BEFORE THE WASHINGTON

UTILITIES & TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

Complainant,

v.

AVISTA CORPORATION d/b/a AVISTA UTILITIES,

Respondent.

DOCKET NOS. UE-200900 and UG-200901

RESPONSE TESTIMONY OF J. RANDALL WOOLRIDGE ON BEHALF OF THE WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL PUBLIC COUNSEL UNIT

EXHIBIT JRW-1T

April 21, 2021

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I. INTRODUCTION AND SUMMARY OF TESTIMONY

Q. Please state your full name, address and occupation.

A. My name is J. Randall Woolridge, and my business address is 120 Haymaker Circle, State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration at the University Park Campus of Pennsylvania State University. I am also the Director of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A summary of my educational background, research, and related business experience is provided in Exhibit JRW-12.

Q. What is the scope of your testimony in this proceeding?

A. I have been asked by the Public Counsel Unit of the Washington State Attorney General's Office to provide an opinion as to the overall fair rate of return or cost of capital for the regulated electric and natural gas utility service of Avista Corporation ("Avista" or the "Company") and to evaluate Avista's rate of return testimony in this proceeding.[1]

Q. How is your testimony organized?

A. First, I summarize my cost of capital recommendation for the Company, and review the primary areas of contention on the Company's position. Second, I provide an overview of capital market conditions and authorized returns on equity ("ROE") for utilities across the country. Third, I discuss the proxy group that I have used to estimate an equity cost rate for Avista. Fourth, I provide my recommendations on the Company's appropriate capital

[1] In my testimony, I use the terms 'rate of return' and 'cost of capital' interchangeably. This is because the required rate of return of investors on a company's capital is the cost of capital.

structure and senior capital cost rates. Fifth, I estimate the equity cost rate for the Company. Finally, I critique Avista's rate of return analysis and testimony.

A. Utility Rate of Return

Q. What comprises a utility's "Rate of Return"?

A. A company's overall rate of return consists of three main categories: (1) capital structure (i.e., ratios of short-term debt, long-term debt, preferred stock and common equity); (2) cost rates for short-term debt, long-term debt, and preferred stock; and (3) common equity cost, otherwise known as ROE.

Q. What is a utility's ROE intended to reflect?

A. An ROE is most simply described as the allowed rate of profit for a regulated company. In a competitive market, a company's profit level is determined by a variety of factors including the state of the economy, the degree of competition a company faces, the ease of entry into its markets, the existence of substitute or complementary products/services, the company's cost structure, the impact of technological changes, and the supply and demand for its services and/or products. For a regulated monopoly, the regulator determines the level of profit available to the utility. The United States Supreme Court established the guiding principles for establishing an appropriate level of profitability for regulated public utilities in two cases: (1) *Bluefield*[2] and (2) *Hope*.[3] In those cases, the Court recognized that the fair rate of return on equity should be: (1) comparable to returns investors expect to earn on investments with similar risk; (2) sufficient to assure

[2] *Bluefield Water Works and Improvement Co. v. Pub. Serv. Comm'n of W. Va.*, 262 U.S. 679 (1923) ("Bluefield").
[3] *Fed. Power Comm'n v. Hope Nat. Gas Co*., 320 U.S. 591 (1944) ("Hope").

confidence in the company's financial integrity; and (3) adequate to maintain the company's credit and to attract capital.

Thus, the appropriate ROE for a regulated utility requires determining the market-based cost of capital. The market-based cost of capital for a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. The purpose of all of the economic models and formulas in cost of capital testimony (including those presented later in my testimony) is to estimate, using market data of similar-risk firms, the rate of return equity investors require for that risk-class of firms in order to set an appropriate ROE for a regulated firm.

B. Summary of Positions

Q. Please review the Company's proposed rate of return or cost of capital.

A. Avista witness Mr. Mark T. Thies recommends a capital structure consisting of 50.0 percent total debt and 50.0 percent common equity, and a debt cost rate of 4.97 percent.[4] Avista witness Mr. Adrien McKenzie has recommended a common equity cost rate of 9.90 percent for Avista.[5] The Company's overall proposed rate of return is 7.43 percent.[6] This recommendation is shown in Table 1.

Table 1
Avista's Rate of Return Recommendation

Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	**50.00%**	**4.97%**	**2.49%**
Common Equity	**50.00%**	**9.90%**	**4.95%**
Total Capital	**100.00%**		**7.43%**

[4] Direct Testimony of Mark T. Thies, Exh. MTT-1T, at 17:10–12.
[5] Direct Testimony of Adrien M. McKenzie, Exh. AMM-1T, at 7:6–7.
[6] Thies, Exh. MTT-1T, at 17:12.

Q. Please review your recommendation regarding the appropriate market-based rate of return for Avista.

A. I have reviewed the Company's proposed capital structure and overall cost of capital. I demonstrate that Avista's proposed capitalization has a higher common equity ratio and lower financial risk than the capitalization the Company has maintained over time. As a result, I have used a capital structure with a common equity ratio of 48.50 percent, which is the capital structure adopted in the Company's last rate case, and is consistent with Avista's capitalization in recent years. This recommended capitalization ratio is also consistent with those approved by the Commission in recent years in other utilities' rate cases. To estimate an equity cost rate for the Company, I have applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model (CAPM) to three proxy groups: my proxy group of electric utility companies ("Electric Proxy Group"), Mr. McKenzie's proxy group ("McKenzie Proxy Group"), and my proxy group of gas distribution companies ("Gas Proxy Group"). My DCF and CAPM analyses indicate an equity cost rate range of 7.60 percent to 9.05 percent.

Q. What is your recommended rate of return for Avista?

A. As noted, my equity cost rate studies indicate an ROE between 7.60 percent and 9.05 percent. I believe that this range accurately reflects current capital market data. Since I rely primarily on the DCF approach, and Avista's risk level is at the high-end of the Proxy Groups, I will use 9.00 percent as my recommended equity cost rate for the Company. With my recommended capitalization ratios and using Avista's proposed debt

cost rate, my rate of return or cost of capital recommendation for the Company is 6.83 percent and is summarized in Table 2 and Exhibit JRW-2.

Table 2
PC's Rate of Return Recommendation

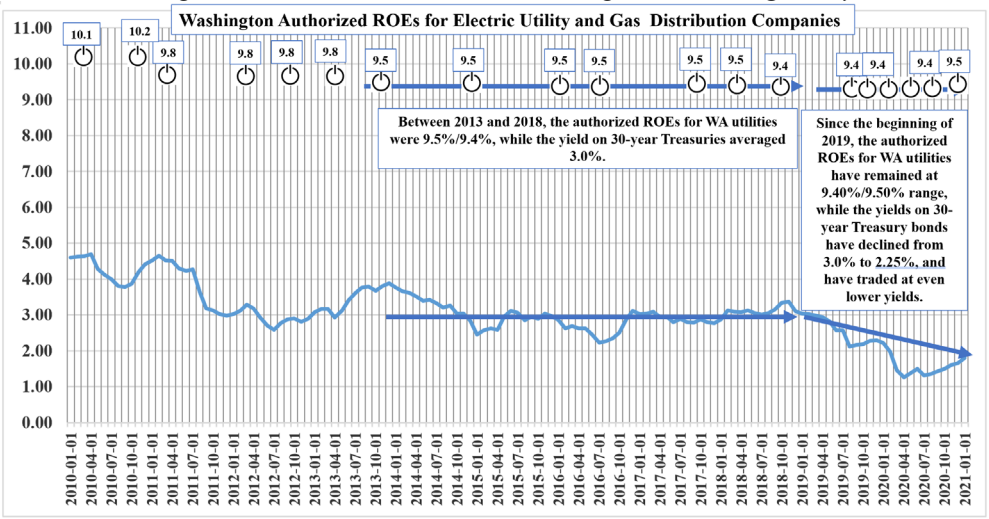
Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	**51.50%**	**4.97%**	**2.56%**
Common Equity	**48.50%**	**9.00%**	**4.37%**
Total Capital	**100.00%**		**6.92%**

Q. Please discuss the authorized ROEs for electric utility and gas distribution companies in Washington, and how they are related to interest rates?

A. Figure 1 shows (1) the authorized ROEs in Washington for electric utility and gas distribution companies and (2) 30-year Treasury yields, since 2010. Between 2013 and 2018, the authorized ROEs in Washington were in the 9.4 percent to 9.5 percent range, while the 30-year Treasury yield averaged 3.0 percent. The Washington ROEs are provided in Table 3. Over that time period, the difference between the authorized ROEs and 30-year Treasury yields was fairly constant. In the year 2019, yield on 30-year Treasury bonds declined about 100 basis points to 2.25. In 2020, these yields declined another 100 basis points to 1.25 percent due to COVID-19. These yields have recovered to some degree since mid-2020, and now are back at 2.25 percent. Meanwhile, despite the lower interest rates, the authorized ROEs in Washington remained in the 9.4 percent to 9.5 percent range. In every litigated and settled rate case since 2019, with one exception, the Commission has reduced or maintained utility ROEs at 9.4 percent. The bottom line is that, unlike previous years, Washington authorized ROEs since the beginning of 2019 have not maintained their relationship with interest rates because they have not reflected the decline in interest rates and capital costs.

Figure 1
Washington Authorized ROEs and 30-Year Treasury Yields
2010-2021

Date Sources: Washington ROEs - S&P Global Market Intelligence, RRA *Regulatory Focus*, 2021.



FRED, Thirty-Year Treasury Yields, https://fred.stlouisfed.org/series/DGS30.

Table 3
Washington Authorized ROEs and Common Equity Ratios
2010-2021

Company	Docket No.	Order Date	Decision Type	ROE	CE Ratio
Puget Sound Energy Inc.	D-UE-090704	4/2/2010	Fully Litigated	10.10	46.00
Puget Sound Energy Inc.	D-UG-090705	4/2/2010	Fully Litigated	10.10	46.00
Avista Corp.	D-UE-100467	11/19/2010	Settled	10.20	46.50
Avista Corp.	D-UG-100468	11/19/2010	Settled	10.20	46.50
Puget Sound Energy Inc.	D-UG 101644	3/15/2011	Settled	NA	NA
PacifiCorp	D-UE-100749	3/25/2011	Fully Litigated	9.80	49.10
Avista Corp.	D-UE-110876	12/16/2011	Settled	NA	NA
Avista Corp.	D-UG-110877	12/16/2011	Settled	NA	NA
PacifiCorp	D-UE-111190	3/30/2012	Settled	NA	NA
Puget Sound Energy Inc.	D-UE-111048	5/7/2012	Fully Litigated	9.80	48.00
Puget Sound Energy Inc.	D-UG-111049	5/7/2012	Fully Litigated	9.80	48.00
Avista Corp.	D-UE-120436	12/26/2012	Settled	9.80	47.00
Avista Corp.	D-UG-120437	12/26/2012	Settled	9.80	47.00
Puget Sound Energy Inc.	D-UE-130137	6/25/2013	Settled	9.80	48.00
Puget Sound Energy Inc.	D-UG-130138	6/25/2013	Settled	9.80	48.00
PacifiCorp	D-UE-130043	12/4/2013	Fully Litigated	9.50	49.10
Avista Corp.	D-UE-140188	11/25/2014	Settled	NA	NA
Avista Corp.	D-UG-140189	11/25/2014	Settled	NA	NA
PacifiCorp	D-UE-140762	3/25/2015	Fully Litigated	9.50	49.10
Avista Corp.	D-UE-150204	1/6/2016	Settled	9.50	48.50
Avista Corp.	D-UG-150205	1/6/2016	Settled	9.50	48.50
Cascade Natural Gas Corp.	D-UG-152286	7/7/2016	Settled	NA	NA
PacifiCorp	D-UE-152253	9/1/2016	Fully Litigated	9.50	49.10
Avista Corp.	D-UE-160228	12/15/2016	Fully Litigated	NA	NA
Avista Corp.	D-UG-160229	12/15/2016	Fully Litigated	NA	NA
Puget Sound Energy Inc.	D-UE-170033	12/5/2017	Settled	9.50	48.50
Puget Sound Energy Inc.	D-UG-170034	12/5/2017	Settled	9.50	48.50
Avista Corp.	D-UE-170485	4/26/2018	Fully Litigated	9.50	48.50
Avista Corp.	D-UG-170486	4/26/2018	Fully Litigated	9.50	48.50
Cascade Natural Gas Corp.	D-UG-170929	7/20/2018	Settled	9.40	49.00
Puget Sound Energy Inc.	D-UE-180899	2/21/2019	Settled	NA	NA
Puget Sound Energy Inc.	D-UG-180900	2/21/2019	Settled	NA	NA
Northwest Natural Gas Co.	D-UG-181053	10/21/2019	Settled	9.40	49.00
Cascade Natural Gas Corp.	D-UG-190210	2/3/2020	Settled	9.40	49.10
Avista Corp.	D-UE-190334	3/25/2020	Settled	9.40	48.50
Avista Corp.	D-UG-190335	3/25/2020	Settled	9.40	48.50
Puget Sound Energy Inc.	D-UE-190529	7/8/2020	Fully Litigated	9.40	48.50
Puget Sound Energy Inc.	D-UG-190530	7/8/2020	Fully Litigated	9.40	48.50
PacifiCorp	D-UE-191024	12/14/2020	Settled	9.50	49.10

C. Primary Rate of Return Issues in this Case

Q. Please provide an overview of the primary issues regarding rate of return in this proceeding.

A. The primary issues related to the Company's rate of return include the following:

1. **Capital Market Conditions** — Mr. McKenzie's analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs. However, interest rates and capital costs remained at low levels in recent years. In 2019, interest rates fell due to slow economic growth and low inflation. Interest rates fell even further to record low levels in 2020 due to the impact of the COVID-19 public health crisis on the world's population and economy. The benchmark 30-year Treasury yield has rebounded since mid-2020, and it is in the 2.25 percent range.

2. **Capital Structure** — As I have just noted, Avista's proposed hypothetical capital structure has a higher common equity ratio and lower financial risk than other electric and gas companies. Hence, I have used the capital structure adopted in the Company's last rate case and what is consistent among the other Washington utilities.

3. **DCF Equity Cost Rate** — The DCF Equity Cost Rate is estimated by summing the stock's dividend yield and investors' expected long-run growth rate in dividends paid per share. The issues are whether it is appropriate to: (1) eliminate, as Mr. McKenzie does, low-end DCF equity cost rates without also eliminating high-end results, resulting in an asymmetric elimination process; and

(2) rely exclusively on the overly optimistic and upwardly biased earnings per share ("EPS") growth rate forecasts of Wall Street analysts and *Value Line*.

I also have used a traditional constant-growth DCF model. In developing a growth rate for my DCF model for the proxy group, I have reviewed 13 growth rate measures, including historic and projected growth-rate measures, and have evaluated growth in dividends, book value, and earnings per share. I give primary weight to analysts' projected EPS growth rates.

4. **CAPM Approach** — The CAPM approach requires an estimate of the risk-free interest rate, the beta, and the market or equity risk premium. There are several issues with Mr. McKenzie's CAPM analyses: (1) he has employed the Empirical CAPM ("ECAPM") version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium; (1) he has employed the Empirical CAPM ("ECAPM") version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium; (2) most significantly, he has used a highly overstated market risk premium of 10.2 percent. Mr. McKenzie has employed analysts' three-to-five-year growth-rate projections for EPS to compute an expected market return and market risk premium. These EPS growth-rate projections and the resulting expected market returns and market risk premiums include highly unrealistic assumptions regarding future economic and earnings growth and stock returns; and (3) he has included an unwarranted utility size adjustment.

5. **Alternative Risk Premium Model** — ("Utility Risk Premium") Mr. McKenzie estimates an equity cost rate using an alternative risk premium model, which he

calls the Utility Risk Premium ("URP") approach. The risk premium in his URP method is based on the historical relationship between long-term utility bond yields and authorized ROEs for electric utility and gas distribution companies. There are several issues with this approach, which I discuss in more depth later, but the primary problem is that the URP is a gauge of *commission* behavior rather than *investor* behavior.

6. **Expected Earnings Approach** — Mr. McKenzie also uses the Expected Earnings approach to estimate an equity cost rate for the Company. Mr. McKenzie computes the expected ROE as forecasted by *Value Line* for his proxy group of electric utilities. The so-called "Expected Earnings" approach, however, (1) does not measure the market cost of equity capital, (2) is independent of most cost of capital indicators, and (3) has several other empirical problems. Therefore, the Commission should ignore Mr. McKenzie's "Expected Earnings" approach in determining the appropriate ROE for Avista.

7. **DCF Model Applied to Non-Utility Companies** — Mr. McKenzie also estimates an equity cost rate by applying his equity-cost-rate approaches and methodologies to a group of "comparable risk" non-price regulated companies. As I note in the critique section of this testimony, his approach is fundamentally flawed for two reasons. First, these companies are not truly comparable to Avista. Their lines of business are vastly different from the electric utility and gas distribution business, and they do not operate in a highly regulated environment. Second, the upward bias in the EPS growth rate forecasts of Wall Street analysts is

particularly severe for non-utility companies, and therefore, the DCF equity cost rate estimates for this group are particularly overstated.

8. **Flotation Costs** — Mr. McKenzie also reports his equity cost rate results include a flotation cost adjustment of 10 basis points. However, Mr. McKenzie has not provided any evidence that the Company has paid flotation costs. Therefore, the Company should not be allowed to collect additional revenues in the form of a higher ROE for flotation costs that they did not incur.

II. CAPITAL MARKET CONDITIONS AND AUTHORIZED ROES

A. Capital Market Conditions

Q. Please provide a summary of the utility capital market indicators in Exhibit JRW-3.

A. Page 1 of Exhibit JRW-3 shows the yields on A-rated public-utility bonds. These yields have gradually declined in the past decade from 7.5 percent to the 3.0 percent range. They have increased since the middle of 2020 to the 3.5 percent range. Page 2 of Exhibit JRW-3 shows the average dividend yield for publicly-held electric utility and gas distribution companies. For electric utilities (Panel A), these yields declined over the past decade, bottoming out at 3.1 percent in 2019.They increased slightly to 3.6 percent in 2020. The average dividend yield for gas companies is shown in Panel B on page 2 of Exhibit JRW-3.These yields declined over the last decade, bottoming out at 2.7 percent in 2017. They have increased since then, especially in the last year, and now are in the 3.6 percent range. The average earned ROE and market-to-book ratio for publicly-held electric utilities is shown on page 3 of Exhibit JRW-3 (Panel A). The average earned ROE has been in the 9.0 percent to 10.0 percent range over the past five years. The average market-to-book ratio increased over the decade, peaking at 2.0X in 2019, and

declined to 1.75X in 2020.The average earned ROE and market-to-book ratio for publicly-held gas companies are shown in Panel B of page 3 of Exhibit JRW-3. The average ROE for gas companies has been in the 8.0 percent to 9.0 percent range in recent years, while the average market-to-book ratio reached 2.25X in 2019, but fell off to 1.75X in 2020.

