +0.12 (0.26%)  
 Updated Aug 24, 2020 01:35 PM ET

Add to portfolio Trades from \$1

Zacks Rank: 2-Buy

Style Scores: D Value | B Growth | C Momentum | VGW Industry Rank: Top 17% (43 out of 252)

**Quote Overview**

Stock Activity: Open 45.54, Day Low 45.54, Day High 45.88, 52 Wk Low 30.70, 52 Wk High 48.69, Avg. Volume 853,048, Market Cap 12.87 B, Dividend 0.34 (0.75%), Beta 0.71

Key Earnings Data: Earnings ESP 3.76%, Most Accurate Est 0.43, Current Qtr Est 0.41, Current Yr Est 1.53, Exp Earnings Date 10/26/20, Prior Year EPS 1.40, Exp EPS Growth (3-5yr) NA, Forward PE 29.75, PEG Ratio NA



**Research Reports For BRO**

Analyst Reports | All Zacks' Analyst Reports >

**News For BRO**

Zacks News for BRO | Other News for BRO

Why You Should Hold Marsh & McLennan (MMC) in Your Portfolio  
 08/20/20-11:58AM EST Zacks

Here's Why Hold Strategy is Apt for Arthur J. Gallagher Stock  
 08/20/20-9:11AM EST Zacks

BRO: What are Zacks experts saying now?  
 Zacks Private Portfolio Services

Is Brown & Brown (BRO) Stock a Solid Choice Right Now?  
 08/20/20-7:53AM EST Zacks

Brown & Brown's Subsidiary Buys Assets of Amity Insurance  
 08/18/20-10:22AM EST Zacks

Here's What Makes Brown & Brown (BRO) an Attractive Pick  
 08/17/20-9:32AM EST Zacks

More Zacks News for BRO >

**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series.](#)

**Company Summary**

Headquartered in Daytona Beach, FL and founded in 1939, Brown & Brown, Inc. markets and sells insurance products and services primarily in the United States, as well as in London, Bermuda, and the Cayman Islands.

The company reports through four segments:

- The Retail segment (51.8% of 2019 commissions and fees) provides a broad range of insurance products and services to commercial, public and quasi-public entities, and to professional and individual customers. The categories of insurance it principally sells include commercial packages, group medical, workers' compensation, property risk and ...

[Read Full Company Summary for BRO here](#)

**Premium Research for BRO**

Zacks Rank: Buy 2

Zacks Industry Rank: Top 17% (43 out of 252)

Zacks Sector Rank: Bottom 25% (12 out of 16)

Style Scores: D Value | B Growth | C Momentum | VGW

Earnings ESP: 3.76%

Research Reports for BRO: Analyst | Snapshot

Change in last 30 days: View All Zacks Rank #1 Strong Buys

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**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Brown Brown Inc	BRO	
eHealth Inc	EHTH	
Hannover Ruck SE	HVRRY	
Aon plc	AON	
Arthur J Gallagher Co	AJG	
Erie Indemnity Company	ERIE	
Fanhuia Inc	FANH	

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**Quote & News**  
**Quote Overview**  
 Quotes & News  
 Quote Overview  
 Zacks News  
 Partner News  
 Zacks Research

Snapshot  
 Analyst Report  
 Style Scores  
 Detailed Estimates  
 Comparison to Industry  
 Zacks Experts View  
 More Research

Broker Recommendations  
 Full Company Report  
 Earnings Announcements  
 Key Company Metrics  
 Broker Reports  
 Insiders  
 Earnings Transcripts

Charts  
 Price, Consensus and EPS Surprise  
 Fundamental Charts  
 Comparative  
 Interactive Charts  
 Price and Consensus  
 Price & EPS Surprise  
 12 Month EPS  
 Broker Recommendations

Financials  
 Financial Overview  
 Income Statements  
 Balance Sheet  
 Cash flow Statements

Options  
 Option Chain  
 Options Greek Montage

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**Comcast Corporation (CMCSA)**  
 (Real Time Quote from BATS)  
**\$43.52 USD**  
 +0.45 (1.05%)  
 Updated Aug 24, 2020 01:38 PM ET

Add to portfolio Trades from \$1

**Zacks Rank:** 3-Hold  3  4  5  6  7  8  9  10

**Style Scores:** B Value | B Growth | D Momentum | **B** VGM  
**Industry Rank:** Bottom 29% (179 out of 252)  
 Industry: Cable Television

**Quote Overview**

Stock Activity	Key Earnings Data	Earnings ESP	-0.16%
Open	42.85	Current Qtr Est	0.47
Day Low	42.85	Current Yr Est	2.39
Day High	43.75	Exp Earnings Date	10/22/20
52 Wk Low	31.71	Prior Year EPS	3.13
52 Wk High	47.74	Exp EPS Growth (3-5yr)	9.70%
Avg. Volume	15,252,669	Forward PE	17.98
Market Cap	196.75 B	PEG Ratio	1.85
Dividend	0.92 (2.14%)		
Beta	0.99		

Consumer Discretionary » Cable Television



**Research Reports For CMCSA**

Analyst Reports | Snapshot | All Zacks' Analyst Reports »

**News For CMCSA**

Zacks News for CMCSA | Other News for CMCSA

Video Streaming Gains Traction in Q2: 4 Stocks to Watch  
 08/14/20-7:50AM EST Zacks

Bear of the Day: AMC Entertainment Holdings, Inc. (AMC)  
 08/12/20-12:00AM EST Zacks

CMCSA: What are Zacks experts saying now?  
 Zacks Private Portfolio Services

Lionsgate's (LGF A) Q1 Earnings, Revenues Beat Estimates  
 08/07/20-10:59AM EST Zacks

Steaming Services Grow on Coronavirus Crisis: 3 Stocks to Watch  
 08/06/20-7:36AM EST Zacks

Media Stock Aug 5 Earnings Roster: DISCA, ROKU and More  
 08/04/20-9:53AM EST Zacks

More Zacks News for CMCSA »

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Billion Dollar Secret Full Series

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**Premium Research for CMCSA**

**Zacks Rank** **Hold** 3

**Zacks Industry Rank** Bottom 29% (179 out of 252)

**Zacks Sector Rank** Bottom 19% (13 out of 16)

**Style Scores** B Value | B Growth | D Momentum | **B** VGM

**Earnings ESP** -0.16%

**Research Reports for CMCSA** [Analyst](#) | [Snapshot](#)

▲ ▼ = Change in last 30 days  
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**Company Summary**

Comcast Corporation is a global media and technology company with three primary businesses: Comcast Cable, NBCUniversal and Sky.

The Philadelphia, PA-based company reported revenues of \$108.94 billion in 2019. The company reports in three revenue generating segments:

Cable Communications (53.3% of total revenues): It consists of the operations of Comcast Cable. This segment offers high-speed Internet, video, voice, and security and automation services in the United States individually and as bundled services at a discounted rate over its cable distribution system to residential and business customers.

Cable Communications generates revenues primarily from residential ...

[Read Full Company Summary for CMCSA here](#)

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Comcast Corporation	<b>CMCSA</b>	
DISH Network Corporation	<b>DISH</b>	
Cable One Inc	<b>CABO</b>	
Casa Systems Inc	<b>CASA</b>	
Charter Communications Inc	<b>CHTR</b>	
Liberty Broadband Corporation	<b>LBRDA</b>	
Liberty Global PLC	<b>LBTYA</b>	

[See all Cable Television Peers »](#)

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**Quote & News**  
**Quote Overview**  
 Quotes & News  
 Quote Overview  
 Zacks News  
 Partner News  
 Zacks Research

**Snapshot**  
 Analyst Report  
 Style Scores  
 Detailed Estimates  
 Comparison to Industry  
 Zacks Experts View

**More Research**  
 Broker Recommendations  
 Full Company Report  
 Earnings Announcements  
 Key Company Metrics  
 Broker Reports  
 Insiders  
 Earnings Transcripts

**Charts**  
 Price, Consensus and EPS Surprise  
 Fundamental Charts  
 Comparative  
 Interactive Charts  
 Price and Consensus  
 Price & EPS Surprise  
 12 Month EPS  
 Broker Recommendations

**Financials**  
 Financial Overview  
 Income Statements  
 Balance Sheet  
 Cash flow Statements

**Options**  
 Option Chain  
 Options Greek Montage

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**Costco Wholesale Corporation (COST)**  
 (Real Time Quote from BATS)  
**\$344.22 USD**  
 -0.39 (-0.11%)  
 Updated Aug 24, 2020 01:38 PM ET

Add to portfolio  **Zacks Rank:**   
**3-Hold**   
**Style Scores:**   
**Industry Rank:**   
 Industry: Retail - Discount Stores

**Quote Overview**

Stock Activity	Key Earnings Data	Earnings ESP
Open <b>345.14</b>	Most Accurate Est	2.61%
Day Low 342.11	Current Qtr Est	2.80
Day High 346.11	Current Yr Est	8.54
52 Wk Low 271.28	Exp Earnings Date	10/1/20
52 Wk High 346.11	Prior Year EPS	8.19
Avg. Volume 1,894,612	Exp EPS Growth (3-5yr)	8.40%
Market Cap 152.15 B	Forward PE	40.36
Dividend 2.80 ( 0.81%)	PEG Ratio	4.81
Beta 0.69		

Retail-Wholesale » Retail - Discount Stores



**Research Reports For COST**  
 Analysts | Snapshot | All Zacks' Analyst Reports >

- News For COST**  
 Zacks News for COST | Other News for COST
- Buy Kroger (KR) Stock for Big Retail's Pandemic Growth and Safety **08/23/20-4:10PM EST Zacks**
  - Buy Target (TGT) Stock at Highs for Booming E-Commerce Growth? **08/21/20-2:46PM EST Zacks**
  - COST: What are Zacks experts saying now? **Zacks Private Portfolio Services**
  - Costco (COST) Gains As Market Dips: What You Should Know **08/19/20-4:45PM EST Zacks**
  - TJX Companies' (TJX) Q2 Loss Lower Than Expected, Sales Down **08/19/20-9:14AM EST Zacks**
  - 3 Reasons Why Growth Investors Shouldn't Overlook Costco **08/08/20-11:45AM EST Zacks**
- More Zacks News for COST >

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 Billion Dollar Secret Full Series

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**Premium Research for COST**

**Zacks Rank**  **Hold**

**Zacks Industry Rank** Top 19% (49 out of 252)

**Zacks Sector Rank** Top 19% (3 out of 16)

**Style Scores**  |  |  |

**Earnings ESP** 2.61%

**Research Reports for COST** [Analyst](#) | [Snapshot](#)

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**Company Summary**

Based in Issaquah, Washington, Costco Wholesale Corporation sells high volumes of foods and general merchandise (including household products and appliances) at discounted prices through membership warehouses. It is one of the largest warehouse club operators in the United States. The company also operates e-commerce websites in the U.S., Canada, the United Kingdom, Mexico, Korea, Taiwan, Japan and Australia.

The company's warehouses offer an array of low-priced nationally branded and select private labeled products in a wide range of merchandise categories. Costco offers three types of memberships to its customers: Business, Gold ...

[Read Full Company Summary for COST here](#)

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Costco Wholesale Corporation	<b>COST</b>	
Big Lots Inc	<b>BIG</b>	
Target Corporation	<b>TGT</b>	
Dollar General Corporation	<b>DG</b>	
Dollar Tree Inc	<b>DLTR</b>	
Ross Stores Inc	<b>ROST</b>	
Burlington Stores Inc	<b>BURL</b>	

[See all Retail - Discount Stores Peers >](#)

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**Quote & News**  
**Quote Overview**  
 Quotes & News  
 Quote Overview  
 Zacks News  
 Partner News  
 Zacks Research

**Snapshot**  
 Analyst Report  
 Style Scores  
 Detailed Estimates  
 Comparison to Industry  
 Zacks Experts View

**More Research**  
 Broker Recommendations  
 Full Company Report  
 Earnings Announcements  
 Key Company Metrics  
 Broker Reports  
 Insiders  
 Earnings Transcripts

**Charts**  
 Price, Consensus and EPS Surprise  
 Fundamental Charts  
 Comparative  
 Interactive Charts  
 Price and Consensus  
 Price & EPS Surprise  
 12 Month EPS  
 Broker Recommendations

**Financials**  
 Financial Overview  
 Income Statements  
 Balance Sheet  
 Cash flow Statements

**Options**  
 Option Chain  
 Options Greek Montage

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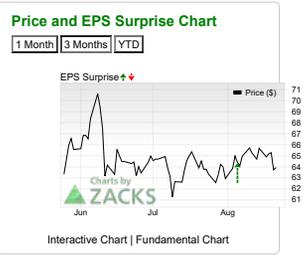
**CVS Health Corporation (CVS)**  
 (Real Time Quote from BATS)  
**\$63.52 USD**  
 -0.42 (-0.66%)  
 Updated Aug 24, 2020 01:38 PM ET

Add to portfolio  **Zacks Rank:** 3-Hold       
**Style Scores:** Value | Growth | Momentum | **VGM**  
**Industry Rank:** Top 48% (121 out of 252)

**Quote Overview**

Stock Activity	Key Earnings Data	Earnings ESP	-4.85%
Open	Most Accurate Est	Current Qtr Est	1.38
Day Low	63.42	Current Yr Est	7.23
Day High	64.08	Exp Earnings Date	11/4/20
52 Wk Low	52.04	Prior Year EPS	7.08
52 Wk High	77.03	Exp EPS Growth (3-5yr)	5.59%
Avg. Volume	6,806,019	Forward PE	8.85
Market Cap	83.68 B	Beta	0.73
Dividend	2.00 (3.13%)	PEG Ratio	1.58

Retail-Wholesale » Retail - Pharmacies and Drug Stores



**Research Reports For CVS**  
 All Zacks' Analyst Reports »

**News For CVS**  
 Zacks News for CVS | Other News for CVS

3 Top-Ranked Dividend Stocks: A Smarter Way to Boost Your Retirement Income - August 24, 2020

Improve Your Retirement Income with These 3 Top-Ranked Dividend Stocks - August 17, 2020

CVS: What are Zacks experts saying now?  
 Zacks Private Portfolio Services

How to Maximize Your Retirement Portfolio with These Top-Ranked Dividend Stocks - August 10, 2020

Top Research Reports for Facebook, Cisco & T-Mobile US  
 08/10/20-12:00AM EST Zacks

3 Investing Facts About Required Minimum Distributions You Need to Know - August 5, 2020

More Zacks News for CVS »

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 Billion Dollar Secret Full Series

The Zacks Rank has been called the Billion Dollar Secret. Click here to watch the full series. »

**Premium Research for CVS**

**Zacks Rank**  **Hold 3**

**Zacks Industry Rank** Top 48% (121 out of 252)

**Zacks Sector Rank** Top 19% (3 out of 16)

**Style Scores** Value | Growth | Momentum | **VGM**

**Earnings ESP** -4.85%

**Research Reports for CVS** Analyst | Snapshot

▲ ▼ = Change in last 30 days  
 View All Zacks Rank #1 Strong Buys

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**Company Summary**

Headquartered in Woonsocket, RI, CVS Health Corporation (formerly known as CVS Caremark Corporation) is a pharmacy innovation company with integrated offerings across the entire spectrum of pharmacy care. On Sep 3, 2014, CVS Caremark Corporation announced a change of its corporate name to CVS Health to reflect its broader health care commitment.

In Nov 2018, CVS Health completed the \$70-billion consolidation of insurance-giant Aetna. With the acquisition, the segments of CVS Health have been realigned.

Effective first-quarter 2019, the company's SilverScript Medicare Part D prescription drug plan (PDP) ...

Read Full Company Summary for CVS here

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
CVS Health Corporation	<b>CVS</b>	
Herbalife LTD	<b>HLF</b>	
Rite Aid Corporation	<b>RAD</b>	
Walgreens Boots Alliance Inc	<b>WBA</b>	
China JoJo Drugstores Inc	<b>CJJD</b>	NA
GNC Holdings Inc	<b>GNC</b>	NA
Progressive Care Inc	<b>RXMD</b>	NA

See all Retail - Pharmacies and Drug Stores Peers »

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- Zacks News
- Partner News
- Zacks Research
- Snapshot
- Analyst Report
- Style Scores
- Detailed Estimates
- Comparison to Industry
- Zacks Experts View
- More Research
- Broker Recommendations
- Full Company Report
- Earnings Announcements
- Key Company Metrics
- Broker Reports
- Insiders
- Earnings Transcripts
- Charts
- Price, Consensus and EPS Surprise
- Fundamental Charts
- Comparative
- Interactive Charts
- Price and Consensus
- Price & EPS Surprise
- 12 Month EPS
- Broker Recommendations
- Financials
- Financial Overview
- Income Statements
- Balance Sheet
- Cash flow Statements
- Options
- Option Chain
- Options Greek Montage
- Access Zacks Data Feed

**General Mills, Inc. (GIS)**  
 (Real Time Quote from BATS)  
**\$64.22 USD**  
 +0.20 (0.31%)  
 Updated Aug 24, 2020 01:41 PM ET

Add to portfolio Trades from \$1  
 Zacks Rank: 3-Hold  
 Style Scores: Value | Growth | Momentum | VGM  
 Industry Rank: Bottom 35% (164 out of 252)  
 Industry: Food - Miscellaneous

**Quote Overview**

Stock Activity	Key Earnings Data
Open: <b>64.22</b> <span style="color: red;">▼</span> <b>ES</b> <span style="color: red;">-2.30%</span>	Current Yr Est: <b>0.87</b>
Day Low: <b>63.52</b>	Most Accurate Est: <b>0.85</b>
Day High: <b>64.23</b>	Current Qtr Est: <b>0.87</b>
52 Wk Low: <b>46.59</b>	Current Yr Est: <b>3.53</b>
52 Wk High: <b>66.14</b>	Exp Earnings Date: <b>9/16/20</b>
Avg. Volume: <b>2,611,989</b>	Prior Year EPS: <b>3.61</b>
Market Cap: <b>39.11 B</b>	Exp EPS Growth (3-5yr): <b>7.50%</b>
Dividend: <b>1.96 (3.06%)</b>	Forward PE: <b>18.16</b>
Beta: <b>0.60</b>	PEG Ratio: <b>2.42</b>

Consumer Staples » Food - Miscellaneous

**Price and EPS Surprise Chart**



**Research Reports For GIS**

Analyst Reports | Snapshot | All Zacks' Analyst Reports >

**News For GIS**

- [Zacks News for GIS](#) [Other News for GIS](#)
- [Kellogg Gains on Pandemic-Led Demand, Hurt by Cost Concerns](#)  
08/17/20-9:25AM EST Zacks
- [B&G Foods \(BGS\) More Than Doubles in 6 Months on Solid Demand](#)  
08/20/20-9:28AM EST Zacks
- [GIS: What are Zacks experts saying?](#)  
Zacks Private Portfolio Services
- [Is Global X SuperDividend U.S. ETF \(DIV\) a Strong ETF Right Now?](#)  
08/20/20-5:20AM EST Zacks
- [General Mills \(GIS\) Up 3.3% Since Last Earnings Report: Can It Continue?](#)  
08/20/20-3:00AM EST Zacks
- [General Mills \(GIS\) Stock Sinks As Market Gains: What You Should Know](#)  
08/20/20-4:45PM EST Zacks
- [More Zacks News for GIS >](#)

**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series.](#)

**Company Summary**

Based in Minneapolis, MN, General Mills Inc. is a global manufacturer and marketer of branded consumer foods sold through retail stores. The company also serves the foodservice and commercial baking industries. Its principal product categories include ready-to-eat cereals, convenient meals, snacks (including grain, fruit and savory snacks, nutrition bars, and frozen hot snacks), yogurt, super-premium ice creams, baking mixes and ingredients, and refrigerated and frozen dough.

General Mills acquired Blue Buffalo in April 2018, and its consolidated results form part of a newly formed "Pet" segment following the first quarter of fiscal 2019. The ...

[Read Full Company Summary for GIS here](#)

**Premium Research for GIS**

**Zacks Rank** Hold **3**

**Zacks Industry Rank** Bottom 35% (164 out of 252)

**Zacks Sector Rank** Top 44% (7 out of 16)

Style Scores  Value |  Growth |  Momentum |  VGM

**Earnings ESP** -2.30%

**Research Reports for GIS** [Analyst](#) | [Snapshot](#)

▲▼ = Change in last 30 days

[View All Zacks Rank #1 Strong Buys](#)

[More Premium Research >>](#)

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
General Mills Inc	<b>GIS</b>	
Flowers Foods Inc	<b>FLO</b>	
MEDIFAST INC	<b>MED</b>	
BG Foods Inc	<b>BGS</b>	
Campbell Soup Company	<b>CPB</b>	
Celsius Holdings Inc	<b>CELH</b>	
McCormick Company Incorporated	<b>MKC</b>	

[See all Food - Miscellaneous Peers >](#)

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**Quote Overview**  
 Quotes & News  
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 Zacks News  
 Partner News  
 Zacks Research

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- Snapshot
- Analyst Report
- Style Scores
- Detailed Estimates
- Comparison to Industry
- Zacks Experts View

**Charts**

- Price, Consensus and EPS Surprise
- Fundamental Charts
- Comparative
- Interactive Charts
- Price and Consensus
- Price & EPS Surprise
- 12 Month EPS
- Broker Recommendations

**Financials**

- Financial Overview
- Income Statements
- Balance Sheet
- Cash flow Statements

**Options**

- Option Chain
- Options Greek Montage

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**Eli Lilly and Company (LLY)**  
 (Real Time Quote from BATS)  
**\$148.92 USD**  
 -0.34 (-0.23%)  
 Updated Aug 24, 2020 01:41 PM ET

Add to portfolio  **Zacks Rank:**   
**3-Hold**   
**Style Scores:**   
**Industry Rank:**

**Quote Overview**

Stock Activity	Key Earnings Data
Open <input type="text" value="148.92"/>	EPS 0.00%
Day Low 148.25	Most Accurate Est 1.76
Day High 150.40	Current Qtr Est 1.76
52 Wk Low 101.36	Current Yr Est 7.32
52 Wk High 170.75	Exp Earnings Date 10/28/20
Avg. Volume 2,770,335	Prior Year EPS 6.04
Market Cap 142.76 B	Exp EPS Growth (3-5yr) 15.65%
Dividend 2.96 (1.98%)	Forward PE 20.41
Beta 0.21	PEG Ratio 1.30

Medical » Large Cap Pharmaceuticals



**Research Reports For LLY**

[All Zacks' Analyst Reports >](#)

**News For LLY**

[Zacks News for LLY](#) [Other News for LLY](#)

Pharma Stock Roundup: SNY, JNJ Acquisition Deals, FDA Approvals 12AM EST Zacks

United Therapeutics Announces FDA Acceptance of Tyvaso sNDA 08/18/20-10:13AM EST Zacks

LLY: What are Zacks experts saying now? Zacks Private Portfolio Services

Pharma Stock Roundup: FDA Approval for Roche's SMA Drug & Other Updates 12AM EST Zacks

Large-Cap Pharma Industry Outlook Dull Amid Coronavirus Woes 08/12/20-12:00AM EST Zacks

Radiuz' (RDUS) Q2 Earnings Miss Estimates, Sales Surpass 08/11/20-7:41AM EST Zacks

[More Zacks News for LLY >](#)

**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series. >](#)

**Premium Research for LLY**

**Zacks Rank**  **Hold**

**Zacks Industry Rank** Top 48% (121 out of 252)

**Zacks Sector Rank** Bottom 38% (10 out of 16)

**Style Scores**  |  |  |

**Earnings ESP** 0.00%

**Research Reports for LLY** [Analyst](#) | [Snapshot](#)

= Change in last 30 days

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**Company Summary**

Indianapolis, IN based Eli Lilly and Company, one of the world's largest pharmaceutical companies, boasts a diversified product profile including a solid lineup of new successful drugs. It also has a dependable pipeline as it navigates through challenges like patent expirations of several drugs and rising pricing pressure on its U.S. diabetes franchise.

Its pharmaceutical product categories are neuroscience (Zyprexa, Cymbalta, Emgality), diabetes (Humalog, Humulin, Trulicity and others), oncology (Aimta, Cytaraza, Verzenio), immunology (Taltz and Olumiant) and others (Cialis).

Over the past few years, Lilly has been actively seeking ...

[Read Full Company Summary for LLY here](#)

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Eli Lilly and Company	<b>LLY</b>	
GlaxoSmithKline plc	<b>GSK</b>	
AbbVie Inc	<b>ABBV</b>	
AstraZeneca PLC	<b>AZN</b>	
Bayer Aktiengesellschaft	<b>BAYRY</b>	
H Lundbeck AS	<b>HLUYY</b>	
Innoviva Inc	<b>INVA</b>	

[See all Large Cap Pharmaceuticals Peers >](#)

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 Zacks News  
 Partner News  
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- Snapshot
- Analyst Report
- Style Scores
- Detailed Estimates
- Comparison to Industry
- Zacks Experts View

More Research

- Broker Recommendations
- Full Company Report
- Earnings Announcements
- Key Company Metrics
- Broker Reports
- Insiders
- Earnings Transcripts

Charts

- Price, Consensus and EPS Surprise
- Fundamental Charts
- Comparative
- Interactive Charts
- Price and Consensus
- Price & EPS Surprise
- 12 Month EPS
- Broker Recommendations

Financials

- Financial Overview
- Income Statements
- Balance Sheet
- Cash flow Statements

Options

- Option Chain
- Options Greek Montage

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**McCormick Company, Incorporated (MKC)**  
 (Real Time Quote from BATS)  
**\$203.07 USD**  
 -0.08 (-0.04%)  
 Updated Aug 24, 2020 01:44 PM ET

Add to portfolio Trades from \$1

Zacks Rank: 2-Buy

Style Scores: Value | Growth | Momentum | VGW

Industry Rank: Bottom 35% (164 out of 252)

Industry: Food - Miscellaneous

**Quote Overview**

Stock Activity

Open	203.50	Key Earnings Data	EPS	0.00%
Day Low	201.79	Most Accurate Est		1.52
Day High	204.16	Current Qtr Est		1.52
52 Wk Low	112.23	Current Yr Est		5.76
52 Wk High	204.16	Exp Earnings Date		10/6/20
Avg. Volume	440,164	Prior Year EPS		5.35
Market Cap	27.06 B	Exp EPS Growth (3-5yr)		5.78%
Dividend	2.48 (1.22%)	Forward PE		35.25
Beta	0.39	PEG Ratio		6.10

Consumer Staples » Food - Miscellaneous



**Research Reports For MKC**

Analyst Reports | All Zacks' Analyst Reports »

**News For MKC**

Zacks News for MKC | Other News for MKC

McCormick (MKC) Gains on Pandemic-Led Demand, Saving Efforts  
 08/17/20-9:27AM EST Zacks

CPB vs. MKC: Which Stock Should Value Investors Buy Now?  
 08/05/20-10:40AM EST Zacks

MKC: What are Zacks experts saying now?  
 Zacks Private Portfolio Services

McCormick (MKC) Up 8.4% Since Last Earnings Report: Can It Continue?  
 07/30/20-9:30AM EST Zacks

Kraft Heinz's Product Development & Pricing Efforts Solid  
 07/14/20-8:05AM EST Zacks

General Mills Rises More Than 18% YTD, Will Momentum Sustain?  
 07/13/20-7:16AM EST Zacks

More Zacks News for MKC »

**Billion Dollar Secret**

Billion Dollar Secret Full Series

The Zacks Rank has been called the Billion Dollar Secret. Click here to watch the full series. »

**Company Summary**

Founded in 1889 and based in Sparks, MD, McCormick & Company, Inc. is a leading manufacturer, marketer and distributor of spices, seasonings, specialty foods and flavors to the entire food industry across the globe.

The company's key sales, distribution and production facilities are located in North America and Europe. Furthermore, the company has facilities in China, Australia, Mexico, India, Singapore, Central America, Thailand and South Africa.

McCormick conducts its business through two segments – Consumer and Flavor Solutions.

The Consumer Business segment offers spices, herbs, extracts, seasoning ...

Read Full Company Summary for MKC here

**Premium Research for MKC**

Zacks Rank **Buy** 2

Zacks Industry Rank Bottom 35% (164 out of 252)

Zacks Sector Rank Top 44% (7 out of 16)

Style Scores Value | Growth | Momentum | VGW

Earnings ESP 0.00%

Research Reports for MKC Analyst | Snapshot

Change in last 30 days

View All Zacks Rank #1 Strong Buys

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**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
McCormick Company Incorporated	<b>MKC</b>	
Flowers Foods Inc	<b>FLO</b>	
MEDIFAST INC	<b>MED</b>	
BG Foods Inc	<b>BGS</b>	
Campbell Soup Company	<b>CPB</b>	
Celsius Holdings Inc	<b>CELH</b>	
Nomad Foods Limited	<b>NOMD</b>	

See all Food - Miscellaneous Peers »

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**Quote Overview**  
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 Zacks News  
 Partner News  
 Zacks Research
- More Research**
- Snapshot
  - Analyst Report
  - Style Scores
  - Detailed Estimates
  - Comparison to Industry
  - Zacks Experts View
- Charts**
- Price, Consensus and EPS Surprise
  - Fundamental Charts
  - Comparative
  - Interactive Charts
  - Price and Consensus
  - Price & EPS Surprise
  - 12 Month EPS
  - Broker Recommendations
- Financials**
- Financial Overview
  - Income Statements
  - Balance Sheet
  - Cash flow Statements
- Options**
- Option Chain
  - Options Greek Montage
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**Pfizer Inc. (PFE)**  
 (Real Time Quote from BATS)  
**\$38.59 USD**  
 -0.29 (-0.75%)  
 Updated Aug 24, 2020 01:47 PM ET

Add to portfolio Trades from \$1  
 Zacks Rank: 3-Hold  
 Style Scores: B Value | C Growth | C Momentum | VG  
 Industry Rank: Top 48% (121 out of 252)

**Quote Overview**

Key Earnings Data	
Open	0.00%
Day Low	38.54
Day High	39.04
52 Wk Low	27.88
52 Wk High	40.97
Avg. Volume	23,728,826
Market Cap	216.05 B
Dividend	1.52 (3.91%)
Beta	0.74
Most Accurate Est	0.69
Current Qtr Est	0.69
Current Yr Est	2.89
Exp Earnings Date	11/3/20
Prior Year EPS	2.95
Exp EPS Growth (3-5yr)	4.29%
Forward PE	13.44
PEG Ratio	3.13



**Research Reports For PFE**

Analyst Reports | All Zacks' Analyst Reports >

**News For PFE**

Zacks News for PFE | Other News for PFE

- FDA Grants Emergency Use to Plasma Therapy to Treat COVID-19
- Stock Market News for Aug 24, 2020
- PFE: What are Zacks experts saying now?
- BioMarin Down on CRL From FDA for Hemophilia A Candidate
- Glaxo Initiates Dosing in Phase III Meningitis Vaccine Study
- Merck's Keytruda Positive in First-Line Esophageal Cancer Study

**Billion Dollar Secret**

Billion Dollar Secret Full Series

The Zacks Rank has been called the Billion Dollar Secret. Click here to watch the full series. >

**Premium Research for PFE**

Zacks Rank: **Hold** (3)

Zacks Industry Rank: Top 48% (121 out of 252)

Zacks Sector Rank: Bottom 38% (10 out of 16)

Style Scores: B Value | C Growth | C Momentum | VG

Earnings ESP: 0.00%

Research Reports for PFE: Analyst | Snapshot

Change in last 30 days: (▲ ▼)

View All Zacks Rank #1 Strong Buys

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**Company Summary**

With eight blockbuster products in its portfolio, New York-based, Pfizer, Inc., boasts a sustainable pipeline with multiple late-stage pipeline programs that can drive growth. Pfizer markets a wide range of drugs and vaccines and reports under two business units — Pfizer Biopharmaceuticals Group and Upjohn. Biopharma comprises six business units — Oncology, Inflammation & Immunology, Rare Disease, Hospital, Vaccines and Internal Medicine. Upjohn is a global, off-patent branded and generic established medicines business, which includes 20 off patent solid oral dose legacy brands, as well as certain generic medicines. In July 2019, Pfizer announced a definitive agreement to ...

Read Full Company Summary for PFE here

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Pfizer Inc	PFE	
GlaxoSmithKline plc	GSK	
AbbVie Inc	ABBV	
AstraZeneca PLC	AZN	
Bayer Aktiengesellschaft	BAYRY	
Eli Lilly and Company	LLY	
H Lundbeck AS	HLUYY	

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- Quotes & News**
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- Zacks News
- Partner News
- Zacks Research
- Snapshot
- Analyst Report
- Style Scores
- Detailed Estimates
- Comparison to Industry
- Zacks Experts View
- More Research
- Broker Recommendations
- Full Company Report
- Earnings Announcements
- Key Company Metrics
- Broker Reports
- Insiders
- Earnings Transcripts
- Charts
- Price, Consensus and EPS Surprise
- Fundamental Charts
- Comparative
- Interactive Charts
- Price and Consensus
- Price & EPS Surprise
- 12 Month EPS
- Broker Recommendations
- Financials
- Financial Overview
- Income Statements
- Balance Sheet
- Cash flow Statements
- Options
- Option Chain
- Options Greek Montage
- Access Zacks Data Feed

**Procter Gamble Company The (PG)**  
(Real Time Quote from BATS)

**\$138.33 USD**  
+0.89 (0.65%)  
Updated Aug 24, 2020 01:47 PM ET

Add to portfolio  **Zacks Rank:** 3  
**3-Hold**     
**Style Scores:**      
**Industry Rank:**     
 Top 37% (93 out of 252)

**Quote Overview**

Stock Activity	Key Earnings Data
Open <b>137.44</b> <span style="color: green;">▲</span> <b>Bar</b> <b>138.33</b> <b>Change</b> <b>0.89</b> <b>ESP</b> <b>0.04%</b>	
Day Low 137.20	Most Accurate Est 1.41
Day High 138.30	Current Qtr Est 1.41
52 Wk Low 94.34	Current Yr Est 5.40
52 Wk High 138.30	Exp Earnings Date 10/27/20
Avg. Volume 6,458,176	Prior Year EPS 5.12
Market Cap 341.69 B	Exp EPS Growth (3-5yr) 7.41%
Dividend 3.16 ( 2.30%)	Forward PE 25.46
Beta 0.46	PEG Ratio 3.43

**Price and EPS Surprise Chart**



**Research Reports For PG**

[All Zacks' Analyst Reports >](#)

**News For PG**

- [Zacks News for PG](#) [Other News for PG](#)
- Is Fidelity High Dividend ETF (FDVV) a Strong ETF Right Now?  
08/21/20-5:20AM EST Zacks
- Should You Invest in the Fidelity MSCI Consumer Staples Index ETF (FSTA)?  
08/20/20-9:20AM EST Zacks
- PG: What are Zacks experts saying now?  
Zacks Private Portfolio Services
- Church & Dwight Gains 30% in 3 Months on Pandemic-Led Demand  
08/13/20-10:13AM EST Zacks
- Cleaning Product Demand Aids P&G's Growth: Will it Persist?  
08/13/20-8:27AM EST Zacks
- Should iShares Morningstar LargeCap Value ETF (JKF) Be on Your Investing Radar?  
08/13/20-8:27AM EST Zacks
- More Zacks News for PG >

**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series. >](#)

**Company Summary**

Headquartered in Cincinnati, OH, The Procter & Gamble Company, also referred to as Procter & Gamble or P&G, is a branded consumer products company which markets its products in more than 180 countries primarily through mass merchandisers, grocery stores, membership club stores, drug stores, department stores, distributors, baby stores, specialty beauty stores, e-commerce, high frequency stores and pharmacies. It has operations in approximately 70 countries. The company has five reportable segments:

**Beauty (18.8% of fiscal 2020 revenues):** The segment includes hair care products (conditioner, shampoo, styling aids treatments) antiperspirants and deodorants ...

