BEFORE THE WASHINGTON

UTILITIES & TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Complainant

v.

PACIFICORP d/b/a PACIFIC POWER & LIGHT COMPANY,

Respondent

DOCKET UE-230172

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

EXHIBIT JRW-1T

September 14, 2023

RESPONSE TESTIMONY OF J. RANDALL WOOLRIDGE, PH.D.

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I. INTRODUCTION

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 the Pennsylvania State University. I am also the Director of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. I provide a summary of my educational background, research, and related business experience in Exhibit JRW-2.

Q. On whose behalf are you testifying?

A. The Public Counsel Unit of the Washington State Attorney General's Office (Public Counsel) asked me to provide an opinion as to the overall fair rate of return or cost of capital for the regulated electric utility service of PacifiCorp d/b/a Pacific Power and Light Company (PacifiCorp or the Company), evaluate PacifiCorp's rate of return testimony, and evaluate PacifiCorp's capital structure in this proceeding.[1]

Q. How is your testimony organized?

A. The following outlines my testimony:

- 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 assessment of capital costs in today's capital markets.
- Third, I discuss the selection of proxy groups for estimating the cost of equity capital for

[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.

the Company.

- Fourth, I discuss the Company's recommended capital structure and debt cost rates.
- Fifth, I provide an overview of the concept of the cost of equity capital, and then estimate the equity cost rate for the Company.
- Finally, I critique the Company's rate of return analysis and testimony.

II. SUMMARY OF RECOMMENDATIONS

A. Overview

Q. What comprises a utility's "rate of return"?

A. A company's overall rate of return has three main components:

(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 return on equity (ROE).

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

A. ROE is described most simply as the allowed rate of profit for a regulated company. In a competitive market, a variety of factors determine a company's profit level, 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 public utility. The United States Supreme Court established the guiding principles for determining an appropriate level of profitability for regulated public utilities in two seminal cases: (1) *Hope* and (2)

Bluefield.[2] 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 other investments of similar risk;

(2) sufficient to assure confidence in the companies' financial integrity; and

(3) adequate to maintain and support the companies' credit and to attract capital.

Accordingly, finding 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 the economic models and formulas, such as the Discounted Cash Flow (DCF) Model and the Capital Asset Pricing Model (CAPM), is to use market data of firms with similar risk to estimate the equity rate of return investors require for this specific risk-class of firms (*i.e.*, regulated utilities) in order to set an appropriate ROE for a regulated firm.

B. Summary of Positions

Q. Please review your proposed recommendations regarding the appropriate rate of return for the Company.

A. Table 1 reflects the Company's proposed capital structure and debt and equity cost rates. The Company's witness Nikki Kobliha has proposed a capital structure consisting of 48.72 percent long-term debt, 0.01 percent preferred stock, and 51.27 percent equity for PacifiCorp. Kobliha also recommends long-term debt and preferred stock cost rates of

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

4.77 percent and 6.75 percent. Ann Bulkley proposes an ROE of 10.30 percent for the Company. Based on these components, Kobliha has proposed an overall rate of return or cost of capital of 7.61 percent for PacifiCorp.

Table 1
PacifiCorp's Rate of Return Recommendation

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	**48.72%**	**4.77%**	**2.32%**
Preferred Stock	**0.01%**	**6.75%**	**0.00%**
Common Equity	**51.27%**	**10.30%**	**5.28%**
Total	**100.00%**		**7.61%**

Table 2 shows my proposed cost of capital for the Company. The Company's proposed capital structure includes a much higher common equity ratio than the averages of the two proxy groups. Furthermore, as discussed below, the S&P and Moody's credit ratings of BBB+ and A3 are slightly better than the averages of the proxy groups. In the Company's last rate case in 2020, which resulted in a settlement, PacifiCorp agreed to a capital structure with a common equity ratio of 49.1 percent. I am employing the capital structure from the Company's last rate case. I have adopted the Company's proposed preferred stock and long-term debt cost rates. I have applied the DCF Model and the CAPM to a proxy group of publicly-held electric utility companies ("Electric Proxy Group") and the group developed by Bulkley ("Bulkley Proxy Group"). My analysis indicates a common equity cost rate in the range of 9.15 percent to 9.40 percent. Since I rely primarily on the DCF model and the results for the Electric Proxy Group, and in light of the lower investment risk level of the Company relative to the proxy groups, I am using an ROE of 9.25 percent for the Company. Given my proposed capital structure and capital cost rates for the Company, I am recommending an overall fair rate of return or cost of capital of 6.97 percent for PacifiCorp. These are summarized Exhibit JRW-3.

Table 2
Public Counsel's Rate of Return Recommendations

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.89%	4.77%	2.43%
Preferred Stock	0.01%	6.75%	0.00%
Common Equity	49.10%	9.25%	4.54%
Total	100.00%		6.97%

C. Primary Rate of Return Issues in this Case

Q. Please describe the primary rate of return issues in this case.

A. The primary rate of return issues in this case are the appropriate capital structure and ROE for the Company.

1. <u>The Company's Assessment of Capital Market Conditions</u>: Bulkley's analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs. However, despite the increase in inflation and interest rates over the past year, several factors suggest the equity cost rate for utilities has not risen significantly. To support this contention, I show that: (1) despite the increase in year-over-year inflation, long-term inflation expectations are still about 2.25 percent; (2) the yield curve is currently inverted — which suggests that investors expect yields to decline and that a recession in the next year is very likely, which would also put downward pressure on interest rates; (3) interest rates have fallen since their peak in October 2022; and (4) while authorized ROEs for utilities hit all-time lows in 2020 and 2021, these ROEs did not decline nearly as much as interest rates, and in 2022, with the 30-year

Treasury yield up 106 basis points, authorized ROEs for electric utilities only increased 16 basis points.

2. **<u>The Company's Investment Risk is Below the Average of the Two Proxy Groups</u>**: PacifiCorp's S&P and Moody's credit ratings of BBB+ and A3 suggest that the investment risk of the Company is slightly lower than the averages of the proxy groups. Specifically, the Company's Moody's issuer credit rating of A3 is two notches above the average of the two proxy groups, which are Baa2.

3. **<u>The Company's Proposed Capital Structure Includes an Higher Common Equity Ratio and Lower Financial Risk than the Two Proxy Groups</u>**: The Company's proposed capital structure include much higher common equity ratio than the averages of the two proxy groups. Therefore, I have employed the capital structure the Company agreed to in its last rate case, which has a common equity ratio of 49.1 percent. PacifiCorp has operated with this equity ratio for a number of years.

4. **<u>DCF Equity Cost Rate</u>**: Bulkley and I both employ the traditional constant-growth DCF model. However, Bulkley overstates reported DCF results in two ways: (1) by exclusively using the overly optimistic and upwardly biased earnings per share (EPS) growth rate forecasts of Wall Street analysts and *Value Line*; and (2) by claiming that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields. By contrast, to develop the DCF growth rate for my analysis I reviewed 13 growth rate measures, including historical and projected growth rate measures, and have evaluated growth in dividends, book value, and EPS.

5. **<u>CAPM Equity Cost Rate</u>**: The CAPM approach requires an estimate of the risk-free interest rate, the beta, and the market or equity risk premium. Two problems arise from Bulkley's CAPM analysis: (1) employing the Empirical CAPM (ECAPM) version of the CAPM results in inappropriate adjustments to the risk-free rate and the market risk premium; and (2) more significantly, computing a market risk premium of 8.79 percent. This 8.79 percent market risk premium is larger than: (1) historic stock and bond return data indicate; and (2) published studies and surveys of the market risk premium find. In addition, I demonstrate that Bulkley bases the 8.79 percent market risk premium on unrealistic assumptions of future economic and earnings growth and stock returns. To compute that market risk premium, Bulkley applied the DCF model to the S&P 500 and employed an average projected EPS growth-rate of 10.65 percent to compute an expected market return of 12.50 percent and market risk premium of 8.79 percent. My analysis shows Bulkey's expected stock market return of 12.50 percent is almost *double* the average annual stock return of 6.87 percent that investment firms tell investors to expect over the next 10 years. In addition, as I demonstrate later in my testimony, the EPS growth-rate projection (10.65 percent) used for the S&P 500 and the resulting expected market return (12.50 percent) and market risk premium (8.79 percent) all include unrealistic assumptions regarding future economic and earnings growth and stock returns.

As I highlight in my testimony, it is common to use three procedures in estimating a market risk premium — historic returns, surveys, and expected return models. I use a market risk premium of 5.50 percent, which: (1) factors in all three approaches — historic returns, surveys, and expected return models — to estimate a market premium; and (2) employs the results of many studies of the market risk premium. The 5.50 percent figure reflects the market risk premiums: (1) that leading finance scholars determined in recent academic studies; (2) that leading investment banks and management consulting firms employ; and (3) that surveys of companies, financial forecasters, financial analysts, and corporate CFOs contain.

6. **Alternative Risk Premium Model**: Bulkley also estimates an equity cost rate using an alternative risk premium model, calling it the Bond Yield Risk Premium approach. Bulkley computes this risk premium using a regression of the historical relationship between the yields on long-term Treasury bonds and authorized ROEs for electric utility companies. Bulkley computes the estimated ROE as the projected risk-free rate plus the risk premium. I discuss several issues with this approach in more depth later, but the primary problems with this approach are: (1) this particular risk premium approach is a gauge of *commission* behavior rather than *investor* behavior; (2) this methodology produces an inflated measure of the risk premium because this approach uses historical authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury yields; (3) the risk premium in this approach is inflated as a measure of investors' required risk premium, since electric utility companies have been selling at market-to-book ratios in excess of 1.0; and (4) the ROE is dependent on the authorized ROEs from state utility commissions, and the Werner and Jarvis study (2022), which is discussed below, demonstrated that authorized ROEs over the past four decades have overstated the actual cost of equity capital because they have not declined in line with capital costs.

7. **<u>Expected Earnings Approach</u>**: Bulkley also uses the "Expected Earnings" approach to estimate an equity cost rate for the Company. Bulkley computes the expected ROE as forecasted by *Value Line* for her 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 empirical problems. Therefore, the Commission should ignore Bulkley's "Expected Earnings" approach in determining the appropriate ROE for the Company.

8. **<u>Regulatory and Business Risks</u>**: Bulkley considers several elements of the Company's regulatory and business risks in arriving at her 10.30 percent ROE recommendation. These include: the Company's capital expenditures, elements of the Company's regulatory risk in Washington, and generation ownership. However, these three factors are risk considerations utilized in the credit rating process. As noted above, the Company's Moody's issuer credit rating is two notches above the average Moody's issuer credit ratings for the proxy groups. Hence, despite these factors, the Company's investment risk is still below the average of the proxy groups.

III. CAPITAL MARKET CONDITIONS AND AUTHORIZED ROEs

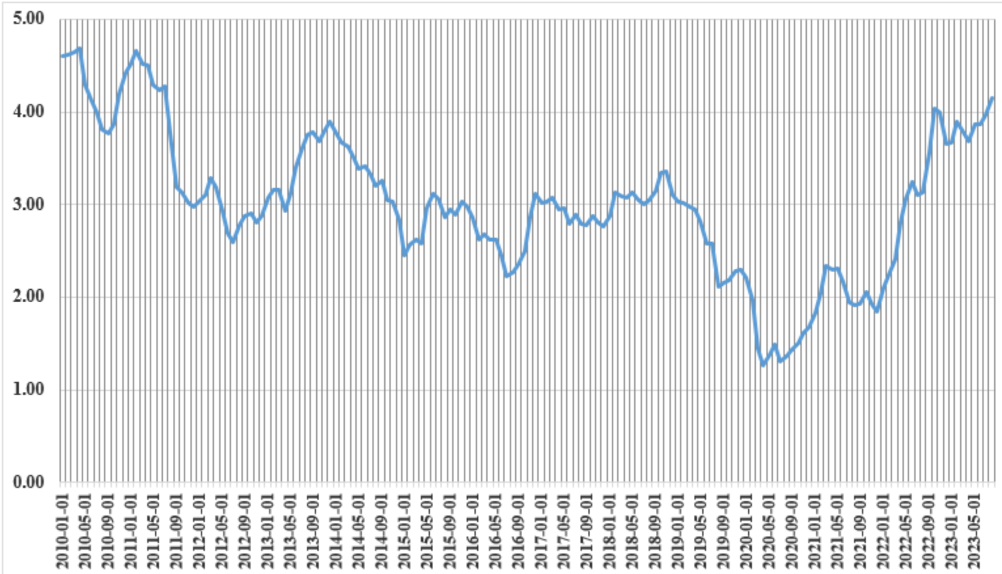
A. Capital Market Conditions

A. Exhibit JRW-4 provides some public utility capital cost indicators. Page 1 of Exhibit JRW-4 shows the yields on A rated public utility bonds. These yields gradually declined in the past 15 years from 7.5 percent to the 3.0 percent range. These yields bottomed out in the 3.0 percent range in 2020 and 2021 due to the economic fallout from the COVID-19 pandemic. They increased with interest rates in general over the past year, peaked at almost 6.0 percent, and now are in the 5.25 percent range. Page 2 of Exhibit JRW-4 shows the average dividend yield for electric utilities. These yields declined over the past 13 years, bottoming out at 3.1 percent in 2019. They increased to 3.6 percent in 2020 but declined to 3.4 percent in 2022. Page 3 of Exhibit JRW-4 shows the average earned ROE and market-to-book ratio for publicly held electric utilities. The average earned ROE has been in the 9.0 percent to 10.2 percent range over the past five years. The average market-to-book ratio increased over the last 13 years, peaked at 2.0X in 2019, and declined to the 1.75X range in 2020, 2021, and 2022.

Q. Please review interest rate movements in recent years.

A. Figure 1, below, shows 30-year Treasury yields over the past 13 years (2010 to 2023). These yields were in the 3.0 percent range at the end of 2018. These yields declined to the 2.25 percent range in 2019 due primarily to slow economic growth and low inflation. In 2020, 30-year Treasury yields responded to the COVID-19 pandemic and declined to record low levels, declining about 100 basis points to the 1.25 percent range. Yields began to recover in the summer of 2020 and increased to about 2.50 percent in the first quarter of 2021. They subsequently fell to below 2.0 percent in the fourth quarter of 2021, but increased significantly in 2022, peaking at over 4.40 percent in October of 2022. They have ranged between 3.50 percent and 4.40 percent in 2023. Currently, these rates are at the higher end of this range.

Figure 1
30-Year Treasury Yields



Data source: https://fred.stlouisfed.org/series/DGS30

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

A. Yes. Figure 2 shows the annual amounts of debt and equity capital raised by public utility companies over the past 13 years. 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 four of the past five years, public utilities have annually raised over $100 billion in combined debt and equity capital. The total dropped slightly to $92 billion in 2022.

