BEFORE THE WASHINGTON

UTILITIES & TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Complainant,

v.

PUGET SOUND ENERGY

Respondent.

DOCKETS UE-240004 and UG-240005 (*Consolidated*)

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

EXHIBIT JRW-1T

August 6, 2024

RESPONSE TESTIMONY OF J. RANDALL WOOLRIDGE

DOCKETS UE-240004 AND UG-240005 (Consolidated)

EXHIBIT JRW-1CT

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I. INTRODUCTION & SUMMARY

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

A. My name is J. Randall Woolridge, and my business address is 120 Haymaker Circle, State College, Pennsylvania, 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and 3 Frank P. Smeal Endowed University Fellow in Business Administration at the University 3 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 and gas utility service of Puget Sound Energy (PSE or the Company) and to evaluate PSE's rate of return testimony 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.

[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.

- Third, I discuss the selection of proxy groups for estimating the cost of equity capital for 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 PSE's rate of return analysis and testimony.

Q. What exhibits are you sponsoring in this proceeding?

A. I am sponsoring the following exhibits:

- Exhibit JRW-2 Qualifications of J. Randall Woolridge, Ph.D.
- Exhibit JRW-3 Recommended Cost of Capital
- Exhibit JRW-4 Utility Capital Cost Indicators
- Exhibit JRW-5 Summary Financial Statistics for Proxy Group
- Exhibit JRW-6 Capital Structure and Debt Cost Rates
- Exhibit JRW-7 Discounted Cash Flow Model
- Exhibit JRW-8 Capital Asset Pricing Model Study
- Exhibit JRW-9 PSE's Rate of Return Recommendation
- Exhibit JRW-10 Investment Firms' Expected Equity Market Returns
- Exhibit JRW-11 GDP and S&P 500 Growth Rates

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;
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 utilities 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 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 company's financial integrity; and
3. Adequate to maintain and support the company's credit and to attract capital.

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

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 in cost of capital testimony, such as my testimony's 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 rate of return on equity investors require for this specific risk-class of firms, 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. I provide PSE's proposed capital structure and debt and equity cost rates in Table 1. The Company has proposed a capital structure and cost of capital for the first year of the proposed Multi-Year Rate Plan (MYRP) and another capital structure and cost of capital for the second year of the MYRP. The first-year proposal includes capital structure ratios of 1.81 percent short-term, 48.19 percent long-term debt and 50.0 percent common equity and short-term and long-term debt cost rates of 5.07 percent and 5.27 percent. PSE witness Ann E. Bulkley proposes a ROE of 9.95 percent in year one of the MYRP. The Company's current approved capital structure includes a common equity ratio of 48.50 percent. The second-year proposal includes capital structure ratios of 1.91 percent short-term, 47.81 percent long-term debt and 51.0 percent common equity and

short-term and long-term debt cost rates of 4.08 percent and 5.36 percent. Bulkley's recommended ROE is 10.50 percent for year two of the MYRP. PSE's recommended rates of return for the first and second years of the MYRP are 7.65 percent and 7.99 percent, respectively.

Table 1
Puget Sound Energy Rate of Return Recommendation

Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate*
Short-Term Debt	1.81%	5.07%	0.11%
Long-Term Debt	48.19%	5.27%	2.56%
Common Equity	50.00%	9.95%	4.98%
Total Capital	100.00%		7.65%
*Weighted short-term debt rate includes 0.02% of commitment and amortization fees. Weighted long-term debt rate includes 0.02% of amortization of reacquired debt[3]			
Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate*
Short-Term Debt	1.19%	4.08%	0.06%
Long-Term Debt	47.81%	5.36%	2.57%
Common Equity	51.00%	10.50%	5.36%
Total Capital	100.00%		7.99%
*Weighted short-term debt rate includes 0.01% of commitment and amortization fees. Weighted long-term debt rate includes 0.01% amortization of required debt[4]			

I provide my proposed cost of capital for PSE in Table 2. The Company's proposed capital structure includes a higher common equity ratio than: (1) the average of the three proxy groups and APCo's parent, Puget Sound Energy. As a

[3] Direct Test. of Cara G. Peterman, Exh. CGP-1CT at 10:15.
[4] *Id*. at 11:7.

result, I have recommended a capital structure with a common equity ratio of 49.0 percent which was the capitalization approved by the Washington Utilities and Transportation Commission (Commission) in the last rate case. This capitalization is: (1) consistent with the Company's historic capitalization, which PSE has used to finance its operations and maintained its credit ratings; (2) consistent with the Commission's past policies on utility capitalizations; and (3) more reflective of the capital structures of proxy groups of electric, combination electric and gas, and gas distribution companies. I have adopted APCo's proposed short-term and long-term debt cost rates and have averaged these Year 1 and Year 2 cost rates for my proposed short-term and long-term debt cost rates. I have applied the DCF Model and the CAPM to a proxy group of investor-owned electric utility companies (Electric Proxy Group), the group developed by Bulkley (Bulkley Proxy Group), and a group of gas distribution companies (Gas Proxy Group). My analysis indicates a common equity cost rate in the range of 8.25 percent to 9.90 percent for the three groups. Given that I rely primarily on the DCF model, but recognizing the recent lower interest rates and CAPM equity cost rates, I believe that the common equity cost rate is in the 9.00 percent-9.75 percent range. Given these results, and PSE's risk level, the Commission should set the return at the midpoint of this range with a ROE of 9.375 percent. Effectively, I am testifying that PSE has not adequately demonstrated that increasing the ROE from the current authorized (9.40 percent) is justified or reasonable. This is fair given that I have employed a capital structure that has more common equity and less financial risk than the average of the three proxy groups as well as PSE's parent, Puget

Energy. My overall cost of capital is 6.99 percent. This recommendation is summarized in Table 2 and Exhibit JRW-3.

Table 2
Public Counsel's Rate of Return Recommendation

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Short-Term Debt	1.55%	4.575%	0.07%
Long-Term Debt	49.45%	4.698%	2.32%
Common Equity	49.00%	9.375%	4.59%
Total	100.00%		6.99%

Q. How do your analyses and recommendations consider equity as that term is used in the multiyear rate plan statute in RCW 80.28.425(1)?

A. As discussed above, cost of capital in the regulated world is driven by the *Hope* and *Bluefield* decisions. The Court prescribed that the fair rate of return on equity should be comparable to similar-risk returns, sufficient to assure financial integrity, adequate to maintain credit quality and to attract capital. As such, *Hope* and *Bluefield* provide guidelines as to equity for the utility and its investors. In my testimony, I provide an opinion as to the market-based cost of capital. The Company has also provided its opinion as to the market-based cost of capital, which is higher than mine and would require customers to pay higher rates. Nonetheless, I provide empirical evidence that my lower rate of return meets *Hope* and *Bluefield* standards and benefits customers with lower rates.

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 PSE.

1. PSE'S Assessment of Capital Market Conditions: Bulkley's analyses, ROE results, and recommendations suggest that higher interest rates and capital costs are on the horizon. However, despite the increase in inflation and interest rates over the past two years, several factors suggest the equity cost rate for utilities has not risen significantly. To support this contention, I show that: (1) despite the higher inflation of the past two years, long-term inflation expectations are 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; and (3) while authorized ROEs for utilities hit all-time lows in 2020 and 2021, these ROEs did not decline nearly as much as interest rates during those years. Hence, now that interest rates have increased, authorized ROEs have not increased at the same magnitude.