[Read Full Company Summary for PG here](#)

**Premium Research for PG**

**Zacks Rank** ▼ Hold 3

**Zacks Industry Rank** Top 37% (93 out of 252)

**Zacks Sector Rank** Top 44% (7 out of 16)

**Style Scores**  Value |  Growth |  Momentum |  VGMI

**Earnings ESP** 0.04%

**Research Reports for PG** [Analyst](#) | [Snapshot](#)

▲ ▼ = Change in last 30 days

[View All Zacks Rank #1 Strong Buys](#)

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**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Procter Gamble Company The	<b>PG</b>	0.04%
Unilever NV	<b>UN</b>	
Church Dwight Co Inc	<b>CHD</b>	
ColgatePalmolive Company	<b>CL</b>	
Henkel AG Co	<b>HENKY</b>	
Reckitt Benckiser Group PLC	<b>RBGLY</b>	
The Clorox Company	<b>CLX</b>	

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 Quote Overview  
 Zacks News  
 Partner News  
 Zacks Research

**Snapshot**  
 Analyst Report  
 Style Scores  
 Detailed Estimates  
 Comparison to Industry  
 Zacks Experts View

**More Research**  
 Broker Recommendations  
 Full Company Report  
 Earnings Announcements  
 Key Company Metrics  
 Broker Reports  
 Insiders  
 Earnings Transcripts

**Charts**  
 Price, Consensus and EPS Surprise  
 Fundamental Charts  
 Comparative  
 Interactive Charts  
 Price and Consensus  
 Price & EPS Surprise  
 12 Month EPS  
 Broker Recommendations

**Financials**  
 Financial Overview  
 Income Statements  
 Balance Sheet  
 Cash flow Statements

**Options**  
 Option Chain  
 Options Greek Montage

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**Texas Instruments Incorporated (TXN)**  
 (Real Time Quote from BATS)  
**\$140.40 USD**  
 +0.07 (0.05%)  
 Updated Aug 24, 2020 01:47 PM ET

Add to portfolio Trades from \$1  
**Zacks Rank:**  
 1-Strong Buy 1  
**Style Scores:**  
 Value | Growth | Momentum | VGM  
**Industry Rank:**  
 Top 28% (71 out of 252)

**Quote Overview**

Stock Activity	Key Earnings Data	EPS	-0.18%
Open	Current Yr Est	5.05	
Day Low	Most Accurate Est	1.25	
Day High	Current Qtr Est	1.25	
52 Wk Low	Current Yr Est	5.05	
52 Wk High	Exp Earnings Date	10/27/20	
Avg. Volume	Prior Year EPS	5.24	
Market Cap	Exp EPS Growth (3-5yr)	9.33%	
Dividend	Forward PE	27.77	
Beta	PEG Ratio	2.98	



**Research Reports For TXN**  
 All Zacks' Analyst Reports >

**News For TXN**  
 Zacks News for TXN | Other News for TXN

Is Texas Instruments (TXN) Outperforming Other Computer and Technology Stocks This Year?  
 Top Ranked Income Stocks to Buy for August 21st  
 08/21/20-12:00AM EST Zacks

TXN: What are Zacks experts saying now?  
 Zacks Private Portfolio Services

Why Is Texas Instruments (TXN) Up 4.5% Since Last Earnings Report?  
 08/19/20-7:58AM EST Zacks

Cloud Services Driving Semiconductor Demand: 4 Solid Picks  
 08/19/20-7:58AM EST Zacks

Red-Hot NVIDIA & Other Chip Bigwigs to Add to Your Portfolio  
 08/19/20-6:04AM EST Zacks

More Zacks News for TXN >

**Billion Dollar Secret**  
 Billion Dollar Secret Full Series

The Zacks Rank has been called the Billion Dollar Secret. Click here to watch the full series. >

**Company Summary**  
 Headquartered in Dallas, Texas, Texas Instruments, Inc. is an original equipment manufacturer of analog, mixed signal and digital signal processing (DSP) integrated circuits.  
 TI has manufacturing and design facilities, including wafer fabrication and assembly/test operations in North America, Asia and Europe.  
 Management's strategy has been to build assets that would be fully utilized through their lifetimes and outsource any excess demand in peak situations to outside foundries.  
 ...  
 Read Full Company Summary for TXN here

**Premium Research for TXN**

**Zacks Rank** ▲ Strong Buy 1

**Zacks Industry Rank** Top 28% (71 out of 252)

**Zacks Sector Rank** Top 25% (4 out of 16)

**Style Scores** Value | Growth | Momentum | VGM

**Earnings ESP** -0.18%

**Research Reports for TXN** Analyst | Snapshot

(▲ ▼) = Change in last 30 days  
[View All Zacks Rank #1 Strong Buys](#)

More Premium Research >>

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Texas Instruments Incorporated	<b>TXN</b>	
Amtech Systems Inc	<b>ASYS</b>	
Intel Corporation	<b>INTC</b>	
NVIDIA Corporation	<b>NVDA</b>	
STMicroelectronics NV	<b>STM</b>	
SUMCO CORP ADR	<b>SUOPY</b>	
Screen Holdings Co Ltd	<b>DINRF</b>	

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 Quotes & News  
 Quote Overview  
 Zacks News  
 Partner News  
 Zacks Research

Snapshot  
 Analyst Report  
 Style Scores  
 Detailed Estimates  
 Comparison to Industry  
 Zacks Experts View

More Research  
 Broker Recommendations  
 Full Company Report  
 Earnings Announcements  
 Key Company Metrics  
 Broker Reports  
 Insiders  
 Earnings Transcripts

Charts  
 Price, Consensus and EPS Surprise  
 Fundamental Charts  
 Comparative  
 Interactive Charts  
 Price and Consensus  
 Price & EPS Surprise  
 12 Month EPS  
 Broker Recommendations

Financials  
 Financial Overview  
 Income Statements  
 Balance Sheet  
 Cash flow Statements

Options  
 Option Chain  
 Options Greek Montage

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**The Travelers Companies, Inc. (TRV)**  
 (Real Time Quote from BATS)  
**\$113.88 USD**  
 +2.05 (1.83%)  
 Updated Aug 24, 2020 01:47 PM ET

Add to portfolio Trades from \$1  
**Zacks Rank:**  
 4-Sell       
**Style Scores:**  
 Value | Growth | Momentum | **VGM**  
**Industry Rank:**  
 Top 48% (121 out of 252)

**Quote Overview**

Stock Activity	Key Earnings Data	
Open <b>111.52</b>	Current Qtr Est	0.00%
Day Low 111.52	Most Accurate Est	3.30
Day High 113.93	Current Qtr Est	3.30
52 Wk Low 76.99	Current Yr Est	8.53
52 Wk High 153.65	Exp Earnings Date	10/27/20
Avg. Volume 1,213,031	Prior Year EPS	9.60
Market Cap 28.31 B	Exp EPS Growth (3-5yr)	6.66%
Dividend 3.40 (3.04%)	Forward PE	13.10
Beta 0.86	PEG Ratio	1.97

Finance » Insurance - Property and Casualty

**Price and EPS Surprise Chart**  
 1 Month 3 Months YTD  
 Interactive Chart | Fundamental Chart

**Billion Dollar Secret**  
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**Research Reports For TRV**  
 All Zacks' Analyst Reports »

**News For TRV**  
 Zacks News for TRV Other News for TRV

Why Is Travelers (TRV) Down 5.7% Since Last Earnings Report?  
 08/22/20-10:30AM EST Zacks

Allstate Reports PG&E Recoveries and July 2020 Cat Losses  
 08/21/20-11:42AM EST Zacks

TRV: What are Zacks experts saying now?  
 Zacks Private Portfolio Services

Slew of Strong Earnings Pushes Insurance ETFs Higher  
 08/11/20-9:05AM EST Zacks

Brown & Brown (BRO) Q2 Earnings Beat, Revenues Improve Y/Y  
 07/28/20-10:29AM EST Zacks

Travelers (TRV) Q2 Earnings Meet Estimates, Revenues Miss  
 07/23/20-9:32AM EST Zacks

More Zacks News for TRV »

**Company Summary**  
 Established in 1853 and is based in New York, NY, The Travelers Companies Inc., a holding company, is principally engaged, through its subsidiaries, in providing a wide variety of property and casualty insurance and surety products and services to businesses, organizations and individuals in the United States, and select international markets.

Travelers operates its business through three segments: The **Business Insurance** segment (52.3% of 2019 net premium written) offers a broad array of property and casualty insurance and insurance-related services to its customers, primarily in the United States, as well as in ...

[Read Full Company Summary for TRV here](#)

**Premium Research for TRV**

**Zacks Rank** **Sell**

**Zacks Industry Rank** Top 48% (121 out of 252)

**Zacks Sector Rank** Bottom 25% (12 out of 16)

**Style Scores** Value | Growth | Momentum | **VGM**

**Earnings ESP** 0.00%

**Research Reports for TRV** Analyst | Snapshot

▲ ▼ = Change in last 30 days  
[View All Zacks Rank #1 Strong Buys](#)

More Premium Research » »

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
The Travelers Companies Inc	<b>TRV</b>	
Donegal Group Inc	<b>DGICA</b>	
Fidelity National Financial Inc	<b>FNFI</b>	
Stewart Information Services Corporation	<b>STC</b>	
The Allstate Corporation	<b>ALL</b>	
Allegheny Corporation	<b>Y</b>	
First American Financial Corporation	<b>FAF</b>	

[See all Insurance - Property and Casualty Peers »](#)

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 Price & EPS Surprise  
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**United Parcel Service, Inc. (UPS)**  
 (Real Time Quote from BATS)  
**\$159.37 USD**  
 +0.34 (0.21%)  
 Updated Aug 24, 2020 01:47 PM ET

Add to portfolio Trades from \$1

**Zacks Rank:**  
 1-Strong Buy **1**

**Style Scores:**  
 D Value | C Growth | F Momentum | **VGM**  
**Industry Rank:**  
 Top 2% (5 out of 252)

**Quote Overview**

Stock Activity	Key Earnings Data
Open <b>159.37</b>	EPS <b>0.64%</b>
Day Low 159.07	Most Accurate Est 1.74
Day High 161.06	Current Qtr Est 1.73
52 Wk Low 82.00	Current Yr Est 6.67
52 Wk High 162.70	Exp Earnings Date 10/27/20
Avg. Volume 5,715,183	Prior Year EPS 7.53
Market Cap 137.30 B	Exp EPS Growth (3-5yr) 7.77%
Dividend 4.04 (2.54%)	Forward PE 23.85
Beta 0.94	PEG Ratio 3.07



**Research Reports For UPS**

Analyst Reports **1** **All Zacks' Analyst Reports >**

- News For UPS**
- Zacks News for UPS** Other News for UPS
  - Air Lease Rides on Rental Equipment Amid Coronavirus Woes 08/24/20-9:48AM EST Zacks
  - Top 5 Corporate Giants Up More Than 15% Since Last Earnings 08/24/20-6:10AM EST Zacks
  - UPS: What are Zacks experts saying now? Zacks Private Portfolio Services
  - Frontline (FRO) to Report Q2 Earnings: What's in the Offing? 08/21/20-11:28AM EST Zacks
  - Is United Parcel Service (UPS) Stock Outpacing Its Transportation Peers This Year? 08/21/20-9:55AM EST Zacks
  - Spirit Airlines (SAVE) Rides on Low Fuel Costs Amid Pandemic 08/21/20-9:55AM EST Zacks
- [More Zacks News for UPS >](#)

**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series. >](#)

**Company Summary**

Based in Atlanta, United Parcel Service is the world's largest express carrier and package delivery company. The company, founded in 1907, provides specialized transportation and logistics services in the United States and internationally.

UPS offers a range of supply chain solutions, such as, freight forwarding, customs brokerage, fulfillment, returns, financial transactions, and repairs. UPS transports millions of packages each business day across the globe. In 2019, the company delivered 21.9 million pieces per day on an average. This translated into 5.5 billion packages in the year.

UPS operates a ground fleet of multiple vehicles in ...

[Read Full Company Summary for UPS here](#)

**Premium Research for UPS**

**Zacks Rank** **1** Strong Buy

**Zacks Industry Rank** Top 2% (5 out of 252)

**Zacks Sector Rank** Bottom 13% (14 out of 16)

**Style Scores** D Value | C Growth | F Momentum | **VGM**

**Earnings ESP** 0.64%

**Research Reports for UPS** [Analyst](#) | [Snapshot](#)

(▲ ▼) = Change in last 30 days

[View All Zacks Rank #1 Strong Buys](#)

[More Premium Research >>](#)

**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
United Parcel Service Inc	<b>UPS</b>	
Atlas Air Worldwide Holdings	<b>AAWW</b>	
Air Transport Services Group Inc	<b>ATSG</b>	
FedEx Corporation	<b>FDX</b>	
Air T Inc	<b>AIRT</b>	NA
Avianca Holdings SA	<b>AVH</b>	NA
Radiant Logistics Inc	<b>RLGT</b>	NA

[See all Transportation - Air Freight and Cargo Peers >](#)

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- Broker Recommendations
- Full Company Report
- Earnings Announcements
- Key Company Metrics
- Broker Reports
- Insiders
- Earnings Transcripts
- Charts
- Price, Consensus and EPS Surprise
- Fundamental Charts
- Comparative
- Interactive Charts
- Price and Consensus
- Price & EPS Surprise
- 12 Month EPS
- Broker Recommendations
- Financials
- Financial Overview
- Income Statements
- Balance Sheet
- Cash flow Statements
- Options
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**Walmart Inc. (WMT)**  
 (Real Time Quote from BATS)  
**\$130.74 USD**  
 -0.89 (-0.68%)  
 Updated Aug 24, 2020 01:50 PM ET

Add to portfolio  **Zacks Rank:** 3-Hold      
**Style Scores:** B Value | A Growth | A Momentum | **VGM**  
**Industry Rank:** Top 40% (102 out of 252)  
 Industry: Retail - Supermarkets

**Quote Overview**

Stock Activity	Key Earnings Data	
Open <a href="#">View All Zacks' Analyst Reports</a>	EPS	2.56%
Day Low 130.33	Most Accurate Est	1.19
Day High 132.48	Current Qtr Est	1.16
52 Wk Low 102.00	Current Yr Est	5.26
52 Wk High 137.63	Exp Earnings Date	11/12/20
Avg. Volume 7,794,599	Prior Year EPS	4.93
Market Cap 373.00 B	Exp EPS Growth (3-5yr)	5.63%
Dividend 2.16 (1.64%)	Forward PE	25.02
Beta 0.31	PEG Ratio	4.44

Retail-Wholesale » Retail - Supermarkets



**Research Reports For WMT**

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**News For WMT**

[Zacks News for WMT](#) [Other News for WMT](#)

**Buy Kroger (KR) Stock for Big Retail's Pandemic Growth and Safety**  
 08/21/20-4:10PM EST Zacks

**Buy Target (TGT) Stock at Highs for Booming E-Commerce Growth?**  
 08/21/20-2:46PM EST Zacks

**WMT: What are Zacks experts saying now?**  
 Zacks Private Portfolio Services

**Digitization Plays Key Role for WMT, TGT & LOW in Q2 Earnings**  
 08/21/20-9:53AM EST Zacks

**Top Analyst Reports for Facebook, Walmart & Morgan Stanley**  
 08/21/20-12:00AM EST Zacks

**Buy Dollar General Stock After Walmart & Target's Strong Pandemic Earnings**  
 08/21/20-7:03PM EST Zacks

[More Zacks News for WMT >](#)

**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series. >](#)

**Company Summary**

Walmart Inc., which removed "Stores" from its name in 2018, has evolved from just being a traditional brick-and-mortar retailer into an omnichannel player. In this regard, acquisitions of Jet.com, Bonobos, Moosejaw and Parcel, partnership with JD.com and Lord and Taylor, and investment in online e-commerce platform Flipkart are noteworthy. These position the company to keep pace with the changing retail ecosystem and stay firm in the presence of rivals like Amazon and Target. Markedly, Walmart's product offerings include almost everything from grocery to cosmetics, electronics to stationery, home furnishings to health ...

[Read Full Company Summary for WMT here](#)

**Premium Research for WMT**

**Zacks Rank** ▲ Hold 3

**Zacks Industry Rank** Top 40% (102 out of 252)

**Zacks Sector Rank** Top 19% (3 out of 16)

**Style Scores** B Value | A Growth | A Momentum | **VGM**

**Earnings ESP** 2.56%

**Research Reports for WMT** [Analyst](#) | [Snapshot](#)

(▲ ▼) = Change in last 30 days

[View All Zacks Rank #1 Strong Buys](#)

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**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Walmart Inc	<b>WMT</b>	
Jeronimo Martins SGPS SA	<b>JRONY</b>	
The Kroger Co	<b>KR</b>	
Carrefour SA	<b>CRRFY</b>	
Companhia Brasileira de Distribuicao	<b>CBD</b>	
Ingles Markets Incorporated	<b>IMKTA</b>	
J Sainsbury PLC	<b>JSAIY</b>	

[See all Retail - Supermarkets Peers >](#)

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- Broker Reports
- Insiders
- Earnings Transcripts
- Charts
- Price, Consensus and EPS Surprise
- Fundamental Charts
- Comparative
- Interactive Charts
- Price and Consensus
- Price & EPS Surprise
- 12 Month EPS
- Broker Recommendations
- Financials
- Financial Overview
- Income Statements
- Balance Sheet
- Cash flow Statements
- Options
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**Waste Management, Inc. (WM)**  
(Real Time Quote from BATS)

**\$112.00 USD**

+0.84 (0.76%)  
Updated Aug 24, 2020 01:50 PM ET

Add to portfolio Trades from \$1

**Zacks Rank:**  
3-Hold      
**Style Scores:**  
C Value | B Growth | C Momentum | **VGM**  
**Industry Rank:**  
Top 44% (111 out of 252)

**Quote Overview**

Stock Activity		Key Earnings Data	
Open	View All Zacks #1 Strong Buys	EPS	-0.77%
Day Low	111.15	Most Accurate Est	1.00
Day High	111.98	Current Qtr Est	1.01
52 Wk Low	85.34	Current Yr Est	3.83
52 Wk High	126.79	Exp Earnings Date	10/28/20
Avg. Volume	1,387,223	Prior Year EPS	4.40
Market Cap	46.96 B	Exp EPS Growth (3-5yr)	6.29%
Dividend	2.18 (1.96%)	Forward PE	29.02
Beta	0.73	PEG Ratio	4.61

**Price and EPS Surprise Chart**



**Research Reports For WM**

Analyst Reports | Snapshot | All Zacks' Analyst Reports >

**News For WM**

- [Zacks News for WM](#) [Other News for WM](#)
- Waste Management (WM) Tops Q2 Earnings, Revenue Estimates  
07/30/20-10:01AM EST Zacks
- Waste Management (WM) Q2 Earnings and Revenues Top Estimates.35AM EST Zacks
- WM: What are Zacks experts saying?  
Zacks Private Portfolio Services
- Waste Management (WM) to Post Q2 Earnings: What's in Store?  
07/28/20-8:33AM EST Zacks
- Interpublic (IPG) to Report Q2 Earnings: What's in Store?  
07/24/20-10:16AM EST Zacks
- What Awaits Automatic Data Processing (ADP) in Q4 Earnings?  
07/24/20-9:38AM EST Zacks
- More Zacks News for WMs

**Billion Dollar Secret**

**Billion Dollar Secret Full Series**

The Zacks Rank has been called the Billion Dollar Secret. [Click here to watch the full series.](#)

**Company Summary**

Headquartered in Houston, Texas, Waste Management Inc. is a leading provider of comprehensive waste management services in North America. The company provides collection, transfer, recycling and resource recovery, as well as disposal services to residential, commercial, industrial and municipal customers. It is also a leading developer, operator and owner of waste-to-energy and landfill gas-to-energy facilities in the United States.

Waste Management provides collection services that include picking up and transporting waste and recyclable materials from the point of generation to a transfer station, disposal site or material recovery facility (MRF). The ...

[Read Full Company Summary for WM here](#)

**Premium Research for WM**

**Zacks Rank** Hold

**Zacks Industry Rank** Top 44% (111 out of 252)

**Zacks Sector Rank** Top 38% (6 out of 16)

**Style Scores**  Value |  Growth |  Momentum |  **VGM**

**Earnings ESP** -0.77%

**Research Reports for WM** [Analyst](#) | [Snapshot](#)

(▲ ▼) = Change in last 30 days

[View All Zacks Rank #1 Strong Buys](#)

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**Premium Research: Industry Analysis**

Top Peers	Symbol	Zacks Rank
Waste Management Inc	<b>WM</b>	
Aqua Metals Inc	<b>AQMS</b>	
Republic Services Inc	<b>RS</b>	
Advanced Disposal Services Inc	<b>ADSW</b>	
CHINA EVERBRIHT	<b>CHFFF</b>	
CONCRETE PUMPING HOLDINGS INC	<b>BBCP</b>	
Clean Harbors Inc	<b>CLH</b>	

[See all Waste Removal Services Peers >](#)

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## CRSP Deciles Size Premiums

Decile	Market Capitalization of Smallest Company (in millions)	Market Capitalization of Largest Company (in millions)	Size Premium (Return in Excess of CAPM)
Mid-Cap 3-5	\$ 2,688.889 -	\$ 13,100.225	0.80%
Low Cap 6-8	515.621 -	2,685.865	1.42%
Micro-Cap 9-10	1.973 -	515.602	3.16%
<b>Breakdown of Deciles 1-10</b>			
1-Largest	\$ 31,090.379 -	\$ 1,061,355.011	-0.28%
2	13,142.606 -	30,542.936	0.50%
3	6,618.604 -	13,100.225	0.73%
4	4,312.546 -	6,614.962	0.79%
5	2,688.889 -	4,311.252	1.10%
6	1,669.856 -	2,685.865	1.34%
7	993.855 -	1,668.282	1.47%
8	515.621 -	993.847	1.59%
9	230.024 -	515.602	2.22%
10- Smallest	1.973 -	229.748	4.99%
<b>Breakdown of CRSP 10th Decile</b>			
10a	\$ 120.519 -	\$ 229.748	3.49%
10w	181.408 -	229.748	2.69%
10x	120.519 -	181.170	4.42%
10b	\$ 1.973 -	\$ 120.178	8.02%
10y	62.612 -	120.178	6.62%
10z	1.973 -	62.199	10.91%

Source: Duff & Phelps; 2020 CRSP Deciles Size Study -- Supplementary Data Exhibits.

Source: Regulatory Research Associates, a group within S&P Global Market Intelligence

**Table 3: Electric authorized ROEs: 2007-2019**

**Settled versus fully litigated cases**

Year	All cases			Settled cases			Fully litigated cases		
	Average ROE (%)	Median ROE (%)	Number of observatio	Average ROE (%)	Median ROE (%)	Number of observatio	Average ROE (%)	Median ROE (%)	Number of observatio
2007	10.30	10.20	38	10.42	10.33	14	10.23	10.15	24
2008	10.41	10.30	37	10.43	10.25	17	10.39	10.54	20
2009	10.52	10.50	40	10.64	10.62	16	10.45	10.50	24
2010	10.37	10.30	61	10.39	10.30	34	10.35	10.10	27
2011	10.29	10.17	42	10.12	10.07	16	10.39	10.25	26
2012	10.17	10.08	58	10.06	10.00	29	10.28	10.25	29
2013	10.03	9.95	49	10.12	9.98	32	9.85	9.75	17
2014	9.91	9.78	38	9.73	9.75	17	10.05	9.83	21
2015	9.85	9.65	30	10.07	9.72	14	9.66	9.62	16
2016	9.77	9.75	42	9.80	9.85	17	9.74	9.60	25
2017	9.74	9.60	53	9.75	9.60	29	9.73	9.56	24
2018	9.60	9.58	48	9.57	9.63	26	9.63	9.53	22
2019	9.65	9.60	47	9.75	9.73	20	9.58	9.50	27

**General rate cases versus limited-issue riders**

Year	All cases			General rate cases			Limited-issue riders		
	Average ROE (%)	Median ROE (%)	Number of observatio	Average ROE (%)	Median ROE (%)	Number of observatio	Average ROE (%)	Median ROE (%)	Number of observatio
2007	10.30	10.20	38	10.32	10.23	36	9.90	9.90	1
2008	10.41	10.30	37	10.37	10.30	35	11.11	11.11	2
2009	10.52	10.50	40	10.52	10.50	38	10.55	10.55	2
2010	10.37	10.30	61	10.29	10.26	58	11.87	12.30	3
2011	10.29	10.17	42	10.19	10.14	40	12.30	12.30	2
2012	10.17	10.08	58	10.02	10.00	51	11.57	11.40	6
2013	10.03	9.95	49	9.82	9.82	40	11.34	11.40	7
2014	9.91	9.78	38	9.76	9.75	32	10.96	11.00	5
2015	9.85	9.65	30	9.60	9.53	23	10.87	11.00	6
2016	9.77	9.75	42	9.60	9.60	32	10.31	10.55	10
2017	9.74	9.60	53	9.68	9.60	42	10.01	9.95	10
2018	9.60	9.58	48	9.56	9.58	38	9.74	9.70	10
2019	9.65	9.60	47	9.64	9.65	33	9.68	9.31	14

**Vertically integrated cases versus delivery-only cases**

Year	All cases			Vertically integrated cases			Delivery-only cases		
	Average ROE (%)	Median ROE (%)	Number of observatio	Average ROE (%)	Median ROE (%)	Number of observatio	Average ROE (%)	Median ROE (%)	Number of observatio
2007	10.30	10.20	38	10.50	10.45	26	9.86	9.98	10
2008	10.41	10.30	37	10.48	10.47	26	10.04	10.25	9
2009	10.52	10.50	40	10.66	10.66	28	10.15	10.30	10
2010	10.37	10.30	61	10.42	10.40	41	9.98	10.00	17
2011	10.29	10.17	42	10.33	10.20	28	9.85	10.00	12
2012	10.17	10.08	58	10.10	10.20	39	9.75	9.73	12
2013	10.03	9.95	49	9.95	10.00	31	9.37	9.36	9
2014	9.91	9.78	38	9.94	9.90	19	9.49	9.55	13
2015	9.85	9.65	30	9.75	9.70	17	9.17	9.07	6
2016	9.77	9.75	42	9.77	9.78	20	9.31	9.33	12
2017	9.74	9.60	53	9.80	9.65	28	9.43	9.55	14
2018	9.60	9.58	48	9.68	9.73	23	9.38	9.50	15
2019	9.65	9.60	47	9.73	9.73	25	9.37	9.60	8

Data compiled Jan. 29, 2020.

## Electric Average Authorized ROEs: 2006 — 2016

### Settled versus Fully Litigated Cases

Year	All Cases		Settled Cases		Fully Litigated Cases	
	ROE %	(# Cases)	ROE %	(# Cases)	ROE %	(# Cases)
2006	10.32	(26)	10.26	(11)	10.37	(15)
2007	10.30	(38)	10.42	(14)	10.23	(24)
2008	10.41	(37)	10.43	(17)	10.39	(20)
2009	10.52	(40)	10.64	(16)	10.45	(24)
2010	10.37	(61)	10.39	(34)	10.35	(27)
2011	10.29	(42)	10.12	(16)	10.39	(26)
2012	10.17	(58)	10.06	(29)	10.28	(29)
2013	10.03	(49)	10.12	(32)	9.85	(17)
2014	9.91	(38)	9.73	(17)	10.05	(21)
2015	9.85	(30)	10.07	(14)	9.66	(16)
2016	9.77	(42)	9.80	(17)	9.74	(25)

### General Rate Cases versus Limited Issue Riders

Year	All Cases		General Rate Cases		Limited Issue Riders	
	ROE %	(# Cases)	ROE %	(# Cases)	ROE %	(# Cases)
2006	10.32	(26)	10.34	(25)	9.80	(1)
2007	10.30	(38)	10.31	(37)	9.90	(1)
2008	10.41	(37)	10.37	(35)	11.11	(2)
2009	10.52	(40)	10.52	(38)	10.55	(2)
2010	10.37	(61)	10.29	(58)	11.87	(3)
2011	10.29	(42)	10.19	(40)	12.30	(2)
2012	10.17	(58)	10.01	(52)	11.57	(6)
2013	10.03	(49)	9.81	(42)	11.34	(7)
2014	9.91	(38)	9.75	(33)	10.96	(5)
2015	9.85	(30)	9.60	(24)	10.87	(6)
2016	9.77	(42)	9.60	(32)	10.31	(10)

### Vertically Integrated Cases versus Delivery Only Cases

Year	All Cases		Vertically Integrated Cases		Delivery Only Cases	
	ROE %	(# Cases)	ROE %	(# Cases)	ROE %	(# Cases)
2006	10.32	(26)	10.63	(15)	9.91	(10)
2007	10.30	(38)	10.50	(26)	9.86	(11)
2008	10.41	(37)	10.48	(26)	10.04	(9)
2009	10.52	(40)	10.66	(28)	10.15	(10)
2010	10.37	(61)	10.42	(41)	9.98	(17)
2011	10.29	(42)	10.33	(28)	9.85	(12)
2012	10.17	(58)	10.10	(39)	9.73	(13)
2013	10.03	(49)	9.95	(31)	9.41	(11)
2014	9.91	(38)	9.94	(19)	9.50	(14)
2015	9.85	(30)	9.75	(17)	9.23	(7)
2016	9.77	(42)	9.77	(20)	9.31	(12)

Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

Average Equity Returns Authorized January 1980 - December 1989

(Return Percent - No. of Observations)

Period	Electric Utilities	Gas Utilities	Telephone Utilities
1980 1st Quarter	13.97 (21)	13.45 (13)	12.83 (6)
2nd Quarter	14.25 (25)	14.35 (9)	12.83 (10)
3rd Quarter	14.50 (25)	13.87 (12)	12.83 (12)
4th Quarter	14.32 (33)	14.35 (23)	12.83 (12)
1980 Full Year	14.23(104)	14.05 (57)	12.84 (40)
1981 1st Quarter	14.87 (21)	14.69 (9)	13.88 (13)
2nd Quarter	15.03 (40)	14.61 (10)	14.18 (13)
3rd Quarter	15.31 (26)	14.89 (18)	14.57 (18)
4th Quarter	15.58 (36)	15.70 (23)	14.71 (20)
1981 Full Year	15.22(125)	15.11 (60)	14.32 (64)
1982 1st Quarter	15.71 (29)	15.55 (15)	14.65 (12)
2nd Quarter	15.60 (35)	15.62 (16)	15.00 (17)
3rd Quarter	15.83 (27)	15.72 (22)	15.61 (11)
4th Quarter	15.97 (34)	15.82 (30)	15.82 (14)
1982 Full Year	15.76(125)	15.62 (63)	15.12 (64)
1983 1st Quarter	15.53 (26)	15.41 (15)	14.75 (15)
2nd Quarter	15.10 (16)	14.84 (14)	14.75 (17)
3rd Quarter	15.39 (23)	15.24 (18)	14.99 (9)
4th Quarter	15.35 (28)	15.41 (20)	14.72 (20)
1983 Full Year	15.35 (95)	15.25 (65)	14.78 (71)
1984 1st Quarter	15.08 (19)	15.39 (6)	14.12 (12)
2nd Quarter	15.07 (15)	15.07 (7)	14.75 (6)
3rd Quarter	15.38 (22)	15.57 (12)	14.89 (10)
4th Quarter	15.69 (19)	15.53 (12)	14.70 (7)
1984 Full Year	15.32 (75)	15.51 (39)	14.50 (36)
1985 1st Quarter	15.51 (15)	15.03 (8)	14.23 (10)
2nd Quarter	15.27 (12)	15.44 (4)	14.99 (10)
3rd Quarter	14.91 (14)	14.64 (9)	14.68 (8)
4th Quarter	15.11 (17)	14.44 (13)	14.52 (14)
1985 Full Year	15.20 (56)	14.75 (34)	14.50 (46)
1986 1st Quarter	14.35 (14)	14.05 (4)	14.05 (8)
2nd Quarter	14.27 (16)	13.39 (9)	14.05 (7)
3rd Quarter	13.18 (15)	13.00 (5)	13.95 (12)
4th Quarter	13.52 (9)	13.63 (7)	13.95 (12)
1986 Full Year	13.93 (49)	13.46 (26)	13.95 (18)
1987 1st Quarter	12.82 (12)	12.81 (7)	12.85 (1)
2nd Quarter	13.15 (10)	13.13 (5)	12.81 (4)
3rd Quarter	13.17 (16)	12.58 (6)	12.85 (4)
4th Quarter	12.79 (19)	12.73 (12)	12.85 (4)
1987 Full Year	12.99 (57)	12.74 (39)	12.85 (13)
1988 1st Quarter	12.74 (8)	12.94 (5)	12.70 (2)
2nd Quarter	12.70 (7)	12.42 (4)	12.90 (1)
3rd Quarter	12.68 (8)	12.73 (9)	12.97 (3)
4th Quarter	12.98 (10)	12.98 (13)	12.90 (7)
1988 Full Year	12.79 (35)	12.85 (31)	12.13 (13)
1989 1st Quarter	13.04 (9)	12.90 (4)	12.95 (5)
2nd Quarter	13.22 (7)	13.35 (2)	12.95 (3)
3rd Quarter	12.38 (2)	12.56 (7)	13.75 (2)
4th Quarter	12.84 (9)	12.94 (15)	12.85 (7)
1989 Full Year	12.97 (27)	12.88 (31)	12.97 (15)

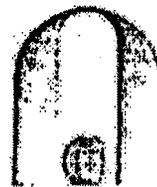
*Special Research Study  
January 1986*

Argus  
Utility Scope  
Regulatory  
Service

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JULY 1974 — DECEMBER 1985*

ARGUS RESEARCH CORPORATION, 42 BROADWAY, NEW YORK, N. Y. 10004



<u>Year</u>	<u>ROE</u>	<u>Year</u>	<u>ROE</u>
1974	13.1	1980	14.1
1975	13.2	1981	15.2
1976	13.1	1982	15.8
1977	13.3	1983	15.4
1978	13.2	1984	15.4
1979	13.5	1985	15.2

TABLE OF CONTENT

<u>Commission</u>	<u>Page</u>	<u>Commission</u>	<u>Page</u>
Alabama	4	Montana	64
Arizona	6	Nebraska	66
Arkansas	8	Nevada	68
California	10	New Hampshire	70
Colorado	14	New Jersey	72
Connecticut	16	New Mexico	74
Delaware	18	New York	76
District of Columbia	20	North Carolina	82
Florida	22	North Dakota	86
Georgia	24	Ohio	88
Hawaii	26	Oklahoma	92
Idaho	28	Oregon	94
Illinois	30	Pennsylvania	96
Indiana	34	Rhode Island	100
Iowa	36	South Carolina	102
Kansas	40	South Dakota	104
Kentucky	42	Tennessee	106
Louisiana	44	Texas	108
Maine	46	Utah	112
Maryland	48	Vermont	114
Massachusetts	50	Virginia	116
Michigan	54	Washington	118
Minnesota	56	West Virginia	120
Mississippi	58	Wisconsin	122
Missouri	60	Wyoming	126

NOTE: This Research Study has been prepared solely for the use of our clients and under no circumstance is it to be duplicated or disseminated to a party or parties outside your organization.

VALUE LINE ELECTRIC UTILITIES

	Included	SYM	Company	(a)	(b)	(c)			(d)	Override:		
				S&P Credit Rating	Moody's Issuer Rating	Safety Rank	Financial Strength	Beta	Market Cap	"Y" for Incl. "X" for Excl.	Comments	
1	Y	AQN	Algonquin Pwr & Util	BBB	NR	0	n/a	n/a	0.90	\$9,094	Y	S&P rating meets criteria
2	Y	ALE	ALLETE	BBB	Baa1	8	2	A	0.85	\$2,800		
3		LNT	Alliant Energy	A-	Baa2	9	2	A	0.85	\$13,500		
4	Y	AEE	Ameren Corp.	BBB+	Baa1	8	2	A	0.80	\$20,000		
5		AEP	American Elec Pwr	A-	Baa2	9	1	A+	0.75	\$39,000		
6	Y	AGR	Avangrid, Inc.	BBB+	Baa1	8	2	B++	0.80	\$15,000		
7	Y	AVA	Avista Corp.	BBB	Baa2	9	2	B++	0.90	\$2,400		
8	Y	BKH	Black Hills Corp.	BBB+	Baa2	9	2	A	0.95	\$3,800		
9	Y	CNP	CenterPoint Energy	BBB+	Baa2	9	3	B+	1.10	\$11,000		
10	Y	CMS	CMS Energy Corp.	BBB+	Baa1	8	2	B++	0.80	\$17,000		
11		ED	Consolidated Edison	A-	Baa2	9	1	A+	0.75	\$25,000		
12		D	Dominion Energy	BBB+	Baa2	9	2	B++	0.80	\$67,000	X	Announced sale of gas transmission/storage segment (\$9.5/\$69.9 total capital = 13.6%); reduction in annual dividend in Q4 from \$3.76 to \$2.50.
13	Y	DTE	DTE Energy Co.	BBB+	Baa2	9	2	A	0.90	\$23,000		
14		DUK	Duke Energy Corp.	A-	Baa1	8	2	A	0.85	\$62,000		
15	Y	EIX	Edison International	BBB	Baa3	10	3	B+	0.90	\$20,000		
16	Y	EMA	Emera Inc.	BBB	Baa3	10	2	B+	0.75	\$13,100		
17	Y	ETR	Entergy Corp.	BBB+	Baa2	9	2	B++	0.95	\$20,000		
18		EVRG	Eversource Inc.	A-	Baa2	9	2	B++	1.00	\$12,000		
19		ES	Eversource Energy	A-	Baa1	8	1	A	0.90	\$30,000		
20	Y	EXC	Exelon Corp.	BBB+	Baa2	9	3	B+	0.95	\$37,000		
21	Y	FE	FirstEnergy Corp.	BBB	Baa3	10	3	B+	0.85	\$16,000		
22		FTS	Fortis Inc.	A-	Baa3	10	2	B++	0.80	\$24,000		
23	Y	HE	Hawaiian Elec.	BBB-	Baa2	9	2	A	0.80	\$4,000		
24	Y	IDA	IDACORP, Inc.	BBB	Baa1	8	2	A	0.80	\$4,600		
25		MGEE	MGE Energy	NR	NR	0	1	A+	0.70	\$2,400		
26		NEE	NextEra Energy, Inc.	A-	Baa1	8	1	A+	0.85	\$136,000		
27	Y	NWE	NorthWestern Corp.	BBB	Baa2	9	2	B++	0.90	\$2,700		
28	Y	OGE	OGE Energy Corp.	BBB+	Baa1	8	2	A	1.05	\$6,400		
29	Y	OTTR	Otter Tail Corp.	BBB	Baa2	9	2	A	0.85	\$1,600		
30		PNW	Pinnacle West Capital	A-	A3	7	1	A+	0.85	\$8,900		
31	Y	PNM	PNM Resources	BBB	Baa3	10	3	B+	0.95	\$3,100		
32		POR	Portland General Elec.	BBB+	A3	7	2	B++	0.85	\$3,800		
33		PPL	PPL Corp.	A-	Baa2	9	2	B++	1.10	\$20,000		
34		PEG	Pub Sv Enterprise Grp.	BBB+	Baa1	8	1	A++	0.90	\$28,000		
35	Y	SRE	Sempra Energy	BBB+	Baa2	9	2	A	0.95	\$35,000		
36		SO	Southern Company	A-	Baa2	9	2	A	0.90	\$57,000		
37		WEC	WEC Energy Group	A-	Baa1	8	1	A+	0.80	\$30,000		
38		XEL	Xcel Energy Inc.	A-	Baa1	8	1	A+	0.80	\$34,000		

(a) Issuer credit rating from www.standardandpoors.com (retrieved Oct. 5, 2020).

(b) Long-term rating from www.moody's.com (retrieved Oct. 5, 2020).

(c) The Value Line Investment Survey (Jul. 24, Aug. 14 and Sep. 11, 2020).

(d) www.finance.yahoo.com (retrieved Oct. 5, 2020).