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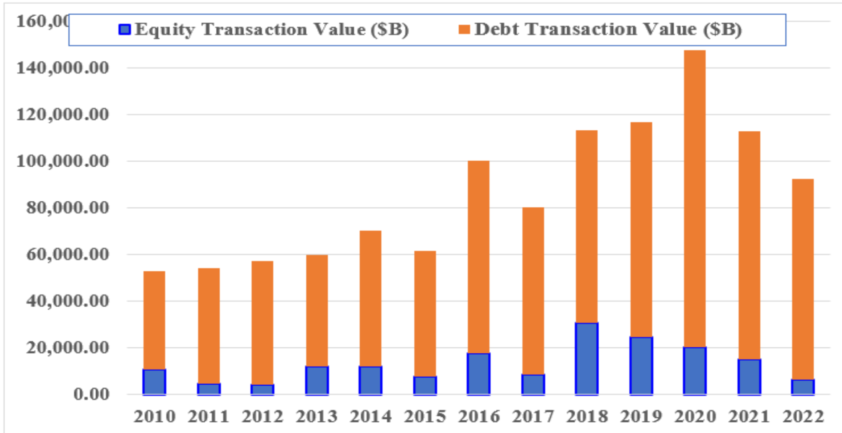
Figure 2
Debt and Equity Capital Raised by Public Utilities
2010–2022



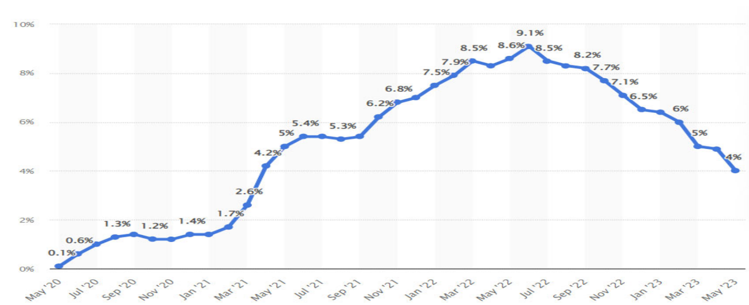
Data Source: S&P Global Market Intelligence, S&P Cap IQ, 2023.

Q. Please discuss the increase in interest rates since the beginning of 2022.

A. Several factors have led to higher interest rates in 2022 generally tied to an improving economy and higher inflation. Real GDP growth increased 5.7 percent in 2021, compared to a decline of -3.4 percent in 2020. This recovery led to greater business activity, higher levels of business and consumer spending, and record increases in housing prices. Unemployment, which was 6.7 percent in 2020, has declined to 3.5 percent in 2022. The recovery in the economy puts upward pressure on interest rates by increasing the demand for capital.

In addition, as reported extensively in the financial press, inflation picked up significantly in 2022, putting additional pressure on interest rates. Reported year-over-year inflation has been as high as 9.20 percent in 2022. Year-over-year inflation declined on a monthly basis since October, and is at 3.20 percent as of August, 2023. The high inflation reported in the past year primarily reflects three factors: (1) the recovering economy, as discussed above; (2) the production shutdowns during the pandemic leading to supply chain shortages as the global economy has recovered; and (3) the war in Ukraine, which has led to higher energy and gasoline prices worldwide.

Figure 3
Year-Over-Year Inflation Rates
2020-2023

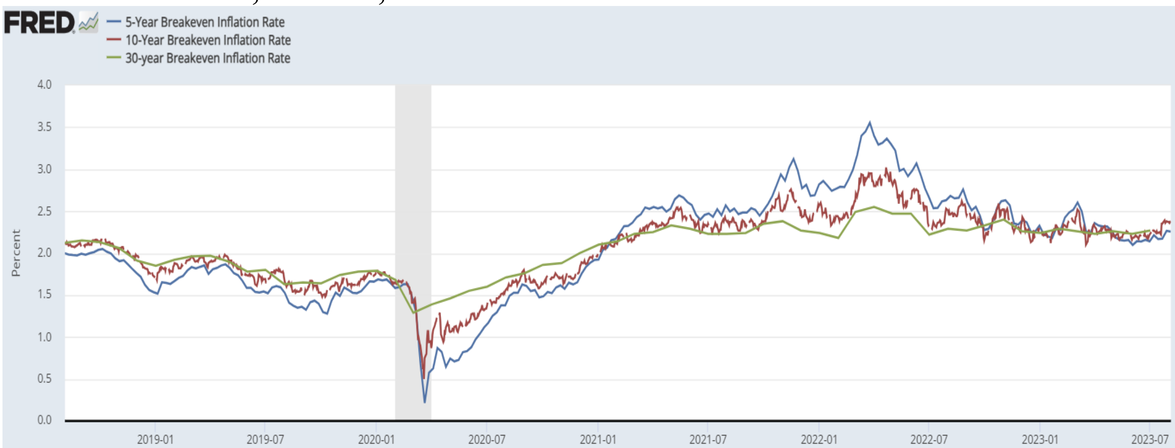


Source: https://www.statista.com/statistics/273418/unadjusted-monthly-inflation-rate-in-the-us/

In response to the higher inflation, the Federal Reserve increased the discount rate by 25 basis points in March, 50 basis points in May, and 75 basis points in June, July, September, and November, 50 basis points in December, and 25 basis points in February, March, May, and July of 2023. However, the Federal Reserve's actions on the discount rate directly affect only short-term rates. Long-term rates are more a function of expected economic growth and expected inflation. One conundrum is that whereas the government has been reporting annual year-over-year inflation rates as high as 9.10 percent in the past year, the 30-year Treasury yield is still only about 4.30 percent.

Investors' inflation expectations can be seen by looking at the difference between yields on ordinary Treasuries and the yields on inflation-protected Treasuries, known as TIPS. Figure 4 shows the expected inflation rate over the last five, 10, and 30 years. The expected inflation rate increased in 2022, but it has stabilized. The expected inflation rates are 2.26 percent over the next five years, 2.38 percent over the next 10 years, and 2.27 percent over the next 30 years. The bottom line is that the expected long-term inflation rate is around 2.25 percent.

Figure 4
5-Year, 10-Year, and 30-Year Breakeven Inflation Rates



Date source: https://fred.stlouisfed.org/.

Q. Do you believe that interest rates will continue to increase into 2023?

A. No. As discussed above, the current inflationary environment has pushed up interest rates over the past year. Also, as noted above, the Federal Reserve has responded with a series of discount rate increases, with the intention of slowing the economy and cooling down inflation, which would lower interest rates. Figure 5 shows the yield curve, which plots the yield-to-maturity and time-to-maturity for Treasury securities. The yield curve is usually upward sloping because investors require higher returns to commit capital for longer periods of time. Currently, the yield curve is said to be “inverted,” which means that the yields on shorter-term maturity securities are higher than the yields on longer-term securities. This means that investors do not expect interest rates to remain where they are and expect that they should decline.

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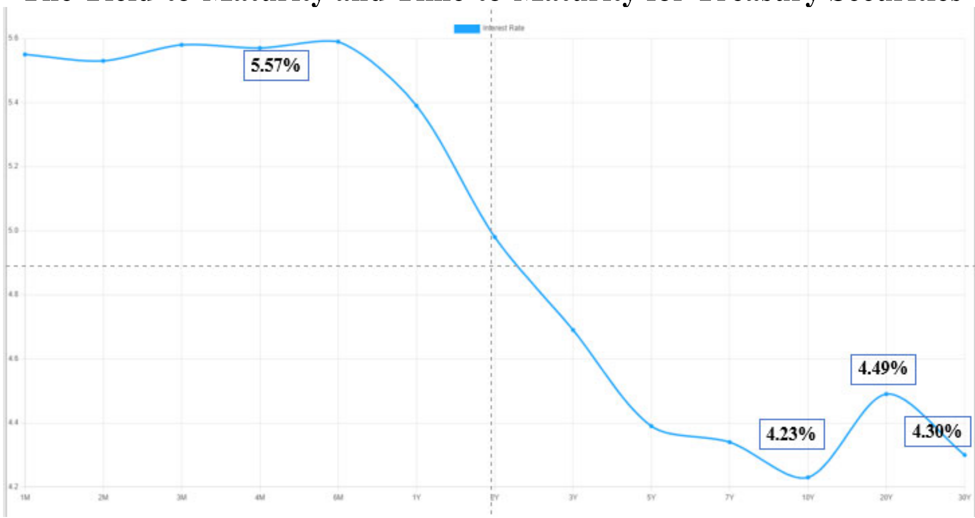
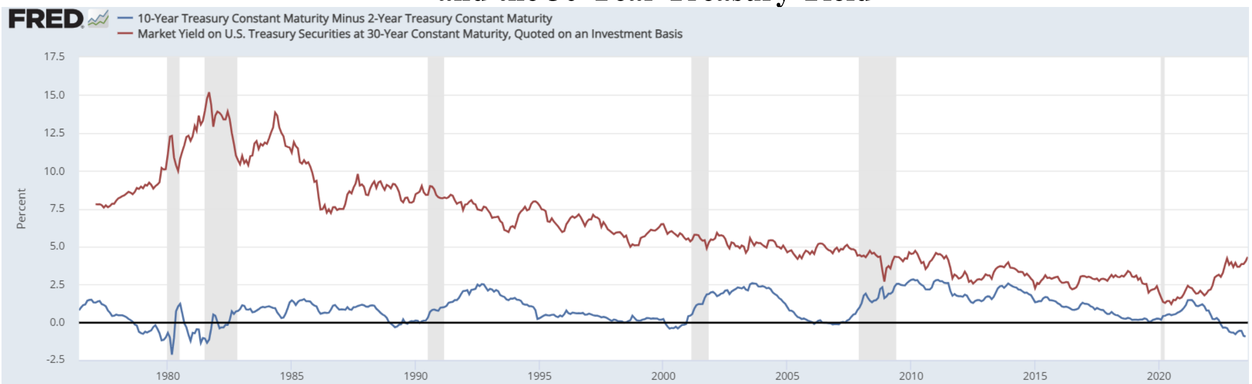
Figure 5
The Yield Curve
The Yield-to-Maturity and Time-to-Maturity for Treasury Securities



Source: https://www.ustreasuryyieldcurve.com/ - 8-24-23.

The financial press has focused on another aspect of an inverted yield curve. An inverted yield curve also is an indicator of a pending recession, which would also put downward pressure on interest rates. An inverted yield curve is usually indicated when the 2-year Treasury yield is above the 10-year Treasury yield. Figure 6 graphs two lines: (1) the 10-year Treasury yield minus the 2-year Treasury yield (blue line); and (2) the 30-year Treasury yield (red line). In Figure 6, the shaded areas are economic recessions, defined as two-straight quarters with negative GDP growth. As demonstrated in Figure 6, every time the yield curve inverted (2-year > 10-year) in the last 50 years, a recession followed. In addition, interest rates, as indicated by the 30-year Treasury yield in Figure 6, decline during recessions. Since the yield curve is currently inverted, a recession and lower interest rates are likely to follow.

Figure 6
Treasury 10-Year Minus 2-Year Yields
and the 30-Year Treasury Yield



Source: https://fred.stlouisfed.org/series/T10Y2Y

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

A. The U.S. economy, as measured by nominal GDP, declined nearly 20 percent in the first half of 2020, rebounded significantly in 2021 and continued the rebound in 2022. This rebound has seen big increases in consumer and business spending, lower unemployment, and higher housing prices. The rebounding economy has put pressure on prices. This has been further exacerbated by the post-COVID supply chain issues and the higher energy prices brought on by the Russia-Ukraine conflict.

Nonetheless, utilities took advantage of the low yields in 2020 and 2021 to raise record amounts of capital. The big economic issue is reported year-over-year inflation. However, while year-over-year inflation was high in the short-term, the yields on TIPS suggest that longer-term inflation expectations are still about 2.25 percent. However, with an inverted yield curve, the prospect of a recession is likely, which would lead to lower interest rates.

B. Authorized ROEs

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

A. In Figure 7, I graphed quarterly authorized ROEs for electric and gas companies from 2000 to 2022. 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 and 2021, authorized ROEs for utilities hit an all-time low. The average annual authorized ROEs for electric utilities and gas distribution companies for 2010–2023 are shown in Table 3 below.

Figure 7
Authorized ROEs for Electric Utilities and Gas Distribution Companies
2000–2023

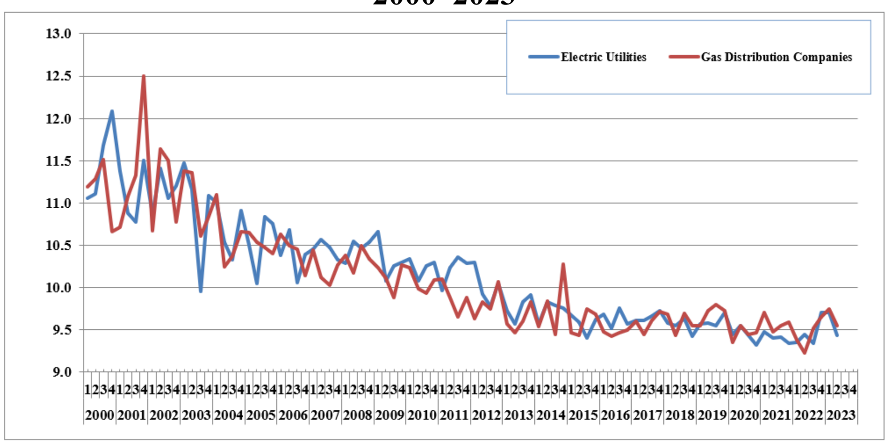


Table 3
Average Annual Authorized ROEs for Electric Utilities
and Gas Distribution Companies
2010–2023

	Electric	Gas		Electric	Gas
2010	**10.37**	**10.15**	**2017**	**9.74**	**9.72**
2011	**10.29**	**9.92**	**2018**	**9.6**	**9.59**
2012	**10.17**	**9.94**	**2019**	**9.66**	**9.72**
2013	**10.03**	**9.68**	**2020**	**9.44**	**9.47**
2014	**9.91**	**9.78**	**2021**	**9.38**	**9.56**
2015	**9.78**	**9.6**	**2022**	**9.54**	**9.53**
2016	**9.77**	**9.54**	**2023 H**	**9.56**	**9.66**

Data Source: S&P Global Market Intelligence, RRA Regulatory Focus, 2023.

Q. Did the higher interest rates in 2022 mean authorized ROEs have increased significantly?

A. No, not necessarily. As I note above, authorized ROEs for utilities reached record low levels in 2020 and 2021 due to record low interest rates and capital costs. However, utility ROEs did not decline to the extent interest rates did over these two years. Figure 8 and Table 4 show the average annual 30-year Treasury yields and authorized ROEs for electric utilities and gas distribution companies. A key observation from Figure 8 and Table 4 is that authorized ROEs for electric utilities, despite hitting record lows in 2020–21, did not decline nearly as much as interest rates. The daily 30-year Treasury yield averaged 2.85 percent in 2018 and 2019, versus 1.81 percent in 2020 and 2021, a decrease of 104 basis points. However, the authorized ROEs for electric utilities averaged 9.63 percent in 2018 and 2019 and declined to an average of 9.41 percent in 2020 and 2021, a decline of only 22 basis points. In 2022, the average daily 30-year Treasury yield increased by 105 basis points to 3.11 percent, while authorized ROEs increased 16 basis points to 9.54 percent.