2. PSE Proposal for Capital Structure: The Company proposes a capital structure with a common equity ratio that increases to 50.0 and then 51.0 percent over the MYRP. I propose a capital structure for the three years of the MYRP with a common equity ratio of 49.0 percent. This common equity ratio is: (1) consistent with the Company's historic capitalization, which PSE has used to finance its operations and maintained its credit ratings; (2) consistent with the Commission past policies on utility capitalizations; and (3) more reflective of the capital structures of proxy

groups of electric, combination electric and gas, and gas distribution companies.

3. <u>PSE's Investment Risk is Similar to Other Electric Utility Companies</u>: PSE's Standard & Poor (S&P) and Moody's issuer credit ratings of BBB and Baa1. The average S&P and Moody's ratings for the proxy groups are BBB+ and Baa2. Hence, PSE's credit ratings are similar to the averages of the proxy groups, which indicates that its investment risk is similar to other electric and gas utilities.

4. <u>Overstated Results in PSE's 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 I use in my analysis I reviewed 13 growth rate measures, including historical and projected growth rate measures, and have evaluated growth in dividends, book value, and earnings per share.

5. <u>Inappropriate Adjustments and Assumptions in PSE's CAPM Approach</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 makes inappropriate adjustments to the risk-free rate and the market risk premium; and (2) more significantly, computing a market risk premium of 7.78 percent. This 7.78 percent market risk premium is much larger (1) than historic stock and bond return data indicate, and (2) than published studies and surveys of the market risk premium find. In addition, I demonstrate that Bulkley bases the 7.78 percent market risk premium on unrealistic assumptions of future economic and earnings growth and stock returns. To compute that market risk premium of 7.78 percent, Bulkley applies the DCF to the S&P 500 and to employed analysts' three-to-five-year EPS growth-rate projections as a growth rate to compute an expected market return and market risk premium. As I demonstrate later in my testimony, the EPS growth-rate projection (10.78 percent) used for the S&P 500 and the resulting expected market return (12.56 percent) and market risk premium (7.78 percent) both 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 5.00 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. As I note, the 5.00 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. <u>Inflated Results from PSE's Alternative Risk Premium Model</u>:

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 vertically-integrated 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 its primary problems are:

a) This particular risk premium approach is a gauge of *commission* behavior rather than *investor* behavior;

b) 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;

c) The risk premium in this approach is inflated as a measure of investors' required risk premium, since electric utilities have been selling at market-to-book ratios in excess of 1.0; and

d) The ROE is dependent on the authorized ROEs from state utility commissions, and the Werner and Jarvis study (2022), which as 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. **Limitations in PSE's Expected Earnings Approach:** Bulkley also uses the Expected Earnings approach to estimate an equity cost rate for the Company, computing the expected ROE as forecasted by *Value Line* for the Company's proxy group of electric and gas utilities. As I discuss in my critique of the Bulkley presentation, the so-called "Expected Earnings" approach does not measure the market cost of equity capital, is independent of most cost of capital indicators, ignores the research on the upward bias in *Value Line's* earnings projections, and has several other empirical issues. Therefore, the Commission should ignore Bulkley's "Expected Earnings" approach in determining the appropriate ROE for PSE.

8. **Other Issues:** Bulkley also considers four other factors to arrive at an ROE recommendation: (1) the MYRP; (2) wildfire risks; (3) capital investment; and (4) regulatory risk including operating and fuel costs, authorized ROEs, and regulatory rankings. As I discuss later in my testimony, these four factors are considerations evaluated by credit rating agencies in rating process. As noted above, PSE's S&P and Moody's issuer credit ratings of BBB+ and Baa1 are slightly better than the average of the

proxy groups. Furthermore, PSE has had several legislative successes in regulation in Washington in recent years which will have credit positive implications for PSE.

III. CAPITAL MARKET CONDITIONS AND AUTHORIZED ROES

A. Assessment of Market Conditions

Q. Please provide a summary of the utility capital market indicators in Exhibit JRW-4.

A. Page 1 of Exhibit JRW-4 shows the yields on A rated public utility bonds. These yields have 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 during 2022 and 2023, and now are in the 5.75 percent range.

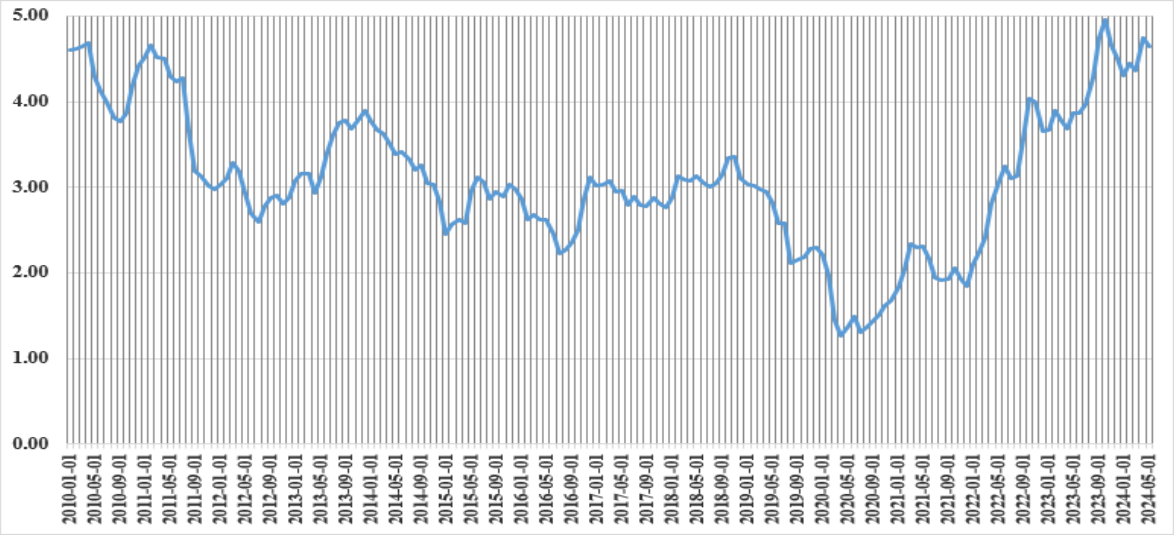
Page 2 of Exhibit JRW-4 shows the average dividend yield for electric utilities. These yields declined over the past decade, bottoming out at 3.1 percent in 2019. They have increased since that time, and the average was 3.9 percent as of 2023.

Page 3 of Exhibit JRW-4 provides the average earned ROEs and market-to-book ratios for electric utilities. The average earned ROE has been in the 9.0 percent to 10.0 percent range over the past five years. The average market-to-book ratio increased over the last 13 years, peaked at 2.0X in 2019, declined to the 1.75X range in 2020-2022, and declined to 1.50X in 2023.

Q. Please review recent changes in 30-year Treasury yields.

A. Figure 1, below, shows 30-year Treasury yields over the past 15 years (2010 to 2024). These yields were in the 3.0 percent range at the end of 2018. They declined to the 2.25 percent range in 2019 due primarily to slow economic growth and low inflation. In 2020, with the advent of the COVID-19 pandemic in February of that year, 30-year Treasury yields declined to record low levels, dropping about 100 basis points to settle in the 1.25 percent range. Yields began to recover in the Summer of 2020 and increased to the 2.00 percent to 2.50 percent range in 2021. They increased significantly in 2022 and 2023 with the improving economy and higher inflation. In 2023, these yields increased from the 3.50 percent range and peaked at about 5.00 percent in the fourth quarter. In 2024, these yields have declined and currently are in the 4.25 percent range.