Q. Please review the financial markets in 2020.

A. The financial markets began the year 2020 in good form—stock prices rose about five percent in the first six weeks of the year and interest rates declined. In the middle of February 2020, however, the spread COVID-19 rapidly increased and the virus became a major risk factor for public health and global economy. From mid-February until the third week of March, the S&P 500 declined 35 percent and investors fled to low-risk financial assets, most notably long-term Treasury bonds. The yield on the benchmark 30-year Treasury bond declined from 2.0 percent and traded as low as 1.25 percent, an all-time low. Furthermore, the day-to-day volatility of prices in financial markets was at extremes. The VIX, which is the Chicago Board Options Exchange ("CBOE") volatility index and is known as Wall Street's Fear Index, increased from 15 and traded over 50, a level which has not been seen since the financial crisis in 2008.

In response, the federal government took unprecedented fiscal and monetary actions to support the economy and financial markets. Congress passed and President Trump signed a $2 trillion stimulus relief package to help American families and businesses, the biggest economic rescue package in modern American history. The package granted relief in the form of stimulus checks sent directly to most Americans, expanded unemployment benefits, expanded paid sick leave, provided temporary student

debt relief, and more. The Federal Reserve lowered the target range for its benchmark federal-funds rate to the current range of 0 percent to 0.25 percent, a target range it expects to maintain until the economy has recovered. In addition, the Federal Reserve implemented a broad range of unprecedented programs to support financial market liquidity and economic stability. These included financial asset purchases and the creation of credit facilities to support households, businesses, and state and local governments.

In 2021, President Biden signed an additional $1.9 trillion COVID-19 stimulus plan which includes $1,400 checks for individuals, billions to help schools and colleges reopen, funding for vaccine distribution, and many other financial resources to help the U.S. recover from the pandemic.

Q. Please review the impact of the economy on interest rates.

A. Figure 2, below, shows 30-year Treasury yields over the past two years (2019-21). These yields were in the 3.0 percent range at the end of 2018, and declined to the 2.25 percent range in 2019, due primarily to slow economic growth and low inflation. As noted, in 2020, with the advent of the COVID-19 pandemic in February, 30-year Treasury yields declined to record low levels, declining about 100 basis points to the 1.25 percent range. They began their recovery in the Summer of 2020 and have increased approximately to the 2.25 percent range in 2021.Despite their recovery, these rates are still at historically low levels.

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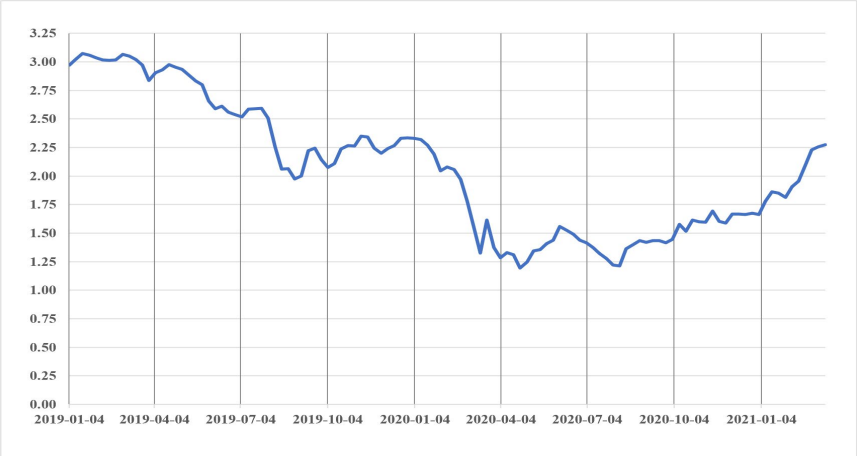
Figure 2
30-Year Treasury Yields

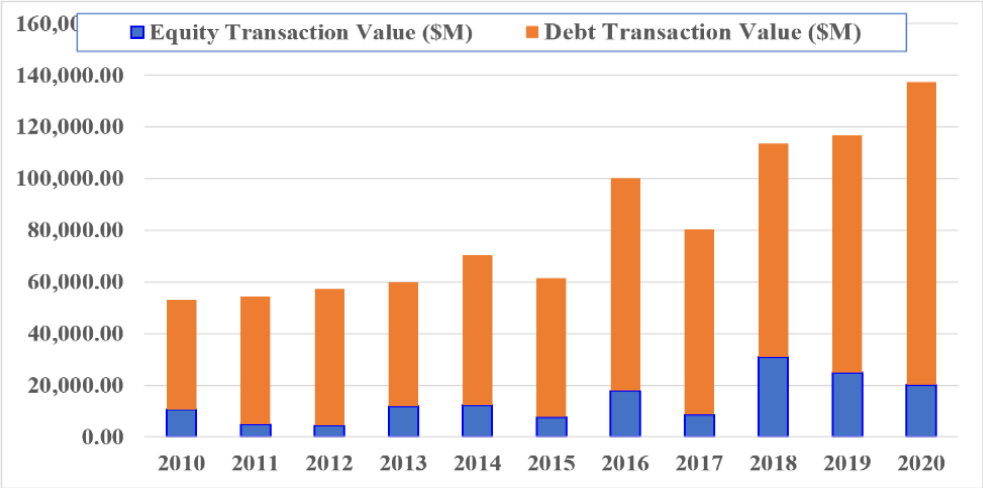


Data Source: FRED, 30-Year Treasury Constant Maturity Rate, https://fred.stlouisfed.org/series/DGS30.

Q. Have utilities taken advantage of the lower bond yields to raise capital?

A. Yes. Figure 3 shows the annual amounts of debt- and equity-capital raised by public utility companies over the past decade. Electric utility and gas distribution companies have taken advantage of the low interest rate and capital cost environment of recent years and raised record amounts of capital in the markets. In fact, in each of the last three years, public utilities have raised a total of over $100 billion in debt and equity.

Figure 3
Debt and Equity Capital Raised by Public Utilities
2010-20



Data Source: S&P Global Market Intelligence, S&P Cap IQ, 2021.

Q. Please discuss the recent increase in interest rates.

A. As noted, with the economy improving and the passage of the second COVID-19 stimulus plan, interest rates increased about 100 basis points since mid-2020. The increase in rates reflects the prospect that expanded economic growth could lead to higher inflation. Investors' inflation expectation can be seen by looking at the difference between yields on ordinary Treasuries and the yields on inflation-protected Treasuries, known as Treasury Inflation-Protected Securities (TIPS). Panel A of Figure 4 shows the expected inflation rate over the next five years and a noticeable increase over the past year, with an expected inflation rate of 2.45 percent over the next five years. Panels B and C of Figure 4 show the expected inflation rate over the next ten and thirty years, respectively. The expected inflation rates over the next ten and thirty years are 2.24 percent and 2.18 percent. When the expected inflation rate is higher over five years than over ten and thirty years, as is the case now, it is known as a bond-market inversion and it reflects that, despite a short-term expectation of higher inflation, the long-term inflation rate is still just above 2.0 percent.[7]

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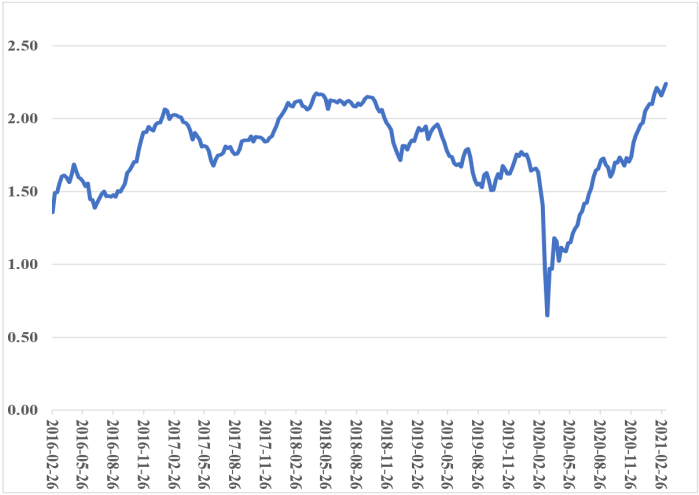
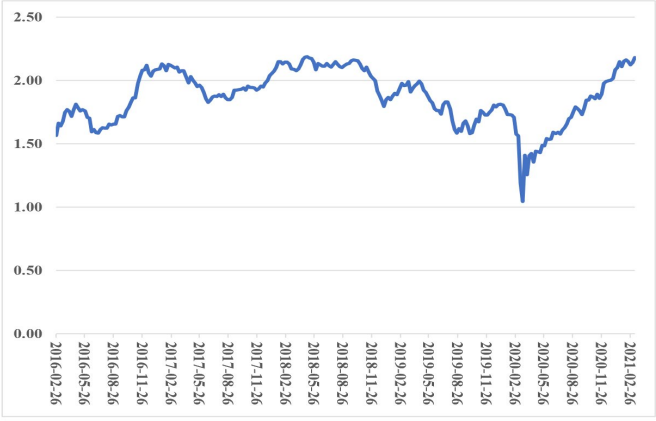
[7] Paul J. Davies, *Rare Bond-Market Inversion Signals Short-Lived Boost to Inflation*, WSJ (Feb. 25, 2021).

Figure 4
Panel A
5-Year Treasury Yields Minus 5-Year Treasury TIPs

Panel B
10-Year Treasury Yields Minus 10-Year Treasury TIPs



Panel C
30-Year Treasury Yields Minus 30-Year Treasury TIPs



Q. How has the change in interest rates over the past year impacted capital costs for utilities?

A. As discussed below, with COVID-19 and the record low interest rates in 2020, authorized ROEs for utilities also reached record low levels in 2020.However, whereas interest rates declined by about 100 basis points in 2020, authorized ROEs only declined by about 25 basis points. Therefore, utility ROEs never declined to the extent that interest rates declined in 2020.

Q. Please summarize your assessment of the current capital market situation.

A. The U.S. economy, which declined nearly twenty percent in the first half of 2020, rebounded significantly in the second half of 2020, resulting in a 3.5 percent GDP decline for the year. The U.S. unemployment rate peaked in the second quarter of 2020 at about 15 percent and is now back to 6.5 percent. The stock market began its recovery in the third week of March of 2020. And despite the ongoing spread of COVID-19 and an economic crisis created by the virus that included record unemployment, the S&P 500 has come back strong and is now back at record levels. The 30-year Treasury yield, which dropped to record low levels, has come back to its pre-COVID levels. Finally, the markets "fear index," the VIX, which topped out over 50, is now near its long-time average of 20.[8]

[8] The Chicago Board Options Exchange Volatility Index, or VIX, is a real-time market index representing the market's expectations for volatility over the coming 30 days. Investors use the VIX to measure the level of risk, fear, or stress in the market when making investment decisions.

B. Authorized ROEs

Q. Please discuss the trend in authorized roes for electric and gas companies.

A. In Figure 5, below, I have graphed the quarterly authorized ROEs for electric and gas companies from 2000 to 2020. Over the years, as interest rates have come down, authorized ROEs for electric utility and gas distribution companies have slowly declined to reflect a low capital-cost environment. In 2020, authorized ROEs for utilities hit an all-time low. As shown in Table 4, the average authorized ROEs for electric utilities and gas distribution companies have declined with interest rates over the past decade.

Table 4
Authorized ROEs for Electric Utilities and Gas Distribution Companies
2012-2020

Year	Authorized Electric ROEs (avg)	Authorized Gas ROEs (avg)
2012	**10.17%**	**9.94%**
2013	**10.03%**	**9.68%**
2014	**9.91%**	**9.78%**
2015	**9.84%**	**9.60%**
2016	**9.77%**	**9.54%**
2017	**9.74%**	**9.72%**
2018	**9.60%**	**9.59%**
2019	**9.66%**	**9.71%**
2020	**9.44%**	**9.46%**

Data Source: S&P Market Intelligence, 2021

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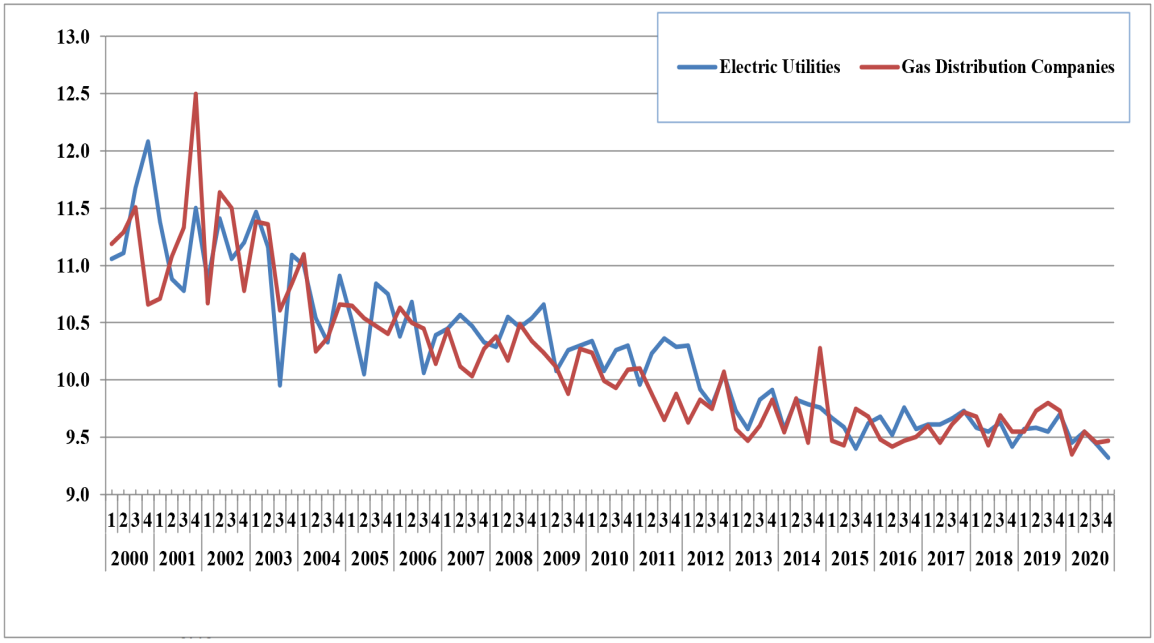
Figure 5
Authorized ROEs for Electric Utility and Gas Distribution Companies
2000-2020



Data Source: S&P Market Intelligence, 2021

Q. Do you believe that your roe recommendation meets *Hope* and *Bluefield* standards?

A. Yes, I do. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital. As shown on page 3 of Exhibit JRW-3, electric utility and gas distribution companies have been earning ROEs in the range of 8.0 percent to 10.0 percent in recent years. With such an ROE, electric utility and gas companies such as those in the proxy group have strong investment grade credit ratings, their stocks have been selling at about 2.0 times book value, and they have been raising abundant amounts of capital. While my recommendation is below the average authorized ROEs for electric utility and gas distribution companies, it reflects the record low levels of interest rates and capital costs.

Therefore, I believe that my ROE recommendation meets the criteria established in the *Hope* and *Bluefield* decisions.

III. PROXY GROUP SELECTION

Q. Please describe your approach to developing a fair rate of return recommendation for Avista.

A. To develop a fair rate of return recommendation for the Company, I have evaluated the return requirements of investors on the common stock of a proxy group of publicly-held utility companies. Given the two divisions of the Company, I have employed two groups of electric companies and one of gas companies.[9]

Q. What proxy groups have you used?

A. I have used my Electric Proxy Group, Mr. McKenzie's electric group ("McKenzie Proxy Group"), and my Gas Proxy Group.

Q. Please compare the different proxy groups.

A. The summary statistics for my Electric Proxy Group[10], Mr. McKenzie's Proxy Group, and my Gas Proxy Group are listed in Panels A, B, and C, respectively, of page 1 of Exhibit JRW-4. Table 5, below, compares the three groups.

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[9] I have used Mr. McKenzie's proxy group, but I have eliminated companies from the electric group. I have not used Avangrid and PNM Resources due to their pending merger. I have also eliminated CenterPoint (announced spin-off), First Energy (issuer credit rating downgrade to BB), Exelon (pending divestiture), and Emera and Algonquin (traded in Canada).

[10] In my testimony, I present financial results using both mean and medians as measures of central tendency. However, due to outliers among means, I have primarily used the median as a measure of central tendency.

Table 5
Authorized ROEs for Electric Utilities and Gas Distribution Companies

	Electric Proxy Group	Mr. McKenzie's Proxy Group	Gas Proxy Group
Number of Companies	**26**	**13**	**9**[11]
Median Operating Revenues	**$6.680.0 million**	**$2122.2 million**	**$1,792.9 million**
Net Plant	**$25,728.1 million**	**$9274.4 million**	**$4,904.3 million**
% Revenues from Regulated Operations	**83%**	**73% (electric)** **17% (gas)**	**70%**
S&P/Moody's Issuer Credit Rating	**BBB+/Baa1**	**BBB+/Baa2**	**A-/BBB+ / Baa1**
Common Equity Ratio	**47.0%**	**46.3%**	**46.1%**
Return on Common Equity	**8.6%**	**7.1%**	**7.9%**

Q. How does the investment risk of Avista compare to that of the three proxy groups?

A. I believe that bond ratings provide a good assessment of the investment risk of a company. Exhibit JRW-3 also shows S&P and Moody's issuer credit ratings for the companies in the two groups. Avista's issuer credit rating is BBB according to S&P and BB2 according to Moody's. These ratings are lower than the average S&P and Moody's issuer credit ratings for the Electric Proxy Group (BBB+ and Baa1), for the McKenzie Proxy Group,(BBB+ and Baa2), and the Gas Proxy Group (A-/BBB+ and Baa1).Therefore, I believe that Avista's investment risk is at the high end of the range of the three proxy groups.

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[11] Includes include Atmos Energy, Chesapeake Utilities, New Jersey Resources, Nisource, Northwest Natural Gas Company, One Gas, South Jersey Industries, Southwest Gas, and Spire.

Q. How does the investment risk of the three proxy groups compare based on the various risk metrics published by *Value Line*?