	<b><u>SYM</u></b>	<b><u>Company</u></b>
1	AQN	Algonquin Pwr & Util
2	ALE	ALLETE
3	AEE	Ameren Corp.
4	AGR	Avangrid, Inc.
5	AVA	Avista Corp.
6	BKH	Black Hills Corp.
7	CNP	CenterPoint Energy
8	CMS	CMS Energy Corp.
9	DTE	DTE Energy Co.
10	EIX	Edison International
11	EMA	Emera Inc.
12	ETR	Entergy Corp.
13	EXC	Exelon Corp.
14	FE	FirstEnergy Corp.
15	HE	Hawaiian Elec.
16	IDA	IDACORP, Inc.
17	NWE	NorthWestern Corp.
18	OGE	OGE Energy Corp.
19	OTTR	Otter Tail Corp.
20	PNM	PNM Resources
21	SRE	Sempra Energy
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## RISK MEASURES

### ELECTRIC GROUP

Company	(a)		(b)		(c)			(d)
	Credit Ratings		Safety Rank	Value Line		Beta	Market Cap	
	S&P	Moody's		Financial Strength				
1 Algonquin Pwr & Util	BBB 9	NR	n/a	n/a		0.90	\$9,094	
2 ALLETE	BBB 9	Baa1 8	2	A	3	0.85	\$2,800	
3 Ameren Corp.	BBB+8	Baa1 8	2	A	3	0.80	\$20,000	
4 Avangrid, Inc.	BBB+8	Baa1 8	2	B++	4	0.80	\$15,000	
5 Avista Corp.	BBB 9	Baa2 9	2	B++	4	0.90	\$2,400	
6 Black Hills Corp.	BBB+8	Baa2 9	2	A	3	0.95	\$3,800	
7 CenterPoint Energy	BBB+8	Baa2 9	3	B+	5	1.10	\$11,000	
8 CMS Energy Corp.	BBB+8	Baa1 8	2	B++	4	0.80	\$17,000	
9 DTE Energy Co.	BBB+8	Baa2 9	2	A	3	0.90	\$23,000	
10 Edison International	BBB 9	Baa3 10	3	B+	5	0.90	\$20,000	
11 Emera Inc.	BBB 9	Baa3 10	2	B+	5	0.75	\$13,100	
12 Entergy Corp.	BBB+8	Baa2 9	2	B++	4	0.95	\$20,000	
13 Exelon Corp.	BBB+8	Baa2 9	3	B+	5	0.95	\$37,000	
14 FirstEnergy Corp.	BBB 9	Baa3 10	3	B+	5	0.85	\$16,000	
15 Hawaiian Elec.	BBB- 10	Baa2 9	2	A	3	0.80	\$4,000	
16 IDACORP, Inc.	BBB 9	Baa1 8	2	A	3	0.80	\$4,600	
17 NorthWestern Corp.	BBB 9	Baa2 9	2	B++	4	0.90	\$2,700	
18 OGE Energy Corp.	BBB+8	Baa1 8	2	A	3	1.05	\$6,400	
19 Otter Tail Corp.	BBB 9	Baa2 9	2	A	3	0.85	\$1,600	
20 PNM Resources	BBB 9	Baa3 10	3	B+	5	0.95	\$3,100	
21 Sempra Energy	BBB+8	Baa2 9	2	A	3	0.95	\$35,000	
Average	<b>BBB 9</b>	<b>Baa2 9</b>	<b>2</b>	<b>B++</b>	<b>4</b>	<b>0.89</b>	<b>\$12,743</b>	

(a) Issuer credit rating from [www.standardandpoors.com](http://www.standardandpoors.com) (retrieved Oct. 5, 2020).

(b) Long-term rating from [www.moody.com](http://www.moody.com) (retrieved Oct. 5, 2020).

(c) The Value Line Investment Survey (Jul. 24, Aug. 14 and Sep. 11, 2020).

(d) [www.finance.yahoo.com](http://www.finance.yahoo.com) (retrieved Oct. 5, 2020).

## RISK MEASURES

### NON-UTILITY GROUP

Company	(a)		(b)		(c)			Market Cap	
	Credit Ratings		Safety Rank	Value Line		Beta			
	S&P	Moody's		Financial Strength					
1 Air Products & Chem.	A	6	A2	6	1	A++	1	0.95	\$ 64,200
2 Amdocs Ltd.	BBB	9	Baa2	9	1	A	3	0.95	\$ 8,200
3 Amgen	A-	7	Baa1	8	1	A++	1	0.85	\$ 145,900
4 Amphenol Corp.	BBB+	8	Baa1	8	1	A	3	0.95	\$ 31,600
5 Apple Inc.	AA+	2	Aa1	2	1	A++	1	0.95	\$ 1,643,800
6 AT&T Inc.	BBB	9	Baa2	9	1	A++	1	0.80	\$ 210,600
7 Baxter Int'l Inc.	A-	7	Baa1	8	1	A+	2	0.80	\$ 42,100
8 Bristol-Myers Squibb	A+	5	A2	6	1	A++	1	0.85	\$ 133,800
9 Brown & Brown	BBB-	10	Baa3	10	1	A	3	0.95	\$ 12,900
10 Brown-Forman 'B'	A-	7	A1	5	1	A	3	0.90	\$ 33,100
11 Church & Dwight	BBB+	8	A3	7	1	A+	2	0.65	\$ 21,900
12 Cisco Systems	AA-	4	A1	5	1	A++	1	0.95	\$ 197,100
13 Coca-Cola	A+	5	A1	5	1	A++	1	0.90	\$ 206,200
14 Colgate-Palmolive	AA-	4	Aa3	4	1	A+	2	0.75	\$ 65,300
15 Comcast Corp.	A-	7	A3	7	1	A+	2	0.75	\$ 199,900
16 Commerce Bancshs.	A-	7	Baa1	8	1	A	3	0.90	\$ 6,500
17 Costco Wholesale	A+	5	Aa3	4	1	A++	1	0.65	\$ 144,000
18 CVS Health	BBB	9	Baa2	9	1	A++	1	0.90	\$ 83,800
19 Danaher Corp.	BBB+	8	Baa1	8	1	A+	2	0.85	\$ 140,900
20 Gen'l Mills	BBB	9	Baa2	9	1	A+	2	0.70	\$ 39,300
21 Hormel Foods	A	6	A1	5	1	A+	2	0.55	\$ 27,400
22 Intel Corp.	A+	5	A1	5	1	A++	1	0.90	\$ 204,400
23 Int'l Flavors & Frag.	BBB	9	Baa3	10	1	A+	2	0.90	\$ 13,700
24 Johnson & Johnson	AAA	1	Aaa	1	1	A++	1	0.85	\$ 388,000
25 Kellogg	BBB	9	Baa2	9	1	A+	2	0.65	\$ 24,300
26 Kimberly-Clark	A	6	A2	6	1	A+	2	0.80	\$ 51,800
27 Lilly (Eli)	A+	5	A2	6	1	A++	1	0.75	\$ 154,800
28 Lockheed Martin	A-	7	A3	7	1	A++	1	0.95	\$ 108,300
29 Marsh & McLennan	A-	7	Baa1	8	1	A	3	0.95	\$ 58,000
30 McCormick & Co.	BBB	9	Baa2	9	1	A+	2	0.85	\$ 25,900
31 McDonald's Corp.	BBB+	8	Baa1	8	1	A++	1	0.95	\$ 152,000
32 Merck & Co.	AA-	4	A1	5	1	A++	1	0.85	\$ 200,300
33 Microsoft Corp.	AAA	1	Aaa	1	1	A++	1	0.95	\$ 1,543,000
34 Northrop Grumman	BBB	9	Baa1	8	1	A++	1	0.85	\$ 52,600
35 Oracle Corp.	A	6	A3	7	1	A++	1	0.85	\$ 170,000
36 PepsiCo, Inc.	A+	5	A1	5	1	A++	1	0.85	\$ 191,000
37 Pfizer, Inc.	AA-	4	A1	5	1	A++	1	0.85	\$ 218,000
38 Procter & Gamble	AA-	4	Aa3	4	1	A++	1	0.75	\$ 317,600
39 Public Storage	A	6	A2	6	1	A+	2	0.85	\$ 34,300
40 Texas Instruments	A+	5	A1	5	1	A++	1	0.85	\$ 120,500
41 Travelers Cos.	A	6	A2	6	1	A++	1	0.95	\$ 29,500
42 United Parcel Serv.	A-	7	A2	6	1	A+	2	0.80	\$ 138,000
43 Verizon Communic.	BBB+	8	Baa1	8	1	A++	1	0.65	\$ 237,700
44 Walmart Inc.	AA	3	Aa2	3	1	A++	1	0.60	\$ 370,100
45 Waste Management	A-	7	Baa1	8	1	A	3	0.80	\$ 47,200
<b>Average</b>	<b>A</b>	<b>6</b>	<b>A2</b>	<b>6</b>	<b>1</b>	<b>A+</b>	<b>2</b>	<b>0.83</b>	<b>\$ 184,656</b>

(a) [www.standardandpoors.com](http://www.standardandpoors.com) (retrieved Aug 21, 2020).

(b) [www.moodys.com](http://www.moodys.com) (retrieved Aug. 21, 2020).

(c) The Value Line Investment Survey (various editions as of Aug. 21, 2020).

	<u>From Exh. AMM-4</u>	<u>Graph Data</u>	
1	9.26%	1	8.82% 9.9%
2	9.43%	2	8.83% 9.9%
3	9.30%	3	9.26% 9.9%
4	8.82%	4	9.27% 9.9%
5	10.43%	5	9.30% 9.9%
6	9.78%	6	9.43% 9.9%
7	10.08%	7	9.78% 9.9%
8	8.83%	8	10.08% 9.9%
9	11.18%	9	10.10% 9.9%
10	11.55%	10	10.31% 9.9%
11	11.43%	11	10.43% 9.9%
12	11.75%	12	10.86% 9.9%
13	9.27%	13	11.18% 9.9%
14	10.10%	14	11.43% 9.9%
15	10.31%	15	11.55% 9.9%
16	10.86%	16	11.75% 9.9%

**DCF**

Value Line  
 IBES  
 Zacks  
 Internal br + sv

**Average**

9.3%<sup>3</sup>  
 9.4%<sup>6</sup>  
 9.3%<sup>5</sup>  
 8.8%<sup>1</sup>  
 11.2%<sup>13</sup>

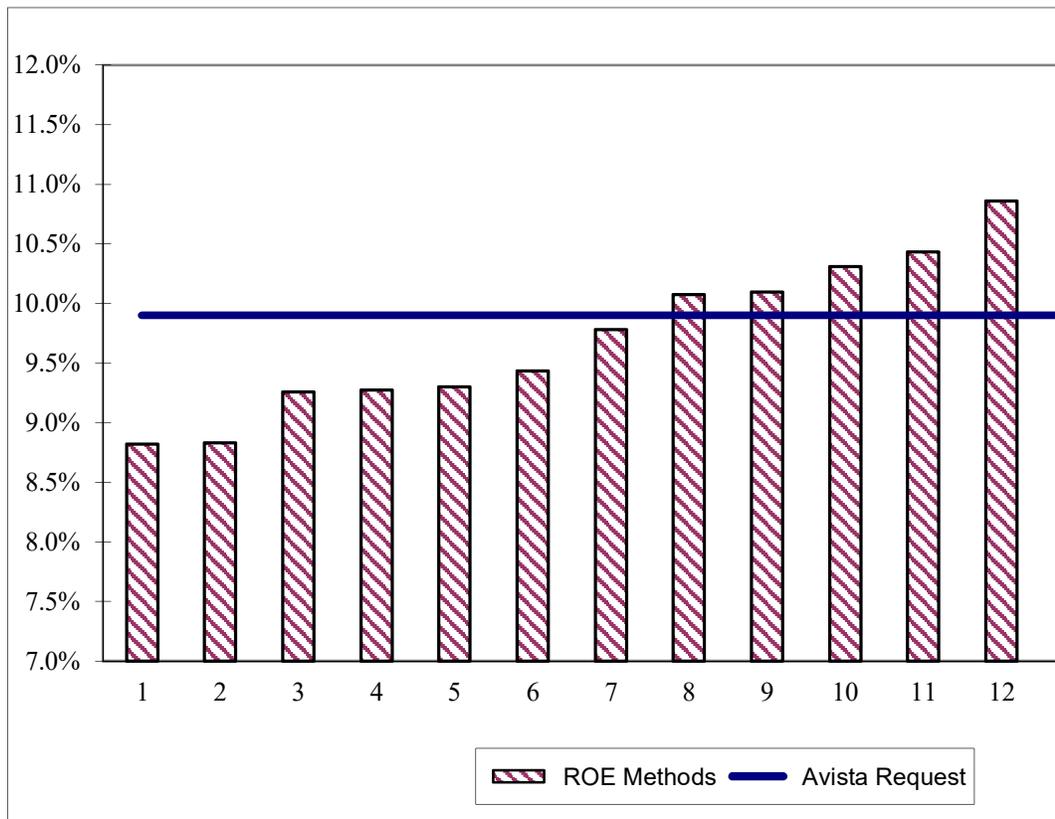
**Midpoint**

10.4%<sup>11</sup>  
 9.8%<sup>7</sup>  
 10.1%<sup>8</sup>  
 8.8%<sup>2</sup>  
 11.6%<sup>15</sup>

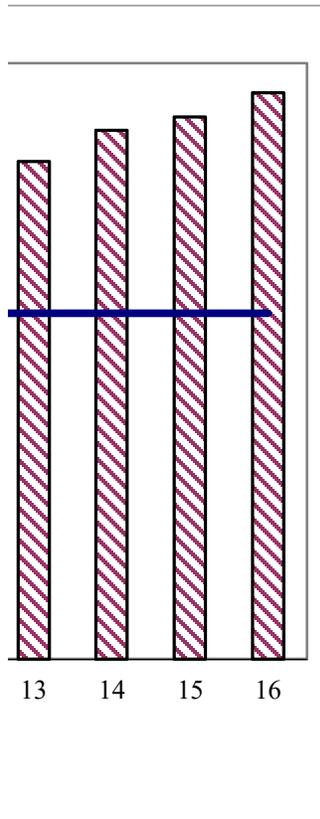
**CAPM**

<b><u>Empirical CAPM</u></b>	11.4% <sup>14</sup>	11.8% <sup>16</sup>
<b><u>Utility Risk Premium</u></b>		
Current Bond Yields	9.3% <sup>4</sup>	
Projected Bond Yields	10.1% <sup>9</sup>	
<b><u>Expected Earnings</u></b>	10.3% <sup>10</sup>	10.9% <sup>12</sup>
<b><u>Cost of Equity Recommendation</u></b>		
Cost of Equity Range	9.3%	-- 10.7%
<b><u>Flotation Cost Adjustment</u></b>	<hr/>	
	0.1%	
<b><u>Recommended ROE Range</u></b>	9.4%	-- 10.8%

Note: Footnotes correspond to rank order in the subsequent figure.



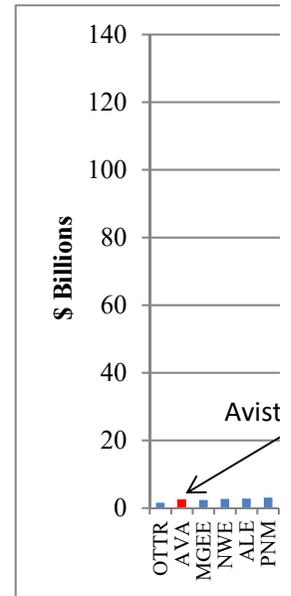


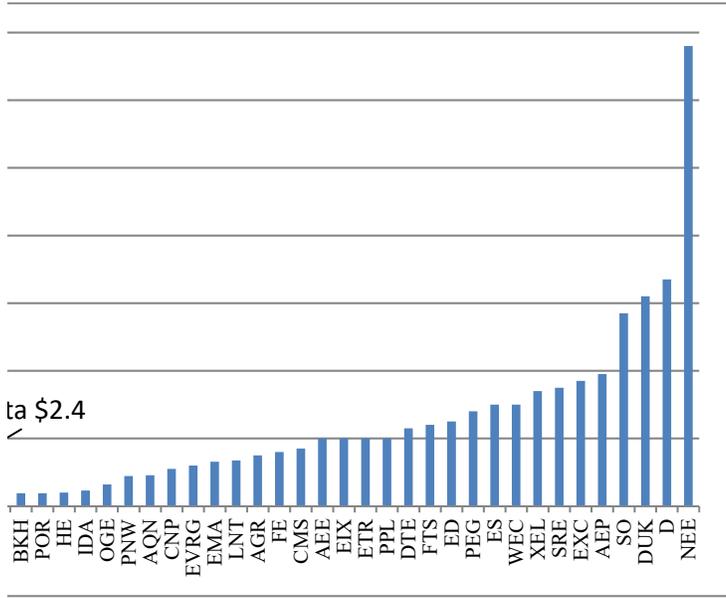


	<u>Credit Rating</u>		<u>Value Line</u>		
	<u>S&amp;P</u>	<u>Moody's</u>	<u>Safety Rank</u>	<u>Financial Strength</u>	<u>Beta</u>
	Utility Group	BBB	Baa2	2	B++
Avista	BBB	Baa2	2	B++	0.90

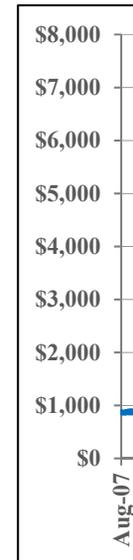
	<u>Credit Rating</u>		<u>Value Line</u>		
	<u>S&amp;P</u>	<u>Moody's</u>	<u>Safety Rank</u>	<u>Financial Strength</u>	<u>Beta</u>
	Non-Utility Group	A	A2	1	A+
Utility Group	BBB	Baa2	2	B++	0.89
Avista	BBB+	Baa1	2	B++	0.90

OTTR	1.60	1600
AVA	2.40	2400
MGEE	2.40	2400
NWE	2.70	2700
ALE	2.80	2800
PNM	3.10	3100
BKH	3.80	3800
POR	3.80	3800
HE	4.00	4000
IDA	4.60	4600
OGE	6.40	6400
PNW	8.90	8900
AQN	9.09	9094.341
CNP	11.00	11000
EVRG	12.00	12000
EMA	13.10	13100
LNT	13.50	13500
AGR	15.00	15000
FE	16.00	16000
CMS	17.00	17000
AEE	20.00	20000
EIX	20.00	20000
ETR	20.00	20000
PPL	20.00	20000
DTE	23.00	23000
FTS	24.00	24000
ED	25.00	25000
PEG	28.00	28000
ES	30.00	30000
WEC	30.00	30000
XEL	34.00	34000
SRE	35.00	35000
EXC	37.00	37000
AEP	39.00	39000
SO	57.00	57000
DUK	62.00	62000
D	67.00	67000
NEE	136.00	136000





Date	Total Assets	
Aug-07	870261	\$870
Aug-07	865453	\$865
Aug-07	864931	\$865
Aug-07	862775	\$863
Aug-07	872873	\$873
Sep-07	871156	\$871
Sep-07	886314	\$886
Sep-07	867732	\$868
Sep-07	889900	\$890
Oct-07	869051	\$869
Oct-07	886363	\$886
Oct-07	869509	\$870
Oct-07	881395	\$881
Oct-07	883385	\$883
Nov-07	885724	\$886
Nov-07	889537	\$890
Nov-07	891028	\$891
Nov-07	879417	\$879
Dec-07	882764	\$883
Dec-07	881750	\$882
Dec-07	887983	\$888
Dec-07	890662	\$891
Jan-08	922187	\$922
Jan-08	880754	\$881
Jan-08	893581	\$894
Jan-08	877253	\$877
Jan-08	900264	\$900
Feb-08	871022	\$871
Feb-08	883005	\$883
Feb-08	878949	\$879
Feb-08	893825	\$894
Mar-08	881208	\$881
Mar-08	896565	\$897
Mar-08	888646	\$889
Mar-08	893965	\$894
Apr-08	883708	\$884
Apr-08	893029	\$893
Apr-08	881904	\$882
Apr-08	885781	\$886
Apr-08	888131	\$888
May-08	889228	\$889
May-08	880175	\$880
May-08	898487	\$898
May-08	904054	\$904
Jun-08	895939	\$896



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Jun-08	890610	\$891
Jun-08	902304	\$902
Jun-08	892713	\$893
Jul-08	902962	\$903
Jul-08	898034	\$898
Jul-08	910681	\$911
Jul-08	899665	\$900
Jul-08	918625	\$919
Aug-08	901710	\$902
Aug-08	914632	\$915
Aug-08	898611	\$899
Aug-08	909982	\$910
Sep-08	905253	\$905
Sep-08	925725	\$926
Sep-08	995093	\$995
Sep-08	1211825	\$1,212
Oct-08	1503989	\$1,504
Oct-08	1591587	\$1,592
Oct-08	1770809	\$1,771
Oct-08	1802602	\$1,803
Oct-08	1969086	\$1,969
Nov-08	2074205	\$2,074
Nov-08	2212852	\$2,213
Nov-08	2187137	\$2,187
Nov-08	2106117	\$2,106
Dec-08	2136924	\$2,137
Dec-08	2250012	\$2,250
Dec-08	2254983	\$2,255
Dec-08	2232311	\$2,232
Dec-08	2239457	\$2,239
Jan-09	2121439	\$2,121
Jan-09	2049714	\$2,050
Jan-09	2037112	\$2,037
Jan-09	1927082	\$1,927
Feb-09	1851437	\$1,851
Feb-09	1843400	\$1,843
Feb-09	1915562	\$1,916
Feb-09	1916115	\$1,916
Mar-09	1901317	\$1,901
Mar-09	1899514	\$1,900
Mar-09	2066942	\$2,067
Mar-09	2071556	\$2,072
Apr-09	2078936	\$2,079
Apr-09	2088573	\$2,089
Apr-09	2186498	\$2,186
Apr-09	2196812	\$2,197

Apr-09	2066712	\$2,067
May-09	2079758	\$2,080
May-09	2196351	\$2,196
May-09	2181632	\$2,182
May-09	2080115	\$2,080
Jun-09	2077695	\$2,078
Jun-09	2052297	\$2,052
Jun-09	2072527	\$2,073
Jun-09	2025571	\$2,026
Jul-09	2005627	\$2,006
Jul-09	1992740	\$1,993
Jul-09	2072451	\$2,072
Jul-09	2039001	\$2,039
Jul-09	2000547	\$2,001
Aug-09	1989203	\$1,989
Aug-09	2014899	\$2,015
Aug-09	2060641	\$2,061
Aug-09	2074902	\$2,075
Sep-09	2083720	\$2,084
Sep-09	2087946	\$2,088
Sep-09	2139783	\$2,140
Sep-09	2158631	\$2,159
Sep-09	2141020	\$2,141
Oct-09	2138086	\$2,138
Oct-09	2192787	\$2,193
Oct-09	2201119	\$2,201
Oct-09	2161537	\$2,162
Nov-09	2165067	\$2,165
Nov-09	2135035	\$2,135
Nov-09	2208721	\$2,209
Nov-09	2206359	\$2,206
Dec-09	2204074	\$2,204
Dec-09	2186383	\$2,186
Dec-09	2235763	\$2,236
Dec-09	2235803	\$2,236
Dec-09	2234067	\$2,234
Jan-10	2235304	\$2,235
Jan-10	2291700	\$2,292
Jan-10	2251806	\$2,252
Jan-10	2246886	\$2,247
Feb-10	2249319	\$2,249
Feb-10	2256679	\$2,257
Feb-10	2277574	\$2,278
Feb-10	2286127	\$2,286
Mar-10	2280147	\$2,280
Mar-10	2282474	\$2,282

Mar-10	2307997	\$2,308
Mar-10	2313149	\$2,313
Mar-10	2307150	\$2,307
Apr-10	2307575	\$2,308
Apr-10	2339345	\$2,339
Apr-10	2337556	\$2,338
Apr-10	2330472	\$2,330
May-10	2326164	\$2,326
May-10	2336103	\$2,336
May-10	2350890	\$2,351
May-10	2334041	\$2,334
Jun-10	2336216	\$2,336
Jun-10	2331529	\$2,332
Jun-10	2344316	\$2,344
Jun-10	2344497	\$2,344
Jun-10	2330851	\$2,331
Jul-10	2332017	\$2,332
Jul-10	2340717	\$2,341
Jul-10	2332322	\$2,332
Jul-10	2325298	\$2,325
Aug-10	2326479	\$2,326
Aug-10	2327533	\$2,328
Aug-10	2313662	\$2,314
Aug-10	2301015	\$2,301
Sep-10	2301996	\$2,302
Sep-10	2305802	\$2,306
Sep-10	2296079	\$2,296
Sep-10	2307171	\$2,307
Sep-10	2298691	\$2,299
Oct-10	2308092	\$2,308
Oct-10	2309885	\$2,310
Oct-10	2305227	\$2,305
Oct-10	2295392	\$2,295
Nov-10	2300353	\$2,300
Nov-10	2312768	\$2,313
Nov-10	2314757	\$2,315
Nov-10	2346001	\$2,346
Dec-10	2346920	\$2,347
Dec-10	2382294	\$2,382
Dec-10	2385754	\$2,386
Dec-10	2427921	\$2,428
Dec-10	2420570	\$2,421
Jan-11	2436064	\$2,436
Jan-11	2468131	\$2,468
Jan-11	2425164	\$2,425
Jan-11	2443527	\$2,444

Feb-11	2469419	\$2,469
Feb-11	2500481	\$2,500
Feb-11	2508868	\$2,509
Feb-11	2533221	\$2,533
Mar-11	2545119	\$2,545
Mar-11	2577076	\$2,577
Mar-11	2583046	\$2,583
Mar-11	2601341	\$2,601
Mar-11	2622523	\$2,623
Apr-11	2648676	\$2,649
Apr-11	2665408	\$2,665
Apr-11	2685782	\$2,686
Apr-11	2690985	\$2,691
May-11	2718757	\$2,719
May-11	2744498	\$2,744
May-11	2758009	\$2,758
May-11	2774996	\$2,775
Jun-11	2788723	\$2,789
Jun-11	2811206	\$2,811
Jun-11	2827549	\$2,828
Jun-11	2856403	\$2,856
Jun-11	2865251	\$2,865
Jul-11	2870103	\$2,870
Jul-11	2878074	\$2,878
Jul-11	2871301	\$2,871
Jul-11	2863576	\$2,864
Aug-11	2867215	\$2,867
Aug-11	2872423	\$2,872
Aug-11	2857906	\$2,858
Aug-11	2859433	\$2,859
Aug-11	2853888	\$2,854
Sep-11	2858660	\$2,859
Sep-11	2863540	\$2,864
Sep-11	2857747	\$2,858
Sep-11	2850921	\$2,851
Oct-11	2859701	\$2,860
Oct-11	2860822	\$2,861
Oct-11	2852390	\$2,852
Oct-11	2845685	\$2,846
Nov-11	2822034	\$2,822
Nov-11	2839786	\$2,840
Nov-11	2831576	\$2,832
Nov-11	2821980	\$2,822
Nov-11	2814235	\$2,814
Dec-11	2820691	\$2,821
Dec-11	2902488	\$2,902

Dec-11	2916085	\$2,916
Dec-11	2926095	\$2,926
Jan-12	2917689	\$2,918
Jan-12	2899149	\$2,899
Jan-12	2919423	\$2,919
Jan-12	2919545	\$2,920
Feb-12	2924947	\$2,925
Feb-12	2928275	\$2,928
Feb-12	2937893	\$2,938
Feb-12	2932813	\$2,933
Feb-12	2925722	\$2,926
Mar-12	2884747	\$2,885
Mar-12	2893560	\$2,894
Mar-12	2892646	\$2,893
Mar-12	2878137	\$2,878
Apr-12	2865478	\$2,865
Apr-12	2867200	\$2,867
Apr-12	2875470	\$2,875
Apr-12	2866561	\$2,867
May-12	2864280	\$2,864
May-12	2864150	\$2,864
May-12	2850984	\$2,851
May-12	2859495	\$2,859
May-12	2842654	\$2,843
Jun-12	2852018	\$2,852
Jun-12	2869071	\$2,869
Jun-12	2870846	\$2,871
Jun-12	2863547	\$2,864
Jul-12	2865858	\$2,866
Jul-12	2866279	\$2,866
Jul-12	2855807	\$2,856
Jul-12	2846757	\$2,847
Aug-12	2851118	\$2,851
Aug-12	2856181	\$2,856
Aug-12	2833317	\$2,833
Aug-12	2825661	\$2,826
Aug-12	2812806	\$2,813
Sep-12	2822169	\$2,822
Sep-12	2823448	\$2,823
Sep-12	2821574	\$2,822
Sep-12	2804457	\$2,804
Oct-12	2808512	\$2,809
Oct-12	2811623	\$2,812
Oct-12	2846920	\$2,847
Oct-12	2840964	\$2,841
Oct-12	2823137	\$2,823

Nov-12	2830791	\$2,831
Nov-12	2877244	\$2,877
Nov-12	2871161	\$2,871
Nov-12	2851362	\$2,851
Dec-12	2859807	\$2,860
Dec-12	2917260	\$2,917
Dec-12	2920231	\$2,920
Dec-12	2907300	\$2,907
Jan-13	2917189	\$2,917
Jan-13	2928728	\$2,929
Jan-13	2963812	\$2,964
Jan-13	3011697	\$3,012
Jan-13	3008704	\$3,009
Feb-13	3014975	\$3,015
Feb-13	3074225	\$3,074
Feb-13	3095150	\$3,095
Feb-13	3090600	\$3,091
Mar-13	3108805	\$3,109
Mar-13	3165396	\$3,165
Mar-13	3206888	\$3,207
Mar-13	3202256	\$3,202
Apr-13	3215432	\$3,215
Apr-13	3227762	\$3,228
Apr-13	3295109	\$3,295
Apr-13	3318649	\$3,319
May-13	3317194	\$3,317
May-13	3324615	\$3,325
May-13	3354269	\$3,354
May-13	3398713	\$3,399
May-13	3385128	\$3,385
Jun-13	3400183	\$3,400
Jun-13	3410842	\$3,411
Jun-13	3470530	\$3,471
Jun-13	3478672	\$3,479
Jul-13	3492742	\$3,493
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Jul-13	3537861	\$3,538
Jul-13	3574574	\$3,575
Jul-13	3571797	\$3,572
Aug-13	3585359	\$3,585
Aug-13	3646323	\$3,646
Aug-13	3645668	\$3,646
Aug-13	3644456	\$3,644
Sep-13	3654182	\$3,654
Sep-13	3662035	\$3,662
Sep-13	3722192	\$3,722

Sep-13	3734018	\$3,734
Oct-13	3747387	\$3,747
Oct-13	3758663	\$3,759
Oct-13	3813599	\$3,814
Oct-13	3839033	\$3,839
Oct-13	3843396	\$3,843
Nov-13	3851623	\$3,852
Nov-13	3907424	\$3,907
Nov-13	3906620	\$3,907
Nov-13	3925876	\$3,926
Dec-13	3932626	\$3,933
Dec-13	3993955	\$3,994
Dec-13	4008062	\$4,008
Dec-13	4032575	\$4,033
Jan-14	4023640	\$4,024
Jan-14	4028185	\$4,028
Jan-14	4071528	\$4,072
Jan-14	4097914	\$4,098
Jan-14	4102138	\$4,102
Feb-14	4109285	\$4,109
Feb-14	4119474	\$4,119
Feb-14	4149224	\$4,149
Feb-14	4159972	\$4,160
Mar-14	4171762	\$4,172
Mar-14	4181361	\$4,181
Mar-14	4222081	\$4,222
Mar-14	4226971	\$4,227
Apr-14	4236441	\$4,236
Apr-14	4244188	\$4,244
Apr-14	4283967	\$4,284
Apr-14	4296339	\$4,296
Apr-14	4296049	\$4,296
May-14	4303143	\$4,303
May-14	4336649	\$4,337
May-14	4327560	\$4,328
May-14	4322654	\$4,323
Jun-14	4330917	\$4,331
Jun-14	4340904	\$4,341
Jun-14	4368168	\$4,368
Jun-14	4368348	\$4,368
Jul-14	4377031	\$4,377
Jul-14	4383401	\$4,383
Jul-14	4398201	\$4,398
Jul-14	4410746	\$4,411
Jul-14	4406637	\$4,407
Aug-14	4410111	\$4,410

Aug-14	4431923	\$4,432
Aug-14	4412924	\$4,413
Aug-14	4413736	\$4,414
Sep-14	4415587	\$4,416
Sep-14	4421408	\$4,421
Sep-14	4449588	\$4,450
Sep-14	4459050	\$4,459
Oct-14	4450260	\$4,450
Oct-14	4455403	\$4,455
Oct-14	4474360	\$4,474
Oct-14	4481616	\$4,482
Oct-14	4486754	\$4,487
Nov-14	4486585	\$4,487
Nov-14	4488895	\$4,489
Nov-14	4492759	\$4,493
Nov-14	4485931	\$4,486
Dec-14	4486190	\$4,486
Dec-14	4488865	\$4,489
Dec-14	4502247	\$4,502
Dec-14	4509462	\$4,509
Dec-14	4497660	\$4,498
Jan-15	4499524	\$4,500
Jan-15	4516077	\$4,516
Jan-15	4512936	\$4,513
Jan-15	4500064	\$4,500
Feb-15	4500348	\$4,500
Feb-15	4501685	\$4,502
Feb-15	4496851	\$4,497
Feb-15	4486725	\$4,487
Mar-15	4487583	\$4,488
Mar-15	4489279	\$4,489
Mar-15	4495888	\$4,496
Mar-15	4480603	\$4,481
Apr-15	4481799	\$4,482
Apr-15	4483419	\$4,483
Apr-15	4485366	\$4,485
Apr-15	4489695	\$4,490
Apr-15	4471499	\$4,471
May-15	4472703	\$4,473
May-15	4501188	\$4,501
May-15	4480384	\$4,480
May-15	4463981	\$4,464
Jun-15	4465360	\$4,465
Jun-15	4468005	\$4,468
Jun-15	4487817	\$4,488
Jun-15	4495055	\$4,495

Jul-15	4479130	\$4,479
Jul-15	4481289	\$4,481
Jul-15	4493605	\$4,494
Jul-15	4500503	\$4,501
Jul-15	4485480	\$4,485
Aug-15	4486329	\$4,486
Aug-15	4489250	\$4,489
Aug-15	4487208	\$4,487
Aug-15	4475105	\$4,475
Sep-15	4475886	\$4,476
Sep-15	4478213	\$4,478
Sep-15	4487809	\$4,488
Sep-15	4497484	\$4,497
Sep-15	4484111	\$4,484
Oct-15	4486185	\$4,486
Oct-15	4504704	\$4,505
Oct-15	4501372	\$4,501
Oct-15	4489339	\$4,489
Nov-15	4489702	\$4,490
Nov-15	4492012	\$4,492
Nov-15	4486721	\$4,487
Nov-15	4477088	\$4,477
Dec-15	4478069	\$4,478
Dec-15	4480436	\$4,480
Dec-15	4489593	\$4,490
Dec-15	4496523	\$4,497
Dec-15	4486587	\$4,487
Jan-16	4486606	\$4,487
Jan-16	4501695	\$4,502
Jan-16	4488840	\$4,489
Jan-16	4482349	\$4,482
Feb-16	4483495	\$4,483
Feb-16	4486278	\$4,486
Feb-16	4483629	\$4,484
Feb-16	4489796	\$4,490
Mar-16	4478485	\$4,478
Mar-16	4481083	\$4,481
Mar-16	4486333	\$4,486
Mar-16	4492857	\$4,493
Mar-16	4482840	\$4,483
Apr-16	4484069	\$4,484
Apr-16	4499729	\$4,500
Apr-16	4490131	\$4,490
Apr-16	4474665	\$4,475
May-16	4477270	\$4,477
May-16	4478411	\$4,478

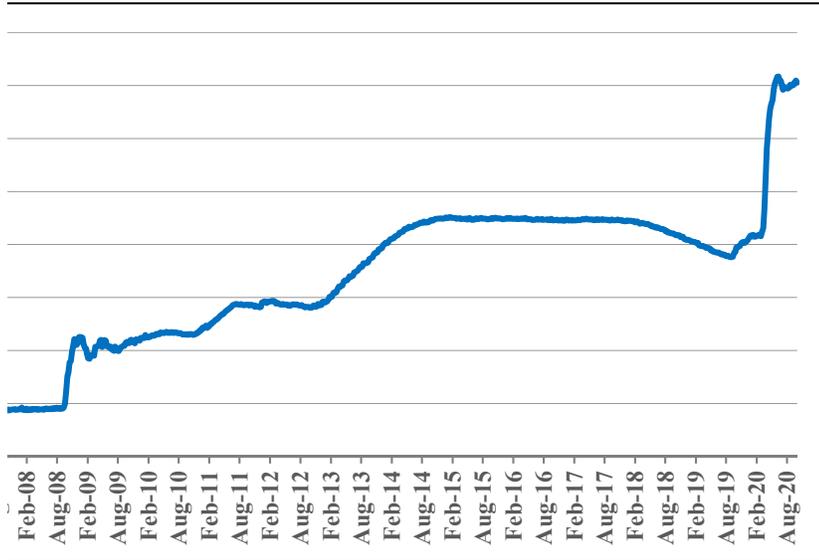
May-16	4473741	\$4,474
May-16	4461111	\$4,461
Jun-16	4461393	\$4,461
Jun-16	4463542	\$4,464
Jun-16	4472817	\$4,473
Jun-16	4482009	\$4,482
Jun-16	4466482	\$4,466
Jul-16	4470605	\$4,471
Jul-16	4472202	\$4,472
Jul-16	4480973	\$4,481
Jul-16	4464498	\$4,464
Aug-16	4466793	\$4,467
Aug-16	4468929	\$4,469
Aug-16	4466476	\$4,466
Aug-16	4473840	\$4,474
Aug-16	4457907	\$4,458
Sep-16	4459394	\$4,459
Sep-16	4481635	\$4,482
Sep-16	4473032	\$4,473
Sep-16	4452002	\$4,452
Oct-16	4459407	\$4,459
Oct-16	4457698	\$4,458
Oct-16	4467382	\$4,467
Oct-16	4454326	\$4,454
Nov-16	4453087	\$4,453
Nov-16	4455087	\$4,455
Nov-16	4453633	\$4,454
Nov-16	4465782	\$4,466
Nov-16	4446307	\$4,446
Dec-16	4448618	\$4,449
Dec-16	4470973	\$4,471
Dec-16	4469089	\$4,469
Dec-16	4451451	\$4,451
Jan-17	4453101	\$4,453
Jan-17	4452509	\$4,453
Jan-17	4460758	\$4,461
Jan-17	4452838	\$4,453
Feb-17	4453881	\$4,454
Feb-17	4456236	\$4,456
Feb-17	4454676	\$4,455
Feb-17	4468702	\$4,469
Mar-17	4458018	\$4,458
Mar-17	4459840	\$4,460
Mar-17	4469577	\$4,470
Mar-17	4478236	\$4,478
Mar-17	4469618	\$4,470