Figure 1
30-Year Treasure Yields[5]

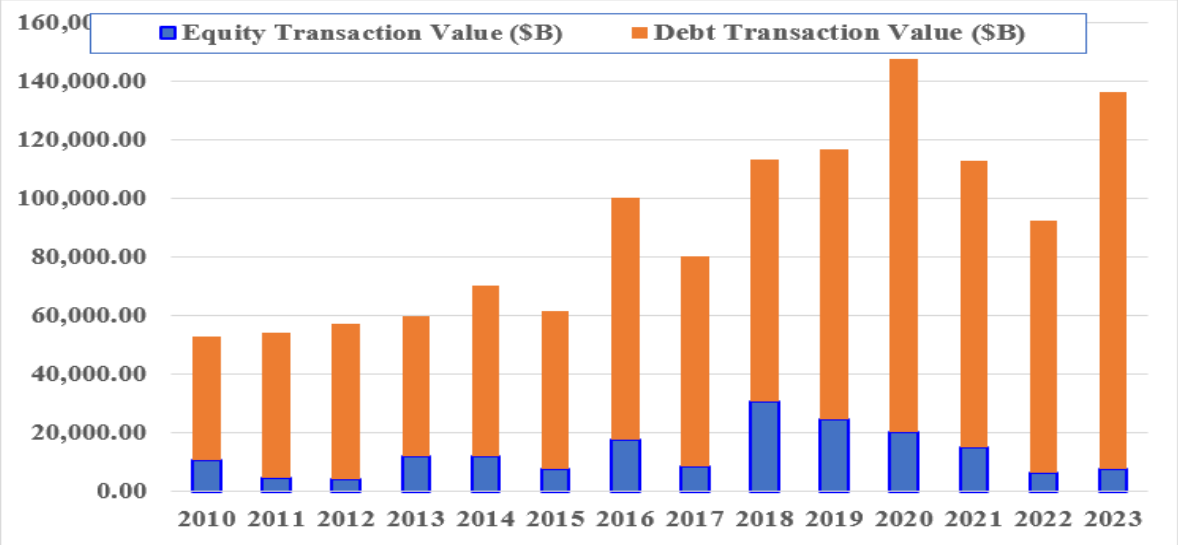


[5] Board of Governors of the Federal Reserve System (US), *Market Yield on U.S. Treasury Securities at 30-Year Constant Maturity, Quoted on an Investment Basis [DGS30]*, (Fed. Res. Bank of St. Louis, Aug. 6 2024) https://fred.stlouisfed.org/series/DGS30.

Q. Did utilities take advantage of the record low bond yields in 2020 and 2021 to raise capital?

A. Yes. Figure 2 shows the annual amounts of debt and equity capital raised by investor-owned 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 more than $100 billion in combined debt and equity capital.[6]

Figure 2
Debt and Equity Capital Raised by Public Utilities 2010-2023



Data Source: S&P Global Market Intelligence, S&P Cap IQ, 2024.

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

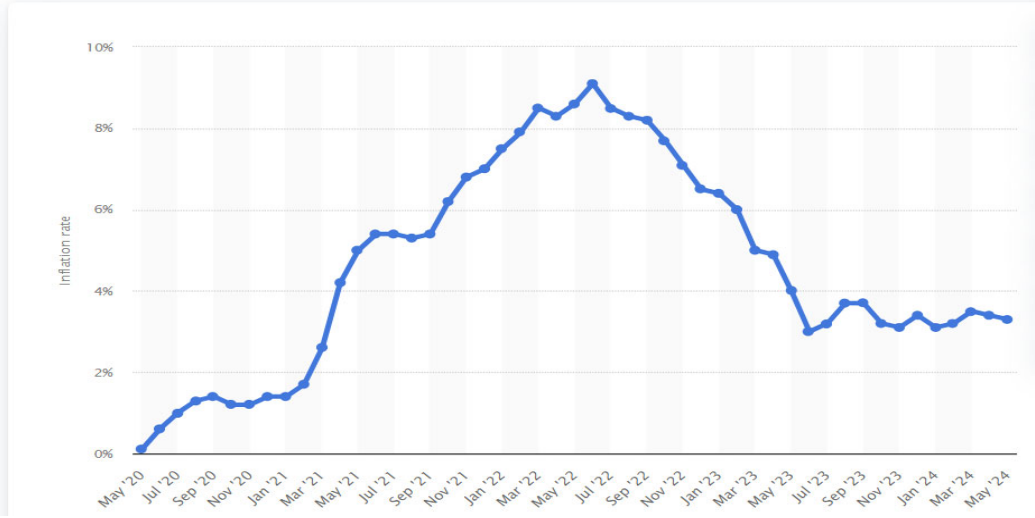
A. Several factors led to higher interest rates since 2022. Coming out of the pandemic, real GDP growth increased 5.95 percent in 2021, 2.06 percent in 2022, and 3.25 percent in 2023, compared to a decline of -3.4 percent in 2020. This

[6] Data Source: S&P Global Market Intelligence, S&P Cap IQ, 2024.

recovery led to greater business activity, higher levels of business and consumer spending, and large increases in housing prices. Unemployment was 6.7 percent in 2020 and steadily declined to 3.5 percent in 2024. 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 was as high as 9.20 percent in 2022. Year-over-year inflation has declined since that time and was at 3.0 percent as of June 2024. The high inflation reported in the past two years primarily reflects three factors: (1) the recovering and growing U.S. economy; (2) the production shutdowns during the pandemic, which led to supply chain shortages as the global economy recovered; and (3) the war in Ukraine, which caused higher energy and gasoline prices worldwide.

Figure 3
Year-Over-Year Inflation Rates 2020-2024[7]

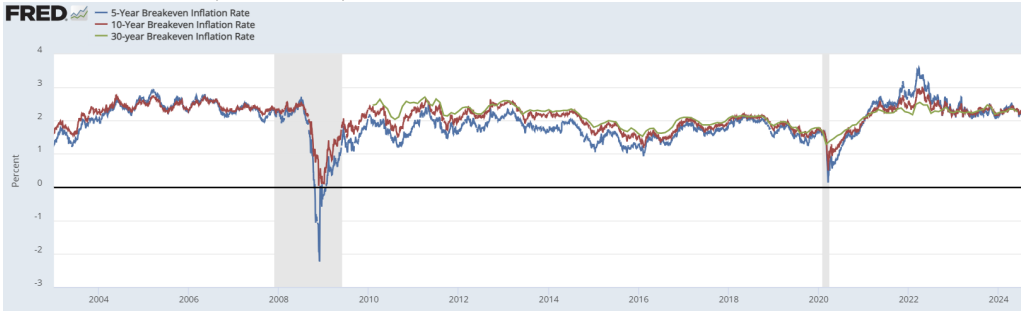


[7] Statista, *Monthly 12-Month Inflation Rate in the United States from May 2020 to May 2024* (July 5, 2024). https://www.statista.com/statistics/273418/unadjusted-monthly-inflation-rate-in-the-us/.

In response to the higher inflation, in 2022 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; and 50 basis points in December. For 2023, the discount rate increased by 25 basis points in February, March, May, and July. Since the last rate increase, the Federal Reserve has held the discount rate steady while monitoring economic activity, with the expectation that once inflation falls to the target 2.0 percent range, the Federal Reserve will begin cutting the discount rate and, thus, interest rates overall.