A. On page 2 of Exhibit JRW-3, I have assessed the riskiness of the three proxy groups using five different accepted risk measures. These measures include Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price Stability. These risk measures suggest that the three proxy groups are similar in risk. The comparisons of the risk measures for the three proxy groups (Electric, McKenzie, and Gas) include Beta (0.87 vs. 0.92 vs. 0.87), Financial Strength (A vs. A vs. A) Safety (1.8 vs. 2.1 vs. 2.0), Earnings Predictability (83 vs. 77 vs. 67), and Stock Price Stability (89 vs. 89 vs. 87). On balance, these measures suggest that these three proxy groups are low risk relative to the overall stock market, and are similar in risk to each other.

III. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

Q. Please describe Avista's proposed capital structure.

A. The Company has proposed a capital structure consisting of 50.0 percent total debt and 50.0 percent common equity, and a debt cost rate of 4.97 percent.

Q. What are the common equity ratios in the capitalizations of the three proxy groups?

A. As shown in Exhibit JRW-4, the median common equity ratios of the Electric, McKenzie and Gas Proxy Groups are 47.0 percent, 46.3 percent, and 46.1 percent, respectively. This indicates that the Company's proposed capitalization of 50.0 percent has a higher common equity ratio than the three proxy groups.

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Q. Is it appropriate to use the common equity ratios of the parent holding companies or subsidiary operating utilities for comparison purposes with Avista's proposed capitalization?

A. It is appropriate to use the common equity ratios of the utility holding companies because the holding companies are publicly-traded, and their stocks are used in the cost of equity capital studies. The equities of the operating utilities are not publicly-traded and hence their stocks cannot be used to compute the cost of equity capital for Avista.

Q. Is it appropriate to include short-term debt in the capitalization in comparing the common equity ratios of the holding companies with the company's proposed capitalization?

A. Yes. In comparing the common equity ratios of the holding companies with the Company's recommendation, it is appropriate to include short-term debt when computing the holding company common equity ratios. That is because short-term debt, like long-term debt, has a higher claim on the assets and earnings of the company and requires timely payment of interest and repayment of principal. In addition, the financial risk of a company is based on total debt, which includes both short-term and long-term debt. This is why credit rating agencies use total debt in assessing the leverage and financial risk of companies.

Q. What common equity ratio does Mr. McKenzie report for his proxy group?

A. On page 32 of his testimony, Mr. McKenzie reports a projected average common equity ratio of 47.2 percent for his proxy group.[12]

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[12] McKenzie, Exh. AMM-1T, at 32.

Q. On pages 30–36 of his testimony, Mr. McKenzie attempts to justify the company's proposed capital structure by comparing Avista's proposed 50.0 percent common equity ratio to the average equity ratio of the operating utilities owned by the proxy holding companies. Is this the appropriate comparison?

A. No. Contrary to Mr. McKenzie's assertions, the appropriate comparison when it comes to common equity ratios is between the common equity ratio as proposed by the Company and the average common equity ratios for the holding companies in his proxy group. The reason is that both Mr. McKenzie and I use the holding companies to estimate a cost of equity capital for the Company. That is because the holding companies have common stock outstanding and so we can apply DCF and CAPM equity cost rate approaches. Therefore, the common equity ratios of the holding companies are appropriate for comparison purposes, not the common equity ratios of the subsidiary operating utility companies.

Q. What capital structure has Avista employed to finance its operations in recent years?

A. As shown in Panel B of Page 1 of Exhibit JRW-5, Avista has maintained a capital structure with a common equity ratio of 46.57 percent including short-term debt and 49.28 percent excluding short-term debt.

Q. What capital structure are you recommending in this case?

A. As reviewed above, Avista has proposed a capital structure with a common equity ratio of 50.0 percent. This proposed capitalization includes a higher common equity ratio than: (1) the average common equity ratios of the three proxy groups; and (2) the common equity ratio employed by the Company in recent years. Given the Company's recent

capitalizations and authorized common equity ratios, I will use a capital structure consisting of 51.50 percent debt and 48.50 percent equity. This is consistent with the capital structure agreed to in the settlement in Avista's most recent rate case (Docket Nos. UE-190334 and UG-190335.[13])

Q. Are you using the Company's proposed debt cost rate?

A. Yes.

IV. THE COST OF COMMON EQUITY CAPITAL

A. Overview

Q. Why must an overall cost of capital or fair rate of return be established for a public utility?

A. In a competitive industry, the return on a firm's common equity capital is determined through the competitive market for its goods and services. Due to the capital requirements needed to provide utility services and the economic benefit to society from avoiding duplication of these services and the construction of utility infrastructure facilities, many public utilities are monopolies. Because of the lack of competition and the essential nature of their services, it is not appropriate to permit monopoly utilities to set their own prices. Thus, regulation serves as a substitute for the absence of competition, and seeks to establish prices that are fair to consumers and, at the same time, sufficient to meet the operating and capital costs of the utility, *i.e.*, provide an adequate return on capital to attract investors.

[13] *Wash. Utils. & Transp. Comm'n v. Avista Corp*. Docket UE-190334 and UG-190335, Order 09: Final Order Approving and Adopting Settlement Agreement (Mar. 25, 2020).

Q. Please provide an overview of the cost of capital in the context of the theory of the firm.

A. The total cost of operating a business includes the cost of capital. The cost of common equity capital is the expected return on a firm's common stock that the marginal investor would deem sufficient to compensate for risk and the time value of money. In equilibrium, the expected and required rates of return on a company's common stock are equal.

Normative economic models of a company or firm, developed under very restrictive assumptions, provide insight into the relationship between a firm's performance or profitability, capital costs, and the value of the firm. Under the economist's ideal model of perfect competition, where entry and exit are costless, products are undifferentiated, and there are increasing marginal costs of production, firms produce up to the point where price equals marginal cost. Over time, a long-run equilibrium is established where price equals average cost, including the firm's capital costs. In equilibrium, total revenues equal total costs, and because capital costs represent investors' required return on the firm's capital, actual returns equal required returns, and the market value must equal the book value of the firm's securities.

In a competitive market, firms can achieve competitive advantage due to product-market imperfections. Most notably, companies can gain competitive advantage through product differentiation (adding real or perceived value to products) and by achieving economies of scale (decreasing marginal costs of production). Competitive advantage allows firms to price products above average cost and thereby earn accounting profits greater than those required to cover capital costs. When profits are in excess of those

required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

James M. McTaggart, founder of the international management consulting firm Marakon Associates, described this essential relationship between the return on equity, the cost of equity, and the market-to-book ratio in the following manner:

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of cash flow, while low ROE companies in high-growth markets, such as Texas Instruments, barely generate enough cash flow to finance growth.
>
> A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically profitable and its market value will exceed book value. If, however, the business earns an ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value. [14]

As such, the relationship between a firm's return on equity, cost of equity, and market-to-book ratio is relatively straightforward. A firm that earns a return on equity above its cost of equity will see its common stock sell at a price above its book value. Conversely, a firm that earns a return on equity below its cost of equity will see its common stock sell at a price below its book value.

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[14] James M. McTaggart, *The Ultimate Poison Pill: Closing the Value Gap*, COMMENTARY, at 3 (Spring 1986).

Q. Please provide additional insights into the relationship between ROE and market-to-book ratios.

A. This relationship is discussed in a classic Harvard Business School case study entitled "Note on Value Drivers." On page 2 of that case study, the author describes the relationship very succinctly:

> For a given industry, more profitable firms – those able to generate higher returns per dollar of equity – should have higher market-to-book ratios. Conversely, firms which are unable to generate returns in excess of their cost of equity [(K)] should sell for less than book value.
>
> | *Profitability* | *Value* |
> |---|---|
> | *If ROE > K* | *then Market/Book > 1* |
> | *If ROE = K* | *then Market/Book =1* |
> | *If ROE < K* | *then Market/Book< 1*[15] |

To assess the relationship by industry, as suggested above, I performed a regression study between estimated ROE and market-to-book ratios using natural gas distribution and electric utility companies. I used all companies in these two industries that are covered by *Value Line* and have estimated ROE and market-to-book ratio data. The results are presented in page 1 of Exhibit JRW-6. The average R-square is 0.50.[16] This demonstrates the strong positive statistically significant relationship between ROEs and market-to-book ratios for public utilities. Given that the market-to-book ratios have been above 1.0 for a number of years, this also demonstrates that utilities have been earning ROEs above the cost of equity capital for many years.

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[15] Benjamin Esty, *Note on Value Drivers*, HARVARD BUS. SCHOOL, Case No. 9-297-082 (Apr. 7, 1997).

[16] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected ROE). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

Q. What factors determine investors' expected or required rate of return on equity?

A. The expected or required rate of return on common stock is a function of market-wide as well as company-specific factors. The most important market factor is the time value of money, as indicated by the level of interest rates in the economy. Common stock investor requirements generally increase and decrease with like changes in interest rates. The perceived risk of a firm is the predominant factor that influences investor return requirements on a company-specific basis. A firm's investment risk is often separated into business risk and financial risk. Business risk encompasses all factors that affect a firm's operating revenues and expenses. Financial risk results from incurring fixed obligations in the form of debt in financing its assets.

Q. How does the investment risk of utilities compare with that of other industries?

A. Due to the essential nature of their service as well as their regulated status, public utilities are exposed to a lesser degree of business risk than other, non-regulated businesses. The relatively low level of business risk allows public utilities to meet much of their capital requirements through borrowing in the financial markets, thereby incurring greater than average financial risk. Nonetheless, the overall investment risk of public utilities is below most other industries.

Page 2 of Exhibit JRW-6 is a study of industry betas. I updated my industry beta study and the average electric, gas, and water utility betas are 0.89, 0.89, and 0.79, respectively. As discussed below, utility stocks were more volatile than the overall market during March and April 2020 when the financial markets were especially volatile. *Value Line* updates betas for companies on a quarterly basis. As such, this short period when utility stocks were more volatile than the market resulted in a significant increase in

utility betas as published by *Value Line*. In fact, the betas of most of the low beta industries increased in the update. Nonetheless, utilities are still among the lowest risk industries as measured by beta. In addition, this issue is discussed later in this testimony, as there are some measurement problems with *Value Line* betas.

Q. What is the cost of common equity capital?

A. The costs of debt and preferred stock are normally based on historical or book values and can be determined with a great degree of accuracy. The cost of common equity capital, however, cannot be determined precisely and must instead be estimated from market data and informed judgment. This return requirement of the stockholder should be commensurate with the return requirement on investments in other enterprises having comparable risks.

According to valuation principles, the present value of an asset equals the discounted value of its expected future cash flows. Investors discount these expected cash flows at their required rate of return that, as noted above, reflects the time value of money and the perceived riskiness of the expected future cash flows. As such, the cost of common equity is the rate at which investors discount expected cash flows associated with common stock ownership.

Q. How can the expected or required rate of return on common equity capital be determined?

A. Models have been developed to ascertain the cost of common equity capital for a firm. Each model, however, has been developed using restrictive economic assumptions. Consequently, judgment is required in selecting appropriate financial valuation models to estimate a firm's cost of common equity capital, in determining the data inputs for these

models, and in interpreting the models' results. All of these decisions must take into consideration the firm involved as well as current conditions in the economy and the financial markets.

Q. How did you estimate the cost of equity capital for the company?

A. Primarily, I rely on the DCF model to estimate the cost of equity capital. Given the investment valuation process and the relative stability of the utility business, the DCF model provides the best measure of equity cost rates for public utilities. I have also performed an analysis based on the capital asset pricing model (CAPM); however, I give these results less weight because I believe that risk premium studies, of which the CAPM is one form, provide a less reliable indication of equity cost rates for public utilities.

Q. Why do you think that CAPM provides a less reliable indicator of equity cost rates?

A. I believe that the CAPM provides a less reliable measure of a utility's equity cost rate because it requires an estimate of the market risk premium. As discussed below, there is a wide variation in estimates of the market risk premium found in studies by academics and investment firms as well as in surveys of market professionals.

B. DCF Approach

Q. Please describe the theory behind the traditional DCF model.

A. According to the DCF model, the current stock price is equal to the discounted value of all future dividends that investors expect to receive from investment in the firm. As such, stockholders' returns ultimately result from current as well as future dividends. As owners of a corporation, common stockholders are entitled to a *pro rata* share of the firm's earnings. The DCF model presumes that earnings that are not paid out in the form of dividends are reinvested in the firm so as to provide for future growth in earnings and

dividends. The rate at which investors discount future dividends, which reflects the timing and riskiness of the expected cash flows, is interpreted as the market's expected or required return on the common stock. Therefore, this discount rate represents the cost of common equity. Algebraically, the DCF model can be expressed as:

$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \ldots \frac{D_n}{(1+k)^n}$$

Whereas P is the current stock price, D_n is the dividend in year n, and k is the cost of common equity.

Q. Is the DCF model consistent with valuation techniques employed by investment firms?

A. Yes. Virtually all investment firms use some form of the DCF model as a valuation technique. One common application for investment firms is called the three-stage DCF or dividend discount model (DDM). The stages in a three-stage DCF model are presented in Exhibit JRW-7. This model presumes that a company's dividend payout progresses initially through a growth stage, then proceeds through a transition stage, and finally assumes a maturity (or steady-state) stage. The dividend-payment stage of a firm depends on the profitability of its internal investments, which, in turn, is largely a function of the life cycle of the product or service.

1. **Growth stage**: Characterized by rapidly expanding sales, high profit margins, and an abnormally high growth in earnings per share. Because of highly profitable expected investment opportunities, the payout ratio is low. Competitors are attracted by the unusually high earnings, leading to a decline in the growth rate.

2. **Transition stage**: In later years, increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings.

3. **Maturity (steady-state) stage**: Eventually, the company reaches a position where its new investment opportunities offer, on average, only slightly more attractive ROEs. At that time, its earnings growth rate, payout ratio, and ROE stabilize for the remainder of its life. As I will explain below, the constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using this model to estimate a firm's cost of equity capital, dividends are projected into the future using the different growth rates in the alternative stages, and then the equity cost rate is the discount rate that equates the present value of the future dividends to the current stock price.

Q. How do you estimate stockholders' expected or required rate of return using the DCF model?

A. Under certain assumptions, including a constant and infinite expected growth rate, and constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the following:

$$P = \frac{D_1}{k - g}$$

Whereas D_1 represents the expected dividend over the coming year and g is the expected growth rate of dividends. This is known as the constant-growth version of the DCF model. To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for "k" in the above expression to obtain the following:

$$k = \frac{D_1}{P} + g$$

Q. In your opinion, is the constant-growth version of the DCF model appropriate for public utilities?

A. Yes. The economics of the public utility business indicate that the industry is in the maturity or constant-growth stage of a three-stage DCF. The economics include the relative stability of the utility business, the maturity of the demand for public utility services, and the regulated status of public utilities (especially the fact that their returns on investment are effectively set through the ratemaking process). The appropriate DCF valuation procedure for companies in this stage is the constant-growth DCF. In the constant-growth version of the DCF model, the current dividend payment and stock price are directly observable. However, the primary problem and controversy in applying the DCF model to estimate equity cost rates entails estimating investors' expected dividend growth rate.

Q. What factors should one consider when applying the DCF methodology?

A. One should be sensitive to several factors when using the DCF model to estimate a firm's cost of equity capital. In general, one must recognize the assumptions under which the DCF model was developed in estimating its components (the dividend yield and the expected growth rate). The dividend yield can be measured precisely at any point in time; however, it tends to vary somewhat over time. Estimation of expected growth is considerably more difficult. One must consider recent firm performance, in conjunction with current economic developments and other information available to investors, to accurately estimate investors' expectations.

Q. What dividend yields have you reviewed?

A. I have calculated the dividend yields for the companies in the proxy groups using the current annual dividend and the 30-day, 90-day, and 180-day average stock prices. These dividend yields are provided in Panels A, B, and C of page 2 of Exhibit JRW-8. For the Electric Proxy Group, the mean and median dividend yields using the 30-day, 90-day, and 180-day average stock prices range from 3.6 percent to 3.8 percent. Hence, I am using 3.70 percent, as the dividend yield for the Electric Proxy Group. The dividend yields for the McKenzie Proxy Group are shown in Panel B on page 2 of Exhibit JRW-8. The mean and median dividend yields range from 3.5 percent to 3.9 percent using the 30-day, 90-day, and 180-day average stock prices. Given this range, I am using 3.70 percent as the dividend yield for the McKenzie Proxy Group. For the Gas Proxy Group, the mean and median dividend yields range from 3.4 percent to 3.8 percent using the 30-day, 90-day, and 180-day average stock prices. Therefore, I will use a dividend yields of 3.60 percent for the Gas Proxy Group.

Q. Please discuss the appropriate adjustment to the spot dividend yield.

A. According to the traditional DCF model, the dividend yield term relates to the dividend yield over the coming period. Professor Myron Gordon, who is associated with the development of the DCF model for popular use, indicates that this is obtained by: (1) multiplying the expected quarterly dividend over the coming quarter by four, and (2) dividing the resulting annual dividend by the current stock price to determine the appropriate dividend yield for a firm that pays dividends on a quarterly basis.[17]

[17] Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62, Docket No. 79-05, *Petition for Modification of Prescribed Rate of Return* (F.C.C. Apr. 1980).

In applying the DCF model, some analysts adjust the current dividend for growth over the coming year as opposed to the coming quarter. This can be complicated because firms tend to announce changes in dividends at different times during the year. As such, the dividend yield that is computed based upon presumed growth over the coming quarter as opposed to the coming year can be quite different. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

Q. Given this discussion, what adjustment factor do you use for your dividend yield?

A. I adjust the dividend yield (D/P) by one-half (0.5) of the expected growth (g) so as to reflect growth over the coming year. This is the approach employed by the Federal Energy Regulatory Commission ("FERC").[18] The DCF equity cost rate ("K") is computed as:

$$K = \left[\left(\frac{D}{P}\right) \times (1 + 0.5g)\right] + g$$

Q. Please discuss the growth rate component of the DCF model.

A. There is debate as to the proper methodology to employ in estimating the growth component of the DCF model. By definition, this component is investors' expectation of the long-term dividend growth rate. Presumably, investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book-value growth to assess long-term potential.

[18] *Transcontinental Gas Pipe Line Corp.*, 84 FERC ¶ 61, 084, Opinion No. 414-A (1998).