Apr-17	4474634	\$4,475
Apr-17	4484492	\$4,484
Apr-17	4479270	\$4,479
Apr-17	4470142	\$4,470
May-17	4471246	\$4,471
May-17	4473459	\$4,473
May-17	4467108	\$4,467
May-17	4470852	\$4,471
May-17	4459914	\$4,460
Jun-17	4462443	\$4,462
Jun-17	4476269	\$4,476
Jun-17	4474257	\$4,474
Jun-17	4463347	\$4,463
Jul-17	4467272	\$4,467
Jul-17	4466702	\$4,467
Jul-17	4476903	\$4,477
Jul-17	4465284	\$4,465
Aug-17	4466846	\$4,467
Aug-17	4469083	\$4,469
Aug-17	4462871	\$4,463
Aug-17	4463837	\$4,464
Aug-17	4452360	\$4,452
Sep-17	4453474	\$4,453
Sep-17	4471174	\$4,471
Sep-17	4458576	\$4,459
Sep-17	4455661	\$4,456
Oct-17	4460422	\$4,460
Oct-17	4459415	\$4,459
Oct-17	4469723	\$4,470
Oct-17	4461117	\$4,461
Nov-17	4455887	\$4,456
Nov-17	4458552	\$4,459
Nov-17	4448289	\$4,448
Nov-17	4450615	\$4,451
Nov-17	4438592	\$4,439
Dec-17	4437148	\$4,437
Dec-17	4452726	\$4,453
Dec-17	4447470	\$4,447
Dec-17	4448680	\$4,449
Jan-18	4443718	\$4,444
Jan-18	4446062	\$4,446
Jan-18	4439145	\$4,439
Jan-18	4441317	\$4,441
Jan-18	4419225	\$4,419
Feb-18	4420745	\$4,421
Feb-18	4434863	\$4,435

Feb-18	4411660	\$4,412
Feb-18	4393401	\$4,393
Mar-18	4396097	\$4,396
Mar-18	4407258	\$4,407
Mar-18	4401222	\$4,401
Mar-18	4392198	\$4,392
Apr-18	4386104	\$4,386
Apr-18	4383684	\$4,384
Apr-18	4385903	\$4,386
Apr-18	4372886	\$4,373
May-18	4356129	\$4,356
May-18	4358207	\$4,358
May-18	4337609	\$4,338
May-18	4337301	\$4,337
May-18	4327519	\$4,328
Jun-18	4319191	\$4,319
Jun-18	4324906	\$4,325
Jun-18	4315896	\$4,316
Jun-18	4305491	\$4,305
Jul-18	4289764	\$4,290
Jul-18	4291201	\$4,291
Jul-18	4291615	\$4,292
Jul-18	4277681	\$4,278
Aug-18	4255653	\$4,256
Aug-18	4258030	\$4,258
Aug-18	4228924	\$4,229
Aug-18	4228818	\$4,229
Aug-18	4218914	\$4,219
Sep-18	4208496	\$4,208
Sep-18	4210812	\$4,211
Sep-18	4208059	\$4,208
Sep-18	4192909	\$4,193
Oct-18	4174704	\$4,175
Oct-18	4176906	\$4,177
Oct-18	4175446	\$4,175
Oct-18	4173070	\$4,173
Oct-18	4139731	\$4,140
Nov-18	4141936	\$4,142
Nov-18	4145892	\$4,146
Nov-18	4106198	\$4,106
Nov-18	4097170	\$4,097
Dec-18	4086044	\$4,086
Dec-18	4088314	\$4,088
Dec-18	4084274	\$4,084
Dec-18	4075636	\$4,076
Jan-19	4058378	\$4,058

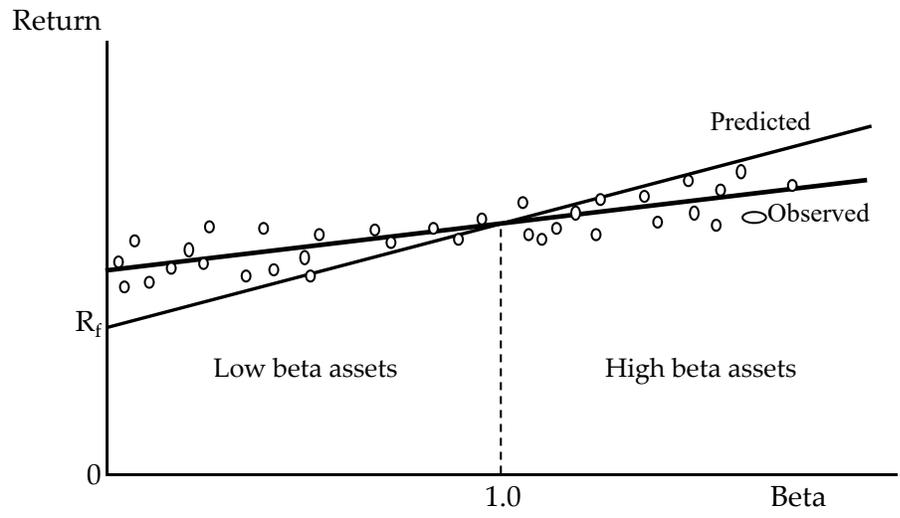
Jan-19	4056563	\$4,057
Jan-19	4050044	\$4,050
Jan-19	4047052	\$4,047
Jan-19	4039678	\$4,040
Feb-19	4026350	\$4,026
Feb-19	4028431	\$4,028
Feb-19	3981420	\$3,981
Feb-19	3974590	\$3,975
Mar-19	3969134	\$3,969
Mar-19	3971559	\$3,972
Mar-19	3962748	\$3,963
Mar-19	3955617	\$3,956
Apr-19	3935509	\$3,936
Apr-19	3936784	\$3,937
Apr-19	3931827	\$3,932
Apr-19	3928273	\$3,928
May-19	3889691	\$3,890
May-19	3892216	\$3,892
May-19	3864749	\$3,865
May-19	3860435	\$3,860
May-19	3851444	\$3,851
Jun-19	3847645	\$3,848
Jun-19	3849955	\$3,850
Jun-19	3844016	\$3,844
Jun-19	3826817	\$3,827
Jul-19	3813198	\$3,813
Jul-19	3815038	\$3,815
Jul-19	3808110	\$3,808
Jul-19	3803436	\$3,803
Jul-19	3779102	\$3,779
Aug-19	3781543	\$3,782
Aug-19	3786018	\$3,786
Aug-19	3764866	\$3,765
Aug-19	3759946	\$3,760
Sep-19	3761508	\$3,762
Sep-19	3769673	\$3,770
Sep-19	3844695	\$3,845
Sep-19	3857715	\$3,858
Oct-19	3945831	\$3,946
Oct-19	3949955	\$3,950
Oct-19	3966471	\$3,966
Oct-19	3968700	\$3,969
Oct-19	4019823	\$4,020
Nov-19	4039443	\$4,039
Nov-19	4047882	\$4,048
Nov-19	4030249	\$4,030

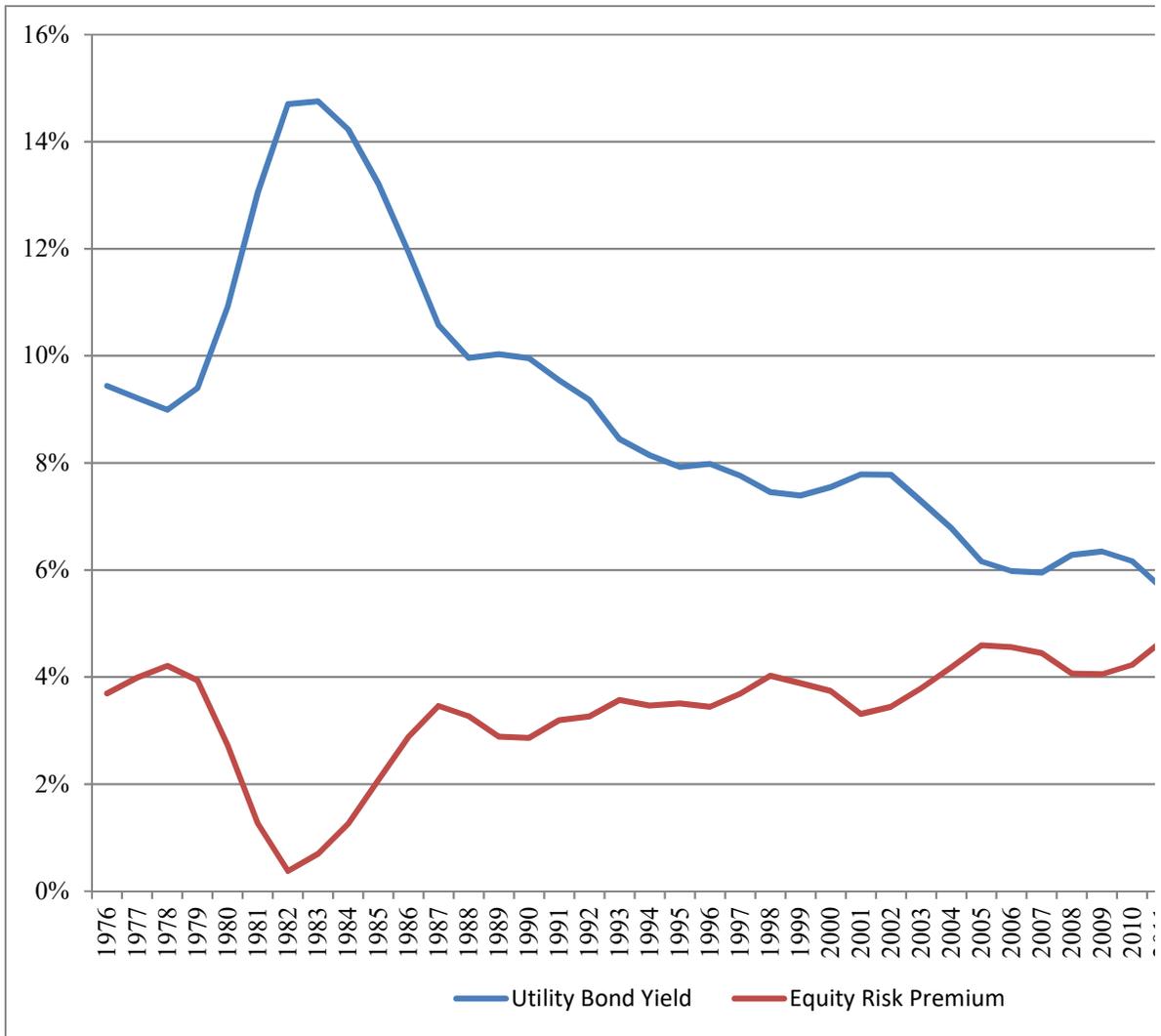
Nov-19	4052875	\$4,053
Dec-19	4065696	\$4,066
Dec-19	4095491	\$4,095
Dec-19	4137052	\$4,137
Dec-19	4165591	\$4,166
Jan-20	4173626	\$4,174
Jan-20	4149544	\$4,150
Jan-20	4175850	\$4,176
Jan-20	4145912	\$4,146
Jan-20	4151630	\$4,152
Feb-20	4166707	\$4,167
Feb-20	4182689	\$4,183
Feb-20	4171570	\$4,172
Feb-20	4158637	\$4,159
Mar-20	4241507	\$4,242
Mar-20	4311911	\$4,312
Mar-20	4668212	\$4,668
Mar-20	5254278	\$5,254
Apr-20	5811607	\$5,812
Apr-20	6083141	\$6,083
Apr-20	6367887	\$6,368
Apr-20	6573136	\$6,573
Apr-20	6655929	\$6,656
May-20	6721420	\$6,721
May-20	6934227	\$6,934
May-20	7037258	\$7,037
May-20	7097316	\$7,097
Jun-20	7165217	\$7,165
Jun-20	7168936	\$7,169
Jun-20	7094690	\$7,095
Jun-20	7082302	\$7,082
Jul-20	7009040	\$7,009
Jul-20	6920716	\$6,921
Jul-20	6958604	\$6,959
Jul-20	6964755	\$6,965
Jul-20	6949032	\$6,949
Aug-20	6945237	\$6,945
Aug-20	6957277	\$6,957
Aug-20	7010637	\$7,011
Aug-20	6990418	\$6,990
Sep-20	7017492	\$7,017
Sep-20	7010614	\$7,011
Sep-20	7064475	\$7,064
Sep-20	7093161	\$7,093
Sep-20	7056129	\$7,056

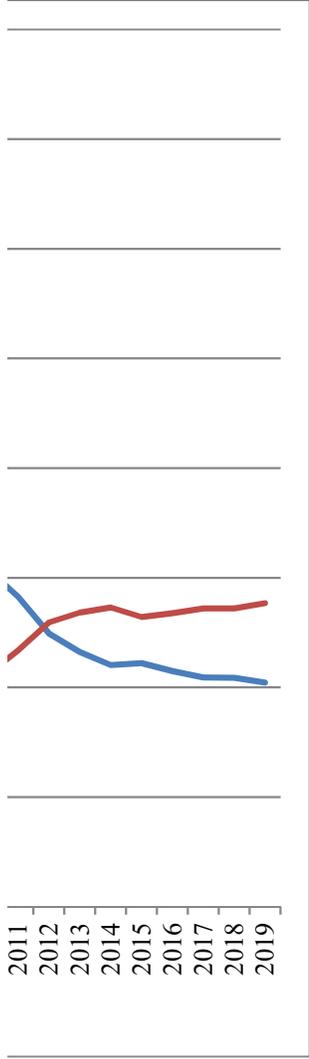


[stlouisfed.org/series/WALCL](http://stlouisfed.org/series/WALCL)

<b><u>Tab</u></b>	<b><u>Designation</u></b>	<b><u>Title I</u></b>	<b><u>Title II</u></b>
4	Exh. AMM-4	ROE ANALYSIS	SUMMARY OF RESULTS
5 (1)	Exh. AMM-5	CAPITAL STRUCTURE	UTILITY GROUP
5 (2-3)	Exh. AMM-5	CAPITAL STRUCTURE	ELECTRIC GROUP OPERATING SUBSIDIARIES
6 (1)	Exh. AMM-6	DCF MODEL - UTILITY GROUP	DIVIDEND YIELD
6 (2)	Exh. AMM-6	DCF MODEL - UTILITY GROUP	GROWTH RATES
6 (3)	Exh. AMM-6	DCF MODEL - UTILITY GROUP	DCF COST OF EQUITY ESTIMATES
6 (4)	Exh. AMM-6	DCF MODEL - UTILITY GROUP	LOW-END THRESHOLD ADJUSTMENTS
7	Exh. AMM-7	DCF MODEL - UTILITY GROUP	BR+SV GROWTH RATE
8	Exh. AMM-8	CAPM	UTILITY GROUP
9	Exh. AMM-9	EMPIRICAL CAPM	UTILITY GROUP
10 (1)	Exh. AMM-10	ELECTRIC UTILITY RISK PREMIUM	CURRENT BOND YIELD
10 (2)	Exh. AMM-10	ELECTRIC UTILITY RISK PREMIUM	PROJECTED BOND YIELD
10 (3)	Exh. AMM-10	ELECTRIC UTILITY RISK PREMIUM	AUTHORIZED RETURNS
10 (4)	Exh. AMM-10	ELECTRIC UTILITY RISK PREMIUM	REGRESSION RESULTS
11	Exh. AMM-11	EXPECTED EARNINGS APPROACH	UTILITY GROUP
12 (1)	Exh. AMM-12	DCF MODEL - NON-UTILITY GROUP	DIVIDEND YIELD
12 (2)	Exh. AMM-12	DCF MODEL - NON-UTILITY GROUP	GROWTH RATES
12 (3)	Exh. AMM-12	DCF MODEL - NON-UTILITY GROUP	DCF COST OF EQUITY ESTIMATES
13	Exh. AMM-13	FLOTATION COST STUDY	ELECTRIC & GAS UTILITIES
14 (1)	Exh. AMM-14	REGULATORY MECHANISMS	UTILITY GROUP
14 (2-4)	Exh. AMM-14	REGULATORY MECHANISMS	UTILITY GROUP OPERATING COS.









**SUMMARY OF RESULTS**

<b>Method</b>	<b>Average</b>	<b>Midpoint</b>
<b><u>DCF</u></b>		
Value Line	9.3%	10.4%
IBES	9.4%	9.8%
Zacks	9.3%	10.1%
Internal br + sv	8.8%	8.8%
<b><u>CAPM</u></b>	11.2%	11.6%
<b><u>Empirical CAPM</u></b>	11.4%	11.8%
<b><u>Utility Risk Premium</u></b>		
Current Bond Yield		9.3%
Projected Bond Yields		10.1%
<b><u>Expected Earnings</u></b>	10.3%	10.9%

<b>ROE Recommendation</b>			
Cost of Equity Range	9.3%	--	10.7%
Flotation Cost Adjustment			
Dividend Yield		4.0%	
Flotation Cost Percentage		2.9%	
Adjustment		0.1%	
<b>Recommended ROE Range</b>	<b>9.4%</b>	<b>--</b>	<b>10.8%</b>
<b>Midpoint</b>		<b>10.1%</b>	

UTILITY GROUP

Company	At Fiscal Year-End 2019 (a)			Value Line Projected (b)		
	Debt (c)	Preferred	Common Equity	Debt (c)	Other	Common Equity
1 Algonquin Pwr & Util	47.2%	2.2%	50.6%	n/a	n/a	n/a
2 ALLETE	40.9%	0.0%	59.1%	41.0%	0.0%	59.0%
3 Ameren Corp.	53.3%	0.0%	46.7%	50.0%	1.0%	49.0%
4 Avangrid, Inc.	32.3%	0.0%	67.7%	42.5%	0.0%	57.5%
5 Avista Corp.	49.4%	0.0%	50.6%	51.0%	0.0%	49.0%
6 Black Hills Corp.	56.1%	0.0%	43.9%	52.0%	0.0%	48.0%
7 CenterPoint Energy	64.4%	0.0%	35.6%	54.5%	3.5%	42.0%
8 CMS Energy Corp.	72.2%	0.0%	27.8%	68.0%	0.0%	32.0%
9 DTE Energy Co.	52.1%	0.0%	47.9%	58.5%	0.0%	41.5%
10 Edison International	58.4%	0.0%	41.6%	58.0%	4.5%	37.5%
11 Emera Inc.	54.2%	0.0%	45.8%	53.6%	0.0%	46.4%
12 Entergy Corp.	64.8%	4.2%	30.9%	59.5%	1.0%	39.5%
13 Exelon Corp.	63.0%	0.8%	36.2%	50.0%	0.0%	50.0%
14 FirstEnergy Corp.	51.3%	0.0%	48.7%	66.0%	0.0%	34.0%
15 Hawaiian Elec.	74.1%	0.0%	25.9%	48.0%	0.5%	51.5%
16 IDACORP, Inc.	47.3%	0.8%	51.9%	46.5%	0.0%	53.5%
17 NorthWestern Corp.	42.6%	0.0%	57.4%	50.0%	0.0%	50.0%
18 OGE Energy Corp.	52.5%	0.0%	47.5%	49.0%	0.0%	51.0%
19 Otter Tail Corp.	43.6%	0.0%	56.4%	47.0%	0.0%	53.0%
20 PNM Resources	46.9%	0.0%	53.1%	50.5%	0.5%	49.0%
21 Sempra Energy	63.2%	0.2%	36.6%	48.5%	0.0%	51.5%
<b>Average</b>	<b>53.8%</b>	<b>0.4%</b>	<b>45.8%</b>	<b>52.2%</b>	<b>0.6%</b>	<b>47.2%</b>

(a) Company Form 10-K and Annual Reports.

(b) The Value Line Investment Survey (Jul. 24, Aug. 14 and Sep. 11, 2020).

(c) Includes current maturities.

**ELECTRIC GROUP OPERATING SUBSIDIARIES**

<b>Operating Company</b>	<b>At Year-End 2019 (a)</b>		
	<b>Debt (b)</b>	<b>Preferred</b>	<b>Common Equity</b>
<b>ALGONQUIN PWR. &amp; UTIL.</b>			
Empire District Electric Co.	46.0%	0.0%	54.0%
Liberty Utilities (Granite State Elec.)	22.9%	0.0%	77.1%
<b>ALLETE</b>			
ALLETE, Inc. (Minnesota Power)	40.4%	0.0%	59.6%
<b>AMEREN CORP.</b>			
Ameren Illinois Co.	46.4%	0.8%	52.8%
Union Electric Co.	49.1%	0.9%	50.0%
<b>AVANGRID</b>			
Central Maine Pwr	37.5%	0.0%	62.5%
NY State E&G	51.1%	0.0%	48.9%
Rochester G&E	48.8%	0.0%	51.2%
United Illuminating	42.4%	0.0%	57.6%
<b>BLACK HILLS CORP.</b>			
Black Hills Power	43.2%	0.0%	56.8%
Cheyenne Light Fuel & Power	51.7%	0.0%	48.3%
Black Hills/Colorado Elec. Util. Co.	27.0%	0.0%	73.0%
<b>CENTERPOINT ENERGY</b>			
CenterPoint Energy Houston Elect.	60.4%	0.0%	39.6%
<b>CMS ENERGY</b>			
Consumers Energy Co.	48.7%	0.2%	51.1%
<b>DTE ENERGY CO.</b>			
DTE Electric Co.	50.0%	0.0%	50.0%
<b>EDISON INTERNATIONAL</b>			
Southern California Edison Co.	46.0%	6.8%	47.2%
<b>EMERA INC.</b>			
Emera Maine	42.8%	0.0%	57.1%
Tampa Electric Co.	44.7%	0.0%	55.3%
<b>ENTERGY CORP.</b>			
Entergy Arkansas Inc.	52.9%	0.0%	47.1%
Entergy Louisiana LLC	53.3%	0.0%	46.7%
Entergy Mississippi Inc.	51.1%	0.0%	48.9%
Entergy New Orleans Inc.	52.9%	0.0%	47.1%
Entergy Texas Inc.	51.7%	0.9%	47.4%

**ELECTRIC GROUP OPERATING SUBSIDIARIES**

<b>Operating Company</b>	<b>At Year-End 2019 (a)</b>		
	<b>Debt (b)</b>	<b>Preferred</b>	<b>Common Equity</b>
<b>EXELON CORP.</b>			
Delmarva Power and Light	49.8%	0.0%	50.2%
Baltimore Gas & Electric Co.	47.0%	0.0%	53.0%
Commonwealth Edison Co.	44.9%	0.0%	55.1%
PECO Energy Co.	46.2%	0.0%	53.8%
Potomac Electric Power Co.	49.6%	0.0%	50.4%
Atlantic City Electric Co.	51.0%	0.0%	49.0%
<b>FIRSTENERGY CORP.</b>			
Cleve. Elec. Illum./Ohio Ed./Toledo Ed.	40.2%	0.0%	59.8%
Jersey Central Power & Light Co.	31.7%	0.0%	68.3%
Metropolitan Edison Co.	52.0%	0.0%	48.0%
Monongahela Power Co.	53.6%	0.0%	46.4%
Pennsylvania Electric Co.	49.6%	0.0%	50.4%
The Potomac Edison Co.	45.7%	0.0%	54.3%
West Penn Power Co.	52.3%	0.0%	47.7%
Pennsylvania Power	51.2%	0.0%	48.8%
<b>HAWAIIAN ELEC.</b>			
Hawaiian Electric Co.	41.8%	1.0%	57.2%
<b>IDACORP</b>			
Idaho Power Co.	44.7%	0.0%	55.3%
<b>NORTHWESTERN CORP.</b>			
NorthWestern Corporation	52.4%	0.0%	47.6%
<b>OGE ENERGY CORP.</b>			
Oklahoma G&E	44.9%	0.0%	55.1%
<b>OTTER TAIL CORP.</b>			
Otter Tail Power Co.	48.9%	0.0%	51.1%
<b>PNM RESOURCES</b>			
Public Service Company of New Mexico	53.4%	0.4%	46.2%
Texas-New Mexico Power Co.	47.1%	0.0%	52.9%
<b>SEMPRA ENERGY</b>			
San Diego Gas & Electric	47.3%	0.0%	52.7%
Oncor Electric Delivery	43.4%	0.0%	56.6%
<b>Minimum</b>	<b>22.9%</b>	<b>0.0%</b>	<b>39.6%</b>
<b>Maximum</b>	<b>60.4%</b>	<b>6.8%</b>	<b>77.1%</b>
<b>Average</b>	<b>46.7%</b>	<b>0.2%</b>	<b>53.0%</b>

(a) Data from 2019 Company Form 10-K and FERC Form 1 reports.

(b) Includes current maturities.

**DIVIDEND YIELD**

		(a)	(b)	
	<b>Company</b>	<b>Price</b>	<b>Dividends</b>	<b>Yield</b>
1	Algonquin Pwr & Util	\$14.06	\$0.62	4.4%
2	ALLETE	\$52.70	\$2.55	4.8%
3	Ameren Corp.	\$78.32	\$2.08	2.7%
4	Avangrid, Inc.	\$49.14	\$1.76	3.6%
5	Avista Corp.	\$35.35	\$1.64	4.6%
6	Black Hills Corp.	\$54.70	\$2.23	4.1%
7	CenterPoint Energy	\$19.52	\$0.63	3.2%
8	CMS Energy Corp.	\$60.86	\$1.71	2.8%
9	DTE Energy Co.	\$116.40	\$4.34	3.7%
10	Edison International	\$51.47	\$2.60	5.1%
11	Emera Inc.	\$54.11	\$2.45	4.5%
12	Entergy Corp.	\$97.57	\$3.80	3.9%
13	Exelon Corp.	\$36.20	\$1.57	4.3%
14	FirstEnergy Corp.	\$28.78	\$1.59	5.5%
15	Hawaiian Elec.	\$60.45	\$1.32	2.2%
16	IDACORP, Inc.	\$84.64	\$2.83	3.3%
17	NorthWestern Corp.	\$50.61	\$2.45	4.8%
18	OGE Energy Corp.	\$30.53	\$1.64	5.4%
19	Otter Tail Corp.	\$37.49	\$1.54	4.1%
20	PNM Resources	\$41.95	\$1.26	3.0%
21	Sempra Energy	\$120.32	\$4.34	3.6%
	<b>Average</b>			<b>4.0%</b>

(a) Average of closing prices for 30 trading days ended Oct. 2, 2020.

(b) The Value Line Investment Survey, Summary & Index (Oct. 2, 2020).

**GROWTH RATES**

	Company	(a)	(b)	(c)	(d)
		Earnings Growth			br+sv
		Value Line	IBES	Zacks	Growth
1	Algonquin Pwr & Util	n/a	5.7%	7.9%	n/a
2	ALLETE	4.5%	7.0%	n/a	3.2%
3	Ameren Corp.	6.0%	6.0%	6.9%	6.0%
4	Avangrid, Inc.	4.0%	4.6%	5.3%	1.4%
5	Avista Corp.	1.0%	5.8%	5.1%	3.0%
6	Black Hills Corp.	3.5%	4.7%	5.8%	3.8%
7	CenterPoint Energy	4.0%	-6.7%	5.0%	7.5%
8	CMS Energy Corp.	7.5%	7.1%	7.0%	7.2%
9	DTE Energy Co.	6.0%	6.0%	5.7%	5.3%
10	Edison International	n/a	1.4%	2.9%	5.6%
11	Emera Inc.	6.0%	5.7%	n/a	3.8%
12	Entergy Corp.	3.0%	5.4%	5.4%	4.9%
13	Exelon Corp.	5.0%	-3.5%	4.0%	4.1%
14	FirstEnergy Corp.	8.5%	-2.4%	n/a	9.0%
15	Hawaiian Elec.	1.5%	3.3%	1.7%	2.9%
16	IDACORP, Inc.	3.5%	2.6%	2.6%	3.4%
17	NorthWestern Corp.	1.5%	3.8%	3.4%	2.7%
18	OGE Energy Corp.	3.0%	2.4%	3.7%	2.7%
19	Otter Tail Corp.	5.0%	9.0%	n/a	5.3%
20	PNM Resources	6.0%	5.0%	4.9%	6.0%
21	Sempra Energy	10.0%	6.3%	7.4%	7.3%

(a) The Value Line Investment Survey (Jul. 24, Aug. 14 and Sep. 11, 2020).

(b) [www.finance.yahoo.com](http://www.finance.yahoo.com) (retrieved Oct. 5, 2020).

(c) [www.zacks.com](http://www.zacks.com) (retrieved Oct. 5, 2020).

(d) See Exh. AMM-7.

DCF COST OF EQUITY ESTIMATES

	Company	(a)	(a)	(a)	(a)
		Value Line	IBES	Zacks	br+sv Growth
1	Algonquin Pwr & Util	n/a	10.1%	12.3%	n/a
2	ALLETE	9.3%	11.8%	n/a	8.0%
3	Ameren Corp.	8.7%	8.7%	9.5%	8.6%
4	Avangrid, Inc.	7.6%	8.2%	8.9%	4.9%
5	Avista Corp.	5.6%	10.4%	9.8%	7.7%
6	Black Hills Corp.	7.6%	8.8%	9.8%	7.9%
7	CenterPoint Energy	7.2%	-3.4%	8.2%	10.7%
8	CMS Energy Corp.	10.3%	9.9%	9.8%	10.1%
9	DTE Energy Co.	9.7%	9.7%	9.4%	9.0%
10	Edison International	n/a	6.5%	7.9%	10.7%
11	Emera Inc.	10.5%	10.3%	n/a	8.3%
12	Entergy Corp.	6.9%	9.3%	9.3%	8.8%
13	Exelon Corp.	9.3%	0.9%	8.3%	8.5%
14	FirstEnergy Corp.	14.0%	3.1%	n/a	14.5%
15	Hawaiian Elec.	3.7%	5.5%	3.9%	5.1%
16	IDACORP, Inc.	6.8%	5.9%	6.0%	6.8%
17	NorthWestern Corp.	6.3%	8.6%	8.2%	7.6%
18	OGE Energy Corp.	8.4%	7.8%	9.1%	8.0%
19	Otter Tail Corp.	9.1%	13.1%	n/a	9.4%
20	PNM Resources	9.0%	8.0%	7.9%	9.1%
21	Sempra Energy	13.6%	9.9%	11.0%	10.9%
	<b>Average (b)</b>	<b>9.3%</b>	<b>9.4%</b>	<b>9.3%</b>	<b>8.8%</b>
	<b>Midpoint (b,c)</b>	<b>10.4%</b>	<b>9.8%</b>	<b>10.1%</b>	<b>8.8%</b>

(a) Sum of dividend yield (Exh. AMM-6, p. 1) and respective growth rate (Exh. AMM-6, p. 2).

(b) Excludes highlighted figures.

(c) Average of low and high values.

**LOW-END THRESHOLD ADJUSTMENTS**

*Atlantic Path 15 / Startrans / So. Cal Edison*

	<b><u>Baa Yield</u></b>
Jun-07	6.54%
Jul-07	6.49%
Aug-07	6.51%
Sep-07	6.45%
Oct-07	6.36%
Nov-07	6.27%

*Pioneer Transmission*

	<b><u>Baa Yield</u></b>
Apr-08	6.81%
May-08	6.79%
Jun-08	6.93%
Jul-08	6.97%
Aug-08	6.98%
Sep-08	7.15%

	<b><u>Current</u></b>	<b><u>Projected</u></b>
Historical Baa Bond Yield	6.69% (a)	6.69% (a)
Current Baa Bond Yield	3.37% (b)	4.79% (c)
Change in Bond Yield	<u>-3.32%</u>	<u>-1.90%</u>
Risk Premium/Interest Rate Relationship	-0.42103 (d)	-0.42103 (d)
Adjustment to Low-end Threshold	<u>1.40%</u>	<u>0.80%</u>
Current Baa Bond Yield	3.37%	4.79%
Original Threshold	1.00%	1.00%
Adjustment	<u>1.40%</u>	<u>0.80%</u>
<b>Adjusted Low-end Threshold</b>	<b><u>5.77%</u></b>	<b><u>6.59%</u></b>
<b>Low-end Test -- FERC Opinion No. 569-A</b>		
Current Baa Bond Yield	3.37%	
CAPM Market Risk Premium (e)	10.17%	
Risk Premium Factor (f)	<u>20.00%</u>	
Adjustment to Low-end Threshold	2.03%	
<b>Adjusted Low-end Threshold</b>	<b><u>5.40%</u></b>	

(a) Average Baa utility bond yield for 6-mo. periods ending Nov. 2007 and Sep. 2008.

(b) Average Baa utility bond yield for 6-months ended Sep. 2020.

(c) Average Baa utility bond yield for 2021-25 based on data from IHS Markit, Long-Term Macro Forecast - Baseline (Jun. 29, 2020); Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020), Moody's Investors Service at www.credittrends.com.

(d) Exh. AMM-10, page 4.

(e) Exh. AMM-8, page 1.

(f) 171 FERC ¶ 61,154, Docket Nos. EL14-12-004 and EL15-45-013, Opinion No. 569-A, Order on Rehearing (issued May 21, 2020).

**DCF MODEL - UTILITY GROUP**

**BR+SV GROWTH RATE**

	<u>Company</u>	(a)			(b)		(c)	(d)			(e)		<u>br + sv</u>
		<u>2024</u>			<u>Adjustment</u>			<u>"sv" Factor</u>					
		<u>EPS</u>	<u>DPS</u>	<u>BVPS</u>	<u>b</u>	<u>r</u>	<u>Factor</u>	<u>Adjusted r</u>	<u>br</u>	<u>s</u>	<u>v</u>	<u>sv</u>	
1	Algonquin Pwr & Util	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2	ALLETE	\$4.25	\$2.90	\$51.75	31.8%	8.2%	1.0233	8.4%	2.7%	0.0145	0.3323	0.48%	<b>3.2%</b>
3	Ameren Corp.	\$4.50	\$2.45	\$44.50	45.6%	10.1%	1.0398	10.5%	4.8%	0.0303	0.3862	1.17%	<b>6.0%</b>
4	Avangrid, Inc.	\$2.50	\$1.80	\$51.75	28.0%	4.8%	1.0048	4.9%	1.4%	(0.0000)	(0.2176)	0.00%	<b>1.4%</b>
5	Avista Corp.	\$2.50	\$1.90	\$31.75	24.0%	7.9%	1.0182	8.0%	1.9%	0.0277	0.3952	1.10%	<b>3.0%</b>
6	Black Hills Corp.	\$4.25	\$2.75	\$46.75	35.3%	9.1%	1.0232	9.3%	3.3%	0.0134	0.3968	0.53%	<b>3.8%</b>
7	CenterPoint Energy	\$1.60	\$0.80	\$15.25	50.0%	10.5%	1.0384	10.9%	5.4%	0.0700	0.2907	2.04%	<b>7.5%</b>
8	CMS Energy Corp.	\$3.50	\$2.15	\$25.50	38.6%	13.7%	1.0429	14.3%	5.5%	0.0283	0.6077	1.72%	<b>7.2%</b>
9	DTE Energy Co.	\$8.50	\$5.20	\$79.25	38.8%	10.7%	1.0326	11.1%	4.3%	0.0229	0.4339	0.99%	<b>5.3%</b>
10	Edison International	\$5.25	\$3.00	\$46.50	42.9%	11.3%	1.0285	11.6%	5.0%	0.0150	0.4188	0.63%	<b>5.6%</b>
11	Emera Inc.	\$4.00	\$2.76	\$44.95	31.0%	8.9%	1.0257	9.1%	2.8%	0.0252	0.3800	0.96%	<b>3.8%</b>
12	Entergy Corp.	\$7.00	\$4.55	\$64.00	35.0%	10.9%	1.0267	11.2%	3.9%	0.0204	0.4776	0.97%	<b>4.9%</b>
13	Exelon Corp.	\$3.50	\$1.90	\$40.25	45.7%	8.7%	1.0220	8.9%	4.1%	0.0043	0.1950	0.08%	<b>4.1%</b>
14	FirstEnergy Corp.	\$3.25	\$1.90	\$20.50	41.5%	15.9%	1.0535	16.7%	6.9%	0.0345	0.5900	2.04%	<b>9.0%</b>
15	Hawaiian Elec.	\$2.00	\$1.40	\$24.50	30.0%	8.2%	1.0203	8.3%	2.5%	0.0130	0.3000	0.39%	<b>2.9%</b>
16	IDACORP, Inc.	\$5.50	\$3.55	\$58.00	35.5%	9.5%	1.0167	9.6%	3.4%	(0.0001)	0.4200	-0.01%	<b>3.4%</b>
17	NorthWestern Corp.	\$3.75	\$2.80	\$45.75	25.3%	8.2%	1.0169	8.3%	2.1%	0.0162	0.3900	0.63%	<b>2.7%</b>
18	OGE Energy Corp.	\$2.50	\$1.95	\$20.50	22.0%	12.2%	0.9992	12.2%	2.7%	(0.0002)	0.5684	-0.01%	<b>2.7%</b>
19	Otter Tail Corp.	\$2.75	\$1.80	\$23.25	34.5%	11.8%	1.0227	12.1%	4.2%	0.0203	0.5571	1.13%	<b>5.3%</b>
20	PNM Resources	\$2.75	\$1.50	\$29.25	45.5%	9.4%	1.0468	9.8%	4.5%	0.0450	0.3500	1.57%	<b>6.0%</b>
21	Sempra Energy	\$9.50	\$5.60	\$88.75	41.1%	10.7%	1.0533	11.3%	4.6%	0.0578	0.4621	2.67%	<b>7.3%</b>

**BR+SV GROWTH RATE**

Company	(a)	(a)	(f)	(a)	(a)	(f)	(g)	(a)	(a)	(h)	(a)	(a)	(g)	
	2019			2024			Chg	2024			Common Shares			
	Eq Ratio	Tot Cap	Com Eq	Eq Ratio	Tot Cap	Com Eq	Equity	High	Low	Avg.	M/B	2019	2024	Growth
1 Algonquin Pwr & Util	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2 ALLETE	61.4%	\$3,633	\$2,231	59.0%	\$4,775	\$2,817	4.8%	\$90.00	\$65.00	\$77.50	1.498	51.70	54.25	0.97%
3 Ameren Corp.	47.1%	\$17,116	\$8,062	49.0%	\$24,500	\$12,005	8.3%	\$85.00	\$60.00	\$72.50	1.629	246.20	270.00	1.86%
4 Avangrid, Inc.	69.4%	\$21,953	\$15,235	57.5%	\$27,800	\$15,985	1.0%	\$50.00	\$35.00	\$42.50	0.821	309.01	309.00	0.00%
5 Avista Corp.	50.6%	\$3,835	\$1,940	49.0%	\$4,750	\$2,328	3.7%	\$60.00	\$45.00	\$52.50	1.654	67.18	73.00	1.68%
6 Black Hills Corp.	42.9%	\$5,502	\$2,360	48.0%	\$6,200	\$2,976	4.7%	\$90.00	\$65.00	\$77.50	1.658	61.48	64.00	0.81%
7 CenterPoint Energy	29.1%	\$22,603	\$6,577	42.0%	\$23,000	\$9,660	8.0%	\$25.00	\$18.00	\$21.50	1.410	502.24	640.00	4.97%
8 CMS Energy Corp.	29.4%	\$17,082	\$5,022	32.0%	\$24,100	\$7,712	9.0%	\$75.00	\$55.00	\$65.00	2.549	283.86	300.00	1.11%
9 DTE Energy Co.	42.3%	\$27,607	\$11,678	41.5%	\$39,000	\$16,185	6.7%	\$160.00	\$120.00	\$140.00	1.767	192.21	205.00	1.30%
10 Edison International	39.9%	\$33,360	\$13,311	37.5%	\$47,200	\$17,700	5.9%	\$95.00	\$65.00	\$80.00	1.720	361.99	378.00	0.87%
11 Emera Inc.	38.5%	\$22,245	\$8,566	46.4%	\$23,875	\$11,075	5.3%	\$85.00	\$60.00	\$72.50	1.613	242.48	262.00	1.56%
12 Entergy Corp.	37.1%	\$27,557	\$10,224	39.5%	\$33,800	\$13,351	5.5%	\$140.00	\$105.00	\$122.50	1.914	199.15	210.00	1.07%
13 Exelon Corp.	50.4%	\$63,943	\$32,227	50.0%	\$80,300	\$40,150	4.5%	\$60.00	\$40.00	\$50.00	1.242	973.00	990.00	0.35%
14 FirstEnergy Corp.	26.2%	\$26,593	\$6,967	34.0%	\$35,000	\$11,900	11.3%	\$60.00	\$40.00	\$50.00	2.439	540.65	580.00	1.42%
15 Hawaiian Elec.	54.6%	\$4,177	\$2,281	51.5%	\$5,425	\$2,794	4.1%	\$40.00	\$30.00	\$35.00	1.429	108.97	114.00	0.91%
16 IDACORP, Inc.	58.7%	\$4,201	\$2,466	53.5%	\$5,450	\$2,916	3.4%	\$115.00	\$85.00	\$100.00	1.724	50.42	50.40	-0.01%
17 NorthWestern Corp.	47.5%	\$4,290	\$2,038	50.0%	\$4,825	\$2,413	3.4%	\$85.00	\$65.00	\$75.00	1.639	50.45	53.00	0.99%
18 OGE Energy Corp.	56.4%	\$7,335	\$4,137	51.0%	\$8,050	\$4,106	-0.2%	\$55.00	\$40.00	\$47.50	2.317	200.10	200.00	-0.01%
19 Otter Tail Corp.	53.1%	\$1,471	\$781	53.0%	\$1,850	\$981	4.7%	\$60.00	\$45.00	\$52.50	2.258	40.16	42.00	0.90%
20 PNM Resources	39.9%	\$4,208	\$1,679	49.0%	\$5,475	\$2,683	9.8%	\$55.00	\$35.00	\$45.00	1.538	79.65	92.00	2.92%
21 Sempra Energy	43.4%	\$40,734	\$17,679	51.5%	\$58,500	\$30,128	11.3%	\$190.00	\$140.00	\$165.00	1.859	291.71	340.00	3.11%

- (a) The Value Line Investment Survey (Jul. 24, Aug. 14 and Sep. 11, 2020).
- (h) Average of High and Low expected market prices divided by 2024 BVPS.
- (e) Computed as 1 - B/M Ratio.
- (b) Computed using the formula  $2 * (1 + 5\text{-Yr. Change in Equity}) / (2 + 5 \text{ Yr. Change in Equity})$ .
- (g) Five-year compound rate of change.
- (c) Product of average year-end "r" for 2024 and Adjustment Factor.
- (d) Product of change in common shares outstanding and M/B Ratio.
- (f) Product of total capital and equity ratio.