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, below, shows the expected inflation rate over the next five, 10, and 30 years. One can see that the expected inflation rate has declined since 2022 and is now at an expected inflation rate of 2.25 percent over the next five years. The expected inflation rates over the next 10 and 30 years are also in the 2.25 percent range. 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[8]

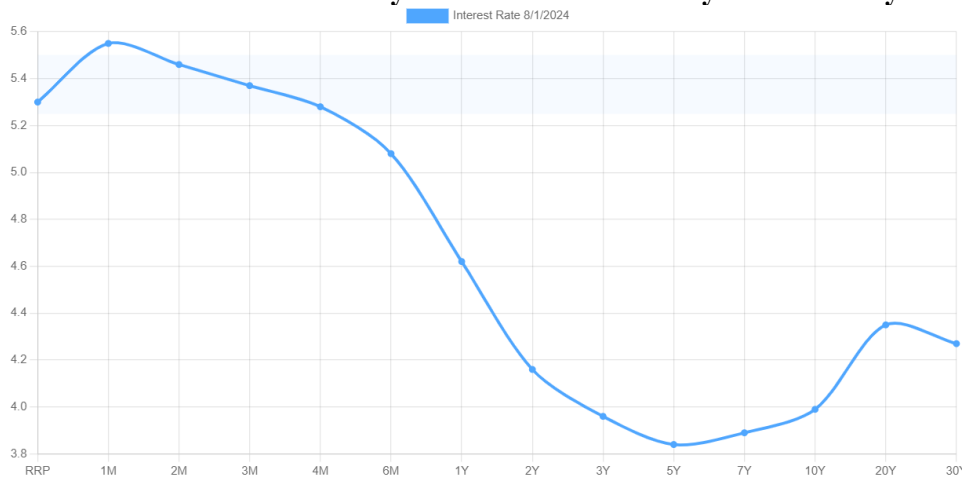


[8] FRED Economic Data, https://fred.stlouisfed.org/.

Q. Do you believe that interest rates will increase in 2024?

A. No. As discussed above, the current inflationary environment pushed up interest rates over the past two years. Also, as noted above, the Federal Reserve responded with a series of discount rate increases, intended to slow the economy and cool down inflation, which would lower interest rates. Below, 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 them to decline.

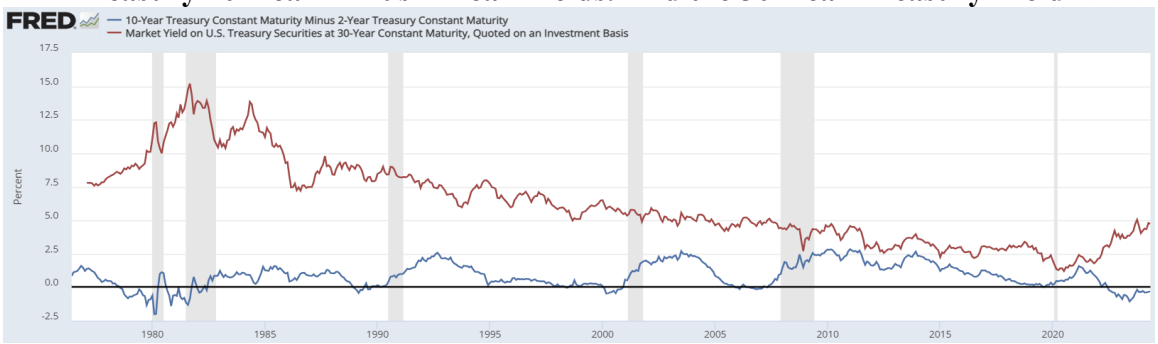
Figure 5
The Yield Curve: Yield-to-Maturity and Time-to-Maturity for Treasury Securities[9]



[9] Winston Kotzan, *U.S. Treasury Yield Curve as of August 1, 2024*, https://www.ustreasuryyieldcurve.com/b/XXOhgt.

The financial press focused on another aspect of an inverted yield curve. An inverted yield curve also is an indicator of a pending recession, which would put additional downward pressure on interest rates. An inverted yield curve is usually indicated when the two-year Treasury yield is above the 10-year Treasury yield. Figure 6, shown below, graphs two lines: (1) the 10-year Treasury yield minus the 2-year Treasury yield, depicted by the blue line; and (2) the 30-year Treasury yield, depicted by the red line. In Figure 6, the shaded areas are economic recessions, defined as two-straight quarters with negative GDP growth. Figure 6 illustrates that every time the yield curve inverted (2-year > 10-year) in the last 50 years, a recession followed. Similarly, one can see that 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[10]



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

[10] Federal Reserve Bank of St. Louis, 10-Year Treasury Constant Maturity Minus 2-Year Treasury Constant Maturity [T10Y2Y]. (Fed. Res. Bank of St. Louis, Aug. 6, 2024) https://fred.stlouisfed.org/series/T10Y2Y.

A. The U.S. economy, as measured by nominal GDP, declined twenty percent in the first half of 2020, rebounded significantly in 2021 and continued to rebound in 2022 and 2023. This rebound has seen big increases in consumer and business spending, lower unemployment, and higher housing prices. The rebounding economy put pressure on prices and was further exacerbated by the post-COVID supply chain issues and higher energy prices brought on by the Russia-Ukraine conflict. In recent months, market participants have been focusing on economic growth, the labor market and unemployment, and inflation in anticipation of a cut in the discount rate by the Federal Reserve. Such a discount rate cut would signal that the federal government believes its target inflation rate of 2.0 percent is within range.

Utilities took advantage of the low yields in 2020 and 2021 to raise record amounts of capital, but the big economic issue has been reported inflation and interest rates. However, while year-over-year inflation remained above the 2.0 percent target, the yields on TIPS suggest that longer-term inflationary expectations are still about 2.25 percent. In addition, as I noted above, 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 trends in authorized ROEs for electric and gas companies.

A. In 2020 and 2021, authorized ROEs for utilities hit an all-time low as the low interest rate and capital cost environment put downward pressure on authorized

ROEs.[11] Figure 7 reflects the authorized ROEs for electric utility and gas distribution companies from 2000-2024. The authorized ROEs have trended downward with interest rates and capital costs in the past 15 years. The average authorized ROEs fell below 10 percent for electric utilities in 2012. Table 3 shows the average annual authorized ROEs for electric utility and gas distribution from 2010 to the first quarter of 2024.

Figure 7
Authorized ROEs for Electric Utilities and Gas Distribution Companies 2000-2024[12]

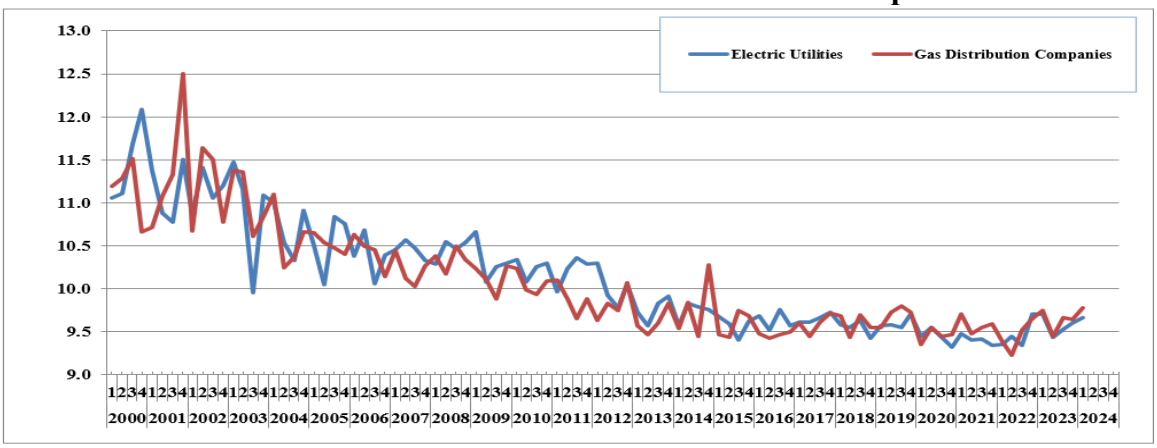


Table 3
Average Annual Authorized ROEs for Electric Utilities and Gas Distribution Companies 2010-2024[13]

Year	Electric	Gas	Year	Electric	Gas
2010	10.37	10.15	2017	9.74	9.72
2011	10.29	9.92	2018	9.65	9.59
2012	10.17	9.94	2019	9.66	9.72
2013	10.03	9.68	2020	9	9.47

[11] The data and numbers discussed in this section come from S&P Global Market Intelligence, RRA *Regulatory Focus*, 2024.