Q. What growth rate data have you reviewed for the proxy group?

A. I have analyzed a number of measures of growth for the companies in the proxy group. I reviewed *Value Line*'s historical and projected growth rate estimates for earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS). In addition, I utilized the average EPS growth-rate forecasts of Wall Street analysts as provided by Yahoo, Zacks and S&P Cap IQ. These services solicit three-to-five-year earnings growth rate projections from securities analysts and compile and publish the means and medians of these forecasts. Finally, I assessed prospective growth as measured by prospective earnings retention rates and earned returns on common equity.

Q. Please discuss historical growth in earnings and dividends as well as internal growth.

A. Historical growth rates for EPS, DPS, and BVPS are readily available to investors and are presumably an important ingredient in forming expectations concerning future growth. However, one must use historical growth numbers as measures of investors' expectations with caution. In some cases, past growth may not reflect future growth potential. Also, employing a single growth rate number (for example, for five or ten years) is unlikely to accurately measure investors' expectations, due to the sensitivity of a single growth rate figure to fluctuations in individual firm performance as well as overall economic fluctuations (i.e., business cycles). However, one must appraise the context in which the growth rate is being employed. According to the conventional DCF model, the expected return on a security is equal to the sum of the dividend yield and the expected long-term growth in dividends. Therefore, to best estimate the cost of common equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). The internal growth rate is computed as the retention rate times the return on equity. Internal growth is significant in determining long-term earnings and, therefore, dividends. Investors recognize the importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

Q. Please discuss the services that provide analysts' EPS forecasts.

A. Analysts' EPS forecasts for companies are collected and published by several different investment information services, including Institutional Brokers Estimate System ("I/B/E/S"), Bloomberg, FactSet, S&P Cap IQ, Zacks, First Call, and Reuters, among others. Thomson Reuters publishes analysts' EPS forecasts under different product names, including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, S&P Cap IQ, and Zacks each publish their own set of analysts' EPS forecasts for companies. These services do not reveal (1) the analysts who are solicited for forecasts or (2) the identity of the analysts who actually provide the EPS forecasts that are used in the compilations published by the services. I/B/E/S, Bloomberg, FactSet, S&P Cap IQ, and First Call are fee-based services. These services usually provide detailed reports and other data in addition to analysts' EPS forecasts. In contrast, Thomson Reuters and Zacks provide limited EPS forecast data free-of-charge on the Internet. Yahoo Finance (http://finance.yahoo.com) lists Thomson Reuters as the source of its summary EPS forecasts. Zacks (www.zacks.com) publishes its summary forecasts on its website. Zacks

estimates are also available on other websites, such as MSN.money (http://money.msn.com).

Q. Which EPS forecast should be used in developing a DCF growth rate?

A. The DCF growth rate is the long-term projected growth rate in EPS, DPS, and BVPS. Therefore, in developing an equity cost rate using the DCF model, the projected long-term growth rate is the projection used in the DCF model.

Q. Why do you not rely exclusively on the EPS forecasts of Wall Street analysts in arriving at a DCF growth rate for the proxy group?

A. There are several reasons. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long term, dividends and earnings will have to grow at a similar growth rate. Therefore, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth.

Second, a 2011 study by Lacina, Lee, and Xu has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than just using last year's earnings figure as the projected future earnings number.[19] Employing data over a 20-year period, these authors demonstrate that using the most recent year's EPS figure to forecast EPS in the next three-to-five years proved to be just as accurate as using the EPS estimates from analysts' long-term earnings growth rate forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings

[19] M. Lacina, B. Lee, and Z. Xu, *Advances in Business and Management Forecasting*, EMERALD GROUP PUBLISHING LTD., at 77–101 (2011), available at https://www.emerald.com/insight/content/doi/10.1108/S1477-4070(2011)0000008009/full/html.

growth rate forecasts should be used with caution as inputs for valuation and cost of capital purposes.

Finally, and most significantly, it is well known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years.[20] Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate. On this issue, a study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[21]

Q. Are the EPS growth rates forecasts of *Value Line* also overly optimistic and upwardly biased?

A. Yes. A study by Szakmary, Conover, and Lancaster (2008) evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a 30-year time period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved.[22]

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[20] The studies that demonstrate analysts' long-term EPS forecasts are overly-optimistic and upwardly biased include: R.D. Harris, *The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts*, J. OF BUS. FIN. & ACCT., 725–55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, *The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings*, CONTEMPORARY ACCT. RSCH. (2000); Louis Chan, Jason Karceski, and Josef Lakonishok, *The Level and Persistence of Growth Rates*, J. OF FIN., 643–684 (2003), available at https://lsvasset.com/pdf/research-papers/Level+Persistence_of_Growth_Rates_FINAL.pdf; M. Lacina, B. Lee, and Z. Xu, *Advances in Business and Management Forecasting*, EMERALD GROUP PUBLISHING LTD., at 77–101 (2011), available at https://www.emerald.com/insight/content/doi/10.1108/S1477-4070(2011)0000008009/full/html.; and Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity Analysts, Still Too Bullish*, MCKINSEY ON FIN., at 14–17 (Spring 2010).

[21] Peter D. Easton and Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. ACCT. RES. 983–1015 (2007).

[22] A. Szakmary, C. Conover, and C. Lancaster, *An Examination of Value Line's Long-Term Projections*, J. OF BANKING & FIN. 820–833 (May 2008).

Q. Is it your opinion that stock prices reflect the upward bias in the EPS growth rate forecasts?

A. Yes, I do believe that investors are well aware of the bias in analysts' EPS growth rate forecasts and stock prices, therefore, reflect the upward bias.

Q. How does that affect the use of these forecasts in a DCF equity cost rate study?

A. According to the DCF model, the equity cost rate is a function of the dividend yield and expected growth rate. Because stock prices reflect the bias, it would affect the dividend yield. In addition, the DCF growth rate needs to be adjusted downward from the projected EPS growth rate to reflect the upward bias.

Q. Please discuss the historical growth of the companies in the proxy group, as provided by *Value Line*.

A. Page 3 of Exhibit JRW-8 provides the five- and 10-year historical growth rates for EPS, DPS, and BVPS for the companies in the three proxy groups, as published in the *Value Line Investment Survey.* The median historical growth measures for EPS, DPS, and BVPS for the Electric Proxy Group, as provided in Panel A, range from 4.0 percent to 5.5 percent, with an average of the medians of 4.8 percent. For the McKenzie Proxy Group, as shown in Panel B of page 3 of Exhibit JRW-8, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 4.0 percent to 6.5 percent, with an average of the medians of 5.3 percent. For the Gas Proxy Group, as shown in Panel C of page 3 of Exhibit JRW-8, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 4.3 percent to 6.5 percent, with an average of the medians of 5.4 percent.

Q. Please summarize *Value Line's* projected growth rates for the companies in the proxy groups.

A. *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the proxy groups are shown on page 4 of Exhibit JRW-8. As stated above, due to the presence of outliers, the medians are used in the analysis. For the Electric Proxy Group, as shown in Panel A of page 4 of Exhibit JRW-8, the medians range from 4.0 percent to 5.5 percent, with an average of the medians of 5.0 percent. The range of the medians for the McKenzie Proxy Group, shown in Panel B of page 4 of Exhibit JRW-8, is from 5.0 percent to 6.0 percent, with an average of the medians of 5.5 percent. The range of the medians for the Gas Proxy Group, shown in Panel C of page 4 of Exhibit JRW-8, is from 6.0 percent to 8.0 percent, with an average of the medians of 6.2 percent.

Also provided on page 4 of Exhibit JRW-8 are the prospective sustainable growth rates for the companies in the two proxy groups as measured by *Value Line*'s average projected retention rate and return on shareholders' equity. As noted above, sustainable growth is a significant and a primary driver of long-run earnings growth. For the Electric, McKenzie, and Gas Proxy Groups, the median prospective sustainable growth rates are 3.7 percent, 4.0 percent, and 3.9 percent, respectively.

Q. Please assess growth for the proxy groups as measured by analyst's forecast of expected five-year EPS growth.

A. Yahoo Finance, Zacks, and S&P Cap IQ collect, summarize, and publish Wall Street analysts' three-to-five yea EPS growth-rate forecasts for the companies in the proxy groups. These forecasts for the companies in the proxy groups are included on page 5 of Exhibit JRW-8. I have reported both the mean and median growth rates for the groups.

Since there is considerable overlap in analyst coverage between the three services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the three services for each company to arrive at an expected EPS growth rate for each company. The mean/median of analysts' projected EPS growth rates for the Electric, McKenzie, and Gas Proxy Groups are 5.5 percent/5.8 percent, 5.4 percent/5.9 percent, and 5.3 percent/5.2 percent, respectively.[23]

Q. Please summarize your analysis of the historical and prospective growth of the proxy groups.

A. Page 6 of Exhibit JRW-8 shows the summary DCF growth rate indicators for the proxy groups.

The historical growth rate indicators for my Electric Proxy Group imply a baseline growth rate of 4.8 percent. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 5.0 percent, and *Value Line*'s projected sustainable growth rate is 3.7 percent. The projected EPS growth rates of Wall Street analysts for the Electric Proxy Group are 5.5 percent and 5.8 percent as measured by the mean and median growth rates. The overall range for the projected growth-rate indicators (ignoring historical growth) is 3.7 percent to 5.8 percent. Giving primary weight to the projected EPS growth rate of Wall Street analysts, I believe that the appropriate projected growth rate is in the range of 5.0 percent to 5.5 percent. I will use the midpoint of this range, 5.25 percent, as my DCF growth rate. This growth rate figure is in the upper end of the range of historic and projected growth rates for the Electric Proxy Group.

[23] Given variation in the measures of central tendency of analysts' projected EPS growth rates proxy groups, I have considered both the means and medians figures in the growth rate analysis.

For the McKenzie Proxy Group, the historical growth rate indicators indicate a growth rate of 5.3 percent. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 5.5 percent, and *Value Line*'s projected sustainable growth rate is 4.0 percent. The projected EPS growth rates of Wall Street analysts are 5.4 percent and 5.9 percent as measured by the mean and median growth rates. The overall range for the projected growth rate indicators is 4.0 percent to 5.9 percent. Again, giving primary weight to the projected EPS growth rate of Wall Street analysts, I believe that the appropriate projected growth rate is in the range of 5.0 percent to 5.5 percent. I will use the midpoint of this range, 5.25 percent, as my DCF growth rate. I believe that the appropriate DCF growth rate is 5.0 percent. Similar to the Electric Proxy Group, this growth rate figure is clearly in the upper end of the range of historic and projected growth rates for the McKenzie Proxy Group.

For the Gas Proxy Group, the historical growth rate indicators suggest a growth rate of 5.4 percent. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 6.2 percent, and *Value Line*'s projected sustainable growth rate is 3.9 percent. The projected EPS growth rates of Wall Street analysts are 5.3 percent and 5.2 percent as measured by the mean and median growth rates, respectively. The overall range for the projected growth rate indicators is 4.5 percent to 6.7 percent. Giving primary weight to the projected EPS growth rate of Wall Street analysts, I believe that the appropriate projected growth rate is 5.5 percent.[24]

[24] Due to issues with the computation of the *Value Line* growth rates for the Gas Proxy Group, which are discussed later in my testimony, I am discounting the weight given the *Value Line* growth rates in this analysis.

Q. Based on the above analysis, what are your indicated common equity cost rates from the DCF model for the proxy groups?

A. My DCF-derived equity cost rates for the groups are summarized on page 1 of Exhibit JRW-8 and in Table 6 below.

Table 6
DCF-Derived Equity Cost Rate/ROE

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	**3.70%**	**1.02625**	**5.25%**	**9.05%**
McKenzie Proxy Group	**3.70%**	**1.02625**	**5.25%**	**9.05%**
Gas Proxy Group	**3.60%**	**1.02500**	**5.00%**	**8.70%**

The results for both the Electric and McKenzie Proxy Groups is the 3.70 percent dividend yield, times the one and one-half growth adjustment of 1.02625, plus the DCF growth rate of 5.25 percent, which results in an equity cost rate of 9.05 percent. The result for the Gas Proxy Group is 8.70 percent, which includes a dividend yield of 3.60 percent, an adjustment factor of 1.0250, and a DCF growth rate of 5.0 percent.

C. Capital Asset Pricing Model

Q. Please discuss the capital asset pricing model (CAPM).

A. The CAPM is a risk premium approach to gauging a firm's cost of equity capital. According to the risk-premium approach, the cost of equity is the sum of the interest rate on a risk-free bond (R_f) and a risk premium (RP), as in the following:

$$k = R_f + RP$$

The yield on long-term U.S. Treasury securities is normally used as R_f. Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock:

firm-specific risk or unsystematic risk, and market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

According to the CAPM, the expected return on a company's stock, which is also the equity cost rate (K), is expressed as:

$$K = \left(R_f\right) + \beta \times \left[E(R_m) - \left(R_f\right)\right]$$

Whereas:

- *K* represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected rate of return on the overall stock market. Frequently, the S&P 500 is used as a proxy for the "market";
- (R_f) represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess rate of return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- *Beta*—(ß) is a measure of the systematic risk of an asset.

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest (R_f), the beta (ß), and the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure—it is represented by the yield on long-term U.S. Treasury bonds. ß, the measure of systematic risk, is a little more difficult to measure because there are different opinions about what adjustments, if any, should be made to historical betas due to their tendency to regress to

1.0 over time. And finally, an even more difficult input to measure is the expected equity or market risk premium ($E(R_m)$ - (R_f)). I will discuss each of these inputs below.

Q. Please discuss exhibit JRW-9.

A. Exhibit JRW-9 provides the summary results for my CAPM study. Page 1 shows the results, and the following pages contain the supporting data.

Q. Please discuss the risk-free interest rate.

A. The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn, has been considered to be the yield on U.S. Treasury bonds with 30-year maturities.

Q. What risk-free interest rate are you using in your CAPM?

A. As shown on page 2 of Exhibit JRW-9, the yield on 30-year U.S. Treasury bonds has been in the 1.25 percent to 4.75 percent range over the 2010–2021 time period. The current 30-year Treasury yield is near the middle of this range. Given the recent range of yields, I have chosen to use a yield toward the middle of the range as my risk-free interest rate. Therefore, I am using 2.50 percent as the risk-free rate, or R_f, in my CAPM. This rate is consistent with Duff & Phelps, who are also using 2.50 percent (see page 7 of Exhibit JRW-9).[25]

Q. Does your 2.50 percent risk-free interest rate take into consideration forecasts of higher interest rates?

A. No, it does not. As I stated before, forecasts of higher interest rates have been notoriously wrong for a decade. My 2.50 percent risk-free interest rate takes into account the range of interest rates in the past and effectively synchronizes the risk-free rate with the market-

[25] Duff & Phelps, *Cost of Capital Research Center* (2020), available at https://www.duffandphelps.com/insights/publications/cost-of-capital.

risk premium. The risk-free rate and the market-risk premium are interrelated in that the market-risk premium is developed in relation to the risk-free rate. As discussed below, my market-risk premium is based on the results of many studies and surveys that have been published over time. Therefore, my risk-free interest rate of 2.50 percent is effectively a normalized risk-free rate of interest.

Q. What betas are you employing in your CAPM?

A. Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the market also has a beta of 1.0. A stock with price movement greater than that of the market, such as a technology stock, is riskier than the market and has a beta greater than 1.0. A stock with below-average price movement, such as that of a regulated public utility, is less risky than the market and has a beta less than 1.0. Estimating a stock's beta involves running a linear regression of a stock's return on the market return.[26]

As shown on page 3 of Exhibit JRW-9, the slope of the regression line is the stock's ß. A steeper line indicates that the stock is more sensitive to the return on the overall market. This means that the stock has a higher ß and greater-than-average market risk. A less steep line indicates a lower ß and less market risk.

Several online investment information services, such as Yahoo Finance and Thomson Reuters, provide estimates of stock betas. Usually these services report different betas for the same stock. The differences are usually due to: (1) the time period

[26] Regression models describe the relationship between variables by fitting a line to the observed data. Linear regression models use a straight line, while logistic and nonlinear regression models use a curved line. Regression allows one to estimate how a dependent variable changes as the independent variable(s) change.

over which ß is measured; and (2) any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time.

Q. Please discuss the recent change in betas.

A. I have traditionally used the betas as provided in the *Value Line Investment Survey*. As discussed above, the betas for utilities recently increased significantly as a result of the volatility of utility stocks during the stock-market meltdown associated with the novel coronavirus in March. Utility betas as measured by *Value Line* have been in the 0.55 to 0.70 range for the past 10 years. But utility stocks were much more volatile relative to the market in March and April of 2020, and this resulted in an increase of above 0.30 to the average utility beta.

Value Line defines their computation of beta as:[27]

> Beta - A relative measure of the historical sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A Beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The ''Beta coefficient'' is derived from a regression analysis of the relationship between weekly percent-age changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are adjusted for their long-term tendency to converge toward 1.00. Value Line then adjusts these Betas to account for their long-term tendency to converge toward 1.00.

However, there are several issues with *Value Line* betas:

1. *Value Line* betas are computed using weekly returns, and the volatility of utility stocks during March 2020 was impacted by using weekly and not monthly

[27] Value Line, *Glossary: Beta*, available at https://www.valueline.com/Glossary/GlossaryDisplay.aspx?taxonomyid=4294967299 (Last Visited Apr. 20, 2021).

returns. Yahoo Finance uses five years of monthly returns to compute betas, and Yahoo Finance's betas for utilities are lower than *Value Lin*e's.

2. *Value Line* betas are computed using the New York Stock Exchange Index as the market. While about 3,000 stocks trade on the NYSE, most technology stocks are traded on the NASDAQ or over-the-counter market and not the NYSE. Technology stocks, which make up about 25 percent of the S&P 500, tend to be more volatile. If they were traded on the NYSE, they would increase the volatility of the measure of the market and thereby lower utility betas.

3. Major vendors of CAPM betas such as Merrill Lynch, *Value Line*, and Bloomberg publish adjusted betas. The so-called Blume adjustment cited by *Value Line* adjusts betas calculated using historical-returns data to reflect the tendency of stock betas to regress toward 1.0 over time, which means that the Betas of typical low beta stocks tend to increase toward 1.0, and the betas of typical high beta stocks tend to decrease toward 1.0.[28]

The Blume adjustment procedure is calculated as follows:

Regressed Beta = .67 * (Observed Beta) + 0.33

For example, suppose a company has an observed past beta of 0.50. The regressed (Blume-adjusted) beta would be:

Regressed Beta = .67 * (0.50) + 0.33 = 0.67

Blume offered two reasons for betas to regress toward 1.0. First, he suggested it may be a by-product of management's efforts to keep the level of firm's systematic risk close to that of the market. He also speculated that it results from management's efforts to diversify

[28] M. Blume, *On the Assessment of Risk*, J. OF FIN. (Mar. 1971).

through investment projects.