UTILITY GROUP

	Company	(a)	(b)	(c)			(d)	(d)	(e)	Size	
		Div Yield	Proj. Growth	Cost of Equity	Risk-Free Rate	Risk Premium	Beta	Unadjusted CAPM	Market Cap	Size Adjustment	Adjusted CAPM
1	Algonquin Pwr & Util	2.3%	9.2%	11.6%	1.4%	10.2%	0.90	10.6%	\$9,094.3	0.73%	11.3%
2	ALLETE	2.3%	9.2%	11.6%	1.4%	10.2%	0.85	10.0%	\$2,800.0	1.10%	11.1%
3	Ameren Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.80	9.5%	\$20,000.0	0.50%	10.0%
4	Avangrid, Inc.	2.3%	9.2%	11.6%	1.4%	10.2%	0.80	9.5%	\$15,000.0	0.50%	10.0%
5	Avista Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.90	10.6%	\$2,400.0	1.34%	11.9%
6	Black Hills Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.95	11.1%	\$3,800.0	1.10%	12.2%
7	CenterPoint Energy	2.3%	9.2%	11.6%	1.4%	10.2%	1.10	12.6%	\$11,000.0	0.73%	13.3%
8	CMS Energy Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.80	9.5%	\$17,000.0	0.50%	10.0%
9	DTE Energy Co.	2.3%	9.2%	11.6%	1.4%	10.2%	0.90	10.6%	\$23,000.0	0.50%	11.1%
10	Edison International	2.3%	9.2%	11.6%	1.4%	10.2%	0.90	10.6%	\$20,000.0	0.50%	11.1%
11	Emera Inc.	2.3%	9.2%	11.6%	1.4%	10.2%	0.75	9.0%	\$13,100.0	0.73%	9.8%
12	Entergy Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.95	11.1%	\$20,000.0	0.50%	11.6%
13	Exelon Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.95	11.1%	\$37,000.0	-0.28%	10.8%
14	FirstEnergy Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.85	10.0%	\$16,000.0	0.50%	10.5%
15	Hawaiian Elec.	2.3%	9.2%	11.6%	1.4%	10.2%	0.80	9.5%	\$4,000.0	1.10%	10.6%
16	IDACORP, Inc.	2.3%	9.2%	11.6%	1.4%	10.2%	0.80	9.5%	\$4,600.0	0.79%	10.3%
17	NorthWestern Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.90	10.6%	\$2,700.0	1.10%	11.7%
18	OGE Energy Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	1.05	12.1%	\$6,400.0	0.79%	12.9%
19	Otter Tail Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	0.85	10.0%	\$1,600.0	1.47%	11.5%
20	PNM Resources	2.3%	9.2%	11.6%	1.4%	10.2%	0.95	11.1%	\$3,100.0	1.10%	12.2%
21	Sempra Energy	2.3%	9.2%	11.6%	1.4%	10.2%	0.95	11.1%	\$35,000.0	-0.28%	10.8%
	<b>Average</b>							<b>10.5%</b>			<b>11.2%</b>
	<b>Midpoint (f)</b>							<b>10.8%</b>			<b>11.6%</b>

(a) Weighted average for dividend paying components of S&P 500 index from zacks.com (retrieved Oct. 1, 2020).

(b) Average of weighted average earnings growth rates from Value Line Investment Survey, IBES, and Zacks Investment Research for dividend-paying stocks in the S&P 500 based on data from <http://finance.yahoo.com> (retrieved Oct. 2, 2020), [www.zacks.com](http://www.zacks.com) (retrieved Oct. 1, 2020), and [www.valueline.com](http://www.valueline.com) (retrieved Oct. 1, 2020).

(c) Average yield on 30-year Treasury bonds for the six-months ending Sep. 2020 based on data from the Federal Reserve at <https://fred.stlouisfed.org/>.

(d) The Value Line Investment Survey (Jul. 24, Aug. 14 and Sep. 11, 2020).

(e) Duff & Phelps, 2020 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.

(f) Average of low and high values.

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	(a)	(b)	(c)			(d)	(e)	(d)	(e)			(f)	Size		
	<u>Market Return (R<sub>m</sub>)</u>												Adjusted		
<u>Company</u>	<u>Div Yield</u>	<u>Proj. Growth</u>	<u>Cost of Equity</u>	<u>Risk-Free Rate</u>	<u>Risk Premium</u>	<u>Weight</u>	<u>Unadjusted RP</u>	<u>Beta</u>	<u>Adjusted RP</u>	<u>RP</u>	<u>K<sub>e</sub></u>	<u>Market Cap</u>	<u>Size Adjustment</u>	<u>K<sub>e</sub></u>	
1 Algonquin Pwr & Util	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.90	75%	6.9%	9.4%	10.8%	\$9,094.3	0.73%	11.5%
2 ALLETE	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.85	75%	6.5%	9.0%	10.4%	\$2,800.0	1.10%	11.5%
3 Ameren Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.80	75%	6.1%	8.6%	10.0%	\$20,000.0	0.50%	10.5%
4 Avangrid, Inc.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.80	75%	6.1%	8.6%	10.0%	\$15,000.0	0.50%	10.5%
5 Avista Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.90	75%	6.9%	9.4%	10.8%	\$2,400.0	1.34%	12.1%
6 Black Hills Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.95	75%	7.2%	9.8%	11.2%	\$3,800.0	1.10%	12.3%
7 CenterPoint Energy	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	1.10	75%	8.4%	10.9%	12.3%	\$11,000.0	0.73%	13.1%
8 CMS Energy Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.80	75%	6.1%	8.6%	10.0%	\$17,000.0	0.50%	10.5%
9 DTE Energy Co.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.90	75%	6.9%	9.4%	10.8%	\$23,000.0	0.50%	11.3%
10 Edison International	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.90	75%	6.9%	9.4%	10.8%	\$20,000.0	0.50%	11.3%
11 Emera Inc.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.75	75%	5.7%	8.3%	9.7%	\$13,100.0	0.73%	10.4%
12 Entergy Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.95	75%	7.2%	9.8%	11.2%	\$20,000.0	0.50%	11.7%
13 Exelon Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.95	75%	7.2%	9.8%	11.2%	\$37,000.0	-0.28%	10.9%
14 FirstEnergy Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.85	75%	6.5%	9.0%	10.4%	\$16,000.0	0.50%	10.9%
15 Hawaiian Elec.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.80	75%	6.1%	8.6%	10.0%	\$4,000.0	1.10%	11.1%
16 IDACORP, Inc.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.80	75%	6.1%	8.6%	10.0%	\$4,600.0	0.79%	10.8%
17 NorthWestern Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.90	75%	6.9%	9.4%	10.8%	\$2,700.0	1.10%	11.9%
18 OGE Energy Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	1.05	75%	8.0%	10.6%	12.0%	\$6,400.0	0.79%	12.7%
19 Otter Tail Corp.	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.85	75%	6.5%	9.0%	10.4%	\$1,600.0	1.47%	11.9%
20 PNM Resources	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.95	75%	7.2%	9.8%	11.2%	\$3,100.0	1.10%	12.3%
21 Sempra Energy	2.3%	9.2%	11.6%	1.4%	10.2%	25%	2.5%	0.95	75%	7.2%	9.8%	11.2%	\$35,000.0	-0.28%	10.9%
<b>Average</b>												<b>10.7%</b>			<b>11.4%</b>
<b>Midpoint (g)</b>												<b>11.0%</b>			<b>11.8%</b>

(a) Weighted average for dividend paying components of S&P 500 index from zacks.com (retrieved Oct. 1, 2020)

(b) Average of weighted average earnings growth rates from Value Line Investment Survey, IBES, and Zacks Investment Research for dividend-paying stocks in the S&P 500 based on data from <http://finance.yahoo.com> (retrieved Oct. 2, 2020), [www.zacks.com](http://www.zacks.com) (retrieved Oct. 1, 2020), and [www.valueline.com](http://www.valueline.com) (retrieved Oct. 1, 2020).

(c) Average yield on 30-year Treasury bonds for the six-months ending Sep. 2020 based on data from the Federal Reserve at <https://fred.stlouisfed.org/>.

(d) Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 190.

(e) The Value Line Investment Survey (Jul. 24, Aug. 14 and Sep. 11, 2020)

(f) Duff & Phelps, 2020 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator

(g) Average of low and high values.

## ELECTRIC UTILITY RISK PREMIUM

Exh. AMM-10

Page 1 of 4

### CURRENT BOND YIELD

#### Current Equity Risk Premium

(a) Avg. Yield over Study Period	8.10%
(b) Average Utility Bond Yield	<u>3.01%</u>
Change in Bond Yield	-5.09%
(c) Risk Premium/Interest Rate Relationship	<u>-0.4210</u>
Adjustment to Average Risk Premium	2.14%
(a) Average Risk Premium over Study Period	<u>3.76%</u>
<b>Adjusted Risk Premium</b>	<b>5.90%</b>

#### Implied Cost of Equity

(b) Baa Utility Bond Yield	3.37%
Adjusted Equity Risk Premium	<u>5.90%</u>
<b>Risk Premium Cost of Equity</b>	<b>9.27%</b>

(a) Exh. AMM-10, page 3.

(b) Average bond yield on all utility bonds and Baa subset for the six-months ending Sep. 2020 based on data from Moody's Investors Service at [www.credittrends.com](http://www.credittrends.com).

(c) Exh. AMM-10, page 4.

## ELECTRIC UTILITY RISK PREMIUM

Exh. AMM-10

Page 2 of 4

### PROJECTED BOND YIELD

#### Current Equity Risk Premium

(a) Avg. Yield over Study Period	8.10%
(b) Average Utility Bond Yield 2021-2025	<u>4.43%</u>
Change in Bond Yield	-3.67%
(c) Risk Premium/Interest Rate Relationship	<u>-0.4210</u>
Adjustment to Average Risk Premium	1.55%
(a) Average Risk Premium over Study Period	<u>3.76%</u>
<b>Adjusted Risk Premium</b>	<b>5.31%</b>

#### Implied Cost of Equity

(b) Baa Utility Bond Yield 2021-2025	4.79%
Adjusted Equity Risk Premium	<u>5.31%</u>
<b>Risk Premium Cost of Equity</b>	<b>10.10%</b>

(a) Exh. AMM-10, page 3.

(b) Yields on all utility bonds and Baa subset based on data from IHS Markit, Long-Term Macro Forecast - Baseline (Jun. 29, 2020); Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020); & Moody's Investors Service at [www.credittrends.com](http://www.credittrends.com).

(c) Exh. AMM-10, page 4.

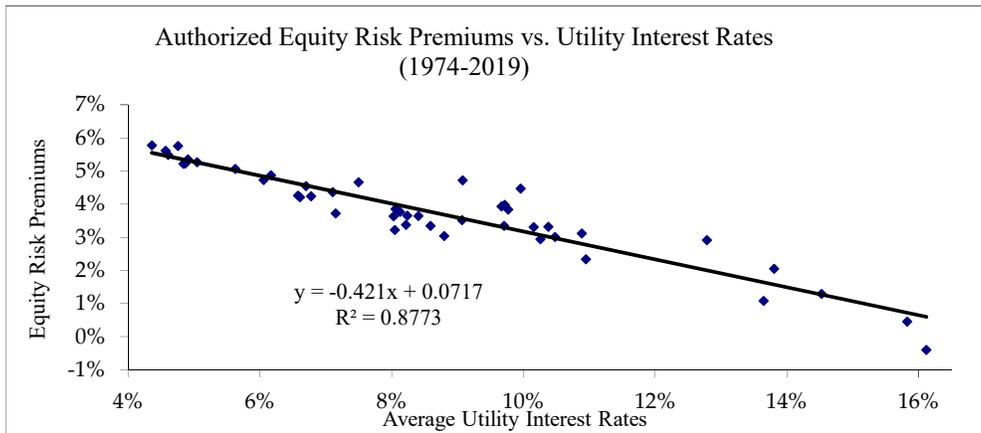
AUTHORIZED RETURNS

Year	(a)	(b)	Risk
	Allowed ROE	Average Utility Bond Yield	Premium
1974	13.10%	9.27%	3.83%
1975	13.20%	9.88%	3.32%
1976	13.10%	9.17%	3.93%
1977	13.30%	8.58%	4.72%
1978	13.20%	9.22%	3.98%
1979	13.50%	10.39%	3.11%
1980	14.23%	13.15%	1.08%
1981	15.22%	15.62%	-0.40%
1982	15.78%	15.33%	0.45%
1983	15.36%	13.31%	2.05%
1984	15.32%	14.03%	1.29%
1985	15.20%	12.29%	2.91%
1986	13.93%	9.46%	4.47%
1987	12.99%	9.98%	3.01%
1988	12.79%	10.45%	2.34%
1989	12.97%	9.66%	3.31%
1990	12.70%	9.76%	2.94%
1991	12.55%	9.21%	3.34%
1992	12.09%	8.57%	3.52%
1993	11.41%	7.56%	3.85%
1994	11.34%	8.30%	3.04%
1995	11.55%	7.91%	3.64%
1996	11.39%	7.74%	3.65%
1997	11.40%	7.63%	3.77%
1998	11.66%	7.00%	4.66%
1999	10.77%	7.55%	3.22%
2000	11.43%	8.09%	3.34%
2001	11.09%	7.72%	3.37%
2002	11.16%	7.53%	3.63%
2003	10.97%	6.61%	4.36%
2004	10.75%	6.20%	4.55%
2005	10.54%	5.67%	4.87%
2006	10.34%	6.08%	4.26%
2007	10.32%	6.11%	4.21%
2008	10.37%	6.65%	3.72%
2009	10.52%	6.28%	4.24%
2010	10.29%	5.56%	4.73%
2011	10.19%	5.13%	5.06%
2012	10.02%	4.26%	5.76%
2013	9.82%	4.55%	5.27%
2014	9.76%	4.41%	5.35%
2015	9.60%	4.37%	5.23%
2016	9.60%	4.11%	5.49%
2017	9.68%	4.07%	5.61%
2018	9.56%	4.34%	5.22%
2019	9.64%	3.86%	5.78%
<b>Average</b>	<b>11.86%</b>	<b>8.10%</b>	<b>3.76%</b>

(a) Major Rate Case Decisions, *Regulatory Focus*, Regulatory Research Associates ("RRA"); *UtilityScope Regulatory Service*, Argus. Data for "general" rate cases (excluding limited-issue rider cases) beginning in 2006 (the first year such data presented by RRA).

(b) Moody's Investors Service.

**REGRESSION RESULTS**



SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.936629767
R Square	0.87727532
Adjusted R Square	0.874486122
Standard Error	0.004786234
Observations	46

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.007205175	0.007205175	314.5260916	1.15178E-21
Residual	44	0.001007954	2.2908E-05		
Total	45	0.008213129			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.071731079	0.00204844	35.01742055	9.02999E-34	0.06760272	0.075859439	0.06760272	0.075859439
X Variable 1	-0.4210	0.023740031	-17.73488347	1.15178E-21	-0.46887158	-0.373181801	-0.46887158	-0.373181801

UTILITY GROUP

	(a)	(b)	(c)
<b>Company</b>	<b>Expected Return on Common Equity</b>	<b>Adjustment Factor</b>	<b>Adjusted Return on Common Equity</b>
1 Algonquin Pwr & Util	n/a	n/a	n/a
2 ALLETE	8.0%	1.0233	8.2%
3 Ameren Corp.	10.0%	1.0398	10.4%
4 Avangrid, Inc.	5.0%	1.0048	5.0%
5 Avista Corp.	7.5%	1.0182	7.6%
6 Black Hills Corp.	9.0%	1.0232	9.2%
7 CenterPoint Energy	10.5%	1.0384	10.9%
8 CMS Energy Corp.	13.5%	1.0429	14.1%
9 DTE Energy Co.	11.0%	1.0326	11.4%
10 Edison International	11.0%	1.0285	11.3%
11 Emera Inc.	10.0%	1.0257	10.3%
12 Entergy Corp.	11.0%	1.0267	11.3%
13 Exelon Corp.	9.0%	1.0220	9.2%
14 FirstEnergy Corp.	15.5%	1.0535	16.3%
15 Hawaiian Elec.	8.5%	1.0203	8.7%
16 IDACORP, Inc.	9.5%	1.0167	9.7%
17 NorthWestern Corp.	8.5%	1.0169	8.6%
18 OGE Energy Corp.	12.0%	0.9992	12.0%
19 Otter Tail Corp.	11.5%	1.0227	11.8%
20 PNM Resources	9.5%	1.0468	9.9%
21 Sempra Energy	10.5%	1.0533	11.1%
<b>Average (d)</b>			<b>10.3%</b>
<b>Midpoint (d,e)</b>			<b>10.9%</b>

(a) The Value Line Investment Survey (Jul. 24, Aug. 14 and Sep. 11, 2020).

(b) Adjustment to convert year-end return to an average rate of return from Exh. AMM-7.

(c) (a) x (b).

(d) Excludes highlighted values.

(e) Average of low and high values.

**DIVIDEND YIELD**

			(a)	(b)	
	<b>Company</b>	<b>Industry Group</b>	<b>Price</b>	<b>Dividends</b>	<b>Yield</b>
1	Air Products & Chem.	Chemical (Diversified)	\$ 286.44	\$ 5.36	1.9%
2	Amdocs Ltd.	IT Services	\$ 60.73	\$ 1.31	2.2%
3	Amgen	Biotechnology	\$ 246.85	\$ 6.70	2.7%
4	Amphenol Corp.	Electronics	\$ 105.69	\$ 1.00	0.9%
5	Apple Inc.	Computers/Peripherals	\$ 420.53	\$ 3.33	0.8%
6	AT&T Inc.	Telecom. Services	\$ 29.88	\$ 2.10	7.0%
7	Baxter Int'l Inc.	Med Supp Invasive	\$ 85.17	\$ 0.98	1.2%
8	Bristol-Myers Squibb	Drug	\$ 60.51	\$ 1.80	3.0%
9	Brown & Brown	Financial Svcs. (Div.)	\$ 44.92	\$ 0.34	0.8%
10	Brown-Forman 'B'	Beverage	\$ 68.98	\$ 0.72	1.0%
11	Church & Dwight	Household Products	\$ 90.86	\$ 0.96	1.1%
12	Cisco Systems	Telecom. Equipment	\$ 45.85	\$ 1.44	3.1%
13	Coca-Cola	Beverage	\$ 47.46	\$ 1.68	3.5%
14	Colgate-Palmolive	Household Products	\$ 76.00	\$ 1.76	2.3%
15	Comcast Corp.	Cable TV	\$ 42.85	\$ 0.92	2.1%
16	Commerce Bancshs.	Bank (Midwest)	\$ 58.38	\$ 1.08	1.9%
17	Costco Wholesale	Retail Store	\$ 332.54	\$ 2.80	0.8%
18	CVS Health	Pharmacy Services	\$ 64.31	\$ 2.00	3.1%
19	Danaher Corp.	Diversified Co.	\$ 200.09	\$ 0.72	0.4%
20	Gen'l Mills	Automotive	\$ 64.15	\$ 1.96	3.1%
21	Hormel Foods	Food Processing	\$ 50.91	\$ 1.00	2.0%
22	Intel Corp.	Hotel/Gaming	\$ 52.12	\$ 1.32	2.5%
23	Int'l Flavors & Frag.	Wireless Networking	\$ 126.21	\$ 3.12	2.5%
24	Johnson & Johnson	Med Supp Non-Invasive	\$ 148.46	\$ 4.04	2.7%
25	Kellogg	Food Processing	\$ 68.97	\$ 2.30	3.3%
26	Kimberly-Clark	Household Products	\$ 151.72	\$ 4.28	2.8%
27	Lilly (Eli)	Drug	\$ 157.03	\$ 2.96	1.9%
28	Lockheed Martin	Aerospace/Defense	\$ 381.27	\$ 10.00	2.6%
29	Marsh & McLennan	Financial Svcs. (Div.)	\$ 115.27	\$ 1.86	1.6%
30	McCormick & Co.	Food Processing	\$ 196.44	\$ 2.50	1.3%
31	McDonald's Corp.	Restaurant	\$ 199.74	\$ 5.00	2.5%
32	Merck & Co.	Drug	\$ 80.92	\$ 2.44	3.0%
33	Microsoft Corp.	Computer Software	\$ 208.47	\$ 2.04	1.0%
34	Northrop Grumman	Aerospace/Defense	\$ 321.97	\$ 5.80	1.8%
35	Oracle Corp.	Drug	\$ 55.43	\$ 0.96	1.7%
36	PepsiCo, Inc.	Beverage	\$ 136.36	\$ 4.09	3.0%
37	Pfizer, Inc.	Drug	\$ 37.80	\$ 1.52	4.0%
38	Procter & Gamble	Household Products	\$ 130.61	\$ 3.16	2.4%
39	Public Storage	R.E.I.T.	\$ 195.48	\$ 8.00	4.1%
40	Texas Instruments	Environmental	\$ 133.79	\$ 3.60	2.7%
41	Travelers Cos.	Insurance (Prop/Cas.)	\$ 116.89	\$ 3.40	2.9%
42	United Parcel Serv.	Air Transport	\$ 138.48	\$ 4.04	2.9%
43	Verizon Communic.	Telecom. Services	\$ 57.37	\$ 2.49	4.3%
44	Walmart Inc.	Retail Store	\$ 131.45	\$ 2.18	1.7%
45	Waste Management	Environmental	\$ 109.21	\$ 2.18	2.0%
	<b>Average</b>				<b>2.4%</b>

(a) Average of closing prices for 30 trading days ended Aug. 21, 2020.

(b) The Value Line Investment Survey, *Summary & Index* (Aug. 21, 2020).

**GROWTH RATES**

	Company	(a)	(b)	(c)
		Earnings Growth		
		Value Line	IBES	Zacks
1	Air Products & Chem.	12.00%	10.33%	8.77%
2	Amdocs Ltd.	9.50%	4.40%	8.50%
3	Amgen	6.50%	6.87%	7.53%
4	Amphenol Corp.	9.00%	3.00%	7.51%
5	Apple Inc.	14.00%	12.46%	10.67%
6	AT&T Inc.	5.50%	0.29%	5.53%
7	Baxter Int'l Inc.	9.00%	10.00%	9.75%
8	Bristol-Myers Squibb	12.50%	18.40%	8.63%
9	Brown & Brown	10.50%	8.93%	n/a
10	Brown-Forman 'B'	11.00%	3.33%	n/a
11	Church & Dwight	8.00%	9.48%	8.86%
12	Cisco Systems	7.00%	6.18%	5.40%
13	Coca-Cola	6.50%	2.94%	4.81%
14	Colgate-Palmolive	5.00%	5.91%	5.89%
15	Comcast Corp.	13.50%	4.95%	9.70%
16	Commerce Bancshs.	5.00%	-8.70%	n/a
17	Costco Wholesale	9.00%	7.15%	8.40%
18	CVS Health	6.00%	6.34%	5.59%
19	Danaher Corp.	15.00%	13.02%	11.64%
20	Gen'l Mills	3.00%	4.90%	7.50%
21	Hormel Foods	8.50%	2.90%	7.50%
22	Intel Corp.	7.00%	8.62%	7.50%
23	Int'l Flavors & Frag.	8.00%	0.38%	n/a
24	Johnson & Johnson	10.00%	5.08%	5.75%
25	Kellogg	3.00%	1.75%	6.00%
26	Kimberly-Clark	7.00%	6.20%	5.45%
27	Lilly (Eli)	10.00%	13.17%	15.65%
28	Lockheed Martin	8.50%	9.11%	6.93%
29	Marsh & McLennan	9.00%	4.87%	6.00%
30	McCormick & Co.	6.50%	5.00%	5.78%
31	McDonald's Corp.	8.00%	3.88%	7.68%
32	Merck & Co.	9.00%	6.25%	6.74%
33	Microsoft Corp.	15.00%	15.00%	13.71%
34	Northrop Grumman	10.50%	8.62%	n/a
35	Oracle Corp.	10.50%	9.04%	11.00%
36	PepsiCo, Inc.	6.00%	5.48%	5.61%
37	Pfizer, Inc.	8.50%	5.37%	4.29%
38	Procter & Gamble	8.50%	7.72%	7.41%
39	Public Storage	n/a	17.00%	3.45%
40	Texas Instruments	2.50%	10.00%	9.33%
41	Travelers Cos.	9.50%	3.05%	6.66%
42	United Parcel Serv.	6.00%	5.90%	7.77%
43	Verizon Communic.	4.00%	1.23%	3.41%
44	Walmart Inc.	7.50%	6.41%	5.63%
45	Waste Management	5.50%	-1.26%	6.29%

(a) The Value Line Investment Survey (various editions as of Aug. 21, 2020).

(b) www.finance.yahoo.com (retrieved Aug. 24, 2020).

(c) www.zacks.com (retrieved Aug. 24, 2020).

DCF COST OF EQUITY ESTIMATES

Company	(a)	(a)	(a)
	Value Line	IBES	Zacks
1 Air Products & Chem.	13.9%	12.2%	10.6%
2 Amdocs Ltd.	11.7%	6.6%	10.7%
3 Amgen	9.2%	9.6%	10.2%
4 Amphenol Corp.	9.9%	3.9%	8.5%
5 Apple Inc.	14.8%	13.3%	11.5%
6 AT&T Inc.	12.5%	7.3%	12.6%
7 Baxter Int'l Inc.	10.2%	11.2%	10.9%
8 Bristol-Myers Squibb	15.5%	21.4%	11.6%
9 Brown & Brown	11.3%	9.7%	n/a
10 Brown-Forman 'B'	12.0%	4.4%	n/a
11 Church & Dwight	9.1%	10.5%	9.9%
12 Cisco Systems	10.1%	9.3%	8.5%
13 Coca-Cola	10.0%	6.5%	8.4%
14 Colgate-Palmolive	7.3%	8.2%	8.2%
15 Comcast Corp.	15.6%	7.1%	11.8%
16 Commerce Bancshs.	6.9%	-6.8%	n/a
17 Costco Wholesale	9.8%	8.0%	9.2%
18 CVS Health	9.1%	9.5%	8.7%
19 Danaher Corp.	15.4%	13.4%	12.0%
20 Gen'l Mills	6.1%	8.0%	10.6%
21 Hormel Foods	10.5%	4.9%	9.5%
22 Intel Corp.	9.5%	11.2%	10.0%
23 Int'l Flavors & Frag.	10.5%	2.9%	n/a
24 Johnson & Johnson	12.7%	7.8%	8.5%
25 Kellogg	6.3%	5.1%	9.3%
26 Kimberly-Clark	9.8%	9.0%	8.3%
27 Lilly (Eli)	11.9%	15.1%	17.5%
28 Lockheed Martin	11.1%	11.7%	9.6%
29 Marsh & McLennan	10.6%	6.5%	7.6%
30 McCormick & Co.	7.8%	6.3%	7.1%
31 McDonald's Corp.	10.5%	6.4%	10.2%
32 Merck & Co.	12.0%	9.3%	9.8%
33 Microsoft Corp.	16.0%	16.0%	14.7%
34 Northrop Grumman	12.3%	10.4%	n/a
35 Oracle Corp.	12.2%	10.8%	12.7%
36 PepsiCo, Inc.	9.0%	8.5%	8.6%
37 Pfizer, Inc.	12.5%	9.4%	8.3%
38 Procter & Gamble	10.9%	10.1%	9.8%
39 Public Storage	n/a	21.1%	7.5%
40 Texas Instruments	5.2%	12.7%	12.0%
41 Travelers Cos.	12.4%	6.0%	9.6%
42 United Parcel Serv.	8.9%	8.8%	10.7%
43 Verizon Communic.	8.3%	5.6%	7.8%
44 Walmart Inc.	9.2%	8.1%	7.3%
45 Waste Management	7.5%	0.7%	8.3%
<b>Average (b)</b>	<b>10.4%</b>	<b>9.5%</b>	<b>9.6%</b>
<b>Midpoint (b,c)</b>	<b>10.4%</b>	<b>9.9%</b>	<b>9.9%</b>

(a) Sum of dividend yield (Exh. AMM-12, p. 1) and respective growth rate (Exh. AMM-

(b) Excludes highlighted figures.

(c) Average of low and high values.

**ELECTRIC & GAS UTILITIES**

No.	Sym	Company	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)	(9)
			Date	Shares Issued	Offering Price	Underwriting Discount (per share)	Underwriting Discount	Offering Expense	Total Flotation Costs	Gross Proceeds Before Flot. Costs	Flotation Cost (%)	
1	ALE	ALLETE	2/27/2014	3,220,000	\$49.75	\$1.74125	\$5,606,825	\$450,000	\$6,056,825	\$160,195,000	3.781%	
2	LNT	Alliant Energy	11/14/2019	3,717,502	\$52.63	\$0.39500	\$1,468,413	\$500,000	\$1,968,413	\$195,652,130	1.006%	
3	AEE	Ameren Corp.	8/5/2019	7,549,205	\$74.30	\$0.12000	\$905,905	\$750,000	\$1,655,905	\$560,905,932	0.295%	
4	AEP	American Elec Pwr	4/2/2009	69,000,000	\$24.50	\$0.73500	\$50,715,000	\$400,000	\$51,115,000	\$1,690,500,000	3.024%	
5	AGR	Avangrid, Inc.					N/A					
6	AVA	Avista Corp.	12/13/2006	3,162,500	\$25.05	\$0.48000	\$1,518,000	\$300,000	\$1,818,000	\$79,220,625	2.295%	
7	BKH	Black Hills Corp.	11/19/2015	6,325,000	\$40.25	\$1.40875	\$8,910,344	\$1,200,000	\$10,110,344	\$254,581,250	3.971%	
8	CNP	CenterPoint Energy	9/27/2018	60,550,459	\$27.25	\$0.75000	\$45,412,844	\$1,000,000	\$46,412,844	\$1,650,000,008	2.813%	
9	CMS	CMS Energy Corp.	3/31/2005	23,000,000	\$12.25	\$0.42880	\$9,862,400	\$325,000	\$10,187,400	\$281,750,000	3.616%	
10	ED	Consolidated Edison (a)	5/7/2019	5,800,000	\$84.83	\$0.59000	\$3,422,000	\$400,000	\$3,822,000	\$492,014,000	0.777%	
11	D	Dominion Energy (a)	3/29/2018	20,000,000	\$67.33	\$1.89420	\$37,884,000	\$450,000	\$38,334,000	\$1,346,516,000	2.847%	
12	DTE	DTE Energy Co.	10/29/2019	2,400,000	\$126.00	\$3.15000	\$7,560,000	\$300,000	\$7,860,000	\$302,400,000	2.599%	
13	DUK	Duke Energy Corp. (a)	11/18/2019	25,000,000	\$85.99	\$2.66000	\$66,500,000	\$592,000	\$67,092,000	\$2,149,750,000	3.121%	
14	EIX	Edison International	7/30/2019	28,000,000	\$68.50	\$1.62688	\$45,552,500	\$725,000	\$46,277,500	\$1,918,000,000	2.413%	
15	EE	El Paso Electric Co.					N/A					
16	ETR	Entergy Corp.	6/8/2018	13,289,037	\$75.25	\$0.80000	\$10,631,230	\$650,000	\$11,281,230	\$1,000,000,034	1.128%	
17	EVRG	Evergy Inc.					N/A					
18	ES	Eversource Energy	5/30/2019	15,600,000	\$71.48	\$1.69000	\$26,364,000	\$615,000	\$26,979,000	\$1,115,088,000	2.419%	
19	EXC	Exelon Corp.	6/13/2014	57,500,000	\$35.00	\$1.05000	\$60,375,000	\$600,000	\$60,975,000	\$2,012,500,000	3.030%	
20	FE	FirstEnergy Corp.	9/15/2003	32,200,000	\$30.00	\$0.97500	\$31,395,000	\$423,000	\$31,818,000	\$966,000,000	3.294%	
21	FTS	Fortis Inc.					N/A					
22	HE	Hawaiian Elec.	3/20/2013	7,000,000	\$26.75	\$1.00312	\$7,021,840	\$450,000	\$7,471,840	\$187,250,000	3.990%	
23	IDA	IDACORP, Inc.	12/10/2004	4,025,000	\$30.00	\$1.20000	\$4,830,000	\$300,000	\$5,130,000	\$120,750,000	4.248%	
24	MGEE	MGE Energy	9/10/2004	1,265,000	\$31.85	\$1.03500	\$1,309,275	\$125,000	\$1,434,275	\$40,290,250	3.560%	
25	NEE	NextEra Energy, Inc. (a)	11/3/2016	13,800,000	\$124.00	\$1.89000	\$26,082,000	\$750,000	\$26,832,000	\$1,711,200,000	1.568%	
26	NWE	NorthWestern Corp. (a)	9/30/2015	1,100,000	\$51.81	\$1.33000	\$1,463,000	\$1,000,000	\$2,463,000	\$56,991,000	4.322%	
27	OGE	OGE Energy Corp.	8/22/2003	5,324,074	\$21.60	\$0.79000	\$4,206,018	\$325,000	\$4,531,018	\$114,999,998	3.940%	
28	OTTR	Otter Tail Corp.					N/A					
29	PNW	Pinnacle West Capital	4/9/2010	6,900,000	\$38.00	\$1.33000	\$9,177,000	\$190,000	\$9,367,000	\$262,200,000	3.572%	
30	PNM	PNM Resources	1/7/2020	5,375,000	\$47.21	\$1.99000	\$10,696,250	\$750,000	\$11,446,250	\$253,753,750	4.511%	
31	POR	Portland General Elec.	6/13/2013	12,765,000	\$29.50	\$0.95875	\$12,238,444	\$600,000	\$12,838,444	\$376,567,500	3.409%	
32	PPL	PPL Corp.	5/10/2018	55,000,000	\$27.00	\$0.29430	\$16,186,500	\$1,000,000	\$17,186,500	\$1,485,000,000	1.157%	
33	PEG	Pub Sv Enterprise Grp.	10/2/2003	9,487,500	\$41.75	\$1.25250	\$11,883,094	\$350,000	\$12,233,094	\$396,103,125	3.088%	
34	SRE	Sempra Energy	1/5/2018	26,869,158	\$107.00	\$1.92600	\$51,749,998	\$1,500,000	\$53,249,998	\$2,874,999,906	1.852%	
35	SO	Southern Company (a)	8/18/2016	32,500,000	\$49.30	\$1.66000	\$53,950,000	\$557,000	\$54,507,000	\$1,602,250,000	3.402%	
36	WEC	WEC Energy Group					N/A					
37	XEL	Xcel Energy Inc. (a)	10/30/2019	10,300,000	\$62.69	\$0.63000	\$6,489,000	\$650,000	\$7,139,000	\$645,707,000	1.106%	
<b>Average</b>											<b>2.779%</b>	
1	ATO	Atmos Energy Corp.	11/30/2018	7,008,087	\$92.75	\$0.97690	\$6,846,200	\$1,000,000	\$7,846,200	\$650,000,069	1.207%	
2	CPK	Chesapeake Utilities	9/23/2016	960,488	\$62.26	\$2.33000	\$2,237,937	\$162,046	\$2,399,983	\$59,799,983	4.013%	
3	NJR	New Jersey Resources	12/4/2019	5,700,000	\$41.25	\$1.23750	\$7,053,750	\$500,000	\$7,553,750	\$235,125,000	3.213%	
4	NI	NiSource Inc.	5/3/2017	N/A	N/A	N/A	\$10,000,000	\$57,950	\$10,057,950	\$500,000,000	2.012%	
5	NWN	Northwest Nat. Holding Co.	6/4/2019	1,250,000	\$67.00	\$2.17750	\$2,721,875	\$400,000	\$3,121,875	\$83,750,000	3.728%	
6	OGS	ONE Gas, Inc.					N/A					
7	SJI	South Jersey Industries	4/20/2018	11,016,949	\$29.50	\$1.03250	\$11,375,000	\$700,000	\$12,075,000	\$324,999,996	3.715%	
8	SWX	Southwest Gas	11/28/2018	3,100,000	\$75.50	\$2.54810	\$7,899,110	\$600,000	\$8,499,110	\$234,050,000	3.631%	
9	SR	Spire Inc.	5/9/2018	2,000,000	\$63.05	\$2.10938	\$4,218,760	\$325,000	\$4,543,760	\$126,100,000	3.603%	
10	UGI	UGI Corporation	3/18/2004	8,625,000	\$32.10	\$1.40440	\$12,112,950	\$1,149,550	\$13,262,500	\$276,862,500	4.790%	
<b>Average</b>											<b>3.324%</b>	
<b>Average - Electric &amp; Gas</b>											<b>2.902%</b>	

Column Notes:

- (1-4) SEC Form 424B for each company.
- (5) Column (2) \* Column (4)
- (6) SEC Form 424B for each company.
- (7) Column (5) + Column (6)
- (8) Column (2) \* Column (3)
- (9) Column (7) / Column (8)

Note (a): Underwriting discount computed as the difference between the current market price and the price offered to the issuing company by the underwriters.