Figure 8
Authorized ROEs for Electric Utilities and 30-Year Treasury Yields
2007–2022

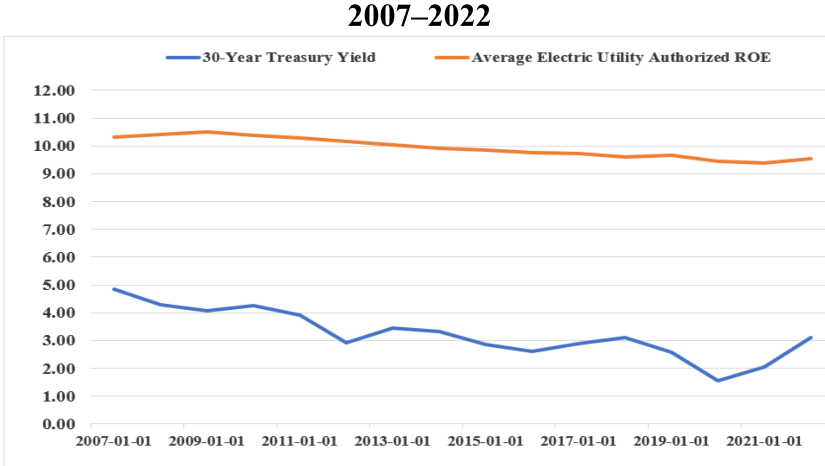


Table 4
Average Annual 30-Year Treasury Yields and Authorized ROEs
for Electric Utility Companies
2018–2022

	2018	2019	2018-19 Average	2020	2021	2020-21 Average	2018-19 - 2020-21	2022	2022 Increase
30-Year Treasury Yield	3.11%	2.58%	2.85%	1.56%	2.06%	1.81%	1.04%	3.11%	1.05%
Average Electric ROE	9.60%	9.66%	9.63%	9.44%	9.38%	9.41%	0.22%	9.54%	0.16%

Q. Please discuss the trend in authorized ROEs for electric and gas companies in Washington?

A. Table 5 shows the electric utilities and gas distribution companies in Washington from 2010–23. These authorized ROEs have been in the 9.40–9.50 percent range over the past five years. In PacifiCorp's last rate cases in 2020, which was a settlement, an ROE of 9.50 percent was authorized.

Table 5
Washington Authorized ROEs
2010–2023

Company	Parent	Docket	Service Type	Date	Decision Type	Revenue Increase	ROE (%)	CE Ratio
Puget Sound Energy Inc.		UE-090704	Electric	4/2/2010	Fully Litigated	74.1	10.10	46.00
Puget Sound Energy Inc.		UG-090705	Natural Gas	4/2/2010	Fully Litigated	10.1	10.10	46.00
Avista Corp.	AVA	UE-100467	Electric	11/19/2010	Settled	29.5	10.20	46.50
Avista Corp.	AVA	UG-100468	Natural Gas	11/19/2010	Settled	4.6	10.20	46.50
Puget Sound Energy Inc.		UG 101644	Natural Gas	3/15/2011	Settled	19.0	NA	NA
PacifiCorp	BRK.A	UE-100749	Electric	3/25/2011	Fully Litigated	33.5	9.80	49.10
Avista Corp.	AVA	UE-110876	Electric	12/16/2011	Settled	20.0	NA	NA
Avista Corp.	AVA	UG-110877	Natural Gas	12/16/2011	Settled	3.8	NA	NA
PacifiCorp	BRK.A	UE-111190	Electric	3/30/2012	Settled	4.5	NA	NA
Puget Sound Energy Inc.		UE-111048	Electric	5/7/2012	Fully Litigated	63.3	9.80	48.00
Puget Sound Energy Inc.		UG-111049	Natural Gas	5/7/2012	Fully Litigated	13.4	9.80	48.00
Avista Corp.	AVA	UE-120436	Electric	12/26/2012	Settled	27.7	9.80	47.00
Avista Corp.	AVA	UG-120437	Natural Gas	12/26/2012	Settled	6.7	9.80	47.00
Puget Sound Energy Inc.		UE-130137	Electric	6/25/2013	Settled	52.3	9.80	48.00
Puget Sound Energy Inc.		UG-130138	Natural Gas	6/25/2013	Settled	9.1	9.80	48.00
PacifiCorp	BRK.A	UE-130043	Electric	12/4/2013	Fully Litigated	17.0	9.50	49.10
Avista Corp.	AVA	UE-140188	Electric	11/25/2014	Settled	7.0	NA	NA
Avista Corp.	AVA	UG-140189	Natural Gas	11/25/2014	Settled	8.5	NA	NA
PacifiCorp	BRK.A	UE-140762	Electric	3/25/2015	Fully Litigated	9.6	9.50	49.10
Avista Corp.	AVA	UE-150204	Electric	1/6/2016	Settled	(8.1)	9.50	48.50
Avista Corp.	AVA	UG-150205	Natural Gas	1/6/2016	Settled	10.8	9.50	48.50
Cascade Natural Gas Corp.	MDU	UG-152286	Natural Gas	7/7/2016	Settled	4.0	NA	NA
PacifiCorp	BRK.A	UE-152253	Electric	9/1/2016	Fully Litigated	13.7	9.50	49.10
Avista Corp.	AVA	UE-160228	Electric	12/15/2016	Fully Litigated	0.0	NA	NA
Avista Corp.	AVA	UG-160229	Natural Gas	12/15/2016	Fully Litigated	0.0	NA	NA
Puget Sound Energy Inc.		UE-170033	Electric	12/5/2017	Settled	106.4	9.50	48.50
Puget Sound Energy Inc.		UG-170034	Natural Gas	12/5/2017	Settled	16.6	9.50	48.50
Avista Corp.	AVA	UE-170485	Electric	4/26/2018	Fully Litigated	10.8	9.50	48.50
Avista Corp.	AVA	UG-170486	Natural Gas	4/26/2018	Fully Litigated	(2.1)	9.50	48.50
Cascade Natural Gas Corp.	MDU	UG-170929	Natural Gas	7/20/2018	Settled	(2.9)	9.40	49.00
Puget Sound Energy Inc.		UE-180899	Electric	2/21/2019	Settled	0.0	NA	NA
Puget Sound Energy Inc.		UG-180900	Natural Gas	2/21/2019	Settled	21.5	NA	NA
Northwest Natural Gas Co.	NWN	UG-181053	Natural Gas	10/21/2019	Settled	5.1	9.40	49.00
Cascade Natural Gas Corp.	MDU	UG-190210	Natural Gas	2/3/2020	Settled	6.5	9.40	49.10
Avista Corp.	AVA	UE-190334	Electric	3/25/2020	Settled	28.5	9.40	48.50
Avista Corp.	AVA	UG-190335	Natural Gas	3/25/2020	Settled	8.0	9.40	48.50
Puget Sound Energy Inc.		UE-190529	Electric	7/8/2020	Fully Litigated	59.6	9.40	48.50
Puget Sound Energy Inc.		UG-190530	Natural Gas	7/8/2020	Fully Litigated	42.9	9.40	48.50
PacifiCorp	BRK.A	UE-191024	Electric	12/14/2020	Settled	(0.2)	9.50	49.10
Cascade Natural Gas Corp.	MDU	UG-200568	Natural Gas	5/18/2021	Fully Litigated	(0.4)	9.40	49.10
Avista Corp.	AVA	UE-200900	Electric	9/27/2021	Settled	13.6	9.40	48.50
Avista Corp.	AVA	UG-200901	Natural Gas	9/27/2021	Settled	8.1	9.40	48.50
Northwest Natural Gas Co.	NWN	UG-200994	Natural Gas	10/21/2021	Settled	8.0	NA	NA
Cascade Natural Gas Corp.	MDU	UG-210755	Natural Gas	8/23/2022	Settled	7.2	9.40	47.00
Avista Corp.	AVA	UE-220053	Electric	12/12/2022	Settled	38.0	NA	NA
Avista Corp.	AVA	UG-220054	Natural Gas	12/12/2022	Settled	7.5	NA	NA
Puget Sound Energy Inc.		UE-220066	Electric	12/22/2022	Settled	223.0	9.40	49.00
Puget Sound Energy Inc.		UG-220067	Natural Gas	12/22/2022	Settled	70.6	9.40	49.00

Data Sources: S&P Global Market Intelligence, RRA *Regulatory Focus*, 2023.

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

A. Yes, I do. As I noted previously, 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 companies' financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital.[3] As page 3 of Exhibit JRW-4 shows, in recent years, electric utilities and gas distribution companies earned ROEs in the range of 8.0 percent to 10.0 percent. With such an ROE, electric utilities and gas companies, such as those in the proxy group, have strong investment grade credit ratings, sell stocks well over book value, and raise abundant amounts of capital. While my recommendation is slightly below the average authorized ROE for electric utility and gas distribution companies, it reflects the relatively low levels of interest rates and capital costs in the current market. Therefore, I believe that my ROE recommendation meets the criteria *Hope* and *Bluefield* established.

Q. With respect to this discussion, please discuss the recent *Wall Street Journal* article on utilities' authorized roes in the current environment.

A. The article, entitled "Utilities Have a High-Wire Act Ahead," discusses the issue utilities are facing today to meet the needs of its primary stakeholders—customers and investors.[4] In years past, utilities could invest and grow their rate bases without undue burden on ratepayers because low interest rates and natural gas prices moderated rate increases.

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

4 Jinjoo Lee, *Utilities Have a High-Wire Act Ahead*, Wall Street J., Oct. 9, 2022, at C1 (included as Exh. JRW-12).

However, the big increase in gas prices and interest rates in 2022 means that the past environment is over.[5] Going forward, the greater financial burden on utility customers associated with higher gas prices and interest rates will likely put the pressure on regulatory commissions to look hard at utility rate increase requests.

The article also highlights this utility rate issue in the context of a recent study on rate of return regulation. Werner and Jarvis (2022) evaluated the authorized ROEs in 3,500 electric and gas rate case decisions in the U.S. from 1980–2021. They compare the allowed ROE to a number of capital cost benchmarks (government and corporate bonds, CAPM equity cost rate estimates, and U.K. authorized ROEs) and focused on three questions:

(1) To what extent are utilities being allowed to earn excess returns on equity by their regulators?;

(2) How has this return on equity affected utilities' capital investment decisions?; and

(3) What impact has this had on the costs paid by consumers?[6]

The authors reported the following empirical results:

(1) The real (inflation-adjusted) return regulators allow equity investors to earn has been pretty steady over the last 40 years, while the many different cost of capital measures have been declining;

(2) The gap between the authorized ROEs and the benchmarks suggest that regulators have been approving ROEs that are from 0.50 percent – 5.50 percent above the cost of equity estimates;

(3) One potential explanation is that utilities have become riskier. However, the authors find that utility credit ratings, on average, have not changed much over the past 40 years;

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5 Higher gas prices do not hurt the utilities because they are passed on to consumers in the form of higher rates.

6 Karl Dunkle Werner and Stephen Jarvis, *Rate of Return Regulation Revisited* (Univ. of Cal. at Berkeley, Energy Inst. Working Paper, 2022).

(4) An extra 1.0 percent of allowed ROE causes a utility's capital rate base to expand by an extra 5 percent on average. This supports the Averch-Johnson effect that utilities have the incentive to overinvest in capital projects if they are earning an outsized return on those investments;[7]

(5) Both the ROE requested by utilities and the return granted by regulators respond more quickly to rises in market measures of capital cost than to declines. The time adjustment for decreases is twice as long as for increases.

(6) Authorized ROEs tend to be approved at round numbers (1.0, 0.5, 0.25), with 10.0 percent being the most common authorized ROE;

(7) Overall, based on the gap, consumers may be paying $2-20 billion per year more than if authorized ROEs had fallen in line with other capital market indicators; and

(8) The authors also indicate that their results are similar to those found in a previous study by Rode and Fischback (2019).[8]

In summary, these results indicate that over the past four decades authorized ROEs have not declined in line with capital costs and therefore past authorized ROEs have overstated the actual cost of equity capital. Hence, even though my recommended ROE is slightly below other authorized ROEs, my recommendation is reasonable for PacifiCorp.

IV. PROXY GROUP SELECTION

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

A. To develop a fair rate of return recommendation for the Company, I evaluated the return requirements of investors on the common stock of a proxy group of publicly-held electric utility companies ("Electric Proxy Group"). I also employed the group developed by Bulkley ("Bulkley Proxy Group").

[7] *Averch-Johnson Effect (AJ Effect)*, https://regulationbodyofknowledge.org/glossary/a/averch-johnson-effect-aj-effect/ (last visited Sept. 8. 2023).

[8] David C. Rode and Paul S. Fischbeck, *Regulated Equity Returns: A Puzzle,* 133 Energy Pol'y (2019).

Q. Please describe your proxy group of electric companies.

A. The selection criteria for my Electric Proxy Group include the following:

(1) Receives at least 50 percent of revenues from regulated electric operations as reported in its SEC Form 10-K Report;

(2) *Value Line Investment Survey* lists it as a U.S.-based electric utility;

(3) Holds an investment-grade corporate credit and bond rating;

(4) Has paid a cash dividend for the past six months, with no cuts or omissions;

(5) Is not involved in an acquisition of another utility, and not the target of an acquisition; and

(6) Its analysts' long-term EPS growth rate forecasts are available from Yahoo, S&P Cap IQ, and/or Zacks.

The Electric Proxy Group includes 24 companies. Page 1 of Exhibit JRW-5 provides summary financial statistics for the proxy group, showing median operating revenues and net plant among members of the Electric Proxy Group of $8.28 billion and $25.93 billion respectively. The group on average receives 83 percent of its revenues from regulated electric operations, has a BBB+ bond rating from S&P's and a Baa2 rating from Moody's, has a current average common equity ratio of 41.9 percent and an average earned return on common equity of 8.86 percent.

Q. Please describe the Bulkley Proxy Group.

A. Bulkley's group is a little smaller with 17 utilities. Panel B of page one of Exhibit JRW-5 provides summary financial statistics for the Bulkley Proxy Group, showing median operating revenues and net plant of $5.86 billion and $22.28 billion respectively. The group on average receives 83 percent of its revenues from regulated electric operations, has a BBB+ bond rating from S&P's and a Baa2 rating from Moody's, has an average common equity ratio of 43.3 percent, and an average earned return on common equity of 10.16 percent.

Q. How does the investment risk of the Company compare to that of your proxy groups?

A. I believe bond ratings provide a good assessment of a companies' investment risk. PacifiCorp's S&P and Moody's credit ratings of BBB+ and A3 suggest that the investment risk of the Company is slightly lower than the averages of the proxy groups. Specifically, the Company's Moody's issuer credit rating of A3 is two notches above the average of the two proxy groups, which are Baa2.

Q. Please discuss the risk analysis you performed on page two of Exhibit JRW-5.

A. On page two of Exhibit JRW-5, I use five different risk measures to assess the riskiness of the two proxy groups: Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price Stability. These risk measures indicate the two proxy groups are similar in risk. The comparisons of the risk measures include Beta (0.87 vs. 0.88), Financial Strength (A vs. A) Safety (1.7 vs. 1.7), Earnings Predictability (90 vs. 90), and Stock Price Stability (91 vs. 92). Overall, these measures suggest that the investment risk of the two groups (1) is very low and (2) is similar to each other.

V. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

Q. What are the Company's recommended capital structure and senior capital cost rates for ratemaking purposes?

A. Panel A of Exhibit JRW-6 provides the Company's proposed capital structure and debt cost rates. The Company's witness Nikki Kobliha has proposed a capital structure consisting of 48.72 percent long-term debt, 0.01 percent preferred stock, and 51.27 percent equity for PacifiCorp.