However, there is an issue with using regressed betas for utilities. Specifically, a study by Michelfelder and Theodossiou investigated whether regressed Betas are appropriate for utilities.[29] Conceptually, Michelfelder and Theodossiou suggested that utilities are different from unregulated companies in several areas, which may result in betas not regressing toward 1.0:[30]

> Being natural monopolies in their own geographic areas, public utilities have more influence on the prices of their product (gas and electricity) than other firms. The rate setting process provides public utilities with the opportunity to adjust prices of gas and electricity to recover the rising costs of fuel and other materials used in the transmission and distribution of electricity and gas.[31]

To test for a regression toward 1.0, the authors used monthly holding-period total returns for 57 publicly traded U.S. public utilities for the period from January 1962 to December 2007 using 60, 84, 96, and 108 monthly returns over five different non-lapping periods. They also used alternative time periods and obtained similar results. From their analysis of the data, the authors concluded that "public utility betas do not have a tendency to converge to 1."[32]

> Major vendors of CAPM Betas such as Merrill Lynch, Value Line, and Bloomberg distribute Blume adjusted betas to investors. We have shown empirically that public utility betas do not have a tendency to converge to 1. Short-term Betas of public utilities follow a cyclical pattern with recent downward trends, then upward structural breaks with long-term betas following a downward trend.

[29] Richard A. Michelfelder and Panayiotis Theodossiou, *Public Utility Beta Adjustment and Biased Costs of Capital in Public Utility Rate Proceedings*, THE ELEC. J. (Nov. 2013).
[30] *Id.* at 61.
[31] *Id.*
[32] *Id*.

The authors concluded that utility betas converge to 0.59 as opposed to 1.0. The implication is that using regressed betas such as those from *Value Line* will result in an inflated expected return using the CAPM for utilities.

Q. Given this discussion, what betas are you using in your CAPM?

A. As shown on page 3 of Exhibit JRW-9, the median *Value Line* betas for both the Electric, McKenzie, and Gas Proxy Groups are 0.85, 0.85, and 0.85, respectively. At this point, until I have studied utility betas in more depth, I will continue to use *Value Line* betas in my CAPM.

Q. Pleas discuss the market-risk premium.

A. The market-risk premium is equal to the expected return on the stock market (e.g., the expected return on the S&P 500, $E(R_m)$ minus the risk-free rate of interest (R_f)). The market-risk premium is the difference in the expected total return between investing in equities and investing in "safe" fixed-income assets, such as long-term government bonds. However, while the market-risk premium is easy to define conceptually, it is difficult to measure because it requires an estimate of the expected return on the market — $E(R_m)$. As I discuss below, there are different ways to measure $E(R_m)$, and studies have been developed with significantly different magnitudes for $E(R_m)$. As Merton Miller, the 1990 Nobel Prize winner in economics indicated, $E(R_m)$ it is very difficult to measure and is one of the great mysteries in finance.[33]

Q. Please discuss the alternative approaches to estimating the market-risk premium.

A. Page 4 of Exhibit JRW-9 highlights the primary approaches to, and issues in, estimating the expected market-risk premium. The traditional way to measure the market-risk

[33] Merton Miller, *The History of Finance: An Eyewitness Account*, J. OF APPLIED CORP. FIN., 3 (2000).

premium was to use the difference between historical average stock and bond returns. In this case, historical stock and bond returns, also called *ex post* returns, were used as the measures of the market's expected return (known as the *ex ante* or forward-looking expected return). This type of historical evaluation of stock and bond returns is often called the "Ibbotson approach" after Professor Roger Ibbotson, who popularized this method of using historical financial market returns as measures of expected returns. However, this historical evaluation of returns can be a problem because: (1) *ex post* returns are not the same as *ex ante* expectations; (2) market-risk premiums can change over time, increasing when investors become more risk-averse and decreasing when investors become less risk-averse; and (3) market conditions can change such that *ex post* historical returns are poor estimates of *ex ante* expectations.

The use of historical returns as market expectations has been criticized in numerous academic studies, which I discuss later. The general theme of these studies is that the large equity risk premium discovered in historical stock and bond returns cannot be justified by the fundamental data. These studies, which fall under the category "*Ex Ante* Models and Market Data," compute *ex ante* expected returns using market data to arrive at an expected equity risk premium. These studies have also been called "Puzzle Research" after the famous study by Mehra and Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[34]

In addition, there are a number of surveys of financial professionals regarding the market-risk premium, as well as several published surveys of academics on the equity risk premium. Duke University has published a CFO Survey on a quarterly basis for over

[34] Rajnish Mehra and Edward C. Prescott, *The Equity Premium: A Puzzle*, J. OF MONETARY ECON. 145 (1985).

10 years.[35] Questions regarding expected stock and bond returns are also included in the Federal Reserve Bank of Philadelphia's annual survey of financial forecasters, which is published as the *Survey of Professional Forecasters*.[36] This survey of professional economists has been published for almost 50 years. In addition, Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision making.[37]

Q. Please provide a summary of the market-risk premium studies.

A. Derrig and Orr, Fernandez, and Song completed the most comprehensive reviews of the research on the market risk premium.[38] Derrig and Orr's study evaluated the various approaches to estimating market-risk premiums, discussed the issues with the alternative approaches, and summarized the findings of the published research on the market risk premium.

Fernandez examined four alternative measures of the market-risk premium — historical, expected, required, and implied. He also reviewed the major studies of the market-risk premium and presented the summary market-risk premium results.

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[35] Duke Univ. and the Fed. Reserve Banks of Richmond & Atlanta, *The CFO Survey* (2020), available at https://www.richmondfed.org/cfosurvey.

[36] Fed. Reserve Bank of Phila., *Survey of Professional Forecasters* (Feb. 2020), available at https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/survey-of-professional-forecasters. The Survey of Professional Forecasters was formerly conducted by the American Statistical Association (ASA) and the National Bureau of Economic Research (NBER) and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

[37] Pablo Fernandez, Eduardo Apellániz, and Javier Acín, *Survey: Market Risk Premium and Risk-Free Rate used for 81 countries in 2020* (Mar. 25, 2020), IESE Business School Working Paper No. WP-1244-E, available at https://ssrn.com/abstract=3560869 or http://dx.doi.org/10.35139/ssrn.3560869.

[38] *See* Richard Derrig and Elisha Orr, *Equity Risk Premium: Expectations Great and Small*, Working Paper (version 3.0), AUTOMOBILE INSURERS BUREAU OF MASS., (Aug. 28, 2003); Pablo Fernandez, *Equity Premium: Historical, Expected, Required, and Implied*, IESE Business School Working Paper (2007); Zhiyi Song, *The Equity Risk Premium: An Annotated Bibliography*, CFA INSTITUTE (2007).

Song provided an annotated bibliography and highlighted the alternative approaches to estimating the market risk premium.

Page 5 of Exhibit JRW-9 provides a summary of the results of the primary risk-premium studies reviewed by Derrig and Orr, as well as other more recent studies of the market risk premium.

In developing page 5 of Exhibit JRW-9, I have categorized the types of studies as discussed on page 4 of Exhibit JRW-9. I have also included the results of studies of the "Building Blocks" approach to estimating the equity risk premium. The Building Blocks approach is a hybrid approach employing elements of both historical and *ex ante* models.

Q. Please discuss page 5 of Exhibit JRW-9.

A. Page 5 of Exhibit JRW-9 provides a summary of the results of the market risk-premium studies that I have reviewed. These include the results of: (1) the various studies of the historical risk premium, (2) *ex ante* market risk-premium studies, (3) market risk-premium surveys of CFOs, financial forecasters, analysts, companies and academics, and (4) the Building Blocks approach to the market risk premium. There are results reported for over 30 studies, and the median market-risk premium of these studies is 4.83 percent.

Q. Please highlight the results of more recent risk premium studies.

A. The studies cited on page 5 of Exhibit JRW-9 include every market risk-premium study and survey I could identify that was published over the past 15 years and provided a market risk-premium estimate. Many of these studies were published prior to the financial crisis that began in 2008. In addition, some of these studies were published in the early 2000s at the market peak. It should be noted that many of these studies (as indicated) used data over long periods of time (as long as 50 years of data) and so were

not estimating a market-risk premium as of a specific point in time (e.g., the year 2001). To assess the effect of the earlier studies on the market-risk premium, I have reconstructed page 5 of Exhibit JRW-9 on page 6 of Exhibit JRW-9; however, I have eliminated all studies dated before January 2, 2010. The median market-risk-premium estimate for this subset of studies is 5.13 percent.

Q. Please summarize the market risk premium studies and surveys.

A. As noted above, there are three approaches to estimating the market-risk premium — historic stock and bond returns, *ex ante* or expected returns models, and surveys. The studies on page 6 of Exhibit JRW-9 can be summarized in the following manners:

Historic Stock and Bond Returns — Historic stock and bond returns suggest a market-risk premium in the 4.40 percent to 6.43 percent range, depending on whether one uses arithmetic or geometric mean returns.

***Ex Ante* Models** — Market risk-premium studies that use expected or *ex ante* return models indicate a market-risk premium in the range of 5.24 percent to 6.75 percent.

Surveys — Market-risk premiums developed from surveys of analysts, companies, financial professionals, and academics are lower, with a range from 3.36 percent to 5.70 percent.

Q. Please highlight the *ex ante* market-risk premium studies and surveys that you believe are most timely and relevant.

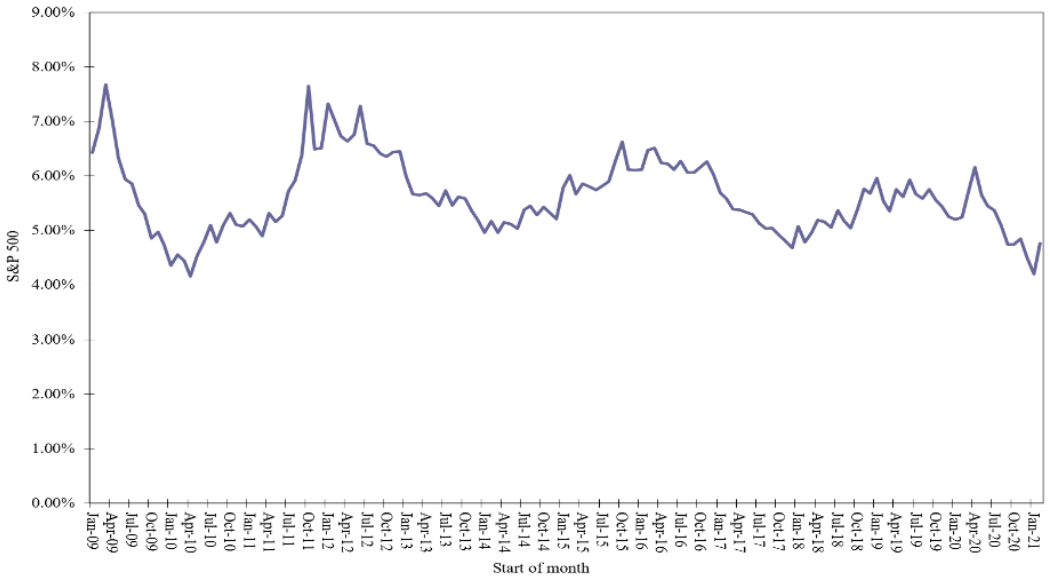
A. I will highlight several studies/surveys.

Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial

decision-making.[39] His survey results are included on pages 5 and 6 of Exhibit JRW-9. The results of his 2020 survey of academics, financial analysts, and companies, which included 4,000 responses, indicated a mean market-risk premium employed by U.S. analysts and companies of 5.6 percent.[40] His estimated market-risk premium for the U.S. has been in the 5.00 percent to 5.60 percent range in recent years.

Professor Aswath Damodaran of New York University, a leading expert on valuation and the market-risk premium, provides a monthly updated market-risk premium based on projected S&P 500 EPS and stock-price level and long-term interest rates. His estimated market-risk premium, shown graphically in Figure 6, below, for the past 20 years, has primarily been in the range of 5.0 percent to 6.0 percent since 2010. As of March 2021, his estimate of the implied market-risk premium was 4.63 percent.[41]

Figure 6
Damodaran Market Risk Premium

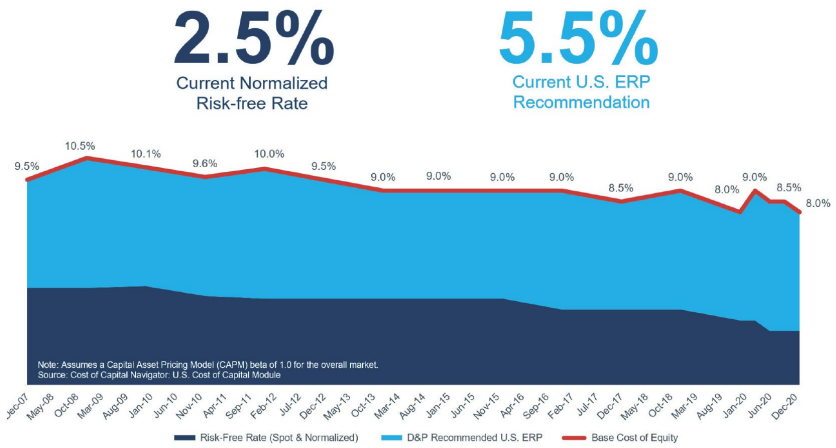


Data Source: Aswath Damodaran, *Damodaran Online*, N.Y. UNIV., http://pages.stern.nyu.edu/~adamodar/ (Last Visited Mar. 9, 2021).

[39] Pablo Fernandez, Vitaly Pershin, and Isabel Fernandez Acín, *A Survey: Market Risk Premium and Risk-Free Rate used for 81 countries in 2020*, IESE BUSINESS SCHOOL (Apr. 2020).
[40] *Id.* at 3.
[41] Aswath Damodaran, *Damodaran Online*, N.Y. UNIV., available at http://pages.stern.nyu.edu/~adamodar/.

Duff & Phelps, an investment advisory firm, provides recommendations for the normalized risk-free interest rate and market-risk premiums to be used in calculating the cost-of-capital data. Its recommendations over the 2008–2020 time periods are shown on page 7 of Exhibit JRW-9 and are shown graphically in Figure 7. Over the past decade, Duff & Phelps' recommended normalized risk-free interest rates have been in the 2.50 percent to 4.00 percent and market-risk premiums have been in the 5.0 percent to 6.0 percent range. In early 2020, in the wake of the novel coronavirus in 2020, Duff & Phelps decreased its recommended normalized risk-free interest rate from 3.0 percent to 2.50 percent and increased its market-risk premium from 5.00 percent to 6.00 percent. Subsequently, on December 9, 2020, Duff & Phelps reduced its recommended market-risk premium to 5.50 percent.[42]

Figure 7
Duff & Phelps
Normalized Risk-Free Rate and Market-Risk Premium Recommendations
2007-2021



Data Source: https://www.duffandphelps.com/insights/publications/cost-of-capital

[42] Carla Nunes and James P. Harrington, *Duff & Phelps Recommended U.S. Equity Risk Premium Decreased from 6.0% to 5.5%, Effective December 9, 2020*, DUFF & PHELPS (Dec. 10, 2020), available at https://www.duffandphelps.com/insights/publications/cost-of-capital/duff-and-phelps-recommended-us-equity-risk-premium-decreased-december-2020.

Q. Given these results, what market-risk premium are you using in your CAPM?

A. The studies on page 6 of Exhibit JRW-9, and more importantly, the more timely and relevant studies just cited, suggest that the appropriate market-risk premium in the U.S. is in the 4.0 percent to 6.0 percent range. I will use an expected market-risk premium of 6.00 percent, which is the upper end of the range, as the market-risk premium. I gave most weight to the market risk-premium estimates of Duff & Phelps, KPMG, the Fernandez survey, and Damodaran. This is a conservatively high estimate of the market-risk premium considering the many studies and surveys of the market-risk premium.

Q. What equity cost rate is indicated by your CAPM analysis?

A. The results of my CAPM study for the proxy groups are summarized on page 1 of Exhibit JRW-9 and in Table 7 below.

Table 7
CAPM-Derived Equity Cost Rate/ROE
$K = (R_f) + ß * [E(R_m) - (R_f)]$

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Electric Proxy Group	**2.50%**	**0.85**	**6.0%**	**7.6%**
McKenzie Proxy Group	**2.50%**	**0.85**	**6.0%**	**7.6%**
Gas Proxy Group	**2.50%**	**0.85**	**6.0%**	**7.6%**

For the Electric, McKenzie, and Gas Proxy Groups, the risk-free rate of 2.50 percent plus the product of the beta of 0.85 times the equity risk premium of 6.0 percent results in a 7.6 percent equity cost rate.

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D. Equity Cost Rate Summary

Q. Please summarize the results of your equity cost rate studies.

A. My DCF analyses for the Electric, McKenzie, and Gas Proxy Groups indicate equity cost rates of 9.05 percent, 9.05 percent, and 8.70 percent, respectively. The CAPM equity cost rates for the Electric, McKenzie, and Gas Proxy Groups are 7.60 percent, 7.60 percent, and 7.30 percent:

Table 8
ROEs Derived from DCF and CAPM Models

	DCF	CAPM
Electric Proxy Group	**9.05%**	**7.60%**
McKenzie Proxy Group	**8.75%**	**7.60%**
Gas Proxy Group	**8.85%**	**7.30%**

Q. Given these results, what is your estimated equity cost rate for the groups?

A. Given these results, I conclude that the appropriate equity cost rate is in the range of 7.60 percent to 9.05 percent range for the companies in the Electric, McKenzie, and Gas Proxy Groups. However, given that Avista's investment risk is at the high end of the proxy groups, that interest rates have risen since mid-2020, and that I rely primarily on the DCF model, I am using the upper end of the range as the equity cost rate. Therefore, I conclude that the appropriate equity cost rate is 9.00 percent for Avista as estimated using the companies in the Electric, McKenzie, and Gas Proxy Groups.

Q. Please indicate why your equity cost rate recommendation is appropriate for the electric and gas operations of the Company.

A. There are a number of reasons why an equity cost rate of 9.00 percent is appropriate and fair for the Company in this case, primarily:

1. As shown on page 1 of Exhibit JRW-7, capital costs for utilities, as indicated by long-term utility bond yields, are at historically low levels. In addition, given low

inflationary expectations and slow global economic growth, interest rates are likely to remain at low levels for some time.