UTILITY GROUP

Company	Type of Adjustment Clause											Future Test Year	Formula Rates / MRP
	Conserv. Program		Decoupling		WNA	Renewables Expense	Environ. Compliance	New Capital		RTO-related Trans. Expense	Other*		
	Fuel/PPA	Expense	Full	Partial				Generation Capacity	Generic Infrastructure				
1 Algonquin Pwr & Util	✓	✓	--	✓	--	--	✓	--	✓	✓	✓	P	✓
2 ALLETE	✓	✓	--	--	--	✓	✓	--	--	✓	--	C	✓
3 Ameren Corp.	✓	✓	--	✓	--	✓	✓	--	✓	✓	✓	O,P	✓
4 AVANGRID, Inc.	D	✓	✓	--	--	✓	--	D	--	✓	✓	C	✓
5 Black Hills Corp.	✓	✓	--	✓	--	✓	✓	✓	✓	✓	--	O	✓
6 CenterPoint Energy	✓	✓	--	✓	--	--	✓	--	✓	✓	✓	--	✓
7 CMS Energy Corp.	✓	✓	--	--	--	✓	--	--	--	✓	--	C	--
8 DTE Energy Co.	✓	✓	--	--	--	✓	--	--	--	✓	✓	C	--
9 Edison International	✓	--	✓	--	--	--	--	--	--	--	--	C	✓
10 Emera Inc.	✓	✓	--	--	--	--	✓	✓	--	--	✓	C	✓
11 Entergy Corp.	✓	✓	--	✓	--	✓	✓	✓	✓	✓	✓	O,P	✓
12 Exelon Corp.	D	✓	✓	✓	✓	✓	✓	D	✓	✓	✓	O,P	✓
13 FirstEnergy Corp.	D	✓	--	✓	--	✓	✓	--	✓	✓	✓	O,P	✓
14 Hawaiian Elec.	✓	✓	✓	--	--	✓	--	✓	✓	✓	✓	C	✓
15 IDACORP, Inc.	✓	✓	✓	--	--	✓	--	--	--	--	--	P,C	--
16 NorthWestern Corp.	✓	✓	--	--	--	✓	--	--	--	--	✓	--	--
17 OGE Energy Corp.	✓	✓	--	✓	--	✓	✓	✓	✓	✓	✓	P	✓
18 Otter Tail Corp.	✓	✓	--	--	--	✓	✓	✓	✓	✓	--	C,O	✓
19 PNM Resources	✓	✓	--	--	--	✓	✓	--	✓	✓	✓	O	--
20 Sempra Energy	✓	✓	✓	--	--	--	--	--	✓	✓	--	C	✓

**Sources:**

Exh. AMM-14, pages 2-4, contain operating company data that are aggregated into the parent company data on this page.

**Notes:**

\* Recover mechanisms for other expenses, such as taxes, franchise fees, bad debts, storm costs, pensions, societal benefits, vegetation management, and decommissioning.

D - Delivery-only utility.

C - Fully-forecasted test years commonly used in the state listed for this operating company.

O - Fully-forecasted test years occasionally used in the state listed for this operating company.

P - Partially-forecasted test years commonly or occasionally used in the state listed for this operating company.





## REGULATORY MECHANISMS

UTILITY GROUP OPERATING COS.

Company	Type of Adjustment Clause (a)											(b)	(c)	
	State	Fuel/PPA	Conserv.	Decoupling		WNA	Renewables Expense	Environ. Compliance	New Capital		RTO-related	Other*	Future Test Year	Formula Rates / MRP
			Program Expense	Full	Partial				Generation Capacity	Generic Infrastructure	Trans. Expense			
<b>18 OGE ENERGY CORP.</b>														
Oklahoma Gas & Electric	AR	✓	✓	--	✓	--	✓	✓	✓	--	✓	✓	P	--
Oklahoma Gas & Electric	OK	✓	✓	--	✓	--	✓	✓	--	✓	✓	✓	--	✓
<b>19 OTTER TAIL CORP.</b>														
Otter Tail Power	MN	✓	✓	--	--	--	✓	✓	--	--	✓	--	C	--
Otter Tail Power	ND	✓	--	--	--	--	--	✓	✓	✓	--	✓	O	✓
Otter Tail Power Corp.	SD	✓	✓	--	--	--	✓	✓	✓	✓	--	--	--	--
<b>20 PNM RESOURCES</b>														
Public Service Co. of New Mexico	NM	✓	✓	--	--	--	✓	✓	--	✓	--	✓	O	--
Texas-New Mexico Power	TX	D	✓	--	--	--	--	--	--	✓	✓	✓	--	✓
<b>21 SEMPRA ENERGY</b>														
San Diego Gas & Electric	CA	✓	--	✓	--	--	--	--	--	--	--	✓	C	✓
Oncor Electric Delivery	TX	D	✓	--	--	--	--	--	--	✓	✓	--	--	✓

**Sources:**

(a) S&P Global Market Intelligence, *Adjustment Clauses*, RRA Regulatory Focus (Nov. 12, 2019).

(b) Edison Electric Institute, *Alternative Regulation for Emerging Utility Challenges: 2015 Update* (Nov. 11, 2015).

(c) Formula rates and Multiyear Rate plans approved in the state listed for this operating company. See, (b); U.S. Department of Energy, *State Performance-Based Regulation Using Multiyear Rate Plans for U.S. Electric Utilities*, GRID Modernization Laboratory Consortium (Jul. 2017); The Brattle Group, *Exploring the Use of Alternative Regulatory Mechanisms to Establish New Base Rates*, Joint Utilities of Maryland (Mar. 29, 2018).

**Notes:**

\* Recover mechanisms for other expenses, such as taxes, franchise fees, bad debts, storm costs, pensions, societal benefits, vegetation management, and decommissioning.

D - Delivery-only utility.

C - Fully-forecasted test years commonly used in the state listed for this operating company.

O - Fully-forecasted test years occasionally used in the state listed for this operating company.

P - Partially-forecasted test years commonly or occasionally used in the state listed for this operating company.

LIR - Limited issue reopeners.

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
	<u>AON</u>	<u>ALE</u>	<u>AEI</u>	<u>AGR</u>	<u>AVA</u>	<u>BKH</u>	<u>CNP</u>	<u>CMS</u>	<u>DTE</u>	<u>EIX</u>	<u>EMA</u>	<u>ETR</u>	<u>EXC</u>	<u>FE</u>	<u>HE</u>	<u>IDA</u>	<u>NWE</u>	<u>OGE</u>	<u>OTTR</u>	<u>PNM</u>	<u>SRE</u>	
1	10/2/20	\$ 14.76	\$ 53.12	\$ 79.81	\$ 52.38	\$ 34.61	\$ 55.34	\$ 19.93	\$ 61.66	\$ 114.16	\$ 51.50	\$ 55.25	\$ 103.65	\$ 35.94	\$ 29.32	\$ 62.50	\$ 82.97	\$ 50.03	\$ 31.06	\$ 37.05	\$ 42.86	\$ 120.50
2	10/1/20	\$ 14.66	\$ 52.10	\$ 79.86	\$ 51.21	\$ 34.41	\$ 53.95	\$ 19.40	\$ 61.68	\$ 113.44	\$ 50.44	\$ 55.05	\$ 101.28	\$ 35.83	\$ 28.76	\$ 62.85	\$ 81.86	\$ 49.01	\$ 30.20	\$ 36.55	\$ 41.90	\$ 119.13
3	9/30/20	\$ 14.54	\$ 51.74	\$ 79.08	\$ 50.46	\$ 34.12	\$ 53.49	\$ 19.35	\$ 61.41	\$ 115.04	\$ 50.84	\$ 54.70	\$ 98.53	\$ 35.76	\$ 28.71	\$ 63.10	\$ 79.90	\$ 48.64	\$ 29.99	\$ 36.17	\$ 41.33	\$ 118.36
4	9/29/20	\$ 14.29	\$ 51.48	\$ 79.02	\$ 49.26	\$ 33.72	\$ 53.11	\$ 19.00	\$ 61.11	\$ 114.40	\$ 51.02	\$ 55.17	\$ 95.78	\$ 35.32	\$ 28.60	\$ 61.98	\$ 80.10	\$ 48.41	\$ 29.67	\$ 36.04	\$ 41.04	\$ 116.18
5	9/28/20	\$ 14.36	\$ 52.00	\$ 78.42	\$ 49.35	\$ 34.12	\$ 53.92	\$ 19.02	\$ 61.40	\$ 114.81	\$ 51.89	\$ 55.25	\$ 96.68	\$ 35.74	\$ 28.45	\$ 64.03	\$ 81.23	\$ 49.15	\$ 29.66	\$ 36.54	\$ 41.45	\$ 116.71
6	9/25/20	\$ 14.20	\$ 51.53	\$ 78.21	\$ 49.15	\$ 33.90	\$ 53.31	\$ 18.99	\$ 61.34	\$ 114.72	\$ 51.65	\$ 54.49	\$ 96.98	\$ 35.52	\$ 28.60	\$ 64.43	\$ 80.55	\$ 48.69	\$ 29.31	\$ 36.14	\$ 40.97	\$ 117.61
7	9/24/20	\$ 13.99	\$ 50.94	\$ 76.70	\$ 48.88	\$ 33.41	\$ 52.82	\$ 18.90	\$ 59.58	\$ 112.99	\$ 50.84	\$ 54.17	\$ 95.78	\$ 34.81	\$ 28.16	\$ 63.28	\$ 79.51	\$ 48.38	\$ 29.09	\$ 36.09	\$ 40.19	\$ 115.74
8	9/23/20	\$ 13.95	\$ 50.93	\$ 75.61	\$ 48.95	\$ 33.36	\$ 52.42	\$ 18.86	\$ 59.57	\$ 111.90	\$ 49.30	\$ 53.94	\$ 95.17	\$ 34.48	\$ 27.58	\$ 64.35	\$ 79.57	\$ 48.01	\$ 29.06	\$ 35.80	\$ 39.45	\$ 114.50
9	9/22/20	\$ 14.28	\$ 52.30	\$ 77.06	\$ 49.47	\$ 34.60	\$ 53.34	\$ 18.91	\$ 60.69	\$ 112.01	\$ 50.42	\$ 54.27	\$ 97.28	\$ 35.21	\$ 28.57	\$ 64.10	\$ 81.33	\$ 49.09	\$ 28.96	\$ 36.76	\$ 40.68	\$ 119.05
10	9/21/20	\$ 13.99	\$ 51.75	\$ 76.62	\$ 48.14	\$ 34.33	\$ 54.00	\$ 18.90	\$ 59.99	\$ 111.30	\$ 49.70	\$ 53.88	\$ 94.83	\$ 34.75	\$ 28.63	\$ 61.55	\$ 80.37	\$ 48.92	\$ 28.69	\$ 36.28	\$ 39.91	\$ 116.66
11	9/18/20	\$ 14.05	\$ 53.41	\$ 76.86	\$ 49.25	\$ 34.68	\$ 54.32	\$ 18.93	\$ 61.10	\$ 112.03	\$ 51.42	\$ 54.06	\$ 95.43	\$ 35.07	\$ 28.96	\$ 63.53	\$ 81.98	\$ 48.69	\$ 28.85	\$ 36.34	\$ 40.04	\$ 119.98
12	9/17/20	\$ 14.20	\$ 53.22	\$ 77.62	\$ 49.43	\$ 34.57	\$ 55.36	\$ 19.29	\$ 61.34	\$ 116.86	\$ 52.63	\$ 54.04	\$ 97.63	\$ 35.93	\$ 29.80	\$ 63.63	\$ 83.50	\$ 49.97	\$ 29.38	\$ 36.91	\$ 40.09	\$ 121.03
13	9/16/20	\$ 14.14	\$ 52.55	\$ 77.94	\$ 50.08	\$ 35.25	\$ 54.95	\$ 19.74	\$ 61.94	\$ 119.04	\$ 52.54	\$ 53.99	\$ 96.84	\$ 36.26	\$ 29.76	\$ 61.98	\$ 82.97	\$ 50.38	\$ 29.73	\$ 37.04	\$ 40.85	\$ 120.84
14	9/15/20	\$ 14.23	\$ 51.58	\$ 77.50	\$ 49.91	\$ 34.58	\$ 54.45	\$ 19.01	\$ 61.11	\$ 118.56	\$ 51.51	\$ 54.65	\$ 96.54	\$ 36.17	\$ 29.35	\$ 63.05	\$ 82.14	\$ 50.05	\$ 29.48	\$ 36.74	\$ 41.00	\$ 117.63
15	9/14/20	\$ 14.05	\$ 51.58	\$ 76.98	\$ 48.74	\$ 34.22	\$ 54.49	\$ 19.54	\$ 61.42	\$ 120.38	\$ 51.65	\$ 54.05	\$ 96.72	\$ 36.26	\$ 29.66	\$ 63.58	\$ 83.51	\$ 50.04	\$ 30.23	\$ 37.15	\$ 40.69	\$ 119.15
16	9/11/20	\$ 13.92	\$ 50.75	\$ 76.60	\$ 47.94	\$ 34.44	\$ 53.22	\$ 19.45	\$ 60.91	\$ 118.44	\$ 50.63	\$ 53.80	\$ 95.45	\$ 35.83	\$ 29.33	\$ 66.00	\$ 82.91	\$ 50.23	\$ 30.16	\$ 36.77	\$ 40.84	\$ 117.80
17	9/10/20	\$ 13.79	\$ 50.36	\$ 76.46	\$ 48.12	\$ 35.50	\$ 53.33	\$ 19.45	\$ 60.80	\$ 117.92	\$ 50.50	\$ 54.16	\$ 95.85	\$ 35.84	\$ 29.05	\$ 64.38	\$ 83.94	\$ 50.98	\$ 30.37	\$ 37.08	\$ 40.89	\$ 118.12
18	9/9/20	\$ 14.03	\$ 52.10	\$ 78.38	\$ 49.05	\$ 36.17	\$ 54.85	\$ 19.53	\$ 61.69	\$ 119.71	\$ 51.54	\$ 54.92	\$ 98.37	\$ 36.67	\$ 29.14	\$ 61.38	\$ 85.93	\$ 51.52	\$ 31.08	\$ 37.89	\$ 42.16	\$ 120.95
19	9/8/20	\$ 13.74	\$ 53.10	\$ 77.40	\$ 48.45	\$ 36.31	\$ 54.60	\$ 19.37	\$ 60.50	\$ 118.08	\$ 51.37	\$ 54.21	\$ 97.95	\$ 36.42	\$ 29.13	\$ 59.90	\$ 86.07	\$ 50.85	\$ 30.85	\$ 37.89	\$ 41.76	\$ 119.09
20	9/4/20	\$ 13.72	\$ 53.78	\$ 78.96	\$ 48.67	\$ 37.10	\$ 55.98	\$ 19.87	\$ 61.66	\$ 118.81	\$ 52.26	\$ 53.12	\$ 97.90	\$ 37.09	\$ 29.40	\$ 59.83	\$ 88.02	\$ 51.83	\$ 31.54	\$ 38.19	\$ 43.01	\$ 120.89
21	9/3/20	\$ 13.81	\$ 54.13	\$ 79.10	\$ 48.40	\$ 37.11	\$ 56.02	\$ 20.15	\$ 61.91	\$ 119.12	\$ 52.96	\$ 53.49	\$ 98.00	\$ 37.29	\$ 29.39	\$ 59.25	\$ 89.08	\$ 52.46	\$ 31.81	\$ 38.44	\$ 43.38	\$ 122.72
22	9/2/20	\$ 14.19	\$ 54.45	\$ 80.23	\$ 48.44	\$ 37.01	\$ 56.15	\$ 20.45	\$ 61.76	\$ 120.46	\$ 52.57	\$ 53.86	\$ 100.48	\$ 38.03	\$ 29.14	\$ 56.40	\$ 90.21	\$ 52.27	\$ 32.33	\$ 38.79	\$ 43.98	\$ 124.55
23	9/1/20	\$ 13.93	\$ 53.27	\$ 78.48	\$ 47.52	\$ 36.52	\$ 55.13	\$ 20.00	\$ 60.22	\$ 117.79	\$ 51.81	\$ 52.86	\$ 97.69	\$ 36.33	\$ 28.26	\$ 55.03	\$ 88.33	\$ 51.50	\$ 31.39	\$ 38.04	\$ 43.11	\$ 122.25
24	8/31/20	\$ 13.83	\$ 53.96	\$ 79.11	\$ 48.04	\$ 36.86	\$ 56.08	\$ 20.07	\$ 60.49	\$ 118.67	\$ 52.48	\$ 53.25	\$ 99.14	\$ 36.91	\$ 28.59	\$ 53.60	\$ 89.90	\$ 51.64	\$ 31.86	\$ 38.85	\$ 43.68	\$ 123.65
25	8/28/20	\$ 13.74	\$ 54.05	\$ 78.66	\$ 48.57	\$ 37.05	\$ 56.59	\$ 19.95	\$ 60.05	\$ 117.86	\$ 52.17	\$ 53.31	\$ 98.96	\$ 37.04	\$ 28.31	\$ 53.65	\$ 88.54	\$ 52.22	\$ 31.79	\$ 39.09	\$ 43.73	\$ 122.32
26	8/27/20	\$ 13.84	\$ 53.79	\$ 78.93	\$ 48.81	\$ 36.75	\$ 55.21	\$ 19.76	\$ 59.72	\$ 117.02	\$ 51.75	\$ 53.46	\$ 97.26	\$ 36.89	\$ 28.10	\$ 55.73	\$ 88.80	\$ 52.19	\$ 31.54	\$ 39.08	\$ 43.47	\$ 123.59
27	8/26/20	\$ 13.81	\$ 53.02	\$ 78.44	\$ 48.74	\$ 36.66	\$ 54.28	\$ 19.64	\$ 59.40	\$ 115.74	\$ 51.09	\$ 53.75	\$ 96.25	\$ 37.28	\$ 28.01	\$ 55.55	\$ 88.45	\$ 51.61	\$ 31.27	\$ 38.66	\$ 43.17	\$ 122.34
28	8/25/20	\$ 13.88	\$ 54.71	\$ 79.60	\$ 49.48	\$ 37.06	\$ 55.98	\$ 20.01	\$ 60.21	\$ 117.00	\$ 52.00	\$ 53.86	\$ 97.82	\$ 37.13	\$ 27.94	\$ 55.95	\$ 89.46	\$ 53.62	\$ 32.17	\$ 39.35	\$ 44.14	\$ 125.51
29	8/24/20	\$ 13.97	\$ 55.03	\$ 81.25	\$ 49.90	\$ 36.29	\$ 57.50	\$ 20.22	\$ 60.84	\$ 117.97	\$ 52.34	\$ 54.27	\$ 98.64	\$ 37.69	\$ 28.31	\$ 54.60	\$ 89.96	\$ 54.40	\$ 32.50	\$ 39.74	\$ 44.86	\$ 127.37
30	8/21/20	\$ 13.98	\$ 54.28	\$ 80.72	\$ 49.47	\$ 35.65	\$ 56.68	\$ 19.79	\$ 60.39	\$ 115.83	\$ 51.26	\$ 54.04	\$ 98.13	\$ 36.52	\$ 28.11	\$ 54.25	\$ 88.14	\$ 53.44	\$ 31.98	\$ 39.32	\$ 43.85	\$ 125.48
Average		\$ 14.06	\$ 52.70	\$ 78.32	\$ 49.14	\$ 35.35	\$ 54.70	\$ 19.52	\$ 60.86	\$ 116.40	\$ 51.47	\$ 54.11	\$ 97.57	\$ 36.20	\$ 28.78	\$ 60.45	\$ 84.64	\$ 50.61	\$ 30.53	\$ 37.49	\$ 41.95	\$ 120.32

(a) Average of closing prices for 30 trading days ended Oct. 2, 2020.

		1	2	3	4	5	6	7	8
	<u>Date</u>	<u>APD</u>	<u>DOX</u>	<u>AMGN</u>	<u>APH</u>	<u>AAPL</u>	<u>T</u>	<u>BAX</u>	<u>BMJ</u>
1	8/21/20	\$286.44	\$59.66	\$237.64	\$108.24	\$497.48	\$29.69	\$83.09	\$ 62.19
2	8/20/20	\$286.07	\$59.99	\$238.73	\$107.30	\$473.10	\$29.67	\$82.89	\$ 62.22
3	8/19/20	\$286.95	\$60.65	\$240.49	\$109.14	\$462.83	\$29.73	\$82.89	\$ 63.09
4	8/18/20	\$286.35	\$60.99	\$241.50	\$109.15	\$462.25	\$29.79	\$84.27	\$ 63.03
5	8/17/20	\$289.56	\$61.52	\$243.01	\$109.89	\$458.43	\$29.85	\$83.70	\$ 63.62
6	8/14/20	\$289.82	\$61.80	\$239.71	\$109.78	\$459.63	\$30.01	\$83.50	\$ 63.16
7	8/13/20	\$288.31	\$61.01	\$240.46	\$110.57	\$460.04	\$29.91	\$84.64	\$ 63.24
8	8/12/20	\$285.40	\$61.12	\$241.72	\$109.79	\$452.04	\$30.18	\$83.48	\$ 63.64
9	8/11/20	\$281.60	\$61.29	\$234.65	\$108.81	\$437.50	\$30.20	\$82.94	\$ 63.13
10	8/10/20	\$281.24	\$62.45	\$238.17	\$108.12	\$450.91	\$30.20	\$83.10	\$ 61.82
11	8/7/20	\$281.69	\$61.89	\$240.69	\$107.96	\$444.45	\$30.02	\$80.73	\$ 61.02
12	8/6/20	\$282.99	\$61.88	\$241.55	\$108.35	\$455.61	\$29.84	\$80.37	\$ 61.33
13	8/5/20	\$284.62	\$61.91	\$241.47	\$108.65	\$440.25	\$29.85	\$80.46	\$ 59.69
14	8/4/20	\$279.58	\$62.05	\$243.59	\$108.42	\$438.66	\$30.01	\$81.08	\$ 59.47
15	8/3/20	\$278.41	\$62.58	\$247.36	\$107.39	\$435.75	\$29.62	\$83.16	\$ 59.10
16	7/31/20	\$286.63	\$62.10	\$244.67	\$105.76	\$425.04	\$29.58	\$86.38	\$ 58.66
17	7/30/20	\$284.81	\$60.87	\$246.14	\$105.17	\$384.76	\$29.57	\$86.01	\$ 58.87
18	7/29/20	\$288.85	\$61.25	\$248.85	\$105.83	\$380.16	\$29.56	\$90.73	\$ 59.15
19	7/28/20	\$289.27	\$60.02	\$255.27	\$104.21	\$373.01	\$29.69	\$89.26	\$ 59.43
20	7/27/20	\$294.71	\$61.26	\$253.65	\$106.17	\$379.24	\$29.29	\$89.29	\$ 58.05
21	7/24/20	\$291.52	\$60.52	\$247.98	\$104.39	\$370.46	\$29.57	\$89.26	\$ 57.85
22	7/23/20	\$293.25	\$60.61	\$252.24	\$106	\$371.38	\$29.90	\$89.49	\$ 59.87
23	7/22/20	\$295.51	\$59.89	\$256.98	\$103.27	\$389.09	\$30.16	\$89.20	\$ 59.85
24	7/21/20	\$290.39	\$59.14	\$257.91	\$102.10	\$388.00	\$30.25	\$88.67	\$ 59.80
25	7/20/20	\$290.87	\$59.99	\$260.95	\$101.48	\$393.43	\$29.85	\$87.82	\$ 59.46
26	7/17/20	\$294.00	\$59.57	\$258.46	\$102.02	\$385.31	\$30.25	\$87.56	\$ 60.39
27	7/16/20	\$287.19	\$59.23	\$255.20	\$100.91	\$386.09	\$30.39	\$85.81	\$ 59.32
28	7/15/20	\$281.97	\$59.10	\$253.31	\$100.44	\$390.90	\$30.01	\$87.09	\$ 59.27
29	7/14/20	\$280.99	\$58.85	\$253.09	\$97.40	\$388.23	\$29.96	\$84.65	\$ 57.89
30	7/13/20	\$274.35	\$58.67	\$250.04	\$94.46	\$381.91	\$29.76	\$83.46	\$ 57.75
	Average	\$286.44	\$60.73	\$246.85	\$105.69	\$420.53	\$29.88	\$85.17	\$60.51

(a) Average of closing prices for 30 trading days ended Aug. 21, 2020.

9	10	11	12	13	14	15	16	17
<u>BRO</u>	<u>BF/B</u>	<u>CHD</u>	<u>CSCO</u>	<u>KO</u>	<u>CL</u>	<u>CMCSA</u>	<u>CBSH</u>	<u>COST</u>
\$45.52	\$72.08	\$96.50	\$42.25	\$47.28	\$78.69	\$43.07	\$58.49	\$344.61
\$45.79	\$72.30	\$96.54	\$42.31	\$47.35	\$78.25	\$43.27	\$58.79	\$340.87
\$45.96	\$72.73	\$96.29	\$41.87	\$47.37	\$77.95	\$43.32	\$60	\$340.90
\$46.09	\$72.48	\$96.46	\$41.98	\$48.42	\$77.65	\$43.54	\$59.52	\$340.75
\$46.00	\$72.04	\$95.79	\$42.09	\$48.21	\$77.21	\$43.53	\$60.79	\$339.96
\$45.82	\$71.13	\$94.26	\$42.50	\$48.45	\$77.05	\$43.77	\$60.97	\$336.28
\$45.82	\$71.48	\$94.75	\$42.72	\$48.38	\$76.98	\$43.39	\$60.65	\$335.70
\$45.80	\$71	\$94.83	\$48.10	\$48.43	\$77.24	\$43.34	\$61.11	\$336.76
\$45.66	\$69.61	\$92.71	\$47.19	\$47.93	\$75.96	\$42.99	\$61.05	\$332.43
\$45.93	\$69.40	\$94.78	\$47.73	\$47.72	\$76.65	\$43.02	\$60.01	\$340.00
\$46.06	\$68.72	\$94.96	\$47.43	\$47.80	\$76.24	\$42.81	\$59.94	\$340.91
\$45.62	\$67.63	\$95.12	\$47.77	\$47.48	\$75.86	\$42.87	\$58.41	\$343.31
\$45.63	\$67.53	\$95.83	\$47.33	\$47.22	\$76.18	\$42.29	\$58.86	\$339.97
\$45.46	\$68.38	\$96.05	\$47.67	\$46.69	\$76.77	\$43.21	\$57.45	\$339.79
\$45.53	\$69.06	\$93.41	\$47.16	\$46.30	\$76.57	\$42.88	\$57.51	\$329.32
\$45.47	\$69.34	\$96.33	\$47.10	\$47.24	\$77.20	\$42.80	\$57.26	\$325.53
\$44.76	\$69.21	\$90.06	\$46.44	\$47.69	\$76.87	\$43.67	\$57.33	\$324.82
\$44.96	\$69.21	\$89.31	\$46.71	\$48.02	\$76.20	\$43.90	\$58.12	\$326.14
\$44.48	\$68.31	\$88.21	\$46.28	\$48.18	\$75.71	\$43.21	\$56.70	\$327.57
\$45.49	\$68.90	\$87.17	\$47.19	\$48.48	\$74.65	\$43.56	\$56.89	\$327.60
\$45.40	\$68.00	\$85.87	\$46.40	\$48.49	\$74.32	\$43.35	\$58.36	\$325.78
\$45.11	\$68.46	\$86.22	\$47.41	\$48.28	\$74.23	\$42.49	\$58.85	\$326.11
\$44.96	\$67.54	\$85.14	\$46.90	\$48.48	\$74.14	\$42.57	\$57.23	\$328.30
\$44.29	\$67.11	\$84.50	\$47.02	\$47.20	\$74.04	\$42.57	\$58.36	\$327.74
\$43.76	\$66.22	\$84.29	\$46.97	\$46.12	\$74.20	\$41.95	\$55.99	\$326.51
\$43.70	\$67.45	\$84.87	\$46.75	\$46.82	\$75.20	\$42.18	\$56.46	\$324.79
\$43.43	\$66.72	\$84.20	\$45.78	\$46.15	\$74.98	\$42.14	\$57.84	\$326.27
\$42.31	\$66.26	\$84.60	\$46.40	\$46.40	\$74.69	\$41.96	\$57.17	\$326.70
\$41.95	\$66.22	\$84.48	\$46.26	\$45.87	\$74.85	\$41.18	\$55.46	\$328.00
\$40.95	\$64.68	\$82.13	\$45.93	\$45.25	\$73.46	\$40.54	\$56.11	\$322.92
\$44.92	\$68.98	\$90.86	\$45.85	\$47.46	\$76.00	\$42.85	\$58.38	\$332.54

18	19	20	21	22	23	24	25	26	27
<u>CVS</u>	<u>DHR</u>	<u>GIS</u>	<u>HRL</u>	<u>INTC</u>	<u>IFF</u>	<u>JNJ</u>	<u>K</u>	<u>KMB</u>	<u>LLY</u>
\$63.94	\$207.80	\$64.02	\$52.68	\$49.28	\$120.55	\$152.76	\$69	\$157.30	\$149.26
\$63.72	\$205.66	\$64.21	\$52.55	\$49.17	\$120.69	\$151.42	\$68.74	\$157.57	\$151.34
\$65.28	\$205.93	\$64.46	\$52.43	\$48.33	\$121.98	\$150.39	\$68.85	\$157.35	\$152.29
\$65.18	\$207.68	\$64.63	\$52.71	\$48.65	\$122.62	\$150.09	\$70.11	\$157.62	\$153.11
\$64.90	\$205.57	\$64.28	\$52.42	\$48.93	\$123.29	\$148.99	\$69.68	\$157.81	\$151.53
\$65.67	\$204.86	\$63.27	\$52.23	\$48.89	\$123	\$148.24	\$69.10	\$158.23	\$150.09
\$64.70	\$207.19	\$62.97	\$52.12	\$48.56	\$123.81	\$148.00	\$69.02	\$158.46	\$150.46
\$64.99	\$205.92	\$63.06	\$52.03	\$49.19	\$127.00	\$149.66	\$69.28	\$158.84	\$152.55
\$65.26	\$200.01	\$62	\$51.41	\$48.19	\$125.29	\$146.97	\$68.13	\$155.79	\$150.63
\$65.71	\$202.05	\$63.75	\$52	\$49.22	\$130.55	\$148.03	\$69.02	\$158.09	\$153.00
\$64.96	\$205.40	\$64.35	\$51.62	\$48.03	\$126.80	\$148.60	\$69.52	\$157.26	\$152.93
\$64.12	\$205.69	\$64.18	\$51.18	\$48.57	\$125.38	\$147.55	\$69.23	\$156.47	\$152.88
\$64.40	\$205.54	\$64.42	\$50.86	\$48.92	\$126.42	\$148.40	\$69.26	\$155.84	\$154.34
\$64.98	\$206.07	\$65.74	\$51.13	\$49.13	\$125.89	\$147.22	\$69.71	\$156.30	\$154.85
\$63.86	\$206.83	\$64.60	\$50.80	\$48.30	\$124.54	\$147.35	\$69.35	\$151.60	\$152.84
\$62.94	\$203.80	\$63.27	\$50.86	\$47.73	\$125.95	\$145.76	\$68.99	\$152.04	\$150.29
\$64.00	\$202.14	\$63.48	\$50.75	\$47.99	\$124.49	\$146.84	\$70.59	\$151.96	\$153.00
\$64.22	\$202.13	\$64.37	\$50.84	\$48.07	\$128.24	\$146.54	\$70.94	\$152.04	\$161.75
\$63.27	\$199.01	\$64.54	\$50.56	\$49.24	\$128.34	\$146.83	\$70.91	\$150.78	\$162.65
\$62.57	\$198.98	\$64.08	\$50.55	\$49.57	\$128.79	\$147.18	\$69.97	\$147.38	\$160.50
\$63.34	\$195.27	\$64.23	\$50.27	\$50.59	\$126.82	\$148.12	\$68.68	\$147.34	\$159.54
\$63.79	\$199.22	\$64.99	\$50.55	\$60.40	\$128.49	\$149.61	\$68.41	\$147.33	\$161.52
\$63.78	\$195.61	\$64.72	\$49.78	\$61.05	\$128.55	\$150.01	\$67.46	\$144.30	\$164.84
\$64.52	\$195.00	\$64.50	\$49.75	\$60.70	\$127.94	\$149.74	\$67.67	\$143.80	\$165.30
\$63.91	\$193.37	\$63.64	\$49.70	\$61.15	\$128.72	\$149.60	\$67.42	\$142.69	\$167.04
\$65.36	\$190.95	\$64.64	\$49.92	\$60.00	\$130.99	\$149.35	\$68.63	\$144.37	\$165.96
\$64.99	\$188.81	\$64.69	\$49.53	\$59.14	\$129.61	\$149.25	\$68.24	\$143.68	\$165.00
\$64.58	\$188.34	\$64.60	\$48.82	\$59.03	\$129.72	\$148.26	\$68.09	\$143.28	\$165.45
\$63.70	\$185.45	\$65.17	\$49.09	\$58.98	\$127.01	\$147.92	\$68.40	\$143.96	\$163.88
\$62.62	\$182.41	\$63.56	\$48.06	\$58.58	\$124.52	\$145.21	\$66.95	\$142.14	\$162.08
\$64.31	\$200.09	\$64.15	\$50.91	\$52.12	\$126.21	\$148.46	\$68.97	\$151.72	\$157.03

28	29	30	31	32	33	34	35	36	37
<u>LMT</u>	<u>MMC</u>	<u>MKC</u>	<u>MCD</u>	<u>MRK</u>	<u>MSFT</u>	<u>NOC</u>	<u>ORCL</u>	<u>PEP</u>	<u>PFE</u>
\$389.57	\$113.47	\$203.15	\$211.57	\$84.98	\$213.02	\$337.86	\$55.19	\$136.46	\$38.88
\$387.88	\$116.05	\$202.89	\$209.88	\$85.03	\$214.58	\$336.67	\$55.26	\$136.72	\$38.72
\$390.05	\$116.10	\$202.52	\$210	\$85.03	\$209.70	\$337.91	\$56.20	\$136.45	\$38.26
\$390.26	\$116.93	\$202.49	\$210.32	\$84.56	\$211.49	\$337.60	\$55.18	\$138.11	\$38.36
\$388.96	\$116.51	\$202.30	\$208.67	\$84.76	\$210.28	\$339.76	\$53.99	\$137.92	\$38.35
\$391.42	\$116.61	\$201.55	\$207.03	\$83.48	\$208.90	\$342.06	\$54.20	\$137.56	\$38.06
\$389.24	\$117.15	\$202.04	\$206.49	\$83.54	\$208.70	\$338.62	\$54.02	\$138.10	\$38.17
\$392.44	\$116.65	\$201.66	\$206.02	\$82.68	\$209.19	\$339.40	\$54.17	\$137.80	\$38.33
\$391.96	\$116.98	\$197.77	\$205.00	\$80.91	\$203	\$341.85	\$54.27	\$135.12	\$37.79
\$389.26	\$116.41	\$201.82	\$204.12	\$80.91	\$208.25	\$335.73	\$54.94	\$135.98	\$38.39
\$385.62	\$117.74	\$201.55	\$204.60	\$81.02	\$212.48	\$329.27	\$55.23	\$136.74	\$38.45
\$379.74	\$118.77	\$199.05	\$203.18	\$81.05	\$216.35	\$326.34	\$55.28	\$135.86	\$38.27
\$383.50	\$118.43	\$197.25	\$199.26	\$81.64	\$212.94	\$329.71	\$55.50	\$136.25	\$38.45
\$377.99	\$117.39	\$198.26	\$199.36	\$81.67	\$213.29	\$325.01	\$56.00	\$137.47	\$38.39
\$377.10	\$115.82	\$196.29	\$194.40	\$82.54	\$216.54	\$323.59	\$55.98	\$136.70	\$38.35
\$378.97	\$116.60	\$194.90	\$194.28	\$80.24	\$205.01	\$325.01	\$55.45	\$137.66	\$38.48
\$381.72	\$116.71	\$193.84	\$195.41	\$78.99	\$203.90	\$326.01	\$55.25	\$137.69	\$38.74
\$387.30	\$115.58	\$194.34	\$196.21	\$79.35	\$204.06	\$315.26	\$55.70	\$137.93	\$39.26
\$386.66	\$114.21	\$192.99	\$196.24	\$79.69	\$202.02	\$312.87	\$55.35	\$137.38	\$39.02
\$382.09	\$114.61	\$196.02	\$201.25	\$78.93	\$203.85	\$308.02	\$55.34	\$137.67	\$37.54
\$386.21	\$114.62	\$193.52	\$198.72	\$77.10	\$201.30	\$312.69	\$55.65	\$136.06	\$38
\$387.62	\$115.28	\$195.89	\$197.55	\$78.06	\$202.54	\$313.06	\$55.76	\$137.08	\$38.41
\$394.08	\$115.51	\$193.82	\$198.62	\$78.78	\$211.75	\$316.00	\$56.01	\$136.01	\$38.56
\$375.12	\$114.40	\$193.58	\$192.98	\$78.89	\$208.75	\$308.19	\$55.91	\$134.43	\$36.69
\$365.53	\$113.48	\$191.56	\$191.61	\$79.41	\$211.60	\$301.49	\$55.40	\$133.11	\$36.50
\$368.50	\$113.69	\$190.89	\$191.48	\$79.87	\$202.88	\$306.84	\$54.90	\$134.66	\$36.25
\$365.88	\$111.83	\$189.72	\$190.92	\$79.40	\$203.92	\$303.65	\$55.82	\$133.88	\$35.60
\$364.56	\$111.58	\$189.20	\$191.77	\$79.44	\$208.04	\$300.76	\$56.62	\$133.69	\$35.72
\$355.66	\$110.24	\$189.42	\$190.72	\$78.25	\$208.35	\$295.55	\$57.20	\$135.52	\$35.23
\$353.06	\$108.76	\$182.91	\$184.92	\$77.35	\$207.07	\$292.35	\$57.01	\$134.91	\$35.21
\$381.27	\$115.27	\$196.44	\$199.74	\$80.92	\$208.47	\$321.97	\$55.43	\$136.36	\$37.80