Q. Please discuss the capital structures of the companies in the proxy groups.

A. Page 1 of Exhibit JRW-5 provides the average common equity ratios for the companies in the two proxy groups. As of December 31, 2022, the average common equity ratios for the Electric and Bulkley Proxy Groups were 41.9 percent and 43.3 percent, respectively. As such, the average common equity ratios for the proxy group companies are much lower and represent higher financial risk than the Company's common equity ratio. That means the Company has proposed a capital structure with more common equity, and less financial risk than the proxy groups.

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

A. Yes. 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 the Company.

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. Short-term debt, like long-term debt, has a higher claim on the assets and earnings of the companies than common equity and requires timely payment of interest and repayment of principal. Thus, 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 companies common equity ratios. Additionally, the financial risk of a company is based on total debt, which includes both short-term and long-term debt.

Q. Please discuss the significance of the amount of equity that is included in a utility's capital structure.

A. A utility's decision as to the amount of equity capital it will incorporate into its capital structure involves fundamental trade-offs relating to the amount of financial risk the firm carries, the return on equity that investors will require, and the overall revenue requirement its customers are required to bear through the rates they pay.

Q. Please discuss a utility's decision to use debt versus equity to meet its capital needs.

A. Utilities satisfy their capital needs through a mix of equity and debt. Because equity capital is more expensive than debt, the issuance of debt enables a utility to raise more capital for a given commitment of dollars than it could raise with just equity. Debt is, therefore, a means of "leveraging" capital dollars. However, as the amount of debt in the capital structure increases, its financial risk increases and the risk of the utility, as perceived by equity investors, also increases. Significantly for this case, the converse is also true. As the amount of debt in the capital structure decreases, the financial risk decreases. The required return on equity capital is a function of the amount of overall risk that investors perceive, including financial risk in the form of debt.

Q. Why is this relationship important to the utility's customers?

A. Just as there is a direct correlation between the utility's authorized ROE and the utility's revenue requirement (the higher the return, the greater the revenue requirement), there is a direct correlation between the amount of equity in the capital structure and the revenue requirement the customers are called on to bear. Again, equity capital is more expensive than debt. Not only does equity command a higher cost rate, but it also adds more to the income tax burden that ratepayers are required to pay through rates. As the equity ratio increases, the utility's revenue requirement increases, and the rates paid by customers increase. If the proportion of equity is too high, rates will be higher than they need to be. For this reason, the utility's management should pursue a capital acquisition strategy that results in the proper balance in the capital structure to minimize the overall cost of capital.

Q. How have utilities typically struck this balance?

A. Due to regulation and the essential nature of its output, a regulated utility is exposed to less business risk than other, nonregulated companies. This means that a regulated electric distribution company can reasonably carry relatively more debt in its capital structure than can most unregulated companies. Thus, a utility should take appropriate advantage of its lower business risk to employ cheaper debt capital at a level that will benefit its customers through lower revenue requirements. Typically, equity ratios for electric utilities range from 40 percent to 50 percent.

Q. Given that the Company has proposed an equity ratio that is higher than that of the proxy group, what should the Commission do in this ratemaking proceeding?

A. When a regulated utility's actual capital structure contains a high equity ratio, the options are: (1) to impute a more reasonable capital structure that is comparable to that of the proxy group and to reflect the imputed capital structure in revenue requirements; or (2) to recognize the downward impact that an unusually high equity ratio will have on the financial risk of a utility and authorize a lower common equity cost rate than that for the proxy group.

Q. Please comment on Bulkley's capital structure study found in Exhibit AEB-12.

A. Bulkley claims to support the Company's proposed capital structure in a study she performed in Exhibit AEB-14. She reports that the operating subsidiary companies owned by her 17 proxy utilities have a common equity ratio of 52.88 percent, which is similar to the capitalization proposed by the Company. The error is that the operating subsidiary companies are not the proxy utility companies in her proxy group. The proxy utilities are the parent holding companies that own the operating companies. As shown in Exhibit JRW-5, the average common equity ratio for the parent holding companies as of December 31, 2022 was 43.3 percent. Hence, Bulkley's study does not support the Company's proposed capital structures.

Q. Given this discussion, what capitalization ratios and debt cost rates are you recommending for the Company?

A. In the Company's last rate case in 2020, which was a settlement, PacifiCorp agreed to a capital structure with a common equity ratio of 49.10 percent, which is a more reasonable level of equity. As a result, I employ the capital structure established in the Company's last rate case. Additionally, I adopt the Company's proposed preferred stock and long-term debt cost rates, because they are calculated correctly and are reasonable.

VI. 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, most 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 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.

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 the price of the firm 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 these profits are in excess of those required by investors, or when a firm earns an ROE 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 ROE, 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-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 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.[9]

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

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." 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.[10]

Profitability	*Value*
If ROE > K	*then Market/Book > 1*
If ROE = K	*then Market/Book =1*
If ROE < K	*then Market/Book< 1*

To assess the relationship by industry, as suggested above, I performed a regression study between estimated ROE and market-to-book ratios of the Electric Proxy Group companies. The results are presented in Figure 9. The average R-square is 0.58.[11]

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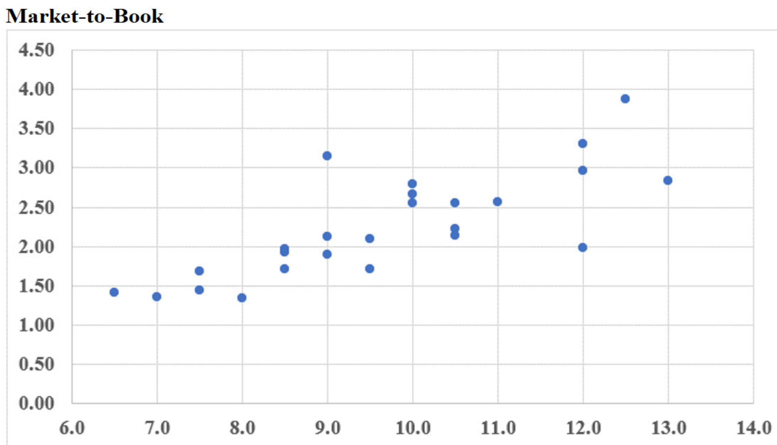
9 James M. McTaggart, *The Ultimate Poison Pill: Closing the Value Gap*, Commentary at 3 (Spring 1986).

10 Benjamin C. Esty, *Note on Value Drivers*, HARVARD BUS. SCHOOL at 2 (Apr. 1997) (Background Note 297-082).

11 R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another

This demonstrates the strong positive 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.

Figure 9
The Relationship Between Expected ROE and Market-to-Book Ratios
Electric Proxy Group



Expected Return on Equity
Adjusted R-Square = .58, N=24
Source: *Value Line Investment Survey*, 2022.

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

variable (e.g., expected ROE). R-squares vary between 0 and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

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 and 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.

Table 6 provides an assessment of investment risk for 92 industries as measured by beta, which, according to modern capital market theory, is the only relevant measure of investment risk. These betas come from the *Value Line Investment Survey*. The study shows that the investment risk of utilities is low compared to other industries.[12] The average betas for electric, gas, and water utility companies are 0.89, 0.87, and 0.78, respectively.[13] As such, the cost of equity for utilities is the lowest of all industries in the U.S., based on modern capital market theory.

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[12] As I discuss in more detail below, a stock whose price movement is 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.

[13] The beta for the *Value Line* electric utilities is the simple average of *Value Line*'s Electric East (0.89), Central (0.88), and West (0.89) group betas.

Table 6
Industry Average Betas*
Value Line Investment Survey Betas**

Industry Average Betas*

Value Line Investment Survey* Betas*

15-Jan-23

Rank	Industry	Beta	Rank	Industry	Beta	Rank	Industry	Beta
1	Hotel/Gaming	1.52	33	Paper/Forest Products	1.16	65	IT Services	1.05
2	Oilfield Svcs/Equip.	1.44	34	Heavy Truck & Equip	1.16	66	Packaging & Container	1.02
3	Insurance (Life)	1.40	35	Bank	1.16	67	Telecom. Equipment	1.02
4	Apparel	1.38	36	Computer Software	1.16	68	Information Services	1.01
5	Advertising	1.38	37	Bank (Midwest)	1.15	69	Retail Store	1.01
6	Petroleum (Integrated)	1.37	38	Engineering & Const	1.15	70	Med Supp Non-Invasive	1.01
7	Petroleum (Producing)	1.36	39	Diversified Co.	1.15	71	Environmental	1.00
8	Air Transport	1.34	40	Entertainment	1.15	72	Cable TV	1.00
9	Homebuilding	1.34	41	Chemical (Specialty)	1.14	73	Retail Building Supply	0.99
10	Metals & Mining (Div.)	1.33	42	Internet	1.14	74	Thrift	0.98
11	Shoe	1.31	43	Maritime	1.14	75	Educational Services	0.96
12	Auto Parts	1.30	44	Machinery	1.14	76	Entertainment Tech	0.95
13	Building Materials	1.30	45	Semiconductor	1.13	77	Drug	0.95
14	Retail (Hardlines)	1.29	46	Wireless Networking	1.13	78	Telecom. Services	0.93
15	Metal Fabricating	1.29	47	Computers/Peripherals	1.13	79	Trucking	0.91
16	Public/Private Equity	1.29	48	Toiletries/Cosmetics	1.12	80	Beverage	0.91
17	Natural Gas (Div.)	1.28	49	Medical Services	1.12	81	Tobacco	0.90
18	Steel	1.27	50	Electronics	1.12	82	Telecom. Utility	0.90
19	Recreation	1.25	51	Chemical (Basic)	1.12	83	Electric Utility (West)	0.89
20	Retail (Softlines)	1.25	52	E-Commerce	1.11	84	Electric Utility (East)	0.89
21	Restaurant	1.23	53	Automotive	1.11	85	Electric Util. (Central)	0.88
22	Furn/Home Furnishings	1.23	54	Insurance (Prop/Cas.)	1.10	86	Natural Gas Utility	0.87
23	Retail Automotive	1.22	55	Power	1.10	87	Biotechnology	0.85
24	Aerospace/Defense	1.22	56	Investment Co.(Foreign)	1.08	88	Household Products	0.81
25	Semiconductor Equip	1.22	57	Investment Co.(Foreign)	1.08	89	Retail/Wholesale Food	0.81
26	Chemical (Diversified)	1.21	58	Industrial Services	1.08	90	Water Utility	0.78
27	Financial Svcs. (Div.)	1.19	59	Precision Instrument	1.07	91	Food Processing	0.77
28	Pipeline MLPs	1.19	60	Publishing	1.07	92	Precious Metals	0.70
29	Electrical Equipment	1.19	61	Healthcare Information	1.06			
30	Oil/Gas Distribution	1.18	62	Human Resources	1.06			
31	R.E.I.T.	1.17	63	Railroad	1.06			
32	Med Supp Invasive	1.17	64	Reinsurance	1.05		Mean	1.11

* Industry averages for 92 industries using *Value Line*'s database of 1,705 companies - Updated 1-15-23.

** *Value Line* computes betas using monthly returns regressed against the New York Stock Exchange Index for five years. These betas are then adjusted as follows: *VL* Beta = [{(2/3) * Regressed Beta} + {(1/3) * (1.0)}] to account to tendency for Betas to regress toward average of 1.0. See M. Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971.

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 Discounted Cash Flow (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 using 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. Please explain why you believe that the 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. Discounted Cash Flow (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 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:

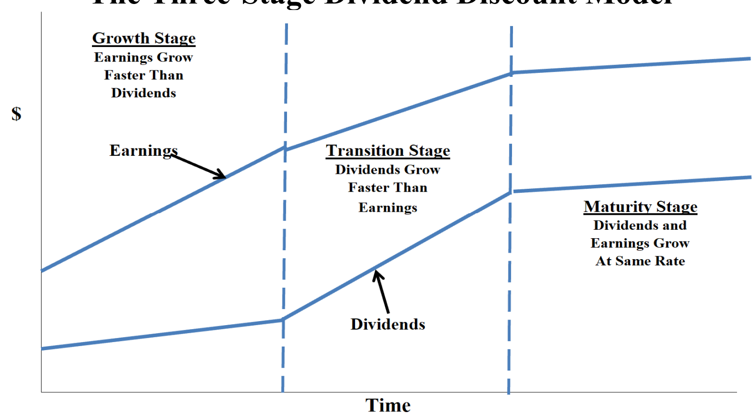
$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_n}{(1+k)^n}$$

where P is the current stock price, D_1, D_2, D_n are the dividends in (respectively) year 1, 2, and in the future years 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 shown in Figure 10. 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.

Figure 10
The Three-Stage Dividend Discount Model



1. **<u>Growth stage</u>**: 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. **<u>Transition stage</u>**: 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 the three-stage 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. Please briefly explain the concept of "present value."

A. Present value is the concept that an amount of money today is worth more than that same amount in the future. In other words, money received in the future is not worth as much as an equal amount received today. Present value tells an investor how much he or she would need in today's dollars to earn a specific amount in the future.

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:

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

Where P is the current stock price, "D_1" represents the expected dividend over the coming year, "k" is investor's required return on equity, 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 DCF model appropriate for public utilities?

A. Yes. The economics of the public utility business indicate that the industry is in the steady-state 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, as monopolies, their returns on investment are effectively set through the ratemaking process). The 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 and B of page 2 of Exhibit JRW-7. I have shown the mean and median dividend yields using 30-day, 90-day, and 180-day average stock prices. For the Electric Proxy Group, the dividend yields range from 3.70 percent to 3.90 percent. I will use the midpoint of this range, 3.80 percent, as the dividend yield for the Electric Proxy Group.[14] For the Bulkley Proxy Group, the dividend yield results range from 3.70 percent to 3.90 percent. I will use the midpoint of this range, 3.80 percent, as the dividend yield for the Bulkley 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 the dividend paid over the coming period to the current stock price. As indicated by Professor Myron Gordon, who is commonly associated with the development of the DCF model for popular use, this is obtained by: (1) multiplying the expected dividend over the coming quarter by four, and (2) dividing this dividend by the current stock price to determine the appropriate dividend yield for a firm that pays dividends on a quarterly basis.[15]

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 computed based on presumed growth over the coming quarter as

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[14] For the dividend yields and ROEs, I round to the nearest .05 percent.

[15] Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62, *Petition for Modification of Prescribed Rate of Return*, Docket No. 79-05 (FCC, filed April 1980).

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. FERC often uses one-half (1/2) of the long-term expected growth rate.[16]

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

A. I adjust the dividend yield by one-half (1/2) of the expected growth to reflect growth over the coming year. 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' expectations 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.

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

A. I have analyzed several growth measures for companies in the proxy groups. I reviewed *Value Line's* historical and projected growth-rate estimates for 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 five-year earnings growth-rate projections from securities analysts and compile and publish the means and medians of these forecasts. Finally, I also assessed prospective growth as measured by prospective earnings retention rates and earned returns on common equity.

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

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. Past growth may not reflect future growth potential. Also, employing a single growth-rate number (for example, for five or 10 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). Thus, 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.

Q. Please define and explain the relevance of internal growth.

A. A company's internal (or "organic") growth occurs when a business expands its own operations rather than relying on takeovers and mergers. It can come about through various means, for example, increasing existing production capacity through investment in new capital and technology, or development and launch of new products.

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 ROE). The internal growth rate is computed as the retention rate times the ROE. Internal growth is significant in determining long-run 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. Are you relying exclusively on the EPS forecasts of Wall Street analysts in arriving at a DCF growth rate for the proxy group?