[12] Data Source: S&P Global Market Intelligence, RRA *Regulatory Focus*, 2024.
[13] *Id*.

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**	**9.60**	**9.64**
			Q1-2024	**9.66**	**9.78**

Q. Did the higher interest rates in 2022 and 2023 mean authorized ROEs 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. Table 4, below, shows the average annual 30-year Treasury yields and authorized ROEs for electric utility companies. A key observation from Table 4 is that authorized ROEs for electric utility companies, despite hitting record lows in 2020-2021, 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, or a decrease of 104 basis points. However, the authorized ROE for electric utility companies 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 for electric utility companies increased by 0.16 percent to 9.54 percent. Likewise, the average daily 30-year Treasury yield increased by 92 basis points to 4.03 percent in 2023, while

authorized ROEs for electric utility companies only increased by 0.06 percent to 9.60 percent.

The bottom line is that despite hitting all-time lows during the pandemic years of 2020 and 2021, authorized ROEs never declined as much as interest rates. Hence, as interest rates have increased with the expanding economy, authorized ROEs have not increased as much as interest rates.

Table 4
Average Annual 30-Year Treasury Yields and Authorized ROEs for Electric Utility Companies 2018-2023[14]

	2018-19 Average	2020-21 Average	2020-21 Avg. Minus 2018-19 Avg.	2022 Average	2022 Avg. Minus 2021 Avg.	2023 Average	2023 Avg. Minus 2022 Avg.
30-Year Treasury Yield	2.85%	1.81%	-1.04%	3.11%	1.05%	4.03%	0.92%
Average Electric ROE	9.63%	9.41%	-0.22%	9.54%	0.16%	9.60%	0.06%

Q. With respect to this discussion, please discuss the *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.[15] The article also highlighted 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 rate of return on equity to a number of capital cost benchmarks

[14] Board of Governors of the Federal Reserve System (US), *Market Yield on U.S. Treasury Securities at 30-Year Constant Maturity, Quoted on an Investment Basis [DGS30]*, retrieved from FRED (July 30, 2024). https://fred.stlouisfed.org/series/DGS30.
[15] Jinjoo Lee, *Utilities Have a High-Wire Act Ahead*, Wall St. J., CI (Oct. 9, 2022).

(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?[16]

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;
4. An extra 1.0 percent of allowed return on equity causes a utility's capital rate base to expand by an extra 5 percent on average, which 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;[17]

[16] Karl Dunkle Werner & Stephen Jarvis, *Rate of Return Regulation Revisited, Working Papers*, Energy Inst., U.C. at Berkeley (2022).
[17] Glossary: Averch-Johnson Effect (AJ Effect), *Body of Knowledge on Infrastructure Regulation*, (July 19, 2024), https://regulationbodyofknowledge.org/glossary/a/averch-johnson-effect-aj-effect/.

5. Both the return on equity requested by utilities and the return granted by regulators respond more quickly to rises in market measures of capital cost than to declines and 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 billion to $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).[18]

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, the Commission should not be concerned that my recommended ROE is below other authorized ROEs.

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

A. Table 5 shows the authorized ROEs in Washington over the past decade. Two things stand out: (1) Most notably, Washington ROEs have been consistently in the

[18] David C. Rode & Paul S. Fischbeck, *Regulated Equity Returns: A Puzzle*, Energy Policy (Oct. 2019).

9.40 percent-9.50 percent range since 2014; and (2) Washington ROEs have reflected national averages for electric utilities and gas distribution companies.

Table 5
Washington Authorized ROEs 2010-2024[19]

Company	Parent	Docket	Service Type	Date	Decision Type	Revenue Increase	ROE (%)	CE Ratio
Puget Sound Energy		UE-090704	Electric	4/2/2010	Fully Litigat	74.1	10.10	46.00
Puget Sound Energy		UG-090705	Natural Gas	4/2/2010	Fully Litigat	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		UG 101644	Natural Gas	3/15/2011	Settled	19.0	NA	NA
PacifiCorp	BRK.A	UE-100749	Electric	3/25/2011	Fully Litigat	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		UE-111048	Electric	5/7/2012	Fully Litigat	63.3	9.80	48.00
Puget Sound Energy		UG-111049	Natural Gas	5/7/2012	Fully Litigat	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		UE-130137	Electric	6/25/2013	Settled	52.3	9.80	48.00
Puget Sound Energy		UG-130138	Natural Gas	6/25/2013	Settled	9.1	9.80	48.00
PacifiCorp	BRK.A	UE-130043	Electric	12/4/2013	Fully Litigat	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 Litigat	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	MDU	UG-152286	Natural Gas	7/7/2016	Settled	4.0	NA	NA
PacifiCorp	BRK.A	UE-152253	Electric	9/1/2016	Fully Litigat	13.7	9.50	49.10
Avista Corp.	AVA	UE-160228	Electric	12/15/2016	Fully Litigat	0.0	NA	NA
Avista Corp.	AVA	UG-160229	Natural Gas	12/15/2016	Fully Litigat	0.0	NA	NA
Puget Sound Energy		UE-170033	Electric	12/5/2017	Settled	106.4	9.50	48.50
Puget Sound Energy		UG-170034	Natural Gas	12/5/2017	Settled	16.6	9.50	48.50
Avista Corp.	AVA	UE-170485	Electric	4/26/2018	Fully Litigat	10.8	9.50	48.50
Avista Corp.	AVA	UG-170486	Natural Gas	4/26/2018	Fully Litigat	(2.1)	9.50	48.50
Cascade Natural Gas	MDU	UG-170929	Natural Gas	7/20/2018	Settled	(2.9)	9.40	49.00
Puget Sound Energy		UE-180899	Electric	2/21/2019	Settled	0.0	NA	NA
Puget Sound Energy		UG-180900	Natural Gas	2/21/2019	Settled	21.5	NA	NA
Northwest Natural	NWN	UG-181053	Natural Gas	10/21/2019	Settled	5.1	9.40	49.00
Cascade Natural Gas	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		UE-190529	Electric	7/8/2020	Fully Litigat	59.6	9.40	48.50
Puget Sound Energy		UG-190530	Natural Gas	7/8/2020	Fully Litigat	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	MDU	UG-200568	Natural Gas	5/18/2021	Fully Litigat	(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	NWN	UG-200994	Natural Gas	10/21/2021	Settled	8.0	NA	NA
Cascade Natural Gas	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		UE-220066	Electric	12/22/2022	Settled	223.0	9.40	49.00
Puget Sound Energy		UG-220067	Natural Gas	12/22/2022	Settled	70.6	9.40	49.00
PacifiCorp	BRK.A	UE-230172	Electric	3/19/2024	Settled	33.8	NA	NA

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

A. Yes, I do. As I noted previously, according to the *Hope* and *Bluefield* decisions, returns on capital should be comparable to returns investors expect to earn on other investments of similar risk, sufficient to assure confidence in the company's financial integrity, and adequate to maintain and support the company's credit and

[19] Data Sources: S&P Global Market Intelligence, RRA *Regulatory Focus*, 2024.

to attract capital.[20] As page 3 of Exhibit JRW-4 shows, in recent years, electric utilities and gas distribution companies have 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, 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 not declined in line with capital costs and; therefore, past authorized ROEs have overstated the actual cost of equity capital. Therefore, I believe that my ROE recommendation meets the criteria *Hope* and *Bluefield* established.