38	39	40	41	42	43	44	45
<u>PG</u>	<u>PSA</u>	<u>TXN</u>	<u>TRV</u>	<u>UPS</u>	<u>VZ</u>	<u>WMT</u>	<u>WM</u>
\$137.44	\$206.55	\$140.33	\$111.83	\$159.03	\$58.99	\$131.63	\$111.16
\$136.85	\$203.26	\$138.57	\$112.53	\$159.55	\$58.96	\$130.57	\$110.15
\$135.77	\$197.43	\$138.48	\$113.20	\$160.34	\$59.05	\$132.41	\$110.56
\$136.51	\$200.94	\$139.31	\$114.93	\$159.99	\$59.18	\$134.71	\$111.01
\$135.50	\$200.02	\$138.28	\$115.91	\$160.30	\$58.78	\$135.60	\$110.87
\$135.10	\$200.24	\$137.35	\$118.60	\$160.74	\$58.79	\$132.60	\$111.47
\$135.78	\$197.30	\$137.15	\$119.27	\$159.29	\$58.52	\$131.85	\$111.34
\$135.46	\$198.38	\$138.64	\$118.86	\$157.79	\$58.60	\$131.89	\$112.25
\$133.23	\$198.99	\$136.04	\$119.92	\$155.85	\$58.51	\$130.20	\$111.59
\$134.10	\$202.49	\$135.41	\$119.12	\$159.59	\$58.99	\$131.88	\$111.61
\$133.55	\$199.25	\$133.56	\$117.36	\$156.90	\$58.53	\$129.97	\$112.72
\$132.71	\$196.08	\$133.74	\$113.74	\$145.47	\$57.83	\$129.35	\$110.37
\$133.44	\$196.97	\$132.70	\$115.08	\$145.08	\$57.54	\$129.81	\$109.18
\$133.79	\$201.38	\$132.23	\$113.10	\$144.72	\$57.91	\$131.64	\$108.82
\$131.29	\$195.84	\$129.32	\$114.40	\$142.18	\$57.24	\$129.30	\$108.98
\$131.12	\$199.88	\$127.55	\$114.42	\$142.76	\$57.48	\$129.40	\$109.60
\$131.42	\$197.71	\$128.89	\$115.93	\$141.46	\$57.30	\$130.12	\$109.38
\$128.31	\$196.84	\$131.64	\$116.85	\$123.68	\$57.45	\$130.69	\$109.65
\$127.88	\$193.87	\$130.13	\$115.03	\$119.62	\$57.48	\$131.76	\$107.52
\$126.32	\$185.57	\$132.12	\$116.63	\$121.01	\$56.87	\$131.21	\$107.07
\$125.96	\$185.36	\$129.63	\$118.28	\$118.35	\$56.85	\$131.24	\$107.28
\$126.16	\$187.02	\$129.04	\$118.61	\$118.14	\$55.85	\$131.64	\$108.03
\$126.14	\$188.31	\$132.53	\$122.24	\$118.72	\$55.75	\$132.66	\$108.21
\$125.07	\$186.84	\$135.48	\$120.42	\$119.04	\$55.84	\$132.33	\$107.52
\$125.24	\$187.79	\$136.58	\$118.77	\$118.35	\$55.87	\$131.47	\$106.57
\$125.63	\$192.30	\$133.89	\$119.16	\$118.55	\$56.30	\$131.74	\$108.70
\$124.76	\$188.38	\$132.18	\$120.50	\$119.74	\$55.78	\$132.20	\$107.46
\$124.50	\$192.80	\$132.15	\$119.14	\$119.21	\$55.06	\$132.00	\$106.79
\$125.09	\$193.84	\$131.89	\$118.55	\$115.33	\$55.44	\$132.01	\$106.20
\$124.05	\$192.89	\$128.82	\$114.24	\$113.76	\$54.45	\$129.52	\$104.33
\$130.61	\$195.48	\$133.79	\$116.89	\$138.48	\$57.37	\$131.45	\$109.21

Company	Ticker	EPS Growth Rates			Market Cap (\$Millions)	Weighted Dividend Yield		Weighted IBES		Weighted Zacks						
		Dividend Yield	IBES Screened	Zacks Screened		VL Screened	Weight	Product	Mkt. Cap.	Weight	Product	Mkt. Cap.				
		(b)	(c)	(d)		(b)	(b)	(b)	(b)	(b)	(b)	(b)				
1	Agilent Technologies, Inc.	A	0.74%	9.40%	10.00%	10.00%	29.904	0.001427	0.000011	29.904	0.001651	0.000155	29.904	0.001513	0.000151	29.904
2	Advance Auto Parts, Inc.	AAP	0.68%	11.90%	12.93%	11.00%	10.125	0.000483	0.000003	10.125	0.000559	0.000067	10.125	0.000512	0.000066	10.125
3	Apple Inc.	AAPL	0.79%	12.46%	11.00%	15.50%	1,835.582	0.008766	0.000692	1,835.582	0.101372	0.012631	1,835.582	0.092878	0.010217	1,835.582
4	AbbVie Inc.	ABBV	5.42%	7.95%	5.96%	10.50%	153.740	0.007337	0.000398	153.740	0.008490	0.000675	153.740	0.007779	0.000464	153.740
5	AmerisourceBergen Corporation	ABC	1.79%	8.17%	7.48%	7.00%	19.201	0.000916	0.000016	19.201	0.001060	0.000087	19.201	0.000972	0.000073	19.201
6	Abbott Laboratories	ABT	1.40%	14.90%	10.98%	10.50%	181.887	0.008681	0.000122	181.887	0.010045	0.000197	181.887	0.009203	0.000111	181.887
7	Accenture PLC	ACN	1.43%	9.51%	10.00%	7.50%	146.821	0.007007	0.000100	146.821	0.008108	0.000771	146.821	0.007429	0.000743	146.821
8	Analog Devices, Inc.	ADI	2.20%	8.44%	10.00%	7.00%	41.531	0.001982	0.000044	41.531	0.002294	0.000194	41.531	0.002011	0.000210	41.531
9	Archer Daniels Midland Company	ADM	3.19%	NMF	NMF	9.00%	25.109	0.001198	0.000038	--	--	--	--	--	25.109	
10	Automatic Data Processing, Inc.	ADP	2.87%	10.57%	12.00%	11.00%	55.324	0.002640	0.000076	55.324	0.003055	0.000323	55.324	0.002799	0.000336	55.324
11	Ameren Corporation	AEE	2.75%	6.00%	6.89%	6.00%	18.683	0.000892	0.000025	18.683	0.001032	0.000062	18.683	0.000945	0.000065	18.683
12	American Electric Power Company, Inc.	AEP	3.74%	5.63%	5.59%	6.00%	39.274	0.001874	0.000070	39.274	0.002169	0.000122	39.274	0.001987	0.000111	39.274
13	The AES Corporation	AES	3.21%	7.65%	8.01%	NMF	11.809	0.000564	0.000018	11.809	0.000652	0.000050	11.809	0.000598	0.000048	--
14	Aflac Incorporated	AFL	3.23%	1.60%	5.00%	8.50%	25.429	0.001214	0.000039	25.429	0.001404	0.000022	25.429	0.001287	0.000064	25.429
15	American International Group, Inc.	AIG	4.84%	3.96%	10.00%	NMF	22.768	0.001087	0.000053	22.768	0.001257	0.000050	22.768	0.001152	0.000115	--
16	Apartment Investment and Management Company	AIV	4.90%	7.10%	NMF	NMF	5.104	0.000244	0.000012	5.104	0.000282	0.000020	--	--	--	
17	Assurant, Inc.	AIZ	2.12%	19.40%	NMF	11.50%	7.073	0.000338	0.000007	7.073	0.000391	0.000076	--	--	7.073	
18	Arthur J. Gallagher Co.	AGJ	1.76%	11.52%	10.00%	13.00%	19.602	0.000936	0.000016	19.602	0.001083	0.000125	19.602	0.000992	0.000083	19.602
19	Albemarle Corporation	ALB	1.92%	15.00%	8.66%	4.00%	8.552	0.000408	0.000008	8.552	0.000472	0.000071	8.552	0.000433	0.000037	8.552
20	The Allstate Corporation	ALL	2.41%	6.35%	7.50%	6.00%	28.051	0.001339	0.000032	28.051	0.001549	0.000098	28.051	0.001419	0.000106	28.051
21	Allegion PLC	ALLE	1.34%	NMF	6.10%	9.00%	8.796	0.000420	0.000006	--	--	--	8.796	0.000445	0.000027	8.796
22	Applied Materials, Inc.	AMAT	1.56%	NMF	12.66%	7.50%	52.285	0.002495	0.000039	--	--	--	52.285	0.002646	0.000335	52.285
23	Amcor PLC	AMCR	5.20%	5.44%	7.27%	NMF	17.129	0.000818	0.000043	17.129	0.000946	0.000051	17.129	0.000867	0.000063	17.129
24	AMETEK, Inc.	AME	0.76%	NMF	7.11%	12.50%	21.888	0.001045	0.000008	--	--	--	21.888	0.001108	0.000079	21.888
25	Amgen Inc.	AMGN	2.86%	6.87%	7.23%	6.50%	142.255	0.006789	0.000191	142.255	0.007856	0.000540	142.255	0.007198	0.000520	142.255
26	Ameriprise Financial, Inc.	AMP	2.82%	7.77%	NMF	11.00%	17.530	0.000837	0.000024	17.530	0.000968	0.000075	--	--	17.530	
27	American Tower Corporation REIT	AMT	2.04%	14.87%	14.78%	9.00%	104.552	0.004990	0.000102	104.552	0.005774	0.000859	104.552	0.005290	0.000782	104.552
28	Anthem, Inc.	ANTM	1.67%	14.52%	14.64%	14.00%	61.954	0.002957	0.000049	61.954	0.003421	0.000497	61.954	0.003135	0.000459	61.954
29	Aon plc	AON	0.90%	6.77%	NMF	7.50%	46.395	0.002214	0.000020	46.395	0.002562	0.000173	--	--	46.395	
30	A. O. Smith Corporation	AOS	1.85%	8.00%	5.00%	8.00%	8.361	0.000399	0.000007	8.361	0.000462	0.000037	8.361	0.000423	0.000034	8.361
31	Apache Corporation	APA	0.90%	NMF	NMF	3.00%	4.190	0.000200	0.000002	--	--	--	--	--	4.190	
32	Air Products and Chemicals, Inc.	APD	1.88%	10.33%	8.77%	12.00%	63.050	0.003009	0.000057	63.050	0.003482	0.000360	63.050	0.003190	0.000280	63.050
33	Amphenol Corporation	APH	0.97%	3.00%	7.51%	10.50%	30.811	0.001471	0.000014	30.811	0.001702	0.000051	30.811	0.001559	0.000117	30.811
34	Alexandria Real Estate Equities, Inc.	ARE	2.71%	0.10%	4.99%	16.50%	17.377	0.000829	0.000022	17.377	0.000960	0.000001	17.377	0.000879	0.000044	17.377
35	Atmos Energy Corporation	ATO	2.65%	7.25%	7.26%	7.00%	11.456	0.000547	0.000014	11.456	0.000633	0.000046	11.456	0.000580	0.000042	11.456
36	Activision Blizzard, Inc.	ATVI	0.56%	NMF	15.97%	11.00%	61.837	0.002951	0.000017	--	--	--	61.837	0.003129	0.000500	61.837
37	AvalonBay Communities, Inc.	AVB	4.43%	2.54%	1.15%	1.50%	20.683	0.000987	0.000044	20.683	0.001142	0.000029	20.683	0.001047	0.000012	20.683
38	Broadcom Inc.	AVGO	3.70%	7.90%	12.62%	17.00%	142.042	0.006779	0.000251	142.042	0.007844	0.000620	142.042	0.007187	0.000907	142.042
39	Avery Dennison Corporation	AVY	2.01%	7.84%	6.15%	11.00%	9.906	0.000473	0.000011	9.906	0.000547	0.000043	9.906	0.000501	0.000031	9.906
40	American Water Works Company, Inc.	AWK	1.63%	8.30%	8.08%	8.50%	25.015	0.001194	0.000019	25.015	0.001381	0.000115	25.015	0.001266	0.000102	25.015
41	American Express Company	AXP	1.80%	9.35%	8.93%	6.00%	76.926	0.003671	0.000066	76.926	0.004248	0.000397	76.926	0.003892	0.000348	76.926
42	Bank of America Corporation	BAC	3.10%	2.36%	7.00%	5.00%	201.527	0.009618	0.000298	201.527	0.011130	0.000263	201.527	0.010197	0.000714	201.527
43	Baxter International Inc.	BAX	1.25%	10.00%	9.75%	9.00%	39.963	0.001907	0.000024	39.963	0.002207	0.000021	39.963	0.002022	0.000197	39.963
44	Best Buy Co., Inc.	BBY	2.07%	7.40%	6.76%	8.00%	27.474	0.001311	0.000027	27.474	0.001517	0.000112	27.474	0.001390	0.000094	27.474
45	Becton, Dickinson and Company	BDX	1.43%	6.40%	7.95%	9.00%	65.392	0.003121	0.000045	65.392	0.003611	0.000231	65.392	0.003309	0.000263	65.392
46	Franklin Resources, Inc.	BEN	5.67%	NMF	NMF	6.50%	9.699	0.000463	0.000026	--	--	--	--	--	9.699	
47	BrownForman Corporation	BF.B	0.96%	6.85%	NMF	12.00%	36.046	0.001720	0.000017	36.046	0.001991	0.000136	--	--	36.046	
48	The Bank of New York Mellon Corporation	BK	3.73%	2.80%	8.00%	3.00%	29.455	0.001406	0.000052	29.455	0.001627	0.000046	29.455	0.001490	0.000119	29.455
49	Baker Hughes Company	BKR	5.32%	2.47%	9.81%	NMF	8.862	0.000423	0.000023	8.862	0.000489	0.000012	8.862	0.000448	0.000044	8.862
50	BlackRock, Inc.	BLK	2.70%	7.73%	10.00%	8.00%	82.106	0.003919	0.000106	82.106	0.004534	0.000351	82.106	0.004154	0.000415	82.106
51	Ball Corporation	BLL	0.75%	10.45%	5.00%	18.00%	26.062	0.001244	0.000009	26.062	0.001439	0.000150	26.062	0.001319	0.000066	26.062
52	Bristol Myers Squibb Company	BMY	3.05%	NMF	8.63%	12.50%	132.960	0.006346	0.000194	--	--	--	132.960	0.006728	0.000581	132.960
53	Broadridge Financial Solutions, Inc.	BR	1.79%	10.00%	NMF	9.00%	14.757	0.000704	0.000013	14.757	0.000815	0.000081	--	--	14.757	
54	BorgWarner Inc.	BWA	1.82%	1.79%	6.42%	3.50%	7.751	0.000370	0.000007	7.751	0.000428	0.000008	7.751	0.000392	0.000025	7.751
55	Boston Properties, Inc.	BXP	4.96%	7.00%	2.47%	4.00%	12.228	0.000584	0.000029	12.228	0.000675	0.000047	12.228	0.000619	0.000015	12.228
56	Citigroup Inc.	C	4.88%	NMF	10.50%	3.50%	87.126	0.004158	0.000203	--	--	--	87.126	0.004408	0.000463	87.126
57	Conagra Brands Inc.	CAG	2.57%	7.00%	7.00%	5.00%	16.492	0.000787	0.000020	16.492	0.000911	0.000064	16.492	0.000834	0.000058	16.492
58	Cardinal Health, Inc.	CAH	4.49%	4.66%	5.45%	12.50%	13.212	0.000631	0.000027	13.212	0.000730	0.000034	13.212	0.000669	0.000036	13.212
59	Carrier Global Corporation	CARR	1.10%	NMF	8.00%	NMF	25.214	0.001203	0.000013	--	--	--	25.214	0.001276	0.000102	25.214
60	Caterpillar Inc.	CAT	2.85%	NMF	12.00%	4.00%	78.183	0.003731	0.000106	--	--	--	78.183	0.003966	0.000475	78.183
61	Chubb Limited	CB	2.74%	1.79%	10.00%	9.50%	48.151	0.002298	0.000063	48.151	0.002659	0.000048	48.151	0.002436	0.000244	48.151
62	Cboe Global Markets, Inc.	CBOE	1.98%	2.60%	2.80%	12.50%	9.687	0.000462	0.000009	9.687	0.000535</					

Company	Ticker	EPS Growth Rates			Market Cap (\$Millions)	Weighted Dividend Yield		Weighted IBES		Weighted Zacks						
		Dividend Yield	IBES Screened	Zacks Screened		VL Screened	Weight	Product	Mkt. Cap.	Weight	Product	Mkt. Cap.				
		(b)	(c)	(d)		(b)										
121	Equinix, Inc.	EQIX	1.53%	15.70%	13.59%	14.50%	62.619	0.002989	0.000046	62.619	0.003458	0.000543	62.619	0.003168	0.000431	62.619
122	Equity Residential	EQR	4.70%	6.10%	3.65%	1.00%	19,048	0.000909	0.000043	19,048	0.001052	0.000064	19,048	0.000964	0.000035	19,048
123	Eversource Energy	ES	2.99%	6.44%	6.59%	5.50%	26,506	0.001265	0.000038	26,506	0.001464	0.000094	26,506	0.001341	0.000088	26,506
124	Essex Property Trust, Inc.	ESS	4.20%	7.90%	2.21%	1.00%	13,346	0.000637	0.000027	13,346	0.000737	0.000058	13,346	0.000675	0.000015	13,346
125	ETRADE Financial Corporation	ETFC	1.17%	NMF	NMF	5.50%	10,617	0.000507	0.000006	--	--	--	--	--	--	10,617
126	Eaton Corporation, PLC	ETN	2.96%	NMF	11.00%	4.00%	39,522	0.001886	0.000056	--	--	--	39,522	0.002000	0.000020	39,522
127	Entergy Corporation	ETR	3.99%	5.40%	5.43%	3.00%	19,054	0.000909	0.000036	19,054	0.001052	0.000057	19,054	0.000964	0.000035	19,054
128	Enviro	EVRO	4.36%	6.80%	6.41%	NMF	11,142	0.000532	0.000023	11,142	0.000615	0.000042	11,142	0.000564	0.000036	11,142
129	Exelon Corporation	EXC	4.55%	NMF	4.00%	5.00%	33,601	0.001604	0.000073	--	--	--	33,601	0.001700	0.000068	33,601
130	Expeditors International of Washington, Inc.	EXPD	1.17%	6.59%	NMF	5.50%	14,803	0.000707	0.000008	14,803	0.000818	0.000054	--	--	--	14,803
131	Extra Space Storage Inc.	EXR	3.45%	6.00%	1.20%	3.00%	13,522	0.000645	0.000022	13,522	0.000747	0.000045	13,522	0.000684	0.000008	13,522
132	Diamondback Energy, Inc.	FANG	5.02%	13.45%	NMF	0.50%	4,719	0.000225	0.000011	4,719	0.000261	0.000035	--	--	--	4,719
133	Fastenal Company	FAST	2.26%	9.10%	9.00%	8.00%	25,346	0.001210	0.000027	25,346	0.001400	0.000127	25,346	0.001282	0.000115	25,346
134	Fortune Brands Home Security, Inc.	FBHS	1.17%	7.30%	7.32%	7.00%	11,382	0.000543	0.000006	11,382	0.000629	0.000046	--	--	--	11,382
135	FedEx Corporation	FDX	1.08%	NMF	12.00%	3.00%	63,395	0.003026	0.000043	--	--	--	63,395	0.003208	0.000385	63,395
136	FirstEnergy Corporation	FE	5.77%	NMF	NMF	8.50%	14,951	0.000714	0.000031	--	--	--	--	--	--	14,951
137	Fidelity National Information Services, Inc.	FIS	0.98%	12.54%	17.12%	NMF	88,751	0.004236	0.000042	88,751	0.004901	0.000615	88,751	0.004491	0.000769	--
138	Fifth Third Bancorp	FITB	5.52%	NMF	8.25%	2.00%	13,931	0.000665	0.000037	--	--	--	13,931	0.000705	0.000058	13,931
139	FLIR Systems, Inc.	FLIR	1.97%	6.00%	NMF	8.00%	4,526	0.000216	0.000004	4,526	0.000250	0.000015	--	--	--	4,526
140	Flowerserve Corporation	FLR	3.00%	2.45%	5.04%	9.50%	3,464	0.000165	0.000005	3,464	0.000191	0.000005	3,464	0.000175	0.000009	3,464
141	FMC Corporation	FMC	1.80%	9.54%	10.48%	11.00%	13,541	0.000646	0.000012	13,541	0.000748	0.000071	13,541	0.000685	0.000072	13,541
142	Fox Corporation	FOXA	1.78%	NMF	NMF	NMF	15,642	0.000747	0.000013	--	--	--	--	--	--	15,642
143	First Republic Bank	FRC	0.79%	7.21%	7.85%	9.00%	17,371	0.000829	0.000007	17,371	0.000959	0.000069	17,371	0.000879	0.000069	17,371
144	Federal Realty Investment Trust	FRT	5.93%	6.70%	1.38%	0.50%	5,398	0.000258	0.000015	5,398	0.000298	0.000020	5,398	0.000273	0.000004	5,398
145	Fortive Corporation	FTV	0.39%	5.14%	5.37%	10.50%	24,163	0.001153	0.000004	24,163	0.001334	0.000069	24,163	0.001223	0.000066	24,163
146	General Dynamics Corporation	GD	3.22%	3.88%	5.20%	6.00%	39,169	0.001869	0.000060	39,169	0.002163	0.000084	39,169	0.001982	0.000103	39,169
147	General Electric Company	GE	0.66%	NMF	4.50%	4.00%	53,483	0.002553	0.000017	--	--	--	53,483	0.002706	0.000122	53,483
148	Gilead Sciences, Inc.	GILD	4.31%	0.24%	12.81%	3.50%	79,115	0.003776	0.000163	79,115	0.004369	0.000010	79,115	0.004003	0.000513	79,115
149	General Mills, Inc.	GIS	3.53%	5.05%	7.50%	3.50%	35,198	0.001680	0.000059	35,198	0.001944	0.000098	35,198	0.001781	0.000134	35,198
150	Globe Life Inc.	GL	0.97%	5.10%	NMF	8.00%	8,240	0.000393	0.000004	8,240	0.000455	0.000023	--	--	--	8,240
151	Corning Incorporated	GLW	2.88%	1.30%	2.40%	13.00%	23,218	0.001108	0.000032	23,218	0.001282	0.000017	23,218	0.001175	0.000028	23,218
152	Genuine Parts Company	GPC	3.34%	NMF	1.50%	7.00%	13,657	0.000652	0.000022	13,657	0.000788	0.000011	13,657	0.000691	0.000010	13,657
153	Global Payments Inc.	GPNI	0.45%	17.05%	NMF	11.50%	52,302	0.002496	0.000011	52,302	0.002888	0.000492	--	--	--	52,302
154	Garmin Ltd.	GRMN	2.74%	4.32%	6.80%	7.50%	17,872	0.000853	0.000023	17,872	0.000987	0.000043	17,872	0.000904	0.000061	17,872
155	The Goldman Sachs Group, Inc.	GS	2.69%	6.29%	2.39%	6.50%	64,013	0.003055	0.000082	64,013	0.003535	0.000222	64,013	0.003239	0.000077	64,013
156	W.W. Grainger, Inc.	GWG	1.81%	5.60%	9.60%	7.00%	18,166	0.000867	0.000016	18,166	0.001003	0.000056	18,166	0.000919	0.000088	18,166
157	Halliburton Company	HAL	1.42%	NMF	6.53%	1.50%	11,094	0.000529	0.000008	--	--	--	11,094	0.000561	0.000037	11,094
158	Hasbro, Inc.	HAS	3.54%	8.40%	11.35%	9.00%	10,534	0.000503	0.000018	10,534	0.000582	0.000049	10,534	0.000533	0.000060	10,534
159	Huntington Bancshares Incorporated	HBAN	6.90%	NMF	4.92%	2.50%	8,840	0.000422	0.000029	--	--	--	8,840	0.000447	0.000022	8,840
160	Hanesbrands Inc.	HBI	3.75%	0.70%	3.30%	3.50%	5,569	0.000266	0.000010	5,569	0.000308	0.000002	5,569	0.000282	0.000009	5,569
161	The Home Depot, Inc.	HD	2.31%	5.95%	10.59%	8.00%	286,808	0.013688	0.000316	286,808	0.015839	0.000942	286,808	0.014512	0.001537	286,808
162	Hess Corporation	HES	2.54%	NMF	NMF	NMF	12,101	0.000578	0.000015	--	--	--	--	--	--	12,101
163	HollyFrontier Corporation	HFC	7.19%	NMF	NMF	1.50%	3,243	0.000155	0.000011	--	--	--	--	--	--	3,243
164	The Hartford Financial Services Group, Inc.	HIG	3.68%	NMF	7.00%	8.50%	12,637	0.000603	0.000022	--	--	--	12,637	0.000639	0.000045	12,637
165	Huntington Ingalls Industries, Inc.	HI	2.96%	2.30%	NMF	7.50%	5,647	0.000270	0.000008	5,647	0.000312	0.000007	--	--	--	5,647
166	Honeywell International Inc.	HON	2.27%	2.44%	7.68%	7.50%	111,439	0.005319	0.000121	111,439	0.006154	0.000150	111,439	0.005639	0.000433	111,439
167	Hewlett Packard Enterprise Company	HPE	5.29%	NMF	5.00%	4.00%	11,664	0.000557	0.000029	--	--	--	11,664	0.000590	0.000030	11,664
168	HP Inc.	HPQ	3.82%	9.34%	2.23%	8.00%	25,162	0.001201	0.000046	25,162	0.001390	0.000130	25,162	0.001273	0.000028	25,162
169	Hormel Foods Corporation	HRL	2.10%	3.00%	7.50%	8.50%	25,707	0.001227	0.000026	25,707	0.001420	0.000043	25,707	0.001301	0.000098	25,707
170	Hershey Company The	HSY	2.42%	6.78%	8.50%	5.00%	27,940	0.001333	0.000032	27,940	0.001543	0.000105	27,940	0.001414	0.000120	27,940
171	Humana Inc.	HUM	0.69%	12.45%	12.34%	10.50%	50,988	0.002433	0.000017	50,988	0.002816	0.000151	50,988	0.002535	0.000118	50,988
172	International Business Machines Corporation	IBM	5.49%	2.57%	3.28%	0.50%	105,828	0.005051	0.000277	105,828	0.005844	0.000150	105,828	0.005355	0.000176	105,828
173	Intercontinental Exchange Inc.	ICE	1.24%	9.20%	8.51%	9.50%	52,768	0.002518	0.000031	52,768	0.002914	0.000268	52,768	0.002670	0.000227	52,768
174	IDEX Corporation	IEX	1.13%	13.00%	10.00%	6.50%	13,321	0.000636	0.000007	13,321	0.000736	0.000096	13,321	0.000674	0.000067	13,321
175	International Flavors & Fragrances Inc.	IFF	2.69%	0.38%	NMF	6.50%	12,417	0.000593	0.000016	12,417	0.000686	0.000003	--	--	--	12,417
176	IHS Markit Ltd.	INFO	0.89%	11.12%	12.00%	12.00%	30,446	0.001453	0.000013	30,446	0.001681	0.000187	30,446	0.001541	0.000185	30,446
177	Intel Corporation	INTC	2.70%	8.62%	7.50%	7.00%	207,632	0.009909	0.000268	207,632	0.011467	0.000988	207,632	0.010506	0.000788	207,632
178	Intuit Inc.	INTU	0.77%	9.95%	13.20%	11.50%	79,510	0.003795	0.000019	79,510	0.004391	0.000399	79,510	0.004023	0.000551	79,510
179	International Paper Company	IP	5.22%	NMF	NMF	6.50%	15,437	0.000737	0.000038	--	--	--	--	--	--	15,437
180	Interplore Group of Companies, Inc. The	IPG	6.30%	1.10%	1.11%	10.00%	15,312	0.000301	0.000019	6,312	0.000349	0.000004	6,312	0.000319	0.000004	6,312
181	Iron Mountain Incorporated	IRM	9.52%	8.00%	5.85%	8.50%	7,509	0.002388	0.000034	7,509	0.000415	0.000033	7,509	0.000380	0.000022	7,509
182	Illinois Tool Works Inc.	ITW	2.39%	0.41%	5.55%	8.50%	60,344	0.002880	0.000069	60,344	0.003333	0.000014	60,344	0.003053	0.000169	60,344
183	Invesco Ltd.	IVZ	5.95%	NMF	5.97%	4.50%	4,785	0.00022								

Company	Ticker	EPS Growth Rates				Market Cap (\$Millions)	Weighted Dividend Yield		Weighted IBES		Weighted Zacks					
		Dividend Yield	IBES Screened	Zacks Screened	VL Screened		Weight	Product	Weight	Product	Weight	Product				
		(b)	(c)	(d)	(b)		(b)	(b)	(b)	(b)	(b)	(b)				
241	Maxim Integrated Products, Inc.	MXIM	2.97%	6.02%	10.00%	4.50%	17.285	0.000825	0.000025	17.285	0.000955	0.000057	17.285	0.000875	0.000087	17.285
242	Noble Energy Inc.	NBL	0.94%	5.00%	18.63%	NMF	4.123	0.000197	0.000002	4.123	0.000228	0.000011	4.123	0.000209	0.000039	--
243	Nasdaq, Inc.	NDAQ	1.64%	8.88%	8.58%	6.50%	19.666	0.000939	0.000015	19.666	0.001086	0.000096	19.666	0.000995	0.000085	19.666
244	NextEra Energy, Inc.	NEE	2.15%	8.14%	7.94%	10.00%	133.826	0.006387	0.000137	133.826	0.007391	0.000602	133.826	0.006771	0.000538	133.826
245	Newmont Corporation	NEM	1.66%	NMF	NMF	19.50%	48.598	0.002319	0.000039	--	--	--	--	--	48.598	
246	NISource, Inc.	NI	3.89%	1.81%	5.46%	12.50%	8.275	0.000395	0.000015	8.275	0.000457	0.000008	8.275	0.000419	0.000023	8.275
247	NIKE, Inc.	NKE	0.77%	NMF	16.66%	16.00%	197.656	0.009433	0.000073	--	--	--	197.656	0.010001	0.001666	197.656
248	NortonLifeLock Inc.	NLOK	2.46%	5.00%	6.00%	6.50%	12.815	0.000573	0.000014	12.015	0.000664	0.000033	12.015	0.000608	0.000036	12.015
249	Nielsen Holdings Plc	NLSN	1.77%	NMF	NMF	NMF	4.834	0.000231	0.000004	--	--	--	--	--	--	
250	Northern Trust Corporation	NOC	1.77%	8.62%	NMF	11.00%	54.690	0.002610	0.000046	54.690	0.003200	0.000260	--	--	54.690	
251	NRG Energy, Inc.	NRG	4.21%	NMF	NMF	NMF	6.963	0.000332	0.000014	--	--	--	--	--	--	
252	Norfolk Southern Corporation	NSC	1.76%	5.24%	7.11%	11.50%	54.448	0.002599	0.000046	54.448	0.003007	0.000158	54.448	0.002755	0.000196	54.448
253	NetApp, Inc.	NTAP	4.86%	3.90%	11.90%	6.00%	9.144	0.000436	0.000021	9.144	0.000505	0.000020	9.144	0.000463	0.000055	9.144
254	Northern Trust Corporation	NTRS	3.69%	NMF	10.70%	4.50%	15.813	0.000755	0.000028	--	--	--	15.813	0.000800	0.000086	15.813
255	Nucor Corporation	NUE	3.60%	NMF	12.00%	3.00%	13.486	0.000644	0.000023	--	--	--	13.486	0.000682	0.000082	13.486
256	NVIDIA Corporation	NVDA	0.13%	17.44%	NMF	11.50%	299.214	0.014280	0.000019	299.214	0.016524	0.002882	--	--	299.214	
257	Newell Brands Inc.	NWL	5.45%	NMF	1.73%	4.50%	7.165	0.000342	0.000019	--	--	--	7.165	0.000363	0.000006	7.165
258	News Corporation	NWSA	1.40%	NMF	NMF	NMF	8.380	0.000400	0.000006	--	--	--	--	--	--	
259	Realty Income Corporation	O	4.88%	5.45%	3.34%	6.50%	19.694	0.000940	0.000046	19.694	0.001088	0.000059	19.694	0.000996	0.000033	19.694
260	Old Dominion Freight Line, Inc.	ODFL	0.34%	10.07%	9.48%	7.50%	21.376	0.001020	0.000003	21.376	0.001181	0.000119	21.376	0.001082	0.000103	21.376
261	ONEOK, Inc.	OK	15.57%	NMF	6.00%	10.00%	10.901	0.000520	0.000081	--	--	--	10.901	0.000552	0.000033	10.901
262	Omnicon Group Inc.	OMC	5.33%	1.40%	7.00%	5.50%	10.488	0.000501	0.000027	10.488	0.000579	0.000008	10.488	0.000531	0.000037	10.488
263	Oracle Corporation	ORCL	1.63%	9.18%	11.00%	10.50%	177.705	0.008481	0.000138	177.705	0.009814	0.000091	177.705	0.008992	0.000989	177.705
264	Otis Worldwide Corporation	OTIS	1.32%	4.70%	NMF	NMF	26.164	0.001249	0.000016	--	--	--	--	--	--	
265	Occidental Petroleum Corporation	OXY	0.38%	NMF	5.45%	14.50%	9.558	0.000456	0.000002	--	--	--	9.558	0.000484	0.000026	9.558
266	Paychex, Inc.	PAYX	3.31%	3.28%	8.00%	7.50%	27.294	0.001303	0.000043	27.294	0.001507	0.000049	27.294	0.001381	0.000110	27.294
267	Peoples United Financial, Inc.	PBCT	7.28%	13.73%	NMF	2.50%	4.199	0.000200	0.000015	4.199	0.000232	0.000032	--	--	4.199	
268	PACCAR Inc.	PCAR	2.82%	NMF	10.00%	3.50%	28.221	0.001347	0.000038	--	--	--	28.221	0.001428	0.000143	28.221
269	Healthpeak Properties, Inc.	PEAK	5.79%	2.50%	2.81%	NMF	12.924	0.000617	0.000036	12.924	0.000714	0.000018	12.924	0.000654	0.000018	--
270	Public Service Enterprise Group Incorporated	PEG	3.85%	1.47%	3.46%	5.00%	26.168	0.001249	0.000048	26.168	0.001445	0.000021	26.168	0.001324	0.000046	26.168
271	PepsiCo, Inc.	PEP	3.12%	5.51%	5.61%	6.00%	181.435	0.008659	0.000270	181.435	0.010020	0.000552	181.435	0.009180	0.000515	181.435
272	Pfizer Inc.	PFE	4.22%	5.37%	4.29%	8.50%	199.944	0.009543	0.000403	199.944	0.011042	0.000593	199.944	0.010117	0.000434	199.944
273	Principal Financial Group, Inc.	PRFG	5.93%	6.09%	6.55%	4.50%	10.354	0.000494	0.000029	10.354	0.000572	0.000035	10.354	0.000524	0.000034	10.354
274	Procter & Gamble Company The	PG	3.22%	7.15%	6.53%	8.00%	338.014	0.016132	0.000374	338.014	0.018667	0.001335	338.014	0.017103	0.001117	338.014
275	The Progressive Corporation	PGR	0.44%	0.94%	6.22%	9.50%	53.383	0.002548	0.000011	53.383	0.002948	0.000028	53.383	0.002701	0.000168	53.383
276	ParkerHannifin Corporation	PH	1.80%	7.49%	11.78%	9.00%	25.063	0.001196	0.000022	25.063	0.001384	0.000104	25.063	0.001268	0.000149	25.063
277	PulteGroup, Inc.	PHM	1.14%	2.00%	9.38%	9.00%	11.757	0.000561	0.000006	11.757	0.000649	0.000013	11.757	0.000595	0.000056	11.757
278	Packaging Corporation of America	PKG	3.12%	NMF	5.00%	4.00%	9.873	0.000471	0.000015	--	--	--	9.873	0.000500	0.000025	9.873
279	PerkinElmer, Inc.	PKI	0.24%	16.95%	17.35%	12.00%	13.110	0.000626	0.000002	13.110	0.000724	0.000123	13.110	0.000663	0.000115	13.110
280	Prologis, Inc.	PLD	2.56%	NMF	7.70%	6.00%	60.210	0.002874	0.000074	--	--	--	60.210	0.003047	0.000235	60.210
281	Philip Morris International Inc.	PM	6.6%	5.26%	7.08%	4.50%	117.575	0.005611	0.000357	117.575	0.006493	0.000342	117.575	0.005949	0.000421	117.575
282	The PNC Financial Services Group, Inc.	PNC	4.49%	NMF	7.00%	3.00%	43.554	0.002079	0.000093	--	--	--	43.554	0.002204	0.000154	43.554
283	Pentair plc	PNR	1.69%	3.90%	5.96%	4.00%	7.454	0.000356	0.000006	7.454	0.000412	0.000016	7.454	0.000377	0.000022	7.454
284	Pinnacle West Capital Corporation	PNW	4.61%	3.75%	4.70%	4.00%	7.986	0.000381	0.000018	7.986	0.000441	0.000017	7.986	0.000404	0.000019	7.986
285	PPG Industries, Inc.	PPG	1.83%	4.66%	5.66%	3.00%	27.921	0.001333	0.000024	27.921	0.001542	0.000072	27.921	0.001413	0.000089	27.921
286	PPL Corporation	PPL	6.45%	NMF	NMF	2.50%	19.919	0.000951	0.000061	--	--	--	--	--	19.919	
287	Perrigo Company plc	PRGO	2.16%	10.00%	NMF	3.50%	6.193	0.000296	0.000006	6.193	0.000342	0.000034	--	--	6.193	
288	Prudential Financial, Inc.	PRU	7.10%	3.77%	9.00%	5.00%	24.450	0.001167	0.000083	24.450	0.001350	0.000051	24.450	0.001237	0.000111	24.450
289	Public Storage	PSA	3.76%	17.00%	3.36%	4.00%	37.136	0.001772	0.000067	37.136	0.002051	0.000349	37.136	0.001879	0.000063	37.136
290	Phillips 66	PSX	7.03%	NMF	5.20%	3.50%	22.987	0.001097	0.000077	--	--	--	22.987	0.001163	0.000060	22.987
291	Quanta Services, Inc.	PWR	0.39%	10.02%	NMF	12.50%	7.063	0.000337	0.000001	7.063	0.000390	0.000039	--	--	7.063	
292	Pioneer Natural Resources Company	PXD	2.53%	11.18%	7.28%	12.00%	14.276	0.000681	0.000017	14.276	0.000788	0.000088	14.276	0.000722	0.000053	14.276
293	QUALCOMM Incorporated	QCOM	2.35%	NMF	19.78%	12.50%	124.723	0.005953	0.000140	--	--	--	124.723	0.006111	0.001248	124.723
294	Everest Re Group, Ltd.	RE	3.15%	4.73%	10.40%	10.50%	7.878	0.000376	0.000012	7.878	0.000435	0.000021	7.878	0.000399	0.000041	7.878
295	Regency Centers Corporation	REG	6.52%	9.10%	1.83%	14.50%	6.120	0.000292	0.000019	6.120	0.000338	0.000019	6.120	0.000310	0.000006	6.120
296	Regions Financial Corporation	RHF	5.77%	NMF	5.80%	5.00%	10.321	0.000493	0.000028	--	--	--	10.321	0.000522	0.000030	10.321
297	Robert Half International Inc.	RHI	2.75%	2.70%	4.33%	6.00%	5.913	0.000282	0.000008	5.913	0.000327	0.000009	5.913	0.000299	0.000013	5.913
298	Raymond James Financial, Inc.	RJF	2.14%	NMF	NMF	6.50%	9.467	0.000452	0.000010	--	--	--	--	--	9.467	
299	ResMed Inc.	RMD	3.93%	NMF	13.85%	14.50%	24.404	0.001165	0.000011	--	--	--	24.404	0.001235	0.000171	24.404
300	Rockwell Automation, Inc.	ROK	1.92%	1.72%	5.57%	7.00%	24.682	0.001178	0.000023	24.682	0.001363	0.000023	24.682	0.001249	0.000070	24.682
301	Rollins, Inc.	ROL	0.61%	8.20%	NMF	12.00%	17.142	0.000818	0.000005	--	--	--	17.142	0.000947	0.000078	17.142
302	Roper Technologies, Inc.	ROP	0.53%	1.00%	10.50%	8.00%	40.466	0.001931	0.000010	40.466	0.002235	0.000022	40.466	0.002048	0.000215	40.466
303	Republic Services, Inc.	RSRG	1.85%	7.11%	7.88%	9.00%	29.319	0.001399	0.000026	29.319	0.001619	0.000115	29.319	0.001484	0.000117	29.319
304	Raytheon Technologies Corporation	RTX	3.29%	NMF	12.00%	NMF	89.108									