A. No. There are several issues with using the EPS growth rate forecasts of Wall Street analysts as DCF growth rates. 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, dividend and earnings will have to grow at a similar 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 study by Lacina, Lee, and Xu (2011) has shown that analysts' three-to-five year EPS growth-rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[17] Employing data over a 20-year period, these authors demonstrate that using the most recent year's actual 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' three-to-five year EPS growth-rate forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings 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 Wall Street securities analysts produce overly optimistic and upwardly biased long-term EPS growth-rate forecasts. This has been demonstrated in a number of academic studies.[18] Hence, using these growth rates as a DCF growth rate will provide an

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[17] Michael Lacina, B. Brian Lee & Zhaohui Xu, *An Evaluation of Financial Analysts and Naïve Methods in Forecasting Long-Term Earnings*, 8 Advances in Bus. and Mgmt. Forecasting, 77–101 (2011). According to random walk theory in this context, annual changes in earnings are normally distributed and are independent of each other. Therefore, the theory presumes the past movement or trend of earnings cannot be used to predict its future earnings.

[18] 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., 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 K.C. Chan, Jason Karceski, & Josef Lakonishok, *The Level and Persistence of Growth Rates*, J. of Fin., at 643–684 (2003); Michael Lacina, Brian B. Lee, and Zhaohui Xu, *An Evaluation of Financial Analysts and Naïve Methods in Forecasting Long-Term Earnings*, 8 Advances in Bus.

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.[19]

Q. Are analysts' projected EPS growth rates for electric utilities likewise overly optimistic and upwardly biased?

A. Yes. I have completed a study of the accuracy of analysts' EPS growth rates for electric utilities and gas distribution companies over the 1985 to 2022 time period. In the study, I used the utilities listed in the electric utilities and gas distribution companies covered by *Value Line*. I collected the three-to-five-year projected EPS growth rate from I/B/E/S for each utility and compared that growth rate to the utility's actual subsequent three-to-five-year EPS growth rate. As shown in Figure 11, the mean forecasted EPS growth rate (depicted in the red line) is consistently greater than the achieved actual EPS growth rate over the time period, with the exception of few short periods. Over the entire period, the mean forecasted EPS growth rate is over 200 basis points above the actual EPS growth rate. As such, the projected EPS growth rates for electric utilities are overly optimistic and upwardly biased.

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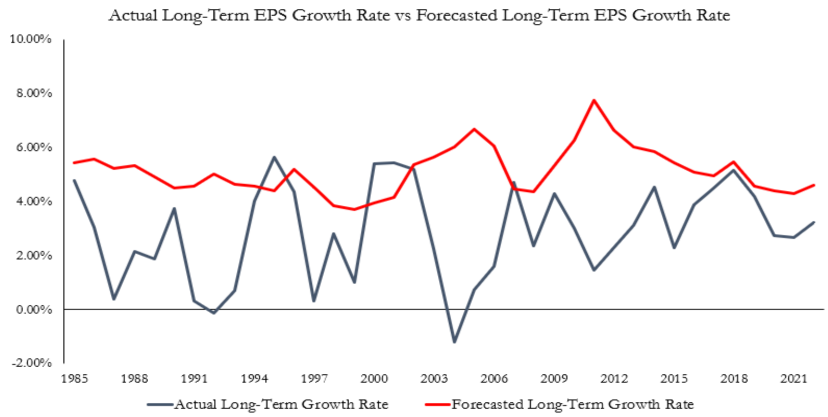
and Mgmt. Forecasting, at 77–101; and Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity Analysts, Still Too Bullish*, McKinsey on Fin. at 14–17 (Spring 2010).

[19] Peter D. Easton & 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).

Figure 11
Mean Forecasted vs. Actual Long-Term EPS Growth Rates
Electric Utilities and Gas Distribution Companies
1985–2022



Data Source: S&P Global Market Intelligence, Capital IQ, I/B/E/S, 2023.

Q. Please discuss the projected EPS growth rates of *Value Line*.

A. The projected EPS growth rates of *Value Line* are also overly optimistic and upwardly biased. A study by Szakmary, Conover, and Lancaster (2008) ("SCL") 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.[20] SCL studied the predicted versus the projected stock returns, sales, profit margins, and earnings per share made by *Value Line* over the 1969 to 2001 time period. *Value Line* projects variables from a three-year base period (e.g., 2012 to 2014) to a future three-year projected period (e.g., 2016 to 2018). SCL used the 65 stocks included in the Dow Jones Indexes (30 Industrials, 20 Transports and 15 Utilities). SCL found that the projected annual stock returns for the Dow Jones stocks were "incredibly overoptimistic" and of no predictive value. The mean annual stock return of

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[20] Andrew C. Szakmary, C. Mitchell Conover, & Carol Lancaster, *An Examination of* Value Line*'s Long-Term Projections*, 32 J. BANKING & FIN., at 8:20–833 (May 2008).

20 percent for the Dow Jones stocks' *Value Line*'s forecasts was nearly double the realized annual stock return. The authors also found that *Value Line*'s forecasts of EPS and profit margins were "strikingly overoptimistic."[21] SCL concluded that the overly optimistic projected annual stock returns were attributable to *Value Line*'s upwardly biased forecasts of EPS and profit margins.

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

A. Yes. I believe that investors are well aware of the bias in analysts' EPS growth-rate forecasts, and therefore, stock prices 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 I believe that investors are aware of the upward bias in analysts' long-term EPS growth-rate forecasts, stock prices reflect the bias. However, the DCF growth rate needs to be adjusted downward from the projected EPS growth rate to reflect the upward bias in the DCF model.

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

A. Page 3 of Exhibit JRW-7 provides the five- and 10-year historical growth rates for EPS, DPS, and BVPS for the companies in the two 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 4.00 percent to 5.00 percent, with an average of the medians of 4.30 percent. For the Bulkley Proxy

[21] *Value Line*'s forecasts of annual sales were higher than achieved levels, but not statistically significant.

Group, as shown in Panel B of page 3 of Exhibit JRW-7, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 3.80 percent to 5.00 percent, with an average of the medians of 4.30 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-7. 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-7, the medians range from 4.00 percent to 6.00 percent, with an average of the medians of 5.10 percent. The range of the medians for the Bulkley Proxy Group, shown in Panel B of page 4 of Exhibit JRW-7, is from 4.50 percent to 6.00 percent, with an average of the medians of 5.40 percent.

Also provided on page 4 of Exhibit JRW-7 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 Proxy Group and Bulkley Proxy Group, the median prospective sustainable growth rates are 4.0 percent and 3.9 percent, respectively.

Q. Please assess growth for the proxy groups as measured by analysts' forecasts of expected three-to-five year EPS growth.

A. Yahoo, Zacks, and S&P Cap IQ collect, summarize, and publish Wall Street analysts' three-to-five-year EPS growth-rate forecasts for the companies in the proxy groups. These forecasts are provided for the companies in the proxy groups on page 5 of Exhibit

JRW-7. 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 and Bulkley Proxy Groups are 5.6 percent/6.0 percent and 5.8 percent/6.1 percent, respectively.[22]

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

A. Page 6 of Exhibit JRW-7 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 4.3 percent. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 5.1 percent, and *Value Line*'s projected sustainable growth rate is 4.0 percent.

The projected EPS growth rates of Wall Street analysts for the Electric Proxy Group are 5.60 percent and 6.00 percent (average = 5.80 percent) as measured by the mean and median growth rates. The overall range for the projected growth-rate indicators (ignoring historical growth) is 4.0 percent to 5.8 percent and the average of the three projected growth rates is 5.00 percent (4.1 percent, 5.1 percent, 5.8 percent). Giving primary weight to the projected growth rates of Wall Street analysts and *Value Line*, but recognizing the upward bias nature of these forecasts, I believe that the appropriate

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[22] 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.

projected growth rate is the range of 5.00 percent to 5.80 percent. I will use the midpoint of this range, 5.40 percent, as my DCF growth rate for the Electric Proxy group. This growth rate figure is in the upper end of the range of historic and projected growth rates for the Electric Proxy Group.

For the Bulkley Proxy Group, the historical growth rate indicators suggest a growth rate of 4.3 percent. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 5.4 percent, and *Value Line*'s projected sustainable growth rate is 3.9 percent. The projected EPS growth rates of Wall Street analysts are 5.8 percent and 6.1 percent (average = 6.0 percent) as measured by the mean and median growth rates. The overall range for the projected growth-rate indicators (ignoring historical growth) is 3.9 percent and the average of the three projected growth rates is 5.10 percent (3.9 percent, 5.4 percent, 6.0 percent). Again, giving primary weight to the projected growth rates of Wall Street analysts and *Value Line*, but recognizing the upward bias nature of these forecasts, I believe that the appropriate projected growth rate is the range of 5.10 percent to 6.00 percent. I will use the midpoint of this range, 5.50 percent, as my DCF growth rate for the Bulkley Proxy group. Similar to the Electric Proxy Group, this growth rate figure is in the upper end of the range of historic and projected growth rates for the Bulkley Proxy Group.

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-7 and in Table 7 below.

Table 7
DCF-Derived Equity Cost Rate/ROE

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	**3.80%**	**1.0270**	**5.40%**	**9.30%**
Bulkley Proxy Group	**3.80%**	**1.0275**	**5.50%**	**9.40%**

The result for the Electric Proxy Group is the 3.80 percent dividend yield, times the one and one-half growth adjustment of 1.0270, plus the DCF growth rate of 5.40 percent, which results in an equity cost rate of 9.30 percent. The result for the Bulkley Proxy Group is 9.40 percent, which includes a dividend yield of 3.80 percent, an adjustment factor of 1.0275, and a DCF growth rate of 5.50 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 companies' stock, which is also the equity cost rate (K), is equal to:

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

Where:

K represents the estimated rate of return on the stock;
$E(R_m)$ represents the expected return on the overall stock market. (Frequently, the 'market' refers to the S&P 500.);
(R_f) represents the risk-free rate of interest;
$[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess 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-8.

A. Exhibit JRW-8 provides the summary results for my CAPM study. Page 1 shows the results, and the following pages contain the supporting data.

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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-8, the yield on 30-year U.S. Treasury bonds has been in the 1.3 percent to 4.75 percent range over the 2010–2023 time period. The current 30-year Treasury yield is above the average of this range. Kroll, a division of the investment firm Duff & Phelps, recommends using a normalized risk-free interest rate.[23] Currently, Kroll is recommending a normalized risk-free interest rate of 3.50 percent or, if the spot 20-year Treasury yield is above 3.50 percent, Kroll recommends using the spot 20-year Treasury yield.[24] However, they have also noted these yields are distorted currently. "We are aware of lack of liquidity issues in the U.S. Treasury market for the 20-year maturity, which is causing some distortion in the 20-year yield relative to that observed for 10 and 30 maturities."[25] The illiquidity and resulting yield distortion has also been highlighted in the financial press.[26] As shown in Figure 5 (page 15), the yield

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23 Carla Nunes, James Harrington, Anas Aboulamer, & Roger Grabowski, *Kroll Recommended U.S. Equity Risk Premium and Corresponding Risk-Free Rates to be Used in Computing Cost of Capital: January 2008 – Present,* Kroll, Cost of Capital Res. Cent. (Jun. 30, 2023), https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.

24 Carla Nunes, *Kroll Increases U.S. Normalized Risk-Free Rate from 3.0% to 3.5%, but Spot 20-Year Treasury Yield Preferred When Higher*, Kross, Cost of Capital Res. Cent. (June 16, 2022), https://www.kroll.com/en/insights/publications/cost-of-capital/kroll-increases-us-risk-free-rate-but-spot-treasury-yield-preferred (click on download icon for PDF).

25 *Impact of High Inflation and Market Volatility on Cost of Capital Assumptions—October 2022 Update,* Kroll, Cost of Capital Res. Cent. (Oct. 18, 2022), https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates (linked as the second article under the 'Historical Recommendations' heading on this page).

26 *See e.g.*, Kate Duguid and Colby Smith, *'The market is just dead': Investors steer clear of 20-year Treasuries*, Fin. Times, July 22, 2022, https://www.ft.com/content/e02705c2-a9b6-4c47-99e2-66924af55bc3.

curve is currently inverted with a yield "hump" at the 20-year mark. The current 10-year, 20-year, and 30-year Treasury yields are in the 4.23 percent, 4.49 percent, and 4.30 percent range, respectively.[27] Given the recent range of yields, and recognizing the "hump," I am using 4.30 percent as the risk-free rate, or R_f, in my CAPM.

Q. Does the 4.30 percent risk-free interest rate take into consideration forecasts of higher interest rates?

A. No, it does not. The 4.30 percent 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 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 is 4.30 percent.

Q. Please discuss betas in the 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 whose price movement is 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.

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27 *Impact of High Inflation and Market Volatility on Cost of Capital Assumptions—October 2022 Update,* Kroll, Cost of Capital Res. Cent. (Oct. 18, 2022), https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.

As shown on page 3 of Exhibit JRW-8, 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 and 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 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 2020 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 2020. 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:[28]

> 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 percentage 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

[28] Value Line, *Investment Education: Glossary*, https://www.valueline.com/investment-education/glossary/b (last visited Sept. 11. 2023) (please refer to the definition for 'Beta').

> 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 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.[29]

The Blume adjustment procedure is:

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

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[29] Marshall Blume, *On the Assessment of Risk*, 26 J. of Fin. (Mar. 1971).

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

$$\text{Regressed Beta} = .67 * (0.50) + 0.33 = 0.67$$

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 a firm's systematic risk close to that of the market. He also speculated that it results from management's efforts to diversify through investment projects.

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

A. As shown on page 3 of Exhibit JRW-8, the median *Value Line* betas for the two Proxy Groups are 0.88 and 0.90. At present, I will continue to use *Value Line* betas in my CAPM, which I believe is a conservative approach.

Q. Please 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 come up with significantly different magnitudes for $E(R_m)$. As Merton Miller, the 1990 Nobel Prize winner in economics, indicated, $E(R_m)$ is very difficult to measure and is one of the great mysteries in finance.[30]

[30] Merton Miller, *The History of Finance: An Eyewitness Account*, J. Applied Corp. Fin., 3 (2000).

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

A. Page 4 of Exhibit JRW-8 highlights the primary approaches to, and issues in, estimating the expected market risk premium. The traditional way to measure the market risk 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.[31]

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[31] Rajnish Mehra & Edward C. Prescott, *The Equity Premium: A Puzzle*, J. Monetary Econ. 145 (1985).

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 10 years.[32] 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*.[33] 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.[34]

Q. Please highlight the results of the academic and professional studies of the market risk premium.

A. Derrig and Orr, Fernandez, and Song completed the most comprehensive reviews of the research on the market risk premium.[35] 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—

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32 *The CFO Survey*, Duke Univ., https://www.richmondfed.org/cfosurvey (last visited Sept. 11, 2023).

33 *Survey of Professional Forecasters*, Fed. Rsrv. Bank of Philadelphia (Feb. 10, 2023), https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/spf-q1-2023 (click on download icon on page). 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.

34 Pablo Fernandez, Teresa Garcia, and Pablo Acín, *Survey: Market Risk Premium and Risk-Free Rate Used for 80 Countries in 2023* (IESE Bus. School Working Paper Apr. 3, 2023).