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 investor-owned electric utility companies (Electric Proxy Group). I also employed the group developed by Bulkley (Bulkley Proxy Group), as well as a group of gas distribution companies (Gas Proxy Group).

[20] *Hope*, 320 U.S. 591; *Bluefield*, 262 U.S. 679.

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. Exhibit JRW-5 lists summary financial statistics for the proxy group, showing mean operating revenues and net plant among members of the Electric Proxy Group of $10.78 billion and $41.55 billion respectively. The group on average receives 85 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 40.9 percent, and has an earned return on common equity of 9.36 percent.

Q. Please describe the Bulkley proxy group.

A. Bulkley's group is smaller (20 utilities) and includes combination electric and gas utility companies. Panel B of page one of Exhibit JRW-5 provides summary financial statistics for the Bulkley proxy group, showing mean operating revenues and net plant of $8.49 billion and $34.86 billion respectively. The group on average receives 79 percent of its revenues from regulated electric operations and 19 percent from regulated gas operations, has a BBB+ bond rating from S&P's and a Baa2 rating from Moody's, has an average common equity ratio of 42.3 percent, and has an earned return on common equity of 9.63 percent.

Q. Please describe your proxy group of gas distribution companies.

A. My Gas Proxy Group consists of eight natural gas distribution companies: Atmos Energy, Chesapeake Utilities, New Jersey Resources, NiSource, Northwest Natural Gas Company, ONE Gas, Southwest Gas, and Spire. Panel C of page one of Exhibit JRW-5 lists summary financial statistics for the Gas Proxy Group, showing median operating revenues and net plant of $2.91 billion and $9.39 billion respectively. The group on average receives 68 percent of revenues from regulated gas operations, has an A- average issuer credit rating from S&P and a Baa1 issuer credit rating from Moody's, has an average common equity ratio of 43.2 percent, and has a median earned return on common equity of 8.09 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 company's investment risk. PSE's issuer credit rating is BBB according to S&P and Baa1 according to Moody's. As I show in Table 6, PSE's Moody's credit rating (Baa1) is better than the Electric (Baa2) and Bulkley (Baa2) groups, and equal to the Gas Proxy Groups (Baa1). PSE's S&P issuer credit rating is one notch below that of the Electric, Bulkley, and Gas Proxy Groups (BBB vs. BBB+). However, S&P and Moody's highlight how the debt of PSE's parent company Puget Energy constrains its credit ratings: Puget Energy's S&P and Moody's credit ratings are BBB- and Baa3.

Table 6
S&P and Moody's Credit Ratings

	S&P Issuer Credit	Moody's Long-Term Credit Rating
PSE	**BBB**	**Baa1**
Puget Energy	**BBB-**	**Baa3**
Electric Proxy Group	**BBB+**	**Baa2**
Bulkley Proxy Group	**BBB+**	**Baa2**
Gas Proxy Group	**A-**	**A3**

Q. What do you conclude about the riskiness of PSE relative to the proxy groups?

A. I believe the investment risk of PSE is in line with the proxy groups.

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 three proxy groups: Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price Stability. These risk measures indicate the three proxy groups are similar in risk. The comparisons of the risk measures include Beta

(0.93 vs. 0.93 vs. 0.89), Financial Strength (A vs. A vs. A) Safety (2.0 vs. 2.1 vs. 1.9), Earnings Predictability (88 vs. 92 vs. 61), and Stock Price Stability (87 vs. 87 vs. 88). Overall, these measures suggest that the investment risk of the three groups (1) is very low and (2) is similar to each other.

V. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

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

A. Panel A of Exhibit JRW-6 provides PSE's proposed capital structure and debt cost rates. The Company proposes a capital structure and cost of capital that would adjust over the years one and two of the MYRP. The Company is requesting an increase in the common equity ratio to 50.0 percent in Year one and 51.0 percent in Year two. The Company also proposes increasing its common equity cost rate from its current approved ROE, 9.40 percent to 9.95 percent in Year one and to 10.5 percent in Year two.

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 three proxy groups. As of December 31, 2023, the average common equity ratios for the Electric, Bulkley, and Gas Proxy Groups were 40.9 percent, 42.3 percent, and 43.2 percent respectively. These ratios indicate that PSE's proposed capital structures, with common equity ratios of 50.0 percent to 51.0 percent, are well above the averages of the proxy groups. That means the proposed capital structure includes more common equity and less financial risk, but higher cost, than do the proxy groups.

Q. Please discuss your recommended capital structures and debt cost rates for PSE.

A. My proposed capital structure is provided in Panels B and C of Exhibit JRW-6. In Panel B, I average the capital structure ratios and debt cost rates for PSE for Years 1 and 2 of the Company's proposed MYRP. In Panel C, I then use these average ratios and cost rates with a common equity ratio of 49.0 percent, which is the Company's current authorized common equity ratio. This common equity ratio is: (1) consistent with the Company's historic capitalization, which PSE has used to finance its operations and maintained its credit ratings; (2) consistent with the Commission past policies on utility capitalizations; and (3) more reflective of the capital structures of proxy groups of electric, combination electric and gas, and gas distribution companies. I maintain the short-term and long-term debt capitalization ratios consistent with the Company's proposal, but with a 49.00 percent common equity ratio. I adopt PSE's proposed short- and long-term debt cost rates, but I average the rates proposed over the two-year plan period.

VI. THE COST OF COMMON EQUITY CAPITAL

A. Overview

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

A. In a competitive industry, the market for goods and services determines the return on a firm's common equity capital. Most public utilities are monopolies due to the capital requirements to construct utility infrastructure and provide utility services and the economic benefit to society from avoiding duplication of these services.

Because monopoly utilities lack competition and offer essential services, it is not appropriate to permit them 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.