Company	Ticker	Dividend Yield	EPS Growth Rates			Market Cap (\$Millions)	Weighted Dividend Yield		Weighted IBES			Weighted Zacks				
			IBES Screened	Zacks Screened	VL Screened		Weight	Product	Mkt. Cap.	Weight	Product	Mkt. Cap.	Weight	Product	Mkt. Cap.	
(a)		(b)	(c)	(d)	(b)											
361	Whirlpool Corporation	WHR	2.73%	0.20%	16.65%	2.00%	10.896	0.000520	0.000014	10.896	0.000602	0.000001	10.896	0.000551	0.000092	10.896
362	Willis Towers Watson Public Limited Company	WLTW	1.33%	4.85%	NMF	11.50%	26.266	0.001254	0.000017	26.266	0.001451	0.000070	--	--	--	26.266
363	Waste Management, Inc.	WM	1.95%	NMF	6.29%	5.50%	47.168	0.002251	0.000044	--	--	--	47.168	0.002387	0.000150	47.168
364	Williams Companies, Inc. The	WMB	8.04%	3.70%	5.00%	12.00%	24.151	0.001153	0.000093	24.151	0.001334	0.000049	24.151	0.001222	0.000061	24.151
365	Walmart Inc.	WMT	1.60%	6.41%	5.63%	7.00%	385.396	0.018394	0.000294	385.396	0.021284	0.001364	385.396	0.019501	0.001098	385.396
366	W.R. Berkley Corporation	WRB	0.81%	6.21%	9.00%	10.00%	10.598	0.000506	0.000004	10.598	0.000585	0.000036	10.598	0.000536	0.000048	10.598
367	WestRock Company	WRK	2.44%	NMF	NMF	5.00%	8.519	0.000407	0.000010	--	--	--	--	--	--	8.519
368	West Pharmaceutical Services, Inc.	WST	0.24%	15.00%	17.37%	16.00%	19.801	0.000945	0.000002	19.801	0.001094	0.000164	19.801	0.001002	0.000174	19.801

Company	Ticker	EPS Growth Rates			Market Cap (\$Millions)	Weighted Dividend Yield		Weighted IBES		Weighted Zacks					
		Dividend Yield	IBES Screened	Zacks Screened		VL Screened	Weight	Product	Mkt. Cap.	Weight	Product	Mkt. Cap.	Weight	Product	Mkt. Cap.
(a)	(b)	(c)	(d)	(b)											
369 The Western Union Company	WU	4.21%	8.67%	NMF	6.00%	8.791	0.000420	0.000018	8.791	0.000486	0.000042	--	--	--	8.791
370 Xcel Energy Inc.	XEL	2.67%	5.85%	5.81%	6.00%	34.763	0.001659	0.000044	34.763	0.001920	0.000112	34.763	0.001759	0.000102	34.763
371 Xilinx, Inc.	XLNX	1.56%	7.47%	9.00%	7.50%	23.664	0.001129	0.000018	23.664	0.001307	0.000098	23.664	0.001197	0.000108	23.664
372 Exxon Mobil Corporation	XOM	10.12%	12.84%	8.71%	4.50%	145.401	0.006939	0.000702	145.401	0.008030	0.001031	145.401	0.007357	0.000641	145.401
373 DENTSPLY SIRONA Inc.	XRAY	0.94%	4.27%	7.95%	7.50%	9.332	0.000445	0.000004	9.332	0.000515	0.000022	9.332	0.000472	0.000038	9.332
374 Xerox Corporation	XRX	5.62%	NMF	NMF	5.50%	3.794	0.000181	0.000010	--	--	--	--	--	--	3.794
375 Xylem Inc.	XYL	1.26%	NMF	NMF	8.50%	14.837	0.000708	0.000009	--	--	--	14.837	0.000751	0.000075	14.837
376 Yum Brands, Inc.	YUM	2.09%	6.63%	12.33%	9.50%	27.057	0.001291	0.000027	27.057	0.001494	0.000099	27.057	0.001369	0.000169	27.057
377 Zimmer Biomet Holdings, Inc.	ZBH	0.72%	3.66%	6.86%	6.00%	27.671	0.001321	0.000010	27.671	0.001528	0.000056	27.671	0.001400	0.000096	27.671
378 Zions Bancorporation, N.A.	ZION	4.81%	NMF	4.37%	3.50%	4.632	0.000221	0.000011	--	--	--	4.632	0.000234	0.000010	4.632
379 Zoetis Inc.	ZTS	0.50%	8.97%	9.66%	12.00%	75.682	0.003612	0.000018	75.682	0.004180	0.000375	75.682	0.003829	0.000370	75.682
<b>Weighted Average</b>						<b>20,952.788</b>	<b>1.000000</b>	<b>2.33%</b>	<b>18,107.406</b>	<b>1.000000</b>	<b>8.75%</b>	<b>19,763.269</b>	<b>1.000000</b>	<b>9.33%</b>	<b>20,018.950</b>
<b>Average</b>														<b>9.24%</b>	

n/a Not Available

NMF Eliminated growth rates that were greater than 20%, as well as all negative values

(a) dividend paying components of S&P 500 index from zacks.com (retrieved Oct. 1, 2020).

(b) www.valueline.com (retrieved Oct. 1, 2020)

(c) http://finance.yahoo.com (retrieved Oct. 2, 2020)

Weighted	
Value Line	Product
Weight	Product
0.001494	0.000149
0.000506	0.000056
0.091692	0.014212
0.007680	0.000806
0.000959	0.000067
0.009086	0.000954
0.007334	0.000550
0.002075	0.000145
0.001254	0.000113
0.002764	0.000304
0.000933	0.000056
0.001962	0.000118
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0.001270	0.000108
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0.000353	0.000041
0.000979	0.000127
0.000427	0.000017
0.001401	0.000084
0.000439	0.000040
0.002612	0.000196
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0.001093	0.000137
0.007106	0.000462
0.000876	0.000096
0.005223	0.000470
0.003095	0.000433
0.002318	0.000174
0.000418	0.000021
0.000209	0.000006
0.003150	0.000378
0.001539	0.000162
0.000868	0.000143
0.000572	0.000040
0.003089	0.000340
0.001033	0.000015
0.007095	0.001206
0.000495	0.000054
0.001250	0.000106
0.003843	0.000231
0.010067	0.000503
0.001996	0.000180
0.001372	0.000110
0.003266	0.000294
0.000485	0.000031
0.001801	0.000216
0.001471	0.000044
--	--
0.004101	0.000328
0.001302	0.000234
0.006642	0.000830
0.000737	0.000066
0.000387	0.000014
0.000611	0.000024
0.004352	0.000152
0.000824	0.000041
0.000660	0.000083
--	--
0.003905	0.000156
0.002405	0.000229
0.000484	0.000060
0.003242	0.000454
0.000778	0.000086
0.000627	0.000034
0.001033	0.000093
--	--
0.000511	0.000008
0.001130	0.000090
0.000681	0.000054
0.002944	0.000339
0.000602	0.000063
0.003218	0.000161
0.001338	0.000054
0.000253	0.000001
0.010351	0.000880
0.002901	0.000073
0.001497	0.000060
0.000852	0.000064
0.000473	0.000019
--	--
0.000371	0.000043
0.000818	0.000090
0.001764	0.000185
0.007601	0.000722
0.000729	0.000022
0.008069	0.000565
0.002924	0.000278
0.001636	0.000213
0.001816	0.000073
--	--
0.000822	0.000074
0.003748	0.000225
0.006711	0.000705
0.000426	0.000026
0.003201	0.000192
--	--
0.003359	0.000168
0.000815	0.000037
0.002540	0.000318
0.000745	0.000067
0.001293	0.000136
0.007270	0.001054
0.001452	0.000123
0.000769	0.000042
--	--
0.000813	0.000110
--	--
0.001077	0.000065
0.002984	0.000149
0.000166	0.000004
0.001785	0.000330
0.002783	0.000237
0.001223	0.000037
0.000923	0.000069
0.000931	0.000130
0.003734	0.000429
0.000520	0.000026
0.001950	0.000166
0.001058	0.000079

Weighted	
Value Line	Product
Weight	Product
0.003128	0.000454
0.000952	0.000010
0.001324	0.000073
0.000667	0.000007
0.000530	0.000029
0.001974	0.000079
0.000952	0.000029
--	--
0.001678	0.000084
0.000739	0.000041
0.000675	0.000020
0.000236	0.000001
0.001266	0.000101
0.000569	0.000040
0.003167	0.000095
0.000747	0.000063
--	--
0.000696	0.000014
0.000226	0.000018
0.000173	0.000016
0.000676	0.000074
--	--
0.000868	0.000078
0.000270	0.000001
0.001207	0.000127
0.001957	0.000117
0.002672	0.000107
0.003952	0.000138
0.001758	0.000062
0.000412	0.000033
0.001160	0.000157
0.000682	0.000048
0.002613	0.000390
0.000893	0.000067
0.003198	0.000208
0.000907	0.000064
0.000554	0.000008
0.000526	0.000047
0.000442	0.000011
0.000278	0.000010
0.014327	0.001146
--	--
0.000162	0.000002
0.000631	0.000054
0.000282	0.000021
0.005567	0.000417
0.000583	0.000023
0.001257	0.000101
0.001284	0.000109
0.001396	0.000070
0.002547	0.000267
0.005286	0.000026
0.002636	0.000250
0.000665	0.000043
0.000620	0.000040
0.001521	0.000183
0.010372	0.000726
0.003972	0.000496
0.000771	0.000050
0.000315	0.000032
0.000375	0.000032
0.003014	0.000256
0.000239	0.000011
0.000581	0.000081
0.000683	0.000044
0.001500	0.000120
0.000610	0.000061
0.018993	0.001899
0.000354	0.000019
0.014118	0.000424
0.001047	0.000031
0.000563	0.000017
--	--
0.000233	0.000012
0.001400	0.000231
0.002467	0.000160
0.001382	0.000256
0.010343	0.000672
0.001288	0.000090
0.000851	0.000098
0.000470	0.000059
0.000638	0.000067
0.000274	0.000022
0.001190	0.000089
--	--
0.007158	0.000716
0.005352	0.000455
0.000294	0.000028
0.000621	0.000034
0.005990	0.000719
0.002301	0.000253
0.000551	0.000014
0.000463	0.000023
--	--
0.016276	0.002116
0.000647	0.000006
0.000706	0.000053
0.007990	0.000639
0.001231	0.000111
0.001190	0.000107
0.002566	0.000218
0.003911	0.000313
0.006910	0.000449
0.001636	0.000106
--	--
0.001234	0.000080
0.000852	0.000132
0.000685	0.000058
0.002897	0.000261
0.004590	0.000207
0.003521	0.000211
0.000346	0.000064
0.000933	0.000028
0.010439	0.000940
0.003655	0.000183
0.001443	0.000245
0.075861	0.011379
0.001292	0.000103
0.000582	0.000023

Weighted	
Value Line	Product
Weight	Product
0.000863	0.000039
--	--
0.000982	0.000064
0.006685	0.000668
0.002428	0.000473
0.000413	0.000052
0.009873	0.001580
0.000600	0.000039
--	--
0.002732	0.000301
--	--
0.002720	0.000313
0.000457	0.000027
0.000790	0.000036
0.000674	0.000020
0.014947	0.001719
0.000358	0.000016
--	--
0.000984	0.000064
0.001068	0.000080
0.000545	0.000054
0.000524	0.000029
0.008877	0.000932
--	--
0.000477	0.000069
0.001363	0.000102
0.000210	0.000005
0.001410	0.000049
--	--
0.001307	0.000065
0.009063	0.000544
0.009988	0.000849
0.000517	0.000023
0.016885	0.001351
0.002667	0.000253
0.001252	0.000113
0.000587	0.000053
0.000493	0.000020
0.000655	0.000079
0.003008	0.000180
0.005873	0.000264
0.002176	0.000065
0.000372	0.000015
0.000399	0.000016
0.001395	0.000042
0.000995	0.000025
0.000309	0.000011
0.001221	0.000061
0.001855	0.000074
0.001148	0.000040
0.000353	0.000044
0.000713	0.000086
0.006230	0.000779
0.000394	0.000041
0.000306	0.000044
0.000516	0.000026
0.000295	0.000018
0.000473	0.000031
0.001219	0.000177
0.001233	0.000086
0.000856	0.000103
0.002021	0.000162
0.001465	0.000132
--	--
0.004846	0.000654
0.002239	0.000146
--	--
0.003081	0.000277
0.000617	0.000019
--	--
0.000384	0.000019
0.002771	0.000083
--	--
0.004130	0.000392
0.001676	0.000168
0.000704	0.000070
0.001017	0.000036
0.000611	0.000015
0.001782	0.000125
0.001250	0.000075
0.001118	0.000106
0.000732	0.000033
0.003797	0.000399
0.001537	0.000131
0.009920	0.000546
0.001549	0.000077
0.000625	0.000081
0.002385	0.000083
0.000768	0.000115
0.003774	0.000358
0.000706	0.000067
0.008315	0.001122
0.001393	0.000111
0.001360	0.000129
0.000812	0.000081
0.001041	0.000057
0.006182	0.000278
0.000396	0.000034
0.000471	0.000028
0.013864	0.001664
0.000166	0.000007
0.006588	0.000692
0.006961	0.000383
0.002596	0.000039
0.018962	0.002750
0.001344	0.000094
0.000887	0.000071
0.000907	0.000045
0.000836	0.000105
--	--
0.001438	0.000151
0.000737	0.000011
0.012177	0.000487
0.000574	0.000060
0.001582	0.000095
0.001466	0.000088
0.001065	0.000037
--	--

Weighted	
Value Line	Product
Weight	
0.000544	0.000011
0.001312	0.000151
0.002356	0.000130
0.001206	0.000145
0.019252	0.001348
0.000529	0.000053
0.000426	0.000021
0.000989	0.000158

Weighted	
Value Line	
Weight	Product
0.000439	0.000026
0.001737	0.000104
0.001182	0.000089
0.007263	0.000327
0.000466	0.000035
0.000190	0.000010
0.000741	0.000063
0.001352	0.000128
0.001382	0.000083
0.000231	0.000008
0.003780	0.000454
<b>1.000000</b>	<b>9.65%</b>

## 6-MONTH AVERAGE BOND YIELDS

	(a)				(b)	(b)	(a)	Baa-30 Yr.
	Public Utility Bonds				30-Yr.	10-Yr.	AAA	
	Baa	A	Aa	AVG.	Govt	Govt	Corp.	
Apr.	3.82%	3.19%	2.93%	3.31%	1.27%	0.66%	2.43%	2.55%
May	3.63%	3.14%	2.89%	3.22%	1.38%	0.67%	2.49%	2.25%
Jun.	3.44%	3.07%	2.80%	3.10%	1.49%	0.73%	2.44%	1.95%
Jul.	3.09%	2.74%	2.46%	2.77%	1.31%	0.62%	2.14%	1.78%
Aug.	3.06%	2.73%	2.49%	2.76%	1.36%	0.65%	2.25%	1.70%
Sep. 2020	3.17%	2.84%	2.62%	2.88%	1.42%	0.68%	2.31%	1.75%
<b>Average</b>	<b>3.37%</b>	<b>2.95%</b>	<b>2.70%</b>	<b>3.01%</b>	<b>1.37%</b>	<b>0.67%</b>	<b>2.34%</b>	
<b>Aa Spread</b>	<b>0.67%</b>	<b>0.25%</b>		<b>0.31%</b>	<b>0.70%</b>			

(a) Moody's Investors Service.

(b) <https://fred.stlouisfed.org/>.

## BOND YIELD FORECAST

	Baa Yield	Average Utility
	2021-25	2021-25
Projected Aa Utility Yield		
IHS Global Insight (a)	3.65%	3.65%
EIA (b)	4.60%	4.60%
Average	4.12%	4.12%
Current Baa - Aa Yield Spread (c)	0.67%	Avg. - Aa Spread 0.31%
<b>Implied Baa Utility Yield</b>	<b>4.79%</b>	<b>Implied Avg Yield 4.43%</b>

(a) IHS Markit, Long-Term Macro Forecast - Baseline (Jun. 29, 2020).

(b) Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020).

(c) Based on monthly average bond yields from Moody's Investors Service for the six-month period Apr. - Sep. 2020.

	2021	2022	2023	2024	2025	Average
						2021-25
10-Yr. Treasury						
Value Line (a)	0.8%	1.1%	1.3%	1.5%		1.2%
IHS Markit (b)	0.69%	0.90%	1.22%	1.50%	1.81%	1.2%
EIA (c)	3.13%	3.23%	3.28%	3.28%	3.27%	3.2%
Blue Chip (d)	1.2%	1.5%	2.1%	2.5%	2.7%	2.0%
						1.9%
30-Yr. Treasury						
Value Line (a)	1.5%	2.0%	2.1%	2.5%		2.0%
IHS Markit (b)	1.52%	1.81%	2.13%	2.37%	2.61%	2.1%
Blue Chip (d)	1.8%	2.2%	2.7%	3.1%	3.3%	2.6%
						2.2%
Aaa Corporate						
Value Line (a)	1.9%	2.2%	2.3%	3.3%		2.4%
IHS Global Insight (b)	2.97%	3.13%	3.15%	3.11%	3.21%	3.1%
Blue Chip (d)	2.8%	3.2%	3.6%	4.0%	4.2%	3.6%
						3.0%
Aa Utility						
IHS Markit (b)	3.47%	3.65%	3.69%	3.65%	3.78%	3.65%
EIA (c)	4.43%	4.58%	4.66%	4.66%	4.65%	4.60%
						4.12%

(a) Value Line Investment Survey, Forecast for the U.S. Economy (Aug. 28, 2020)

(b) IHS Markit, Long-Term Macro Forecast - Baseline (Jun. 29, 2020)

(c) Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020)

(d) Wolters Kluwer, *Blue Chip Financial Forecasts* (Jun. 1, 2020)

BLUE CHIP (Jun. 2020)	1Q2020	2025	BP
			Chg.
Aaa	3.00%	4.20%	120
Baa	3.76%	5.30%	154
			137

<b>Market Cap</b>	<b>Size Premium</b>
\$ 31,090.379	-0.28%
\$ 13,142.606	0.50%
\$ 6,618.604	0.73%
\$ 4,312.546	0.79%
\$ 2,688.889	1.10%
\$ 1,669.856	1.34%
\$ 993.855	1.47%
\$ 515.621	1.59%
\$ 230.024	2.22%
\$ 1.973	4.99%

Duff & Phelps, 2020 CRSP Deciles Size Study -- Supplementary Data Exhibits , Cost of Capital Navigator



## KEY TO RATING CODES

<u>S&amp;P</u>		<u>VL Fin Strength</u>		<u>Moody's</u>	
<u>Corporate</u>	<u>Corporate</u>	<u>Strength</u>	<u>Strength</u>	<u>Long-term</u>	<u>Long-term</u>
<u>Rating</u>	<u>Code Rating</u>	<u>Rank</u>	<u>Code Rank</u>	<u>Rating</u>	<u>Code Rating</u>
AAA	1 AAA	A++	1 A++	AAA	1 AAA
AA+	2 AA+	A+	2 A+	Aa1	2 Aa1
AA	3 AA	A	3 A	Aa2	3 Aa2
AA-	4 AA-	B++	4 B++	Aa3	4 Aa3
A+	5 A+	B+	5 B+	A1	5 A1
A	6 A	B	6 B	A2	6 A2
A-	7 A-	C++	7 C++	A3	7 A3
BBB+	8 BBB+	C+	8 C+	Baa1	8 Baa1
BBB	9 BBB	C	9 C	Baa2	9 Baa2
BBB-	10 BBB-	--	--	Baa3	10 Baa3
BB+	11 BB+	n/a	n/a	Ba1	11 Ba1
BB	12 BB			Ba2	12 Ba2
BB-	13 BB-			Ba3	13 Ba3
B+	14 B+			B1	14 B1
B	15 B			B2	15 B2
B-	16 B-			B3	16 B3
CCC+	17 CCC+			Caa1	17 Caa1
CCC	18 CCC			Caa2	18 Caa2
CCC-	19 CCC-			Caa3	19 Caa3
CC	20 CC			NR	--
C	21 C				
D	22 D				
NR	--				



**CAPITAL STRUCTURE DATA**

**ELECTRIC UTILITY INDUSTRY**

At Year-end 2019

	<b>Company</b>	<b>Current Maturities</b>	<b>Long-term Debt</b>	<b>D+E</b>	<b>Preferred</b>	<b>Common Stock (b)</b>	<b>Total</b>
1	AQN Algonquin Pwr & Util	225.0	3,706.9	3,931.9	184.3	4,222.3	8,338.5
2	ALE ALLETE	212.9	1,400.9	1,613.8	-	2,335.6	3,949.4
3	LNT Alliant Energy	657.2	5,533.0	6,190.2	200.0	5,205.1	11,595.3
4	AEE Ameren Corp.	442.0	8,915.0	9,357.0	-	8,201.0	17,558.0
5	AEP American Elec Pwr	1,598.7	25,126.8	26,725.5	-	19,913.2	46,638.7
6	AGR Avangrid, Inc.	730.0	6,716.0	7,446.0	-	15,586.0	23,032.0
7	AVA Avista Corp.	52.0	1,843.8	1,895.8	-	1,939.3	3,835.1
8	BKH Black Hills Corp.	5.7	3,140.1	3,145.8	-	2,464.1	5,609.9
9	CNP CenterPoint Energy	849.0	14,244.0	15,093.0	-	8,359.0	23,452.0
10	CMS CMS Energy Corp.	1,130.0	12,027.0	13,157.0	-	5,055.0	18,212.0
11	ED Consolidated Edison	1,446.0	18,527.0	19,973.0	-	18,213.0	38,186.0
12	D Dominion Energy	3,162.0	33,824.0	36,986.0	-	34,033.0	71,019.0
13	DTE DTE Energy Co.	687.0	15,935.0	16,622.0	-	11,836.0	28,458.0
14	DUK Duke Energy Corp.	3,141.0	54,985.0	58,126.0	-	47,951.0	106,077.0
15	EIX Edison International	479.0	17,864.0	18,343.0	-	15,496.0	33,839.0
16	EMA Emera Inc.	1,119.0	14,292.0	15,411.0	1,004.0	7,354.0	23,769.0
17	ETR Entergy Corp.	795.0	17,078.6	17,873.7	219.4	10,258.7	28,351.7
18	EVRG Eversource Energy	251.1	8,746.7	8,997.8	-	8,545.3	17,543.1
19	ES Eversource Energy	370.6	14,311.0	14,681.6	-	12,785.6	27,467.1
20	EXC Exelon Corp.	4,710.0	31,719.0	36,429.0	-	34,573.0	71,002.0
21	FE FirstEnergy Corp.	380.0	19,618.0	19,998.0	-	6,975.0	26,973.0
22	FTS Fortis Inc.	714.0	21,914.0	22,628.0	1,623.0	18,490.0	42,741.0
23	HE Hawaiian Elec.	-	2,079.5	2,079.5	34.3	2,280.3	4,394.0
24	IDA IDACORP, Inc.	100.0	1,736.7	1,836.7	-	2,470.6	4,307.2
25	MGEE MGE Energy	19.7	523.7	543.4	-	855.7	1,399.1
26	NEE NextEra Energy, Inc.	2,124.0	37,543.0	39,667.0	-	41,360.0	81,027.0
27	NWE NorthWestern Corp.	2.5	2,250.7	2,253.2	-	2,039.1	4,292.3
28	OGE OGE Energy Corp.	0.0	3,195.2	3,195.2	-	4,139.5	7,334.7
29	OTTR Otter Tail Corp.	0.2	689.6	689.8	-	781.5	1,471.2
30	PNW Pinnacle West Capital	800.0	4,832.6	5,632.6	-	5,553.2	11,185.7
31	PNM PNM Resources	490.3	2,517.4	3,007.7	11.5	1,741.8	4,761.0
32	POR Portland General Elec.	16.0	2,732.0	2,748.0	-	2,591.0	5,339.0
33	PPL PPL Corp.	1,172.0	20,721.0	21,893.0	-	12,991.0	34,884.0
34	PEG Pub Sv Enterprise Grp.	1,365.0	13,743.0	15,108.0	-	15,089.0	30,197.0
35	SRE Sempra Energy	1,526.0	20,785.0	22,311.0	20.0	21,785.0	44,116.0
36	SO Southern Company	2,989.0	41,798.0	44,787.0	291.0	31,468.0	76,546.0
37	WEC WEC Energy Group	693.2	11,211.0	11,904.2	30.4	10,224.2	22,158.8
38	XEL Xcel Energy Inc.	702.0	17,407.0	18,109.0	-	13,239.0	31,348.0

\*This is \$CAD

Source: Form 10-K Reports available at <http://www.sec.gov/edgar/searchedgar/companysearch.html>.

(a) Including current maturities of long-term debt.

(b) Including noncontrolling interest.

Operating Company	Current Maturities- LTD	Long-term Debt (a)	Preferred	Common Equity	Total	Source: 10-K unless otherwise noted
<b>1 ALGONQUIN PWR. &amp; UTIL.</b>						
Empire District Electric Co.		779.6	-	914.9	1,694.4	FERC Form 1 (2019)
Liberty Utilities (Granite State Elec.)		32.0	-	107.3	139.3	FERC Form 1 (2019)
<b>2 ALLETE</b>						
ALLETE, Inc. (Minnesota Power)		1,513.4	-	2,231.6	3,745.1	FERC Form 1 (2019)
<b>3 AMEREN CORP.</b>						
Ameren Illinois Co.		3,575.0	62.0	4,070.0	7,707.0	
Union Electric Co.		4,190.0	80.0	4,269.0	8,539.0	
<b>4 AVANGRID</b>						
Central Maine Pwr		1,190.0	0.6	1,983.2	3,173.8	FERC Form 1 (2019)
NY State E&G		1,535.5	-	1,471.5	3,007.0	FERC Form 1 (2019)
Rochester G&E		1,051.9	-	1,104.3	2,156.3	FERC Form 1 (2019)
United Illuminating		867.0	-	1,179.0	2,046.0	FERC Form 1 (2019)
<b>5 BLACK HILLS CORP.</b>						
Black Hills Power		342.8	-	451.0	793.8	FERC Form 1 (2019)
Cheyenne Light Fuel & Power		202.0	-	188.8	390.8	FERC Form 1 (2019)
Black Hills/Colorado Electric Utility Co		150.0	-	405.2	555.2	FERC Form 1 (2019)
<b>6 CENTERPOINT ENERGY</b>						
CenterPoint Energy Houston Elect.		4,950.0	-	3,251.0	8,201.0	
<b>7 CMS ENERGY</b>						
Consumers Energy Co.		7,345.0	37.0	7,700.0	15,082.0	
<b>9 DTE ENERGY CO.</b>						
DTE Electric Co.		7,188.0	-	7,195.0	14,383.0	
<b>10 EDISON INTERNATIONAL</b>						
Southern California Edison Co.		15,211.0	2,245.0	15,582.0	33,038.0	
<b>11 EMERA INC.</b>						
Emera Maine		398.5	0.4	531.6	930.5	FERC Form 1 (2019)
Tampa Electric Co.		2,557.7	-	3,163.8	5,721.5	FERC Form 1 (2019)
<b>12 ENTERGY CORP.</b>						
Entergy Arkansas Inc.		3,517.2	-	3,125.9	6,643.1	
Entergy Louisiana LLC		7,303.7	-	6,397.1	13,700.8	
Entergy Mississippi Inc.		1,614.1	-	1,542.2	3,156.3	
Entergy New Orleans Inc.		559.1	-	497.6	1,056.6	
Entergy Texas Inc.		1,923.0	35.0	1,764.4	3,722.4	
<b>13 EXELON CORP.</b>						
Delmarva Power and Light		1,567.0	-	1,580.0	3,147.0	
Baltimore Gas & Electric Co.		3,270.0	-	3,683.0	6,953.0	
Commonwealth Edison Co.		8,696.0	-	10,677.0	19,373.0	
PECO Energy Co.		3,589.0	-	4,178.0	7,767.0	
Potomac Electric Power Co.		2,864.0	-	2,907.0	5,771.0	
Atlantic City Electric Co.		1,327.0	-	1,276.0	2,603.0	
<b>14 FIRSTENERGY CORP.</b>						

Cleve. Elec. Illum./Ohio Ed./Toledo Ed.	2,215.3	-	3,296.0	5,511.3	FERC Form 1 (2019)
Jersey Central Power & Light Co.	1,650.8	-	3,562.3	5,213.1	FERC Form 1 (2019)
Metropolitan Edison Co.	1,049.0	-	968.1	2,017.1	FERC Form 1 (2019)
Monongahela Power Co.	1,522.4	-	1,315.6	2,837.9	FERC Form 1 (2019)
Pennsylvania Electric Co.	1,298.5	-	1,318.1	2,616.6	FERC Form 1 (2019)
The Potomac Edison Co.	500.0	-	594.3	1,094.3	FERC Form 1 (2019)
West Penn Power Co.	975.0	-	888.8	1,863.8	FERC Form 1 (2019)
Pennsylvania Power	200.0	-	190.6	390.6	FERC Form 1 (2019)
<b>15 HAWAIIAN ELEC.</b>					
Hawaiian Electric Co.	1,497.7	34.3	2,047.4	3,579.3	
<b>16 IDACORP</b>					
Idaho Power Co.	1,836.7	-	2,275.6	4,112.2	
<b>17 NORTHWESTERN CORP.</b>					
NorthWestern Corporation	2,245.6	-	2,039.1	4,284.7	FERC Form 1 (2019)
<b>18 OGE ENERGY CORP.</b>					
Oklahoma G&E	3,219.4	-	3,958.2	7,177.6	FERC Form 1 (2019)
<b>19 OTTER TAIL CORP.</b>					
Otter Tail Power Co.	612.0	-	640.2	1,252.2	FERC Form 1 (2019)
<b>20 PNM RESOURCES</b>					
Public Service Company of New Mexico	1,748.0	11.5	1,512.4	3,272.0	
Texas-New Mexico Power Co.	670.7	-	754.6	1,425.3	
<b>21 SEMPR ENERGY</b>					
San Diego Gas & Electric	6,362.0	-	7,100.0	13,462.0	
Oncor Electric Delivery	7,760.5	-	10,137.4	17,897.9	FERC Form 1 (2019)
				263,204.8	

Weight	Debt	Preferred	Equity	Wtd Debt	Wtd Preferred Stock	Wtd. Equity
0.00644	46.01%	0.00%	53.99%	0.30%	0.00%	0.35%
0.00053	22.95%	0.00%	77.05%	0.01%	0.00%	0.04%
0.01423	40.41%	0.00%	59.59%	0.57%	0.00%	0.85%
0.02928	46.39%	0.80%	52.81%	1.36%	0.02%	1.55%
0.03244	49.07%	0.94%	49.99%	1.59%	0.03%	1.62%
0.01206	37.50%	0.02%	62.49%	0.45%	0.00%	0.75%
0.01142	51.06%	0.00%	48.94%	0.58%	0.00%	0.56%
0.00819	48.78%	0.00%	51.22%	0.40%	0.00%	0.42%
0.00777	42.37%	0.00%	57.63%	0.33%	0.00%	0.45%
0.00302	43.18%	0.00%	56.82%	0.13%	0.00%	0.17%
0.00148	51.68%	0.00%	48.32%	0.08%	0.00%	0.07%
0.00211	27.02%	0.00%	72.98%	0.06%	0.00%	0.15%
0.03116	60.36%	0.00%	39.64%	1.88%	0.00%	1.24%
0.05730	48.70%	0.25%	51.05%	2.79%	0.01%	2.93%
0.05465	49.98%	0.00%	50.02%	2.73%	0.00%	2.73%
0.12552	46.04%	6.80%	47.16%	5.78%	0.85%	5.92%
0.00354	42.83%	0.04%	57.13%	0.15%	0.00%	0.20%
0.02174	44.70%	0.00%	55.30%	0.97%	0.00%	1.20%
0.02524	52.94%	0.00%	47.06%	1.34%	0.00%	1.19%
0.05205	53.31%	0.00%	46.69%	2.77%	0.00%	2.43%
0.01199	51.14%	0.00%	48.86%	0.61%	0.00%	0.59%
0.00401	52.91%	0.00%	47.09%	0.21%	0.00%	0.19%
0.01414	51.66%	0.94%	47.40%	0.73%	0.01%	0.67%
0.01196	49.79%	0.00%	50.21%	0.60%	0.00%	0.60%
0.02642	47.03%	0.00%	52.97%	1.24%	0.00%	1.40%
0.07360	44.89%	0.00%	55.11%	3.30%	0.00%	4.06%
0.02951	46.21%	0.00%	53.79%	1.36%	0.00%	1.59%
0.02193	49.63%	0.00%	50.37%	1.09%	0.00%	1.10%
0.00989	50.98%	0.00%	49.02%	0.50%	0.00%	0.48%

0.02094	40.20%	0.00%	59.80%	0.84%	0.00%	1.25%
0.01981	31.67%	0.00%	68.33%	0.63%	0.00%	1.35%
0.00766	52.00%	0.00%	48.00%	0.40%	0.00%	0.37%
0.01078	53.64%	0.00%	46.36%	0.58%	0.00%	0.50%
0.00994	49.63%	0.00%	50.37%	0.49%	0.00%	0.50%
0.00416	45.69%	0.00%	54.31%	0.19%	0.00%	0.23%
0.00708	52.31%	0.00%	47.69%	0.37%	0.00%	0.34%
0.00148	51.21%	0.00%	48.79%	0.08%	0.00%	0.07%
0.01360	41.84%	0.96%	57.20%	0.57%	0.01%	0.78%
0.01562	44.66%	0.00%	55.34%	0.70%	0.00%	0.86%
0.01628	52.41%	0.00%	47.59%	0.85%	0.00%	0.77%
0.02727	44.85%	0.00%	55.15%	1.22%	0.00%	1.50%
0.00476	48.88%	0.00%	51.12%	0.23%	0.00%	0.24%
0.01243	53.42%	0.35%	46.22%	0.66%	0.00%	0.57%
0.00542	47.06%	0.00%	52.94%	0.25%	0.00%	0.29%
0.05115	47.26%	0.00%	52.74%	2.42%	0.00%	2.70%
0.06800	43.36%	0.00%	56.64%	2.95%	0.00%	3.85%
1.00000				47.37%	0.95%	51.68%