2. As shown on page 4 of Exhibit JRW-7, the electric utility and gas distribution industries are among the lowest risk industries in the U.S. as measured by beta. Overall, the cost of equity capital for this industry is the lowest in the U.S., according to the CAPM.

Q. Do you believe that your 9.00 percent ROE recommendation meets the *Hope* and *Bluefield* standards?

A. Yes, I do. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital. As shown on page 3 of Exhibit JRW-3, electric utility and gas distribution companies have been earning ROEs in the range of 8.0 percent to 10.0 percent. With such a ROE, electric utility and gas companies such as those in the proxy group have strong investment grade credit ratings, their stocks have been selling at almost 2.0 times book value, and they have been raising abundant amounts of capital. While my recommendation is below the average authorized ROEs for electric utility and gas distribution companies, it reflects the low levels of interest rates and capital costs. Therefore, I do believe that my ROE recommendation meets the criteria established in the *Hope* and *Bluefield* decisions.

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V. CRITIQUE OF AVISTA'S RATE OF RETURN TESTIMONY

Q. Please summarize the company's rate of return recommendation for Avista.

A. The Company's rate of return recommendation is summarized on page 1 of Exhibit JRW-10. The Company has proposed a capital structure of 50.0 percent long-term debt and 50.0 percent common equity. The Company has recommended a long-term debt cost rate of 4.97 percent. Avista witness Mr. Adrien McKenzie has recommended a common equity cost rate of 9.90 percent for Avista.[43] The Company's overall proposed rate of return is 7.43 percent.[44]

Q. Please provide an overview of the primary issues regarding rate of return in this proceeding.

A. The primary issues related to the Company's rate of return include the following:

1. **Capital Market Conditions** — Mr. McKenzie's analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs.

2. **Capital Structure** — Avista's proposed hypothetical capital structure has a higher common equity ratio and lower financial risk than other electric and gas companies.

3. **DCF Equity Cost Rate** — The DCF Equity Cost Rate is estimated by summing the stock's dividend yield and investors' expected long-run growth rate in dividends paid per share. The issues are whether it is appropriate to:
(1) eliminate, as McKenzie does, low-end DCF equity cost rates without also eliminating high-end results, resulting in an asymmetric elimination process and

[43] McKenzie, Exh. AMM-1T, at 7:6–7.
[44] Thies, Exh. MTT-1T, at 17:12.

(2) rely exclusively on the overly optimistic and upwardly biased earnings per share (EPS) growth rate forecasts of Wall Street analysts and *Value Line*.

4. **CAPM Approach** — The CAPM approach requires an estimate of the risk-free interest rate, the beta, and the market or equity risk premium. There are several issues with Mr. McKenzie's CAPM analyses: (1) he has employed the Empirical CAPM ("ECAPM") version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium and (2) most significantly, he has used a highly overstated market risk premium of 10.2 percent. Mr. McKenzie has employed analysts' three-to-five-year growth-rate projections for EPS to compute an expected market return and market risk premium. These EPS growth-rate projections and the resulting expected market returns and market risk premiums include highly unrealistic assumptions regarding future economic and earnings growth and stock returns; and (3) he has included an unwarranted size adjustment.

5. **Alternative Risk Premium Model** — ("Utility Risk Premium" or "URP") - Mr. McKenzie estimates an equity cost rate using an alternative risks premium model which he calls the Utility Risk Premium ("URP") approach. The risk premium in his URP method is based on the historical relationship between the yields on long-term utility bond yields and authorized ROEs for electric utility companies. There are several issues with this approach, which I discuss in more depth later, but the primary problem is that the URP is a gauge of *commission* behavior rather than *investor* behavior.

6. **Expected Earnings Approach** — Mr. McKenzie also uses the Expected Earnings approach to estimate an equity cost rate for the Company. Mr. McKenzie computes the expected ROE as forecasted by *Value Line* for his proxy group of electric utilities. The so-called "Expected Earnings" approach, however, (1) does not measure the market cost of equity capital; (2) is independent of most cost of capital indicators; and (3) has several other empirical problems. Therefore, the Commission should ignore Mr. McKenzie's "Expected Earnings" approach in determining the appropriate ROE for Avista.

7. **DCF Model Applied to Non-Utility Companies** — Mr. McKenzie also estimates an equity cost rate by applying his equity-cost-rate approaches and methodologies to a group of "comparable risk" non-price regulated companies. This approach is fundamentally flawed for two reasons. First, these companies are not truly comparable to Avista. Second, the upward bias in the EPS growth rate forecasts of Wall Street analysts is particularly severe for non-utility companies and therefore the DCF equity cost rate estimates for this group are particularly overstated.

8. **Flotation Costs** - Mr. McKenzie reports his equity cost rate results include a flotation cost adjustment of 10 basis points. However, Mr. McKenzie has not provided any evidence that the Company has paid flotation costs. Therefore, the Company should not be allowed to collect additional revenues in the form of a higher ROE for flotation costs which they did not incur.

Capital market conditions and Avista's proposed capital structure were previously discussed. The other issues are addressed below.

Q. Please review Mr. McKenzie's equity cost rate approaches and results.

A. Mr. McKenzie has developed a proxy group of electric utility and gas distribution companies and employs DCF, CAPM, utility risk premium, and expected earnings equity cost rate approaches. Mr. McKenzie's equity cost rate estimates for Avista are summarized on page 2 of Exhibit JRW-10. Based on these figures, he concludes that the appropriate equity cost rate is 9.90 percent for Avista's electric utility and gas distribution operations.

A. DCF Approach

Q. Please summarize Mr. McKenzie's DCF estimates.

A. On pages 12–24 of Exhibit AMM-3 and in Exhibits AMM-6 -AMM-7, Mr. McKenzie develops an equity cost rate by applying the DCF model to his proxy group.[45] Mr. McKenzie's DCF results are summarized on page 2 of Exhibit JRW-10. In the traditional DCF approach, the equity cost rate is the sum of the dividend yield and expected growth. For the DCF growth rate, Mr. McKenzie uses four measures of projected EPS growth: the projected EPS growth of Wall Street analysts as compiled by IBES and Zack's; *Value Line's* projected EPS projected growth rate; and a measure of sustainable growth as computed by the sum of internal ("*br*") and by external ("*sv*") growth. The average of the mean DCF results is 9.2 percent.

Q. What are the errors in Mr. McKenzie's DCF analyses?

A. The primary issues in Mr. McKenzie's DCF analyses are: (1) His asymmetric elimination of low-end DCF results and (2) The excessive use of the overly optimistic and upwardly-

[45] McKenzie, Exh. AMM-3, at 12–24; McKenzie, Exh. AMM-6 and AMM-7.

biased EPS growth rate forecasts of Wall Street analysts as the growth rate in his DCF model.

1. The asymmetric elimination of low-end DCF results

Q. Please address Mr. McKenzie's asymmetric elimination of DCF results.

A. One very significant error with Mr. McKenzie's DCF equity cost rate analyses is his asymmetric elimination of DCF results. Page 3 of Exhibit JRW-10 provides Mr. McKenzie's DCF results for his proxy group. In deriving a DCF equity cost rate, Mr. McKenzie has labeled certain equity cost rates as extreme outliers. All of the eliminated DCF results are on the low end. As shown on page 3 of Exhibit JRW-10, Mr. McKenzie eliminates 15 percent of his DCF results. By eliminating low-end outliers while keeping the same number of high-end outliers, Mr. McKenzie biases his DCF equity cost rate study and reports a higher DCF equity cost rate than the data indicate. In my DCF analysis, I have used the median as a measure of central tendency so as to not give outlier results too much weight. This approach also avoids biasing the results by including all data in the analysis and not selectively eliminating outcomes.

On page 3 of Exhibit JRW-10, I have recalculated Mr. McKenzie's DCF equity cost rate for the electric group without eliminating the so-called extreme outliers. The average of the reported DCF estimates is 9.2 percent. However, without the low-end eliminations, the actual mean DCF equity cost rate is 8.5 percent for the electric group. As such, Mr. McKenzie's asymmetric elimination of low-end DCF results significantly distorts his reported DCF ROEs.

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2. Analysts' EPS growth rates

Q. Please review Mr. McKenzie's DCF growth rate.

A. In his constant-growth DCF model, Mr. McKenzie's DCF growth rate is the average of the projected EPS growth rate forecasts of: (a) Wall Street analysts as compiled by IBES, Zack's, and *Value Line's* projected EPS projected growth rate; and, (b) a measure of sustainable growth as computed by the sum of internal ("*br*") and by external ("*sv*") growth.

Q. Please discuss Mr. McKenzie's exclusive reliance on the projected growth rates of Wall Street analysts and *Value Line*.

A. It seems highly unlikely that investors today would rely exclusively on the EPS growth rate forecasts of Wall Street analysts and ignore other growth rate measures in arriving at their expected growth rates for equity investments. As I previously indicated, the appropriate growth rate in the DCF model is the dividend growth rate rather than the earnings growth rate. Hence, consideration must be given to other indicators of growth, including historical prospective dividend growth, internal growth, and projected earnings growth. In addition, a study by Lacina, Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[46] As such, the weight given to analysts' projected EPS growth rates should be limited. Finally, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.[47] Hence, using these growth rates as

[46] If earnings follow a random walk, changes in earnings have the same distribution and are independent of each other. If this is the case, past movement or trend of earnings cannot be used to predict earnings. *See* M. Lacina, B. Lee, and Z. Xu, *Advances in Business and Management Forecasting*, EMERALD GROUP PUBLISHING LTD., at 77–101 (2011), available at https://www.emerald.com/insight/content/doi/10.1108/S1477-4070(2011)0000008009/full/html.
[47] *See* references in n.19–21.

a DCF growth rate produces an overstated equity cost rate. A study by Easton and Sommers (2007) found that optimism in analysts' earnings growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[48] Therefore, exclusive reliance on these forecasts for a DCF growth rate results in failure of one the basic inputs in the equation. In addition, as noted above, a study by Szakmary, Conover, and Lancaster (2008) discovered that the three-to-five-year EPS growth rate forecasts of *Value Line* to be significantly higher than the EPS growth rates that these companies subsequently achieved.[49]

B. CAPM Approach

Q. Please discuss Mr. McKenzie's CAPM.

A. On pages 24–32 of Exhibit AMM-3 and in Exhibits AMM-8 and AMM-9, Mr. McKenzie develops an equity cost rate by applying the CAPM model to his proxy groups.[50] Mr. McKenzie has not used a traditional CAPM, but instead has used a variant of the traditional CAPM, the Empirical CAPM ("ECAPM"). The CAPM approach requires an estimate of the risk-free interest rate, Beta, and the equity risk premium. Mr. McKenzie calculates a CAPM equity cost rate using the current long-term Treasury bond yield of 1.4 percent and a projected bond yield of 2.5 percent and Betas from *Value Line*. A market risk premium is computed for each risk-free rate, and both are based on an expected stock market return of 11.6 percent. He also adds a "size premium" to his CAPM equity cost rate. The ECAPM makes adjustments to the risk-free rate and the market risk premium in

[48] Peter Easton and Gregory Sommers, *Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts*, J. OF ACCT. RSCH., 45(5), 983–1015.
[49] Andrew Szakmary, C. Mitchell Conover, and Carol Lancaster, *An Examination of Value Line's Long-Term Projections*, J. OF BANKING & FIN., at 820–833 (May 2008).
[50] McKenzie, Exh. AMM-3, at 24–32; McKenzie, Exh. AMM-8 and AMM-9.

calculating an equity cost rate. The ECAPM version of the CAPM increases these ROE results by about 100 basis points. Mr. McKenzie's reported average CAPM/ECAPM results range from 11.2 percent to 11.8 percent for the proxy group.

Q. What are the errors in Mr. McKenzie's ECAPM analysis?

A. The primary errors with Mr. McKenzie's ECAPM analysis are: (1) the use of the ECAPM version of the CAPM; (2) the expected market return of 11.6 percent that is used to compute the market risk premiums; and (3) the size adjustment.

1. The validity of the ECAPM approach

Q. Do you believe that the ECAPM is a valid methodology to determine Avista's cost of equity capital in this proceeding?

A. No. The ECAPM, as popularized by rate of return consultant Dr. Roger Morin, attempts to model the well-known finding of tests of the CAPM that have indicated that the Security Market Line (SML) is not as steep as predicted by the CAPM. As such, the ECAPM is nothing more than an ad hoc version of the CAPM. Moreover, the ECAPM has not been theoretically or empirically validated in scholarly journals. The ECAPM provides for weights which are used to adjust the risk-free rate and market risk premium in applying the ECAPM. Mr. McKenzie uses 0.25 and 0.75 factors to boost the equity risk premium measure, but provides no empirical justification for those figures.

Beyond the lack of any theoretical or empirical validation of the ECAPM, there are two errors in Mr. McKenzie's ECAPM. I am not aware of any tests of the CAPM that use adjusted betas such as those used by Mr. McKenzie. Adjusted betas address the empirical issues with the CAPM by increasing the expected returns for low beta stocks and decreasing the returns for high beta stocks.

2. Upward Biased Market Risk Premium

Q. Please assess Mr. McKenzie's market-risk premiums derived from applying the DCF model to the S&P 500.

A. The primary problem with Mr. McKenzie's CAPM analysis is the improperly inflated magnitude of the market (or equity) risk premium. Mr. McKenzie develops an expected market risk premium by applying the DCF model to the S&P 500 to get an expected market return, and then subtracting the risk-free rate of interest. As shown in Table 7, Mr. McKenzie's estimated market return of 11.6 percent for the S&P 500 equals the sum of the dividend yield of 2.3 percent and expected EPS growth rate of 9.2 percent. The expected EPS growth rate is the average of the expected EPS growth rates from IBES, Zacks, and *Value Line*. Mr. McKenzie's expected DCF growth rate is inaccurate because the expected EPS growth rates of Wall Street analysts are upwardly biased and the projected growth rate is inconsistent with economic and earnings growth in the U.S.

Table 9
McKenzie Market Risk Premium

Dividend Yield	**2.30%**
+ Expected EPS Growth	**9.20%**
= Expected Market Return	**11.60%**
+ Risk-Free Rate	**1.40%**
= Market Risk Premium	**10.20%**

Q. Please briefly again touch upon the impact on risk premium analyses by analysts' overoptimistic EPS growth rate forecasts.

A. The key point is that Mr. McKenzie's CAPM market risk premium methodology is based entirely on the concept that analyst projections of companies' three-to-five EPS growth rates reflect investors' expected *long-term* EPS growth for those companies. However, this seems highly unrealistic given the research on these projections. As previously noted,

numerous studies have shown that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.[51] Moreover, a 2011 study showed that analysts' forecasts of EPS growth over the next three-to-five years earnings are no more accurate than their forecasts of the next single year's EPS growth.[52] The overly-optimistic inaccuracy of analysts' growth rate forecasts leads to an upward bias in equity cost estimates that has been estimated at about 300 basis points.[53] Additionally, the aforementioned study by Szakmary, Conover, and Lancaster (2008) discovered that the three-to-five-year EPS growth rate forecasts of *Value Line*'s to be significantly higher than the EPS growth rates that the evaluated companies subsequently achieved.[54]

Q. **Have changes in regulations impacting Wall Street analysts and their research impacted the upward bias in their three-to-five year EPS growth rate forecasts?**

A. No. A number of the studies I have cited here demonstrate that the upward bias has continued despite changes in regulations and reporting requirements over the past two decades. This observation is highlighted by a 2010 McKinsey & Company study entitled "Equity Analysts: Still Too Bullish," which involved a study of the accuracy of analysts' long-term EPS growth rate forecasts. The authors conclude that even after a decade of

[51] Such studies include: R.D. Harris, *The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts*, J. OF BUS. FIN. & ACCT., at 725–55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, *The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings*, CONTEMPORARY ACCT. RSCH. (2000 Louis Chan, Jason Karceski, and Josef Lakonishok, *The Level and Persistence of Growth Rates*, J. OF FIN., 643–684 (2003), available at https://lsvasset.com/pdf/research-papers/Level+Persistence_of_Growth_Rates_FINAL.pdf; M. Lacina, B. Lee, and Z. Xu, *Advances in Business and Management Forecasting*, EMERALD GROUP PUBLISHING LTD., at 77–101 (2011), available at https://www.emerald.com/insight/content/doi/10.1108/S1477-4070(2011)0000008009/full/html.

[52] M. Lacina, B. Lee, and Z. Xu, *Advances in Business and Management Forecasting*, EMERALD GROUP PUBLISHING LTD., at 77–101 (2011), available at https://www.emerald.com/insight/content/doi/10.1108/S1477-4070(2011)0000008009/full/html.

[53] Peter D. Easton and Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, at 45, J. OF ACCT. RSCH., at 983–1015 (2007).

[54] Andrew Szakmary, C. Mitchell Conover, and Carol Lancaster, *An Examination of Value Line's Long-Term Projections*, J. OF BANKING & FIN., at 820–833 (May 2008).

stricter regulation, analysts' long-term earnings forecasts continue to be excessively optimistic – so much so that, "[*o*]*n average, analysts' forecasts have been almost 100 percent too high":*[55]

> Alas, a recently completed update of our work only reinforces this view—despite a series of rules and regulations, dating to the last decade, that were intended to improve the quality of the analysts' long-term earnings forecasts, restore investor confidence in them, and prevent conflicts of interest. For executives, many of whom go to great lengths to satisfy Wall Street's expectations in their financial reporting and long-term strategic moves, this is a cautionary tale worth remembering. This pattern confirms our earlier findings that analysts typically lag behind events in revising their forecasts to reflect new economic conditions. When economic growth accelerates, the size of the forecast error declines; when economic growth slows, it increases. So as economic growth cycles up and down, the actual earnings S&P 500 companies report occasionally coincide with the analysts' forecasts, as they did, for example, in 1988, from 1994 to 1997, and from 2003 to 2006. *Moreover, analysts have been persistently overoptimistic for the past 25 years, with estimates ranging from 10 to 12 percent a year, compared with actual earnings growth of 6 percent. Over this time frame, actual earnings growth surpassed forecasts in only two instances, both during the earnings recovery following a recession. On average, analysts' forecasts have been almost 100 percent too high.*

To similar effect, in a 2010 *Bloomberg Businessweek* article, the author concluded that Wall Street research regulatory reforms had failed to stop "overly rosy view[s]" of profit prospects:[56]

> ***The bottom line:*** *Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects.*

[55] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity Analysts, Still Too Bullish*, MCKINSEY ON FIN., at 14–17 (Spring 2010) (emphasis added).