35 *See* Richard Derrig & Elisha Orr, *Equity Risk Premium: Expectations Great and Small (Version 3.0)* (Aug. 28, 2003), https://www.casact.org/sites/default/files/database/forum_04wforum_04wf001.pdf; Pablo Fernandez, *Equity Premium: Historical, Expected, Required, and Implied* (IESE Bus. School Working Paper 2007); Zhiyi Song, *The Equity Risk Premium: An Annotated Bibliography* (The CFA Inst. Rsch. 2007), https://psc.ky.gov/pscecf/2012-00222/rateintervention%40ag.ky.gov/10252012032043/Song_-_equity_risk_premium_-_CFA_-_2007.pdf.

historical, expected, required, and implied. Fernandez also reviewed the major studies of the market risk premium and presented the summary market risk premium results. Song provided an annotated bibliography and highlighted the alternative approaches to estimating the market risk premium.

Page 5 of Exhibit JRW-8 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 the more recent risk premium studies and surveys.

A. The studies cited on page 5 of Exhibit JRW-8 include every market risk premium study and survey I could identify that was published over the past 20 years and that 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-8 on page 6 of Exhibit JRW-8; however, I have eliminated all studies dated before January 2, 2010. The median market risk premium estimate for this subset of studies is 5.34 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-8 can be summarized in the following manners:

Historic Stock and Bond Returns: Historic stock and bond returns suggest a market risk premium ranging from 4.40 percent to 6.64 percent, 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 3.32 percent to 6.00 percent.

Surveys: Market risk premiums developed from surveys of analysts, companies, financial professionals, and academics are lower, with a range from 3.15 percent to 5.70 percent.

Building Block: The mean reported market risk premiums reported in studies using the building blocks approach range from 3.00 percent to 5.21 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.

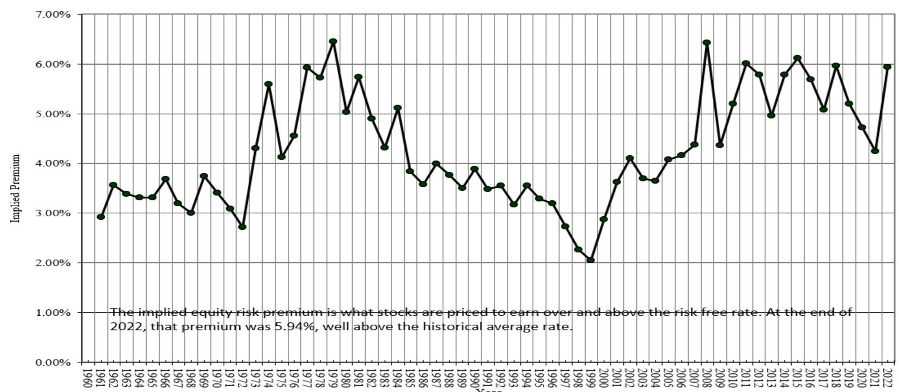
Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision-making.[36] His survey results are included on pages 5 and 6 of Exhibit JRW-8. The results of his 2023 survey of academics, financial analysts, and companies, which included 4,000 responses, indicated a mean market risk premium employed by U.S. analysts and

[36] Pablo Fernandez, Teresa Garcia, and Pablo Acín, *Survey: Market Risk Premium and Risk-Free Rate Used for 80 Countries in 2023* (IESE Bus. School Working Paper Apr. 3, 2023).

companies of 5.7 percent.[37] His estimated market risk premium for the U.S. has been in the 5.00 percent to 5.70 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 12, below, has primarily ranged from 4.0 percent to 6.0 percent since 2010. As of August 1, 2023, his estimate of the implied market risk premium was 4.38 percent.[38]

Figure 12
Damodaran Implied Market Risk Premium



Source: http://pages.stern.nyu.edu/~adamodar/.

As noted above, Kroll 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 2008–2023 time periods are shown on page 7 of Exhibit JRW-8 and are shown graphically in Figure 13. Over the past decade, Kroll's recommended normalized risk-free interest rates have been in the 2.50 percent to 4.50 percent range and market risk premiums have been in the 5.0 percent to 6.0 percent

[37] *Id.* at 3.
[38] Aswath Damodaran, *Damodaran Online*, N.Y. UNIV., http://pages.stern.nyu.edu/~adamodar/ (last visited Sept. 11, 2023).

range. In early 2020, in the wake of the emergence of the novel coronavirus, Kroll 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, Kroll reduced its recommended market risk premium to 5.50 percent. But, on October 18, 2022, Kroll once again increased its market risk premium to 6.00 percent. Most recently, on June 8, 2023, Kroll reduced its market risk premium to 5.50 percent.[39]

Finally, KPMG, the international accounting firm, regularly publishes an update to their market risk premium to be used in their valuation practice. KPMG's market risk premium is shown in Figure 14, which was as high as 6.75 percent in 2020, and was lowered to as low as 5.00 percent on September 30, 2021. KPMG increased its market risk premium to 6.0 percent on June 30, 2022, but lowered it to 5.75 percent on December 31, 2022, to 5.50 percent on March 31, 2023, and to 5.25 percent on June 30, 2023.[40]

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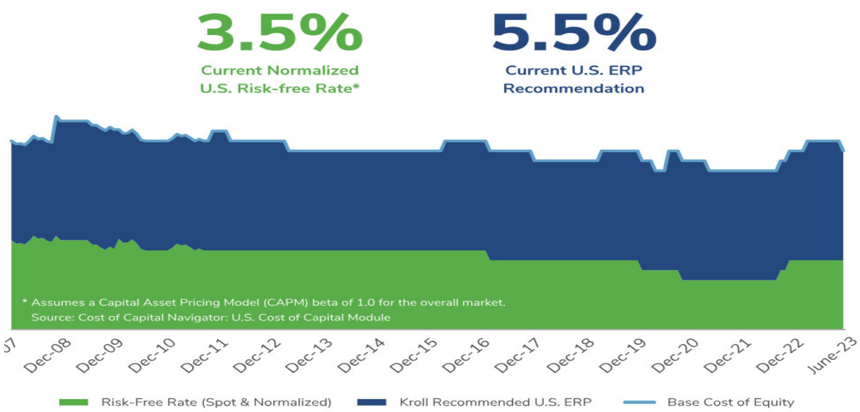
[39] Carla Nunes, James Harrington, Anas Aboulamer, & Roger Grabowski, *Kroll Recommended U.S. Equity Risk Premium and Corresponding Risk-Free Rates to be Used in Computing Cost of Capital: January 2008 – Present,* Kroll, Cost of Capital Res. Cent. (Jun. 30, 2023), https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.

[40] KPMG, *Equity Market Risk Premium – Research Summary*: *KPMG Corporate Finance & Valuations NL recommends an MRP of 5.25% as per 30 June 2023,* https://indialogue.io/clients/reports/public/5d9da61986db2894649a7ef2/5d9da63386db2894649a7ef5 (last visited Sept. 11, 2023).

Figure 13
Kroll
Normalized Risk-Free Rate and Market Risk Premium Recommendations
2007–2023



Source: https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates

Figure 14
KPMG
Market Risk Premium Recommendations
2013–2023

Source:
https://indialogue.io/clients/reports/public/5d9da61986db2894649a7ef2/5d9da63386db2894649a7ef5

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

A. The studies on page 6 of Exhibit JRW-8 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 5.50 percent, which is the upper end of the range. I gave most weight to the market risk-premium estimates of Kroll, 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 group are summarized on page 1 of Exhibit JRW-8 and in Table 8.

Table 8
CAPM-derived Equity Cost Rate/ROE
$K = (R_f) + ß * [E(R_m) - (R_f)]$

	Risk-Free Rate	Beta	Market Risk Premium	Equity Cost Rate
Electric Proxy Group	**4.30%**	**0.88**	**5.50%**	**9.15%**
Bulkley Proxy Group	**4.30%**	**0.90**	**5.50%**	**9.25%**

For both Electric Proxy Group, the risk-free rate of 4.30 percent plus the product of the beta of 0.88 times the equity risk premium of 5.50 percent results in a 9.15 percent equity cost rate. The CAPM result for the Bulkley Proxy Group is 9.25 percent, with the risk-free rate of 4.30 percent plus the product of the beta of 0.90 times the equity risk premium of 5.50 percent.

D. Equity Cost Rate Summary

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

A. Table 9 provides my DCF and CAPM analyses for the proxy groups.

Table 9
ROEs Derived from DCF and CAPM Models

	DCF	CAPM
Electric Proxy Group	**9.30%**	**9.15%**
Bulkley Proxy Group	**9.40%**	**9.25%**

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 for companies in the

Electric and Bulkley Proxy Groups is in the 9.15 percent to 9.40 percent range. Since I rely primarily on the DCF model and the results for the Electric Proxy Group and given that the Company's investment risk is a little below the average of the proxy groups, I am using an ROE of 9.25 percent for the Company.

Q. Please explain why an equity cost rate of 9.25 percent is appropriate for the Company.

A. A number of reasons support an equity cost rate of 9.25 percent as appropriate and fair for the Company:

1. The Company's proposed capital structures have more common equity and less financial risk than the companies in the proxy groups. Hence, I have employed the capital structures that the Company received in its last rate case.
2. The investment risk of the Company is little below the average of the proxy groups. The Company's Moody's issuer credit rating of A3 is two notches above the average of the two proxy groups, which are Baa2.
3. As Table 6 (page 34) shows, the electric utility industry is among the lowest risk industries in the U.S. as measured by beta. As such, according to CAPM, the cost of equity capital for this industry is among the lowest in the U.S.
4. On an annual basis, the average authorized ROEs for electric utility companies have been 9.60 percent in 2018, 9.66 percent in 2019, 9.44 percent in 2020, 9.38 percent in 2021, 9.54 percent in 2022, and 9.56 percent in the first half of 2023, according to Regulatory Research Associates.[41] As I discuss above, authorized ROEs have lagged behind capital market cost rates. This observation is supported

[41] S&P Global Market Intelligence, *RRA Regulatory Focus* (2023).

by the Werner and Jarvis (2022) study, which evaluated over 3,500 authorized ROEs over the past four decades and concluded that authorized ROEs did not decline in line with capital costs and therefore past authorized ROEs have overstated the actual cost of equity capital. Accordingly, I believe my recommended ROE reflects the current capital market environment.

Q. Does your 9.25 percent ROE recommendation meet the *Hope* and *Bluefield* standards?

A. Yes. As I 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 a company's credit and to attract capital. As page 3 of Exhibit JRW-4 shows, electric utility companies have been earning in the 8.0 percent to 10.0 percent range in recent years, they have investment grade bond ratings, and their stocks sell well above their book values. While my recommendation is below the average authorized ROEs for electric utility companies, it reflects the downward trend in authorized and earned ROEs of utilities.

VII. CRITIQUE OF THE COMPANY'S RATE OF RETURN TESTIMONY

Q. Please summarize the company's cost of capital recommendation.

A. The Company's witness Nikki Kobliha has proposed a capital structure consisting of 48.72 percent long-term debt, 0.01 percent preferred stock, and 51.27 percent equity for PacifiCorp. Ann Bulkley proposes a ROE of 10.30 percent for The Company. Based on these components, Kobliha has proposed an overall rate of return or cost of capital of 7.61 percent for PacifiCorp.

Q. What are the areas of disagreement in estimating the rate of return or cost of capital in this proceeding?

A. As I discuss above, the primary issues related to the Company's rate of return include the following: (1) capital market conditions; (2) the capital structure; (3) the Company's investment risk, (4) DCF Approach; (5) CAPM Approach; (6) the alternative risk premium model; and (7) business and regulatory risks.

The capital market conditions, capital structure, and the Company's investment risk were previously discussed. I address the remaining items below.

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

A. Bulkley developed a proxy group of electric utilities and employed DCF, CAPM, and an alternative risk premium model as her equity cost rate approaches. Bulkley's equity cost rate estimates for the Company are summarized on page 2 of Exhibit JRW-9. Based on these figures, Bulkley concludes that the appropriate equity cost rate is 10.30% for the Company's electric utility operations.

A. Discounted Cash Flow Approach

Q. Please summarize Bulkley's DCF estimates.

A. On pages 33–37 of her testimony and in Exhibit AEB-6, Bulkley develops an equity cost rate by applying the DCF model to her proxy group. Bulkley's DCF results are summarized on page 2 of Exhibit JRW-9. In the traditional DCF approach, the equity cost rate is the sum of the dividend yield and expected growth. Bulkley uses three dividend yield measures (30, 90, and 180 days) in the DCF models conducted. In the constant-growth DCF models, Bulkley has relied on the forecasted EPS growth rates of Zacks, Yahoo Finance, and *Value Line*. Bulkley's mean DCF ROEs, using average growth rates, is 9.46 percent.

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

A. The primary issues in Bulkley's DCF analyses are: (1) exclusively using the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*; and (2) claiming that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields.

1. Analysts' EPS Growth Rate Forecasts

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

A. Bulkley's exclusive reliance on the projected growth rates published by Wall Street analysts and *Value Line* inflates her estimates of growth rates. It seems highly unlikely that investors today would rely exclusively on the EPS growth-rate forecasts of Wall Street analysts and *Value Line* and ignore other growth-rate measures in arriving at their expected growth rates for equity investments.

As I previously testified, 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, as well as projected earnings growth.

In addition, I have provide evidence that analysts' EPS growth rate projections are overly optimistic and upwardly biased. I have provided a discussion of this issue on pages 47–50 of this testimony and report on a study I conducted in Figure 11. Using the electric utilities and gas distribution companies covered by *Value Line*, this study demonstrates that the mean forecasted EPS growth rates are consistently greater than the achieved actual EPS growth rates over the 1985–2022 time period. Over the entire period, the mean forecasted EPS growth rate is over 200 basis points above the actual

EPS growth rate. As such, the projected EPS growth rates for utilities are overly optimistic and upwardly based. Hence, exclusively using these growth rates as a DCF growth rate produces an overstated equity-cost rate. In addition. I also highlighted a study by Szakmary, Conover, and Lancaster (2008) who 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.[42]

2. Claim that the DCF Model Understates the Cost of Equity Capital

Q. Please discuss Bulkley's claim that the DCF model understates the cost of equity capital.

A. On page 36 of her testimony, Bulkley claims that the DCF model in the current environment underestimates the market-determined ROE using the DCF model.

Q. What is your response to this claim?

A. Bulkley's claim is wholly without merit. Bulkley is saying that utility stocks are overvalued and that their stock prices will decline in the future (and therefore their dividend yield will increase). Hence, Bulkley presumes to know more than investors in the stock market. Indeed, if Bulkley believes that utility stock prices will decline in the future, the forecast should be for negative returns, which is not what Bulkley presents here.

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[42] Andrew C. Szakmary, C. Mitchell Conover, & Carol Lancaster, *An Examination of* Value Line*'s Long-Term Projections*, 32 J. BANKING & FIN., at 8:20–833 (May 2008).

B. CAPM Approach

Q. Please discuss Bulkley's CAPM.

A. On pages 37–42 of her testimony and in Exhibits AEB-7 through AEB-9, Bulkley develops an equity cost rate by applying the CAPM model to her proxy group. Bulkley's CAPM/ECAPM results are summarized on page 2 of Exhibit JRW-9. Bulkley develops an equity cost rate by using not only the traditional CAPM, but also the so-called Empirical CAPM ("ECAPM") model for her proxy group. The ECAPM is a variant of the traditional CAPM. The CAPM/ECAPM approach requires an estimate of the risk-free interest rate, Beta, and the equity risk premium. Bulkley uses: (1) current (3.71 percent), near-term projected (3.82 percent), and long-term projected (3.90 percent) 30-year Treasury yields; (2) betas from *Value Line* and Bloomberg; and (3) a market risk premium of 8.79 percent. Based on these figures, Bulkley finds CAPM/ECAPM equity cost rates ranging from 10.33 percent to 11.66 percent.