Economists develop normative economic models of a company or firm using very restrictive assumptions, and these models provide insight into the relationship between a firm's performance or profitability, capital costs, and value. Under the economist's ideal model of perfect competition, where entry and exit would be costless, products are undifferentiated, and with increasing marginal costs of production, firms produce up to the point where price equals marginal cost. Over time, a long-run equilibrium develops where 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 gain advantage thanks 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, thereby earning accounting profits greater than those required to cover capital costs. When such profits are in excess of those required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

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

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of cash flow, while low ROE companies in high-growth markets, such as Texas Instruments, barely generate enough cash flow to finance growth. A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically profitable and its market value will exceed book value. If, however, the business earns an ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value. [21]

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

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

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

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

> For a given industry, more profitable firms–those able to generate higher returns per dollar of equity–should have higher market-to-book ratios. Conversely, firms which are unable to generate returns in excess of their cost of equity [(K)] should sell for less than book value.[22]

Figure 8
Relationship Between ROE and Cost of Equity

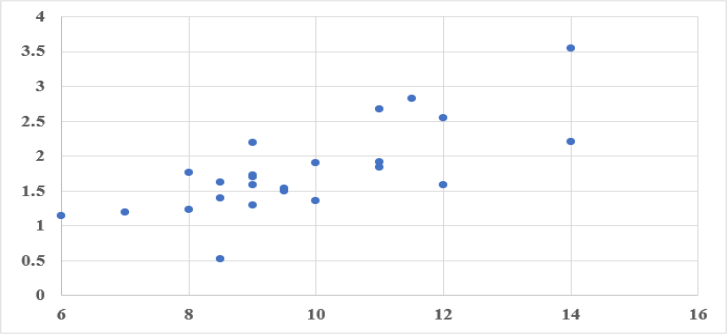
Profitability	*Value*
If ROE > K	*then Market/Book > 1*
If ROE = K	*then Market/Book =1*
If ROE < K	*then Market/Book< 1*

To assess the relationship by industry, as suggested above in Figure 8, 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.[23] This demonstrates the strong positive relationship

[22] Benjamin C. Esty, *Note on Value Drivers*, Harvard Business School Background Note 297-082 (Apr. 1997).
[23] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by

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[24]



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

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

another 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.

[24] Data: *Value Line Investment Survey*, 2024 R-Square – 0.61, n=31.

expenses. Financial risk results from incurring fixed obligations in the form of debt in financing its assets.

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

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

Table 7 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.[25] The average betas for electric, gas, and water utility companies are 0.89, 0.87, and 0.78, respectively.[26] 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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[25] 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.

[26] 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 7 7
Industry Average Betas* Value Line Investment Survey Betas**

Industry Average Betas*
Value Line Investment Survey Betas**
13-Jan-24

Rank	Industry	Beta	Rank	Industry	Beta	Rank	Industry	Beta
1	Hotel/Gaming	1.52	33	Bank	1.18	65	Railroad	1.07
2	Oilfield Svcs/Equip.	1.44	34	Heavy Truck & Equip	1.18	66	IT Services	1.05
3	Apparel	1.41	35	R.E.I.T.	1.18	67	Cable TV	1.05
4	Insurance (Life)	1.40	36	Pipeline MLPs	1.18	68	Thrift	1.04
5	Air Transport	1.39	37	Electrical Equipment	1.17	69	Information Services	1.03
6	Petroleum (Producing)	1.37	38	Med Supp Invasive	1.16	70	Retail Store	1.03
7	Petroleum (Integrated)	1.36	39	Computers/Peripherals	1.16	71	Packaging & Container	1.01
8	Office Equip/Supplies	1.36	40	Entertainment	1.16	72	Human Resources	1.00
9	Advertising	1.36	41	Computer Software	1.16	73	Investment Co.	0.99
10	Shoe	1.33	42	Chemical (Specialty)	1.15	74	Retail Building Supply	0.99
11	Metals & Mining (Div.)	1.33	43	Healthcare Information	1.15	75	Med Supp Non-Invasive	0.99
12	Public/Private Equity	1.33	44	Engineering & Const	1.15	76	Environmental	0.98
13	Homebuilding	1.30	45	Maritime	1.15	77	Educational Services	0.97
14	Building Materials	1.30	46	Automotive	1.15	78	Drug	0.94
15	Auto Parts	1.30	47	Wireless Networking	1.15	79	Telecom. Services	0.92
16	Metal Fabricating	1.28	48	Semiconductor	1.15	80	Electric Utility (West)	0.91
17	Recreation	1.28	49	Medical Services	1.14	81	Beverage	0.91
18	Steel	1.28	50	Diversified Co.	1.14	82	Trucking	0.90
19	Retail (Hardlines)	1.27	51	Chemical (Basic)	1.13	83	Electric Utility (East)	0.90
20	Natural Gas (Div.)	1.27	52	Machinery	1.13	84	Tobacco	0.89
21	Retail (Softlines)	1.26	53	E-Commerce	1.13	85	Electric Util. (Central)	0.88
22	Restaurant	1.25	54	Power	1.13	86	Natural Gas Utility	0.88
23	Furn/Home Furnishings	1.23	55	Electronics	1.12	87	Biotechnology	0.83
24	Retail Automotive	1.22	56	Toiletries/Cosmetics	1.11	88	Household Products	0.82
25	Semiconductor Equip	1.21	57	Industrial Services	1.10	89	Retail/Wholesale Food	0.82
26	Chemical (Diversified)	1.21	58	Publishing	1.09	90	Water Utility	0.82
27	Financial Svcs. (Div.)	1.20	59	Investment Co.(Foreign)	1.09	91	Food Processing	0.77
28	Internet	1.20	60	Entertainment Tech	1.08			
29	Aerospace/Defense	1.20	61	Reinsurance	1.07			
30	Oil/Gas Distribution	1.19	62	Insurance (Prop/Cas.)	1.07			
31	Paper/Forest Products	1.19	63	Telecom. Equipment	1.07			
32	Bank (Midwest)	1.18	64	Precision Instrument	1.07		Mean	1.13

* Industry averages for 92 industries using *Value Line*'s database of 1,700 companies - Updated 1-13-24.
** *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 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:

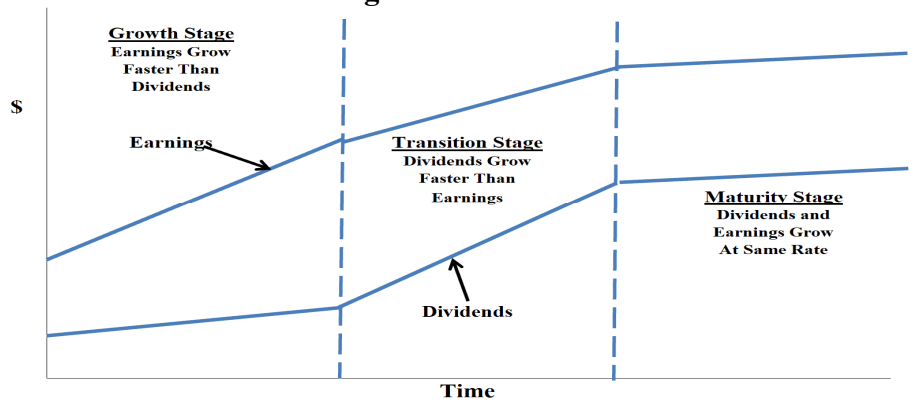
$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_n}{(1+k)^n}$$

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. Growth stage: Characterized by rapidly expanding sales, high profit margins, and an abnormally high growth rate 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. <u>Maturity (steady-state) stage</u>: 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 3-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 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 she 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 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 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 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 entail 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 calculated the dividend yields for the companies in the proxy group using the current annual dividend and the 30-day, 90-day, and 180-day average stock prices. I provide these dividend yields in Panel A of page two in Exhibit JRW-7. For the Electric Proxy, I will use the average of the mean and median dividend yields using the 30-,90-, and 180- day average stock prices, which is 4.05 percent. The dividend yields for the Bulkley Proxy Group in Panel B of page two of Exhibit JRW-7. For the Bulkley Proxy, the average of the mean and median dividend yields using the 30-, 90-, and 180- day average stock prices is also 4.05 percent. The average of the mean and median dividend yields for the Gas Proxy

Group, shown in Panel C, using the 30-, 90-, and 180- day average stock prices is 3.80 percent.

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. Professor Myron Gordon, associated with the development of the DCF model for popular use, suggested obtaining this 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.[27]

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 become 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 opposed to the coming year can differ widely. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

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

A. I adjust the dividend yield by one-half (1/2) of the expected growth to reflect growth over the coming year. This is the approach employed by the Federal

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

Energy Regulatory Commission (FERC).[28] I compute the DCF equity cost rate (*K*) 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. Debate exists as to the proper methodology to employ in estimating the DCF model's growth component, which represents investors' expectation of the long-term dividend growth rate. Presumably, to assess long-term potential investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book-value growth.

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

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

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

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 presumably are an important ingredient in forming expectations concerning future growth. However, one must be cautious using historical growth numbers as measures of investors' expectations. In some cases, 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 and overall economic fluctuations (i.e., business cycles). However, one must appraise the context for employing the growth rate. 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 reach the best estimate of the cost of common equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). To compute the internal growth rate, one multiplies the retention rate times the return on equity. 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. Several different investment information services collect and publish analysts' EPS forecasts for companies, 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 whom they solicit for forecasts or (2) the identity of the analysts who actually provide the EPS forecasts in the compilations the services publish.

I/B/E/S, Bloomberg, FactSet, S&P Cap IQ, and First Call are fee-based services. These 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 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 also are available on other websites, such as MSN.money (http://money.msn.com).

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

A. Several issues arise when attempting to use 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 growth

rate. Therefore, it is important to consider other indicators of growth, including prospective dividend growth, internal growth, and 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 no more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[29] 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 suggest using analysts' long-term earnings growth-rate forecasts only with caution as inputs for valuation and cost-of-capital purposes.

Finally, and most significantly, Wall Street securities analysts are well-known for creating long-term EPS growth-rate forecasts that are overly optimistic and upwardly biased. A number of academic studies demonstrated this.[30] Accordingly, using these growth rates as a DCF growth rate would provide an overstated equity cost rate. On this issue, a study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an

[29] 8 Michael Lacina, B. Brian Lee & Zhao Xu, *Advances in Business and Management Forecasting*, at 77-101 (Kenneth D. Lawrence, Ronald K. Klimberg eds., Emerald Grp. Publ'g Ltd., 2011).

[30] The studies that demonstrate analysts' long-term EPS forecasts are overly optimistic and upwardly biased include: R.D. Harris, The *Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts*, J. of Bus. Fin. & Acct. 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, *The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings*, Contemporary Accounting Research (2000)*;* K. Chan, L., Karceski, J., & Lakonishok, J., *The Level and Persistence of Growth Rates*, J. of Fin. 643-684 (2003); 8 Michael Lacina, B. Brian Lee, and Zhao Xu, *Advances in Business and Management Forecasting* at 77-101 (Kenneth D. Lawrence, Ronald K. Klimberg eds., Emerald Grp. Publ'g Ltd., 2011); and Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity Analysts, Still Too Bullish*, McKinsey on Fin. 14-17 (Spring 2010).

upward bias of almost 3.0 percentage points in estimates of the cost of equity capital.[31]

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

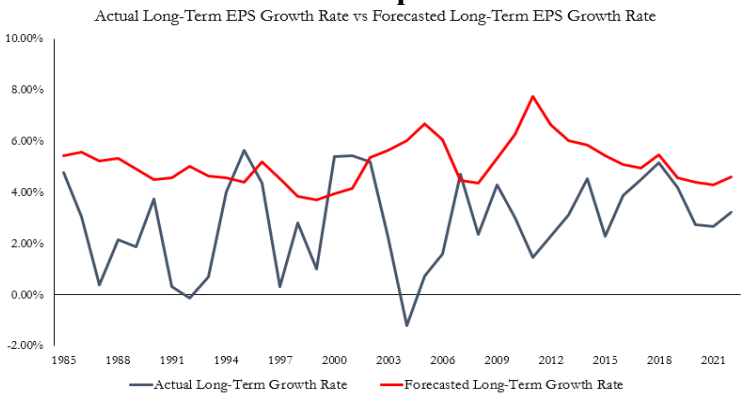
A. Yes. I have studied of the accuracy of analysts' EPS growth rates for utilities over the 1985-2023 time-period. I used the utilities *Value Line* lists in the East, West, and Central Electric Utilities sectors as well as natural gas distribution companies the Natural Gas Utility industry lists. I 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 I show in Figure 9, the mean forecasted EPS growth rate (depicted in the red line in Figure 9) is consistently greater than the achieved actual EPS growth rate over each time period, with the exceptions being brief periods in the 1994-96 and 2000-2002, 2006-07, 2014-15, and 2018-19 time frames. 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 and natural gas companies are overly optimistic and upwardly biased.

As shown in Figure 11 below, the mean forecasted EPS growth rate, as shown by the red line in Figure 11, is consistently greater than the achieved actual EPS growth rate over the time period, with the exception of short periods in 1996, 2001, 2007, 2013, and 2019. Over the entire period, the mean forecasted EPS

[31] 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).

growth rate is over 200 basis points above the actual EPS growth rate. This shows the projected EPS growth rates for electric utilities are overly optimistic and upwardly based.

Figure 11
Mean Forecasted vs. Actual Long-Term EPS Growth Rates Electric Utilities and Gas Distribution Companies 1985-2023[32]



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

A. Yes. A 2008 study by Szakmary, Conover, and Lancaster (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 significantly higher than the EPS growth rates these companies subsequently achieved.[33]

SCL studied predicted versus projected stock returns, sales, profit margins, and earnings per share that *Value Line* made from1969 to 2001. *Value Line* projects variables from a three-year base period (e.g., 2019-2021) to a future

[32] Data Source: S&P Global Market Intelligence, Capital IQ, I/B/E/S, 2024.
[33] Andrew C. Szakmary, C. Mitchell Conover, & Carol Lancaster, *An Examination of Value Line's Long-Term Projections*, J. of Banking & Fin. 820-833 (2008).

three-year projected period (e.g., 2025-27). SCL used the 65 stocks in the Dow Jones Indexes (30 Industrials, 20 Transports and 15 Utilities). SCL found the projected annual stock returns for the Dow Jones stocks were "incredibly overoptimistic" and of no predictive value. The mean annual stock return of 20 percent for the Dow Jones stocks in *Value Line*'s forecasts was nearly double the realized annual stock return. The authors also termed *Value Line*'s forecasts of earnings per share and profit margins "strikingly overoptimistic." *Value Line*'s forecasts of annual sales were higher than achieved levels, though not statistically significantly. SCL attributed *Value Line*'s overly optimistic projected annual stock returns to its upwardly biased forecasts of earnings per share and profit margins.

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. Since this bias is well known, stock prices and dividend yields reflect this bias. However, in the DCF model, the growth rate needs adjustment downward from the projected EPS growth rate to reflect the upward bias.

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

A. Page three of Exhibit JRW-7 provides the five and 10-year historical growth rates for EPS, DPS, and BVPS for the companies in the three proxy groups, as published in the Value Line Investment Survey. The median historical growth measures for EPS, DPS, and BVPS for the Electric Proxy Group, as provided in Panel A, range

from 3.5 percent to 5.0 percent with an average of the medians of 4.3 percent. For the Bulkley Proxy Group, as Panel B of page three of Exhibit JRW-7 shows the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 3.8 percent to 5.5 percent, with an average of the medians of 4.5 percent. The median historical growth measures for EPS, DPS, and BVPS for the Gas Proxy Group, as I provide in Panel C, range from 5.0 percent to 6.8 percent, with an average of the medians of 6.0 percent.

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

A. Page four of