[56] Roben Farzad, *For Analysts, Things Are Always Looking Up*, BLOOMBERG BUSINESSWEEK (June 10, 2010), available at https://www.bloomberg.com/news/articles/2010-06-10/for-analysts-things-are-always-looking-up.

Q. Is Mr. McKenzie's market-risk premium of 10.2 percent reflective of the market-risk premiums found in studies and surveys of the market-risk premium?

A. No. Mr. McKenzie's market risk premium is computed as his expected market return (11.6 percent) minus the risk-free interest rate (1.4 percent), which equals 10.2 percent, This figure is well in excess of market risk premiums either found in studies of the market risk premiums by leading academic scholars, or produced by analyses of historic stock and bond returns, or, found in surveys of financial professionals. Page 6 of Exhibit JRW-9 provides the results of over 30 market risk premiums studies from the past fifteen years. Historic stock and bond returns suggest a market risk premium in the 4.4 percent to 6.44 percent range, depending on whether one uses arithmetic or geometric mean returns. There have been many studies using *ex ante* models, and their market risk premiums results vary from as low as 3.42 percent to as high as 6.25 percent. Finally, the market risk premiums developed from surveys of analysts, companies, financial professionals, and academics suggest lower market risk premiums, in a range of between 3.36 percent and 5.70 percent. The bottom line is that there is no support in historic return data, surveys, academic studies, or reports for investment firms for a market risk premium as high as the 10.2 percent figure used by Mr. McKenzie.

Q. Is there other evidence that indicates that Mr. McKenzie's market-risk premium computed using S&P 500 EPS growth rate is excessive?

A. Yes. In short, a long-term EPS growth rate of 9.2 percent is inconsistent with both historic and projected economic and earnings growth in the U.S. Reasons for this inconsistency are that long-term EPS and economic growth is about one-half of Mr. McKenzie's projected EPS growth rate of 9.2 percent, long-term EPS and GDP growth

are directly linked, and (3) more recent trends in GDP growth, as well as projections of GDP growth, suggest slower economic and earnings growth in the future.

Long-Term Historic EPS and GDP Growth rates have been in the six percent to seven percent Range — I performed a study of the growth in nominal GDP, S&P 500 stock price appreciation, and S&P 500 EPS and DPS growth since 1960. The results are provided on page 1 of Exhibit JRW-11, and a summary is shown in Table 10, below.

Table 10
GDP, S&P 500 Stock Price, EPS, and DPS Growth
1960-Present

Nominal GDP	**6.28**
S&P 500 Stock Price	**7.20**
S&P 500 EPS	**6.53**
S&P 500 DPS	**5.75**
Average	**6.44**

The results show that the historical long-run growth rates for GDP, S&P EPS, and S&P DPS are in the six percent to seven percent range. By comparison, Mr. McKenzie's long-run growth rate projections of 9.2 percent is excessive. These estimates suggest that companies in the U.S. would be expected to increase their growth rate of EPS by 33 percent in the future, and maintain that growth indefinitely in an economy that is expected to grow at about one-half of Mr. McKenzie's projected growth rates.

There is a Direct Link Between Long-Term EPS and GDP Growth — The results in Exhibit JRW-11 and Table 8 show that historically there has been a close link between long-term EPS and GDP growth rates. Brad Cornell of the California Institute of Technology published a study on GDP growth, earnings growth, and equity returns. He finds that long-term EPS growth in the U.S. is directly related to GDP growth, with GDP growth providing an upward limit on EPS growth. In addition, he finds that long-term

stock returns are determined by long-term earnings growth and that "real GDP growth in excess of three percent in the long run is highly unlikely in the developed world": [57]

> The long-run performance of equity investments is fundamentally linked to growth in earnings. Earnings growth, in turn, depends on growth in real GDP. This article demonstrates that both theoretical research and empirical research in development economics suggest relatively strict limits on future growth. In particular, real GDP growth in excess of 3 percent in the long run is highly unlikely in the developed world. In light of ongoing dilution in earnings per share, this finding implies that investors should anticipate real returns on U.S. common stocks to average no more than about 4–5 percent in real terms.

The Trend and Projections Indicate Slower GDP Growth in the Future — The components of nominal GDP growth are real GDP growth and inflation. Page 3 of Exhibit JRW-11 shows annual real GDP growth rate over the 1961 to 2020 time period. Real GDP growth has gradually declined from the 5.0 percent to 6.0 percent range in the 1960s to the 2.0 percent to 3.0 percent range during the most recent five-year period. The second component of nominal GDP growth is inflation. Page 4 of Exhibit JRW-11 shows inflation as measured by the annual growth rate in the Consumer Price Index (CPI) over the 1961 to 2018 time period. The large increase in prices from the late 1960s to the early 1980s is readily evident. Equally evident is the rapid decline in inflation during the 1980s as inflation declined from above 10 percent to about four percent. Since that time, inflation has gradually declined and has been in the 2.0 percent range or below over the past five years.

The graphs on pages 2, 3, and 4 of Exhibit JRW-11 provide clear evidence of the decline, in recent decades, in nominal GDP as well as its components, real GDP and

[57] Bradford Cornell, *Economic Growth and Equity Investing*, FIN. ANALYSTS J., at 63 (Jan.–Feb. 2010).

inflation. To gauge the magnitude of the decline in nominal GDP growth, Table 11, below, provides the compounded GDP growth rates for 10-, 20-, 30-, 40- and 50- years. Whereas the 50-year compounded GDP growth rate is 6.63 percent, there has been a monotonic and significant decline in nominal GDP growth over subsequent 10-year intervals. These figures strongly suggest that nominal GDP growth in recent decades has slowed and that a figure in the range of 4.0 percent to 5.0 percent is more appropriate today for the U.S. economy.

Table 11
Historical Nominal GDP Growth Rates

10-Year Average	**3.40%**
20-Year Average	**3.63%**
30-Year Average	**4.27%**
40-Year Average	**5.10%**
50-Year Average	**6.12%**

Long-Term GDP Projections also Indicate Slower GDP Growth in the Future — A lower range is also consistent with long-term GDP forecasts. There are several forecasts of annual GDP growth that are available from economists and government agencies. These are listed in Panel B of on page 5 of Exhibit JRW-11. The mean 10-year nominal GDP growth forecast (as of March 2020) by economists in the recent *Survey of Financial Forecasters* is 4.30 percent.[58] The Energy Information Administration (EIA), in its projections used in preparing *Annual Energy Outlook,* forecasts long-term GDP growth of 4.2 percent for the period 2019-2050.[59] The Congressional Budget Office (CBO), in its

[58] Fed. Reserve Bank of Phila., *Survey of Professional Forecasters* (Feb. 2020), available at https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/survey-of-professional-forecasters.
[59] U.S. Energy Information Admin., *Annual Energy Outlook 2020*, Table: Macroeconomic Indicators, available at https://www.eia.gov/outlooks/archive/aeo20/tables_ref.php.

forecasts for the period 2019 to 2029, projects a nominal GDP growth rate of 3.8 percent.[60] Finally, the Social Security Administration (SSA), in its Annual OASDI Report, provides a projection of nominal GDP from 2020-2095.[61] SSA's projected growth GDP growth rate over this period is 4.1 percent. Overall, these forecasts suggest long-term GDP growth rate in the 4.0 percent to 4.3 percent range. The trends and projections indicating slower GDP growth make Mr. McKenzie's market risk premium — computed by using analysts' projected EPS growth rates — look even more unrealistic. Simply stated, Mr. McKenzie's projected EPS growth rate of 9.2 percent is twice the projected GDP growth.

Q. What are the fundamental factors that have led to the decline in the prospective GDP growth?

A. As addressed in a study by the consulting firm McKinsey & Co., two factors drive real GDP growth over time: (a) the number of workers in the economy (employment); and (2) the productivity of those workers (usually defined as output per hour).[62] According to McKinsey, real GDP growth over the past 50 years was driven by population and productivity growth which grew at compound annual rates of 1.7 percent and 1.8 percent, respectively.

However, global economic growth is projected to slow significantly in the years to come. The primary factor leading to the decline is slow growth in employment (working-age population), which results from slower population growth and longer life

[60] Cong. Budget Off., The *2020 Long-Term Budget Outlook* (Sept. 21, 2020).
[61] Soc. Sec. Admin., *2020 Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance (OASDI) Program*, Table VI.G4, (July 1, 2020). The 4.1 percent growth rate is the growth in projected GDP from $22,341 trillion in 2020 to $450,425 trillion in 2095.
[62] McKinsey & Co., *Can Long-Term Growth be Saved?*, MCKINSEY GLOB. INST., (Jan. 2015).

expectancy. McKinsey estimates that employment growth will slow to 0.3 percent over the next fifty years. They conclude that even if productivity remains at the rapid rate of the past fifty years of 1.8 percent, real GDP growth will fall by 40 percent to 2.1 percent.

Q. Are there other insights of value into the relationship between S&P 500 EPS and GDP growth?

A. Yes. Figure 8 shows the average annual growth rates for GDP and the S&P 500 EPS since 1960. The one very apparent difference between the two is that the S&P 500 EPS growth rates are much more volatile than the GDP growth rates, when compared using the relatively short, and somewhat arbitrary, annual conventions used in these data.[63] Volatility aside, however, it is clear that over the medium to long run, S&P 500 EPS growth does not outpace GDP growth.

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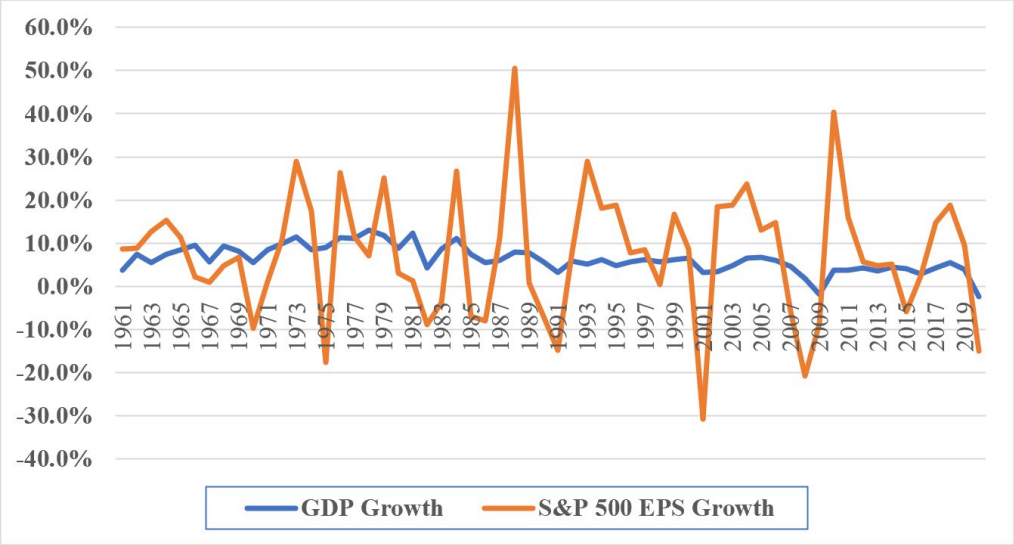
[63] Timing conventions such as years and quarters are needed for measurement and benchmarking but are somewhat arbitrary. In reality, economic growth and profit accrual occur on continuous bases. A 2014 study evaluated the timing relationship between corporate profits and nominal GDP growth. The authors found that aggregate accounting earnings growth is a leading indicator of the GDP growth with a quarter-ahead forecast horizon. *See* Yaniv Konchitchki and Panos N. Patatoukas, *Accounting Earnings and Gross Domestic Product*, JOURNAL OF ACCOUNTING AND ECONOMICS, 57 (2014), at 76–88.

Figure 8
Average Annual Growth Rates
GDP and S&P 500 EPS
1960-2020



Data Sources: GDPA - http://research.stlouisfed.org/fred2/series/GDPA/downloaddata.
S&P EPS - http://pages.stern.nyu.edu/~adamodar/.

A fuller understanding of the relationship between GDP and S&P 500 EPS growth requires consideration of several other factors.

Corporate Profits are Constrained by GDP — In a Fortune magazine article, Milton Friedman, the winner of the 1976 Nobel Prize in Economic Sciences, warned investors and others not to expect corporate profit growth to sustainably exceed GDP growth, stating, "Beware of predictions that earnings can grow faster than the economy for long periods. When earnings are exceptionally high, they don't just keep booming."[64] In that same article, Friedman also noted that profits must move back down to their traditional share of GDP. In Table 12 below, I show that currently the aggregate net income levels for the S&P 500 companies, using 2020 figures, represent 5.47 percent of nominal GDP.

[64] Shaun Tully, *Corporate Profits Are Soaring. Here's Why It Can't Last*, Fortune (Dec. 7, 2017), available at http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

Table 12
S&P 500 Aggregate Net Income as a Percent of GDP

	2020 Value
Aggregate Net Income for S&P 500	**$1,144,698.40**
2020 Nominal U.S. GDP	**$ 20,934,000.00**
Net Income/GDP (%)	**5.47%**

Data Sources: 2020 Net Income for S&P 500 companies – *Value Line* (April 5, 2021).
2020 Nominal GDP – Moody's - https://www.economy.com/united-states/nominal-gross-domestic-product.

Short-Term Factors Impact S&P 500 EPS — The growth rates in the S&P 500 EPS and GDP can diverge on a year-to-year basis due to short-term factors that impact S&P 500 EPS in a much greater way than GDP. As shown above, S&P EPS growth rates are much more volatile than GDP growth rates. The EPS growth for the S&P 500 companies has been influenced by low labor costs and interest rates, commodity prices, the recovery of different sectors such as the energy and financial sectors, the cut in corporate tax rates, etc. These short-term factors can make it appear that there is a disconnect between the economy and corporate profits.

The Differences Between the S&P 500 EPS and GDP — In the last two years, as the EPS for the S&P 500 has grown at a faster rate than U.S. nominal GDP, some have pointed to the differences between the S&P 500 and GDP.[65] These differences include: (a) corporate profits are about 2/3 manufacturing driven, while GDP is 2/3 services driven; (b) consumer discretionary spending accounts for a smaller share of S&P 500 profits (15 percent) than of GDP (23 percent); (c) corporate profits are more

[65] *See* the following studies: Burt White and Jeff Buchbinder, *The S&P and GDP are not the Same Thing*, LPL FINANCIAL (Nov. 4, 2014), available at https://www.businessinsider.com/sp-is-not-gdp-2014-11; Matt Comer, *How Do We Have 18.4% Earnings Growth In A 2.58% GDP Economy?*, SEEKING ALPHA, (Apr. 2018), available at https://seekingalpha.com/article/4164052-18_4-percent-earnings-growth-2_58-percent-gdp-economy; Shaun Tully, *How on Earth Can Profits Grow at 10% in a 2% Economy?*, Fortune, (July 27, 2017), available at http://fortune.com/2017/07/27/profits-economic-growth/.

international-trade driven, while exports minus imports tend to drag on GDP; and (d) S&P 500 EPS is impacted not just by corporate profits but also by share buybacks on the positive side (fewer shares boost EPS) and by share dilution on the negative side (new shares dilute EPS). While these differences may seem significant, it must be remembered that the Income Approach to measure GDP includes corporate profits (in addition to employee compensation and taxes on production and imports) and therefore effectively accounts for the first three factors.[66]

The bottom line is that despite the intertemporal short-term differences between S&P 500 EPS and nominal GDP growth, the long-term link between corporate profits and GDP is inevitable.

Q. Please provide additional insights into the unreasonableness of Mr. McKenzie's 9.2 percent projected S&P EPS growth rate in light of projected GDP growth.

A. Beyond my previous discussion, I have performed the following analysis of S&P 500 EPS and GDP growth in Table 13, below. Specifically, I started with the 2020 aggregate net income for the S&P 500 companies and 2020 nominal GDP for the U.S. As shown in Table 13, the aggregate profit for the S&P 500 companies represented 5.47 percent of nominal GDP in 2020. In Table 13, I then projected the aggregate net income level for the S&P 500 companies and GDP as of the year 2050. For the growth rate for the S&P 500 companies, I used Mr. McKenzie's projected S&P 500 EPS growth rate of 9.2 percent. As a growth rate for nominal GDP, I used the average of the long-term projected GDP growth rates from SFF, CBO, SSA, and EIA (4.3 percent, 3.8 percent, 4.1 percent,

[66] The Income Approach to measuring GDP includes wages, salaries, and supplementary labor income, corporate profits, interest and miscellaneous investment income, farmers' incomes, and income from non-farm unincorporated businesses.

and 4.0 percent), which is 4.09 percent. The projected 2050 level for the aggregate net income level for the S&P 500 companies is $16.0 trillion. Over the same period GDP is expected to grow to $69.7 trillion. As such, if the aggregate net income for the S&P 500 grows in accordance with the growth rate used by Mr. McKenzie, and if nominal GDP grows at rates projected by major government agencies, the net income of the S&P 500 companies will represent growth from 5.47 percent of GDP in 2020 to 23.0 percent of GDP in 2050. Obviously, it is implausible for the net income of the S&P 500 to become almost 50 percent of GDP.

Table 13
Projected S&P 500 Earnings and Nominal GDP
2020-2050
S&P 500 Aggregate Net Income as a Percent of GDP2020-2050
2020-2050

	2020 Value	Growth Rate	No. of Years	2050 Value
Aggregate Net Income for S&P 500	**$1,144,698.40**	**9.20%**	**30**	**$16,046,127.06**
2020 Nominal U.S. GDP	**$20,934,00.00**	**4.09%**	**30**	**$69,682,299.83**
Net Income/GDP (%)	**5.47%**			**23.03%**

Data Sources: 2020 Aggregate Net Income for S&P 500 companies – *Value Line* (April 5, 2021).
2020 Nominal GDP – Moody's - https://www.economy.com/united-states/nominal-gross-domestic-product.
S&P 500 EPS Growth Rate – Mr. McKenzie's projected S&P 500 growth rate of 9.7 percent;
Nominal GDP Growth Rate – The average of the long-term projected GDP growth rates from SFF, CBO, SSA, and EIA (4.3 percent, 3.8 percent, 4.0 percent, and 4.1 percent).