Q. What are the errors in Bulkley's CAPM analysis?

A. The primary errors with Bulkley's CAPM/ECAPM analyses are: (1) the use of the ECAPM version of the CAPM and (2) the expected market risk premium of 8.79 percent.

1. ECAPM Approach

Q. What issues do you have with Bulkley's use of the ECAPM?

A. In addition to CAPM, Bulkley has employed a variation of CAPM called "ECAPM." 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 the Security Market Line is not as steep as predicted by CAPM. Accordingly, ECAPM is an alternative version of the CAPM. However, the ECAPM has not been theoretically or empirically validated in refereed journals. The ECAPM provides for weights that are used to adjust the risk-free rate and market risk premium in applying ECAPM. Bulkley 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 ECAPM, there are two errors in Bulkley's version of ECAPM: (1) I am not aware of any tests of the CAPM that use adjusted betas such as those used by Bulkley; and (2) adjusted betas, which were previously discussed already address the empirical issues with CAPM. Specifically, the beta adjustment (1) increases the beta and resulting expected return for low beta (beta<1.0) stocks, and (2) decreases the beta and resulting expected return for high beta (beta>1.0) stocks.

2. Overstated Market Risk Premium

Q. Please assess Bulkley's market risk premium derived from applying the DCF model to the S&P 500 using *Value Line* EPS growth rates.

A. The most blatant error in Bulkley's CAPM analysis is the magnitude of the market (or equity) risk premium—which is then used to produce very high ROE results, as high as 11.66 percent. Bulkley develops an expected market risk premium by: (1) applying the DCF model to the S&P 500 to get an expected market return; and (2) subtracting the risk-free rate of interest. As shown in Table 10, Bulkley's estimated market return of 12.50 percent for the S&P 500 equals the sum of the dividend yield of 1.75 percent and expected EPS growth rate of 10.65 percent. The expected EPS growth rate is the average of the expected EPS growth rates from S&P. The primary error in this approach is Bulkley's expected DCF growth rate. As previously discussed, the expected EPS growth rates of Wall Street analysts are upwardly biased. In addition, as explained below, the projected growth rate is inconsistent with actual economic and earnings growth rates in the U.S.

Table 10
Bulkley CAPM Market Risk Premium

	S&P 500
Dividend Yield	1.75%
+ Expected EPS Growth	10.65%
= Expected Market Return	12.50%
+ Risk-Free Rate	3.71%
= Market Risk Premium	8.79%

Q. Please provide additional insights into the expected stock market return of 12.50 percent.

A. The assumption of a 12.50 percent expected stock market return is excessive and unrealistic. The compounded annual return in the U.S. stock market is 9.64 percent between 1928 and 2022, according to Damodaran.[43] Bulkley's CAPM results assume that the return on the U.S. stock market will be more than 20 percent higher in the future than it has been in the past. The high expected stock market return, and the resulting market risk premium and equity cost rate results are directly related to computing the expected stock market return as the sum of the adjusted dividend yield, plus the expected EPS growth rate of 10.65 percent.

Q. Is Bulkley's expected stock market return of 12.50 percent reflective of the stock market returns that investment firms tell investors to expect?

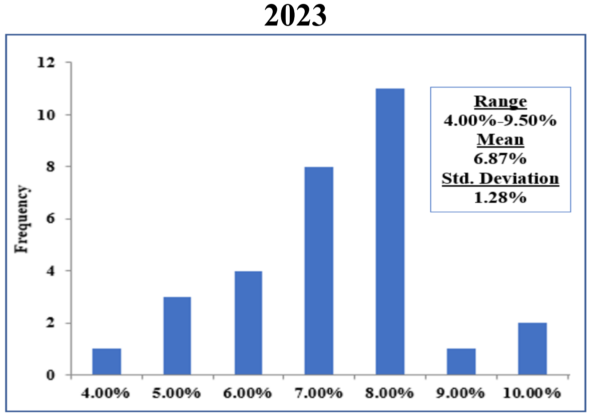
A. No. Many investment firms provide investors with their estimates of the annual stock returns that they should expect in the future. Most publish these expected returns in documents entitled "Capital Market Assumptions" and are available online at their

[43] Aswath Damodaran, *Damodaran Online*, N.Y. Univ., http://pages.stern.nyu.edu/~adamodar/.

websites. Googling “Capital Market Assumptions” provides a long list of investment firms and their base case expected annual return assumptions for stocks, bonds, and other financial assets. In my search, I found 30 investment firms that published their capital market assumptions. These are listed in Exhibit JRW-10, and include many of the largest, best-known investment firms, including J.P. Morgan, BlackRock, BNY Mellon, Fidelity Investments, Northern Trust, Vanguard Group, and State Street. Combined, these 30 firms manage more than $50 trillion in assets.

Figure 15 provides a histogram of the expected returns listed in Exhibit JRW-10. The average duration of the long-term forecasts is 10 years. The range of the forecasted U.S. annual large cap equity returns is 4.00 percent to 9.50 percent. The mean and standard deviation of these expected returns are 6.87 percent and 1.28 percent, respectively.

Figure 15
Histogram of Investment Firm Expected Large Cap Equity Annual Returns 2023



Date Source: Exhibit JRW-10.

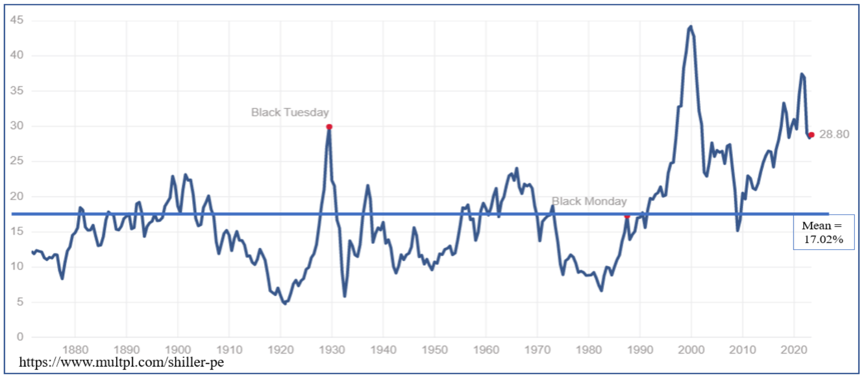
Q. What are your observations on the stock market returns that investment firms tell investors to expect?

A. I have three comments: (1) these returns are below the historical average compounded annual stock market return of 9.64 percent cited above (more on this below); (2) the standard deviation of 1.28 percent is very low, which indicates that the expected returns provided by these firms are quite similar, especially compared to historical stock market returns; and (3) these expected returns indicate Bulkley' average expected stock market return of 12.50 percent, which she calculates using three alternative models using *Value Line* and Bloomberg expected return data. In short, Bulkley' average expected market return of 12.50 percent is more than double the returns investment firms tell investors they should expect.

Q. Why do you think the stock market returns that investment firms tell investors to expect are lower than historical stock returns?

A. The biggest factor is that the valuation of the overall stock market is high relative to historical standards. When stock prices are high, investors have to pay higher prices to buy in, which lowers their future expected returns. Figure 16 provides Schiller's cyclically-adjusted PE ratio (CAPE) over the last 100+ years. Stocks prices have remained above the mean historical CAPE level of 17.02 percent since 2009, with a current level of 28.80. Hence, the higher valuation of the stock market leads to lower expected returns.

Figure 16
Schiller S&P 500 CAPE Ratio
2023



The Schiller S&P 500 CAPE ratio is based on average inflation-adjusted earnings from the previous 10 years. Data Source: https://www.multpl.com/shiller-pe.

Q. How do issues with analysts' EPS growth rate forecasts impact Bulkley's CAPM?

A. The key point is that Bulkley's CAPM market risk premium methodology is based entirely on the concept that analyst projections of companies' three-to-five-year EPS growth rates reflect investors' expected *long-term* EPS growth for those companies. However, this assumption is highly unrealistic given the published 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.[44] Moreover, as I discuss above, the Lacina, Lee, and Xu study showed that analysts' forecasts of EPS growth over the next three-to-five years are no more accurate than their forecasts of the next single year's EPS growth (and the single year forecasts are notoriously inaccurate). The overly optimistic inaccuracy of analysts' growth rate

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[44] Such studies 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 K.C. Chan, Jason Karceski, & Josef Lakonishok, *The Level and Persistence of Growth Rates*, J. of Fin.,at 643−684 (2003); Michael Lacina, B. Brian Lee & Zhaohui Xu, *An Evaluation of Financial Analysts and Naïve Methods in Forecasting Long-Term Earnings*, 8 Advances in Bus. and Mgmt. Forecasting, 77–101 (2011).

forecasts leads to an upward bias in equity cost estimates estimated at about 300 basis points.[45]

I have also completed studies on the accuracy of analysts' projected EPS growth rates. In Figure 11 (page 46), I demonstrated that the EPS growth rate forecasts of Wall Street analysts are upwardly biased for electric utilities and gas distribution companies. In Figure 17, I provide the results of a study I performed using all companies followed by I/B/E/S who have three-to-five-year EPS growth rate forecasts over the 1985 to 2022 time period.

In this study, for each company with a three-to-five-year forecast, I compared the average three-to-five-year average EPS growth rate forecasts to the actual EPS growth rates achieved over the three-to-five-year time period. In Figure 17, the mean of the projected EPS growth rates is the red line and the mean of the actual EPS growth rates is the blue line. Over the 35 years of the study, the mean projected three-to-five-year EPS growth rate was 12.50 percent, while the average actual achieved three-to-five-year EPS growth rate was 6.50 percent. This study demonstrates that the projected three-to-five-year EPS growth rate forecasts are upwardly biased and overly optimistic. As can be seen by comparing Figures 11 and 17, the degree of upward bias for all companies is much larger than it is for electric and gas utility companies.

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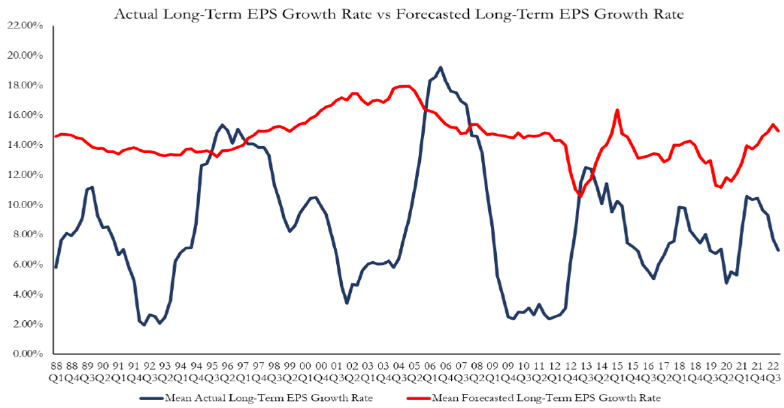
[45] Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. of Acct. Rsch. 983–1015 (2007).

Figure 17
Mean Forecasted vs. Actual Long-Term EPS Growth Rates
All Companies Covered by I/B/E/S
1985–2022



Data Source: I/B/E/S, 2023.

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 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 after a decade of stricter regulation, analysts' long-term earnings forecasts continue to be excessively optimistic. They made the following observation:

> 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.*[46]

This is the same observation made in a *Bloomberg Businessweek* article.[47] The author concluded: "***The bottom line***: *Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects."*

Q. Is Bulkley's market risk premium of 8.79 percent reflective of the market risk premiums found in published studies and surveys?

A. No. This figure is well in excess of market risk premiums: (1) found in studies of the market risk premium by leading academic scholars, (2) produced by analyses of historic stock and bond returns, and (3) found in surveys of financial professionals. Page 6 of Exhibit JRW-8 provides the results of over 30 market risk premium studies from the past 13 years.[48] Historic stock and bond returns suggest a market risk premium in the 4.40 percent–6.64 percent range, depending on whether one uses arithmetic or geometric mean returns. Many studies have used expected return (also called *ex ante*) models, and their market risk premiums results vary from as low as 3.32 percent to as high as 6.0 percent. Finally, the market risk premiums developed from surveys of analysts, companies, financial professionals, and academics suggest even potentially lower market risk premiums, in a range from 3.15 percent to 5.70 percent. The bottom line is that there is

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[46] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity Analysts, Still Too Bullish*, 35 McKinsey on Fin. 14–17 (Spring 2010) (emphasis added).

[47] Roben Farzad, *For Analysts, Things Are Always Looking Up*, Bloomberg Businessweek, June 10, 2010, 2.00 pm, https://www.bloomberg.com/news/articles/2010-06-10/for-analysts-things-are-always-looking-up.

[48] *See* Woolridge, Exh. JRW-8 at 6.

no support in historic return data, surveys, academic studies, or reports for investment firms for a market risk premium as high as the 8.79 percent used by Bulkley.

Q. Is there other evidence that indicates that Bulkley's market risk premium developed using analysts' projected EPS growth rates is excessive?

A. Yes. A long-term EPS growth rate of 10.65 percent is inconsistent with both historic and projected economic and earnings growth in the U.S. for several reasons: (1) long-term EPS and economic growth is about one-half of Bulkley's projected EPS growth rate of 10.65 percent; (2) 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 near future, during the period when the rates from this case will be effective.

Long-Term Historic EPS and GDP Growth Have Been in the 6%–7% Range: In Exhibit JRW-11, 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 11.[49]

Table 11
GDP, S&P 500 Stock Price, EPS, and DPS Growth
1960-Present

Nominal GDP	**6.40%**
S&P 500 Stock Price	**6.99%**
S&P 500 EPS	**7.11%**
S&P 500 DPS	**5.88%**
Average	**6.60%**

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, Bulkley's long-

[49] *See* Woolridge, Exh. JRW-11 at 1.

run growth rate projection of 10.65 percent is substantially overstated. This estimate suggests that companies in the U.S. would be expected to: (1) increase their growth rate of EPS by almost 100 percent in the future and (2) maintain that growth indefinitely in an economy that is expected to grow at about one-third of Bulkley's projected growth rates.

There is a Direct Link Between Long-Term EPS and GDP Growth: The results in Exhibit JRW-11 and Table 11 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. Cornell 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, the study finds that long-term stock returns are determined by long-term earnings growth. Cornell concludes with the following observations:[50]

> 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.

Annual Growth rates in nominal GDP are shown on page 2 of Exhibit JRW-11. Nominal GDP growth was in the four percent range over the past decade until the COVID-19 Pandemic hit in 2020. Nominal GDP fell by 2.2 percent in 2020, before rebounding and growing by over 10.0 percent in 2021 and in 2022. The components of

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[50] Bradford Cornell, *Economic Growth and Equity Investing*, Fin. Analysts J. at 63 (Jan.-Feb. 2010).

nominal GDP growth are real GDP growth and inflation. Page 3 of Exhibit JRW-11 shows the annual real GDP growth rate between 1961 and 2022. 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 2015–2019 period. Real GDP fell by 3.5 percent in 2020, but rebounded and grew by 5.7 percent in 2021 and 2.1 percent in 2022.

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) from 1961 to 2022. 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 was in the 2.0 percent range or below from 2015 to 2020. Prices increased in 2021 and 2022 with the rebounding economy and increased by 4.7 percent in 2021 and 8.0 percent in 2022. Year-over-year inflation in 2022 jumped to 40-year highs in 2022 due to supply chain issues and the Russia-Ukraine conflict, but longer-term inflation is expected to be in the 2.0 percent–3.0 percent range.

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 inflation. To gauge the magnitude of the decline in nominal GDP growth, Table 12 provides the compounded GDP growth rates for 10-, 20-, 30-, 40- and 50- years. Whereas the 50-year compounded GDP growth rate is 6.16 percent, there has been a near 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 12
Historical Nominal GDP Growth Rates

10-Year Average	4.59%
20-Year Average	4.32%
30-Year Average	4.65%
40-Year Average	5.21%
50-Year Average	6.16%

<u>Long-Term GDP Projections also Indicate Slower GDP Growth in the Future</u>: 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 page 5 of Exhibit JRW-11.

The mean 10-year nominal GDP growth forecast (as of February 2023) by economists in the recent *Survey of Financial Forecasters* is 4.40 percent.[51] The Energy Information Administration (EIA), in its projections used in preparing *Annual Energy Outlook*, forecasts long-term GDP growth of 4.3 percent for the period 2023 to 2053.[52] The Congressional Budget Office (CBO), in its forecasts for the period 2023 to 2053, projects a nominal GDP growth rate of 3.8 percent.[53] Finally, the Social Security Administration (SSA), in its Annual OASDI Report, provides a projection of nominal GDP from 2023 to 2100.[54] SSA's projected growth GDP growth rate over this period is

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[51] Ten-year median projected real GDP growth of 2.00 percent and CPI inflation of 2.37 percent. *Survey of Professional Forecasters*, Fed. Rsrv. Bank of Philadelphia, https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/ (last visited Sept. 11, 2023).

[52] *Annual Energy Outlook 2023*, Table 20: Macroeconomic Indicators, U.S. Energy Info. Admin. (Mar. 16, 2023) https://www.eia.gov/outlooks/aeo/ (click on 'Data' tab, then 'Interactive Table Viewer', and then click on the 'Publications & Tables' drop down menu to find Table 20).

[53] *The 2023 Long-Term Budget Outlook*, Congressional Budget Off., (June 28, 2023), https://www.cbo.gov/system/files/2023-06/59014-LTBO.pdf.

[54] Social Security Admin., *2023 Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance (OASDI) Program*, Table VI.G4, at 220–221 (Mar. 31, 2023), https://www.ssa.gov/OACT/TR/2023/tr2023.pdf. The 4.1 percent growth rate is the growth in projected GDP from 2023 to 2100.

4.1 percent. The average projected GDP growth rate for these four forecasts is 4.15 percent.

The bottom line is that the trends and projections suggest a long-term GDP growth rate in the 4.0 percent to 4.5 percent range. As such, Bulkley' average projected EPS growth rate of 10.65 percent is more than double the projected GDP growth.

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

A. As addressed in a study by the consulting firm McKinsey & Co., two factors drive real GDP growth over time: (1) the number of workers in the economy (employment); and (2) the productivity of those workers (usually defined as output per hour).[55] According to McKinsey, population and productivity growth drove real GDP growth over the past 50 years, 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 expectancy. McKinsey estimates that employment growth will slow to 0.3 percent over the next 50 years. They conclude that even if productivity remains at the rapid rate of the past 50 years of 1.8 percent, real GDP growth will fall by 40 percent to 2.1 percent.

Q. Over the medium to long run, is S&P 500 EPS growth likely to outpace GDP growth?

A. No. Figure 18 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

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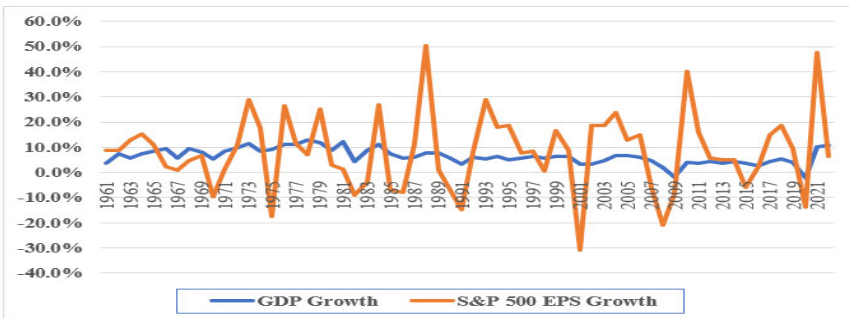
55 James Manyika, et al., *Can Long-Term Growth be Saved*?, McKinsey Global Inst. (Jan. 1, 2015), https://www.mckinsey.com/featured-insights/employment-and-growth/can-long-term-global-growth-be-saved.

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.[56] Volatility aside, however, it is clear that over the medium to long run, S&P 500 EPS growth does not significantly outpace GDP growth.

Figure 18
Average Annual Growth Rates
GDP and S&P 500 EPS
1960-2022



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 at least three factors, as follows.

<u>Corporate Profits are Constrained by GDP</u>: 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."[57] In that

[56] 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*, 57 J. of Acct. and Econ. 76–88 (2014).

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

same article, Friedman also noted that profits must move back down to their traditional share of GDP. In Table 13, I show that the aggregate net income levels for the S&P 500 companies, using 2022 figures, represent 6.11 percent of nominal GDP.

Table 13
S&P 500 Aggregate Net Income as a Percent of GDP

	2022 Value ($B)
Aggregate Net Income for S&P 500	$1,555.98
2021 Nominal U.S. GDP	25,461.34
Net Income/GDP (%)	6.11%

Data Sources: 2022 Net Income for S&P 500 companies https://www.gurufocus.com/economic_indicators/5749/sp-500-net-income-ttm.
2022 Nominal GDP – https://pages.stern.nyu.edu/~adamodar/.

<u>Short-Term Factors Impact S&P 500 EPS</u>: 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, and the cut in corporate tax rates. These short-term factors can make it appear that there is a disconnect between the economy and corporate profits.

<u>The Differences Between the S&P 500 EPS and GDP</u>: 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.[58] These differences include:

[58] *See* the following studies: Burt White and Jeff Buchbinder, *The S&P and GDP are not the Same Thing*, LPL Fin. (Nov. 4, 2014, 11:31 AM), 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. 19, 2018, 1:04 PM), 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, 1:26 PM), http://fortune.com/2017/07/27/profits-economic-growth/.

(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 international-trade driven, while exports minus imports tend to drag on GDP; and (d) S&P 500 EPS is affected 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.[59]

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 evidence showing that Bulkley's S&P 500 EPS growth rate of 10.65 percent is not realistic.

A. Beyond my previous discussion, I have performed the following analysis of S&P 500 EPS and GDP growth in Table 14. Specifically, I started with the 2022 aggregate net income for the S&P 500 companies and 2022 nominal GDP for the U.S. As shown in Table 13, the aggregate profit for the S&P 500 companies represented 6.11 percent of nominal GDP in 2022. In Table 14, 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

[59] 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.

500 companies, I used Bulkley's average projected S&P 500 EPS growth rate of 10.65 percent. As a growth rate for nominal GDP, I used the average of the long-term projected GDP growth rates from CBO, SFF, SSA, and EIA (3.8 percent, 4.4 percent, 4.1 percent, and 4.3 percent, respectively), which is 4.15 percent. The projected 2050 level for the aggregate net income level for the S&P 500 companies is $26.50 trillion. Over the same period, GDP is expected to grow to $79.50 trillion. As such, if the aggregate net income for the S&P 500 grows in accordance with the growth rate used by Bulkley (10.65 percent), and if nominal GDP grows at rates projected by major government agencies (4.15 percent), the net income of the S&P 500 companies will represent growth from 6.11 percent of GDP in 2022 to 33.29 percent of GDP in 2050. It is entirely unrealistic for the net income of the S&P 500 to become such a large component of GDP.

Table 14
Projected S&P 500 Earnings and Nominal GDP
2022-2050
S&P 500 Aggregate Net Income as a Percent of GDP

	2022 Value ($B)	Growth Rate	No. of Years	2050 Value ($B)
Aggregate Net Income for S&P 500	**$1,555.98**	**10.65%**	**28**	**$ 26,463.30**
2022 Nominal U.S. GDP	**$25,461.34**	**4.15%**	**28**	**$ 79,495.21**
Net Income/GDP (%)	**6.11%**			**33.29%**

Data Sources: 2022 Net Income for S&P 500 companies
https://www.gurufocus.com/economic_indicators/5749/sp-500-net-income-ttm.
Growth Rate - Bulkley's average projected S&P 500 EPS growth rate of 10.65%.
Nominal GDP Growth Rate – The average of the long-term projected GDP growth rates from CBO, SFF, SSA, and EIA (3.8%, 4.4%, 4.1%, and 4.3% = 4.15%).

Q. Please provide a summary assessment of GDP and S&P 500 EPS growth rates.

A. The long-term link between corporate profits and GDP is inevitable. The short-term differences in growth between the two indicate 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, Warren Buffet made the following observation:[60]

> 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, Bulkley's average long-term S&P 500 EPS growth rate of 10.65 percent is grossly overstated and has little (if any) basis in economic reality. In the end, the question remains 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 five percent, due to the big gains in the technology sector. But Siegel also believes that sustained EPS growth matching analysts' near-term projections is absurd: "The idea of 8% or 10% or 12% growth is ridiculous. It will not happen."[61]

C. Alternative Risk Premium Approach

Q. Please review bulkley's alternative risk premium model.

A. On pages 42–45 of her testimony and in Exhibit AEB-10, Bulkley estimates an equity cost rate using a risk premium model. Using the quarterly authorized ROEs for electric utility companies from Q1 1992 until Q1 2023, Bulkley develops an equity cost rate by regressing the authorized returns on equity for electric utility companies on the 30-year Treasury Yield. Bulkley then adds the risk premium established by regressing the authorized returns on

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[60] Carol Loomis, *Mr. Buffet on the Stock Market*, Fortune (Nov. 22, 1999), https://money.cnn.com/magazines/fortune/fortune_archive/1999/11/22/269071/.

[61] Shaun Tully, *Corporate Profits Are Soaring. Here's Why It Can't Last*, Fortune (Dec. 7, 2017, 3:30 AM), http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

equity to each of her three different 30-year Treasury yields: (a) a current yield of 3.71 percent, (b) a near-term projected yield of 3.82 percent, and (c) a long-term projected yield of 3.90 percent. Bulkley's risk premium results are provided in page 2 of Exhibit JRW-9. Bulkley reports risk premium equity cost rates ranging from 10.23 percent to 10.32 percent.

Q. What are the errors in Bulkley's bond yield plus risk premium ("BYRP") analysis?

A. There are several problems with this approach for calculating the risk premium.

First, the methodology produces an inflated measure of the risk premium because it uses historic authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury Yields. Since Treasury yields are always forecasted to increase, the resulting risk premium would be smaller if done correctly, which would be the result using projected Treasury yields in the analysis rather than historic Treasury yields.

Second, Bulkley's risk premium approach is a gauge of *commission* behavior and not *investor* behavior. Capital costs are determined in the marketplace 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 consider other utility- and rate case-specific information in setting ROEs. As such, Bulkley's approach and results reflect 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 especially be true when the authorized ROE data includes the results of rate cases that are settled and not fully litigated.

Third, since the stocks of electric utilities have been selling above book value for the last decade, it is obvious that the authorized ROEs of state utility commissions are above the returns that investors require.

Fourth, the ROE derived from this approach is dependent on the authorized ROEs from state utility commissions. As discussed earlier in this testimony, Werner and Jarvis (2022), demonstrated that authorized ROEs over the past four decades have not declined in line with capital costs and therefore past authorized ROEs have overstated the actual cost of equity capital.

Q. How do Bulkley's risk premium results compare to the current authorized ROEs for electric utilities?

A. Bulkley reports results as high as 10.32 percent from her risk premium model. As noted above, the average authorized ROE for electric utility companies in 2022 was 9.54 percent and 9.66 percent in the first half of 2023.

D. Expected Earnings Approach

Q. Please review Bulkley's expected earnings approach.

A. On pages 43–45 of her testimony and in Exhibit AEB-11, Bulkley develops an equity cost rate using her Expected Earnings approach. Bulkley's approach involves using *Value Line*'s projected ROEs for the companies in his proxy group and then adjusting this ROE to account for the fact the *Value Line* uses year-end equity in computing ROE. Bulkley reports a mean Expected Earnings result of 11.25 percent for her electric group.

Q. Please address the issues with Bulkley'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 an ROE for PacifiCorp. 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 2% 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."[62] As such, this method does not measure the market cost of 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

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[62] Roger Morin, *New Regulatory Finance*, 293 (2006).

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.

<u>Changes in ROE Ratios do not Track Capital Market Conditions</u>: 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."[63]

<u>The Expected Earnings Approach is Circular</u>: 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.

<u>The Proxies' ROEs Reflect Earnings on Business Activities that are not Representative of the Company's Rate-Regulated Utility Activities</u>: 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 Bulkley's Expected Earnings approach.

A. In short, Bulkley'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

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[63] *Id.*

a number of other empirical issues. Therefore, the Commission should ignore this approach in determining the appropriate ROE for the Company.

E. Regulatory and Business Risks

Q. Please discuss the other factors considered by Bulkley in arriving at her 10.30 percent ROE recommendation.

A. Bulkley also considers several elements of the Company's regulatory and business risks in arriving at her 10.30 percent ROE recommendation. These include: the Company's capital expenditures, elements of the Company's regulatory risk in Washington, and generation ownership. However, these three factors are risk considerations utilized in the credit rating process. As noted above, the Company's Moody's issuer credit rating is two notches above the average Moody's issuer credit ratings for the proxy groups. Hence, despite these factors, the Company's investment risk is still below the average of the proxy groups.

VIII. SUMMARY AND CONCLUSIONS

Q. Please summarize your testimony on the appropriate cost of capital for the Company.

A. The Company's proposed capital structure includes a much higher common equity ratio than the averages of the two proxy groups. Furthermore, the S&P and Moody's credit ratings of BBB+ and A3 are slightly better than the averages of the proxy groups. In the Company's last rate case in 2020, which was a settlement, PacifiCorp agreed to a capital structure with a common equity ratio of 49.1 percent. I am employing the capital structure from the Company's last rate case. I have adopted the Company's proposed preferred stock and long-term debt cost rates because are calculated correctly and are reasonable.

I have applied the DCF Model and the CAPM to two proxy group of publicly-held electric utility companies—the Electric Proxy Group and the Bulkley Proxy Group. My analysis indicates a common equity cost rate in the range of 9.15 percent to 9.40 percent. Since I rely primarily on the DCF model and the results for the Electric Proxy Group, and in light of the lower investment risk level of the Company relative to the proxy groups, I am using an ROE of 9.25 percent for the Company. Given my proposed capital structure and capital cost rates for the Company, I am recommending an overall fair rate of return or cost of capital of 6.97 percent for PacifiCorp. These are summarized in Table 2 and Exhibit JRW-3.

Q. Does this conclude your testimony?

A. Yes.