Q. Please provide a summary analysis on GDP and S&P 500 EPS growth rates.

A. As noted above, the long-term link between corporate profits and GDP is inevitable. The short-term differences in growth between the two has been highlighted by some notable market observers, including Warren Buffet, who indicated that corporate profits as a share of GDP tend to go far higher after periods where they are depressed, and then drop

sharply after they have been hovering at historically high levels. In a famous 1999 *Fortune* article, Mr. Buffet made the following observation:[67]

> You know, someone once told me that New York has more lawyers than people. I think that's the same fellow who thinks profits will become larger than GDP. When you begin to expect the growth of a component factor to forever outpace that of the aggregate, you get into certain mathematical problems. In my opinion, you have to be wildly optimistic to believe that corporate profits as a percent of GDP can, for any sustained period, hold much above 6%.

In sum, Mr. McKenzie's long-term S&P 500 EPS growth rate of 9.20 percent is grossly overstated and has little (if any) basis in economic reality. In the end, the big question remains as to whether corporate profits can grow faster than GDP. Jeremy Siegel, the renowned finance professor at the Wharton School of the University of Pennsylvania, believes that going forward, earnings per share can grow about half a point faster than nominal GDP, or about 5.0 percent, due to the big gains in the technology sector. But he also believes that sustained EPS growth matching analysts' near-term projections is absurd: "The idea of eight percent or 10 percent or 12 percent growth is ridiculous. It will not happen."[68]

3. Size adjustment

Q. Please discuss Mr. McKenzie's company size adjustment.

A. Mr. McKenzie includes a size adjustment in his CAPM approach for the size of the companies in the utility group. This adjustment is based on the historical stock market returns studies as performed by Duff & Phelps (formerly Morningstar and before that

[67] Carol Loomis, *Mr. Buffet on the Stock Market*, FORTUNE, (Nov. 22, 1999), available at https://money.cnn.com/magazines/fortune/fortune_archive/1999/11/22/269071/.
[68] Shaun Tully, *Corporate Profits Are Soaring. Here's Why It Can't Last*, FORTUNE, (Dec. 7, 2017), available at http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

Ibbotson Associates). There are numerous errors in using historical market returns to compute risk premiums. These errors provide inflated estimates of expected risk premiums. Among the errors are survivorship bias (only successful companies survive – poorly managed companies do not) and unattainable return bias (the Ibbotson procedure presumes monthly portfolio rebalancing). The net result is that Ibbotson's size premiums are poor measures for risk adjustment to account for the size of a utility.

In addition, Professor Annie Wong has tested for a company size premium in utilities and concluded that, unlike industrial stocks, utility stocks do not exhibit a significant company size premium.[69] As explained by Professor Wong, there are several reasons why such a size premium would not be attributable to utilities. Utilities are regulated closely by state and federal agencies and commissions, and hence, their financial performance is monitored on an ongoing basis by both the state and federal governments. In addition, public utilities must gain approval from government entities for common financial transactions such as the sale of securities (or the issuance of debt). Furthermore, unlike for their industrial counterparts, accounting standards and reporting are fairly standardized for public utilities. Finally, a utility's earnings are predetermined to a certain degree through the ratemaking process in which performance is reviewed by state commissions and other stakeholders. Overall, in terms of regulation, government oversight, performance review, accounting standards, and information disclosure, utilities are much different than industrials, which could account for the lack of a company size premium.

[69] Annie Wong, *Utility Stocks and the Size Effect: An Empirical Analysis*, J. OF THE MIDWEST FIN. ASS'N, at 95–101 (1993).

Q. Please discuss the research on the company size premium in estimating the equity cost rate.

A. As noted, there are errors in using historical market returns to compute risk premiums. With respect to the small firm premium, Richard Roll (1983) found that one-half of the historic return premium for small companies disappears once biases are eliminated and historic returns are properly computed. The error arises from the assumption of monthly portfolio rebalancing and the serial correlation in historic small firm returns.[70]

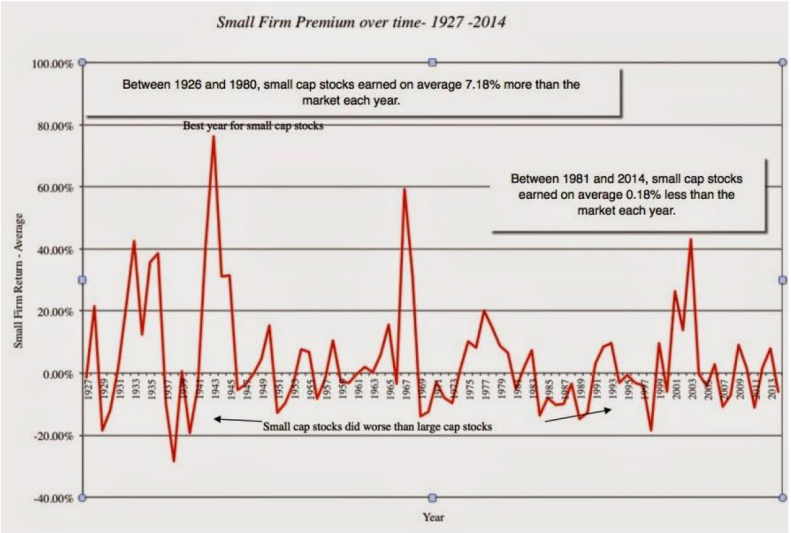
Q. What other evidence can you provide regarding issues related to the size premium?

A. Professor Damodaran, a New York University valuation expert, provides a thorough analysis of the company size effect, which he terms the "small firm" or "cap premium." Figure 9 traces the small firm premium over the 1927-2014 time period.[71] Damodaran has studied the issue for years and makes a number of observations on the size premium or effect: (1) the effect has largely disappeared since 1980, which is the year the Banz article was published; (2) the small firm premium tends to come and go over time; (3) the small firm premium tends to be associated with the January effect (small companies only earn abnormal returns in the first two weeks of January); (4) the small cap premium seems to actually be a microcap premium, as it disappears when companies with market capitalizations below $5 million are removed; (5) Damodaran does not find a small cap premium when he estimates a small firm required return; (6) he has never used a small cap premium when valuing small companies; and (7) he blames three factors for some analysts' continued use of a small cap premium: (i) intuition (it seems smaller companies

[70] *See* Richard Roll, *On Computing Mean Returns and the Small Firm Premium*, J. OF FIN. ECON., at 371–86 (1983).
[71] Aswath Damodaran, *The Small Cap Premium: Where is the Beef?*, Business Valuation Review: Winter 2015, Vol. 34, No. 4, at 152–157 (2015).

should be riskier), (ii) inertia (individuals and institutions are slow to change and to adopt new ideas); and (iii) bias (analysts prefer higher discount rates and lower valuations).

Figure 9
The Small Firm Premium
1927-2014



Source: Aswath Damodaran, *The Small Cap Premium: Where is the Beef?*, Business Valuation Review: Winter 2015, Vol. 34, No. 4, at 152–157 (2015).

C. Utility Risk Premium ("URP") Approach

Q. Please discuss Mr. McKenzie's URP approach.

A. On pages 32–8 of Exhibit AMM-3 and in Exhibit AMM-10, Mr. McKenzie develops an equity cost rate by applying the URP model to his proxy group.[72] Mr. McKenzie estimates equity cost rates of 9.3 percent and 10.1 percent for the group using current and projected BBB-rated utility bond yields of 3.37 percent and 4.79 percent. Mr. McKenzie develops an equity cost rate by: (1) regressing the annual authorized returns on equity for electric utility companies on the Moody's long-term BBB rated public utility bond yields; and (2) adding the appropriate risk premiums established in the regression to current and projected Moody's long-term public utility bond yields.

[72] McKenzie, Exh. AMM-3, at 32–38 and Exh. AMM-10.

Q. What are the issues with Mr. McKenzie's URP approach?

A. There are two issues. First, the bond's yield-to-maturity as a base yield results in an overstatement of investors' return expectations. Second, the risk premium produced from the study is overstated as a measure of investor return requirements and produced an inflated equity cost rate.

1. Base yield

Q. Please discuss the base yield of Mr. McKenzie's URP analysis.

A. The base yield in Mr. McKenzie's URP analyses is the prospective yield on long-term, BBB-rated public utility bonds. The primary error using this yields is that using the yield on these securities inflates the required return on equity for the Company in two ways: (1) long-term bonds are subject to interest rate risk, a risk which does not affect common stockholders since dividend payments (unlike bond interest payments) are not fixed but tend to increase over time and (2) the base yield in Mr. McKenzie's risk premium study is subject to credit risk since it is not default risk-free like an obligation of the U.S. Treasury. As a result, its yield-to-maturity includes a premium for default risk and therefore, is above its expected return. Hence, using a bond's yield-to-maturity as a base yield results in an overstatement of investors' return expectations.

2. Risk premium

Q. What are the issues with Mr. McKenzie's risk premium?

A. The most important issue is that Mr. McKenzie's risk premium is not necessarily applicable to measure utility investors' required rate of return. Mr. McKenzie's URP approach is a gauge of *commission* behavior, not *investor* behavior. Capital costs are determined in the market place through the financial decisions of investors and are

reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors' assessment of the risk and expected return of different investments. Regulatory commissions evaluate capital market data in setting authorized ROEs, but also take into account other utility- and rate case-specific information in setting ROEs. As such, Mr. McKenzie's approach and results reflects other factors such as capital structure, credit ratings and other risk measures, service territory, capital expenditures, energy supply issues, rate design, investment and expense trackers, and other factors used by utility commissions in determining an appropriate ROE in addition to capital costs. This may be especially true when, due to the inherent compromises and trade-offs upon which settlements are made, the authorized ROE data includes the results of rate cases that are settled and not fully litigated.

Finally, Mr. McKenzie's methodology produces an inflated required rate of return since utilities have been selling at a market-to-book ratios in excess of 1.0 for many years. This indicates that the authorized rates of return have been greater than the return that investors require. The relationship between ROE, the equity cost rate, and market-to-book ratios was explained on pages 27–28 of this testimony. In short, a market-to-book ratio above 1.0 indicates a company's ROE is above its equity cost rate. Therefore, the risk premium produced from the study is overstated as a measure of investor return requirements and produced an inflated equity cost rate.

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D. Expected Earnings Approach

Q. Please review Mr. McKenzie's Expected Earnings approach.

A. On pages 38–41 of Exhibit AMM-3 and in Exhibit AMM-11, Mr. McKenzie develops an equity cost rate using his Expected Earnings approach.[73] Mr. McKenzie's approach involves using *Value Line*'s projected ROE for the years 2021-23/2022-24 for his proxy groups and then adjusting this ROE to account for the fact the *Value Line* uses year-end equity in computing ROE. Mr. McKenzie reports Expected Earnings results of 10.3 percent and 10.9 percent for the group.

Q. Please address the issues with Mr. McKenzie's Expected (Comparable) Earnings approach.

A. There are a number of issues with this so-called Expected Earnings approach. As such, I strongly suggest that the Commission ignore this approach in setting a ROE for Avista. These issues include:

The Expected (Comparable) Earnings Approach Does Not Measure the Market Cost of Equity Capital — First and foremost, this accounting-based methodology does not measure investor return requirements. As indicated by Professor Roger Morin, a long-term utility rate of return consultant, "More simply, the Comparable (Expected) Earnings standard ignores capital markets. If interest rates go up two percent for example, investor requirements and the cost of equity should increase commensurably, but if regulation is based on accounting returns, no immediate change in equity cost results."[74] As such, this method does not measure the market cost of

[73] McKenzie, Exh. AMM-3, at 38–41 and Exh. AMM-11.
[74] Roger Morin, *New Regulatory Finance*, at 293 (2006).

equity because there is no way to assess whether the earnings are greater than or less than the earnings investors require, and therefore this approach does not measure the market cost of equity capital.

The Expected ROEs are not Related to Investors' Market-Priced Opportunities — The ROE ratios are an accounting measure that do not measure investor return requirements. Investors had no opportunity to invest in the proxy companies at the accounting book value of equity. In other words, the equity's book value *to investors* is tied to market prices, which means that investors' required return on market-priced equity aligns with expected return on book equity only when the equity's market price and book value are aligned. Therefore, a market-based evaluation of the cost of equity to investors in the proxies requires an associated analysis of the proxies' market-to-book ("M/B") ratios. In addition, as I demonstrated in Exhibit JRW-6, there is a strong positive relationship between expected ROEs and the M/B ratios for electric utility and gas distribution companies.

Changes in ROE Ratios do not Track Capital Market Conditions — As also indicated by Morin,

> The denominator of accounting return, book equity, is a historical cost-based concept, which is insensitive to changes in investor return requirements. Only stock market price is sensitive to a change in investor requirements. Investors can only purchase new shares of common stock at current market prices and not at book value."[75]

The Expected Earnings Approach is Circular — The proxies' ROEs ratios are not determined by competitive market forces, but instead are largely the result of federal and state rate regulation, including the present proceedings.

[75] *Id.*

The Proxies' ROEs Reflect Earnings on Business Activities that are not Representative of Avista's Rate-Regulated Utility Activities — The numerators of the proxy companies' ROEs include earnings from business activities that are riskier and produce more projected earnings per dollar of book investment than does regulated electric utility service. These include earnings from: (1) unregulated businesses including merchant generation; (2) electric generation; and (3) international operations.

Q. Please summarize your analysis of Mr. McKenzie's Expected Earnings approach.

A. In short, Mr. McKenzie's Expected Earnings approach does not measure the market cost of equity capital, is independent of most cost of capital indicators, and, as shown above, has a number of other empirical issues. Therefore, the Commission should ignore this approach in determining the appropriate ROE for Avista.

E. DCF Model Applied to Non-Utility Group

Q. Please discuss Mr. McKenzie's application of the DCF model to a proxy group of non-utility companies?

A. At pages 41–4 of Exhibit AMM-3 and in Exhibit AMM-12, Mr. McKenzie estimates an equity cost rate for the Company by applying the DCF model to a proxy group of 45 non-utility companies.[76] This group includes such companies as Coca-Cola, Colgate-Palmolive, General Mills, Kellogg, Kimberly-Clark, McCormick, PepsiCo, and Walmart. He reports an average DCF ROE of 9.6 percent for his non-utility group.

This approach is fundamentally flawed. While many of these companies are large and successful, their lines of business are vastly different from the electric utility business and they do not operate in a highly regulated environment. As important, the previously

[76] McKenzie, Exh. AMM-3, at 41–44 and Exh. AMM-12.

discussed upward bias in the EPS growth rate forecasts of Wall Street analysts is particularly severe for non-utility companies and therefore the DCF equity cost rate estimates for this group are particularly overstated.

F. Flotation Costs

Q. Please discuss Mr. McKenzie's consideration of flotation costs.

A. Between pages 43–9 of Exhibit AMM-1T, Mr. McKenzie claims that a flotation cost adjustment of 0.10 percent is justified for the Company's ROE determination.[77] However, Mr. McKenzie has not provided any evidence that the Company paid flotation costs. Therefore, the Company should not be allowed to collect additional revenues in the form of a higher ROE for flotation costs to account for flotation costs that have not been identified or paid.

Beyond this issue, it is commonly argued that a flotation cost adjustment (such as that used by the Company) is necessary to prevent the stock price dilution of the existing shareholders. However, this is incorrect for several reasons:

1. If an equity flotation cost adjustment is similar to a debt flotation cost adjustment, the fact that the market-to-book ratios for electric utility companies are in the 1.75X range actually suggests that there should be a flotation cost *reduction* (and not an increase) to the equity cost rate. This is because when (a) a bond is issued at a price in excess of face or book value, and (b) the difference between its market price and the book value is greater than the flotation or issuance costs, the cost of that debt is lower than the coupon rate of the debt. The amount by which market values of electric utility and gas distribution companies are in excess of

[77] McKenzie, Exh. AMM-1T, at 43–49.

book values is much greater than flotation costs. Hence, if common stock flotation costs were exactly like bond flotation costs, and one was making an explicit flotation cost adjustment to the cost of common equity, the adjustment would be downward;

2. If a flotation cost adjustment is needed to prevent dilution of existing stockholders' investment, then the reduction of the book value of stockholder investment associated with flotation costs can occur only when a company's stock is selling at a market price at or below its book value. As noted above, electric utility and gas distribution companies are selling at market prices well in excess of book value. Hence, when new shares are sold, existing shareholders realize an increase in the book value per share of their investment, not a decrease;

3. Flotation costs consist primarily of the underwriting spread (or fee) rather than out-of-pocket expenses. On a per-share basis, the underwriting spread is the difference between the price the investment banker receives from investors and the price the investment banker pays to the company. These are not expenses that should be recovered through the regulatory process. Furthermore, the underwriting spread is known to the investors who are buying the new issue of stock, and who are well aware of the difference between the price they are paying to buy the stock and the price that the company is receiving. The offering price which they pay is what matters when investors decide to buy a stock based on its expected return and risk prospects. Therefore, the Company is not entitled to an adjustment to the allowed return to account for those costs; and

4. Flotation costs, in the form of the underwriting spread, are a form of a transaction cost in the market. They represent the difference between the price paid by investors and the amount received by the issuing company. Whereas the Company believes that it should be compensated for these transaction costs, it has not accounted for *other* market transaction costs in determining its cost of equity. Most notably, brokerage fees that investors pay when they buy shares in the open market are another market transaction cost. Brokerage fees increase the effective stock price paid by investors to buy shares. If the Company had included these brokerage fees or transaction costs in its DCF analysis, the higher effective stock prices paid for stocks would lead to lower dividend yields and equity cost rates. This would result in a downward adjustment to their DCF equity cost rate.

VI. SUMMMARY AND CONCLUSIONS

Q. Dr. Woolridge, please summarize your testimony on the appropriate cost of capital for Avista.

A. I show that the company's proposed capital structure includes more common equity ratio and lower financial risk than other electric utility companies. As a result, I have employed a capital structure with a common equity ratio of 48.50 percent, which was the common equity ratio adopted in the Company's last rate case. To estimate an equity cost rate for the Company, I have applied the DCF and CAPM approaches to three proxy groups of electric utility and gas distribution companies. My analyses indicate that an equity cost rate in the range of 7.60 percent to 9.05 is appropriate at this time. Given the risk profile of the Company, the recent rise in interest rates, and since I rely primarily on the DCF approach, I am recommending a ROE in the upper end of the range, 9.00

percent, for the Company. Given my recommended capitalization ratios, senior capital cost rates, and the 9.00 percent ROE, my rate of return or cost of capital recommendation for the Company is 6.92 percent and is summarized in Table 2 and Exhibit JRW-2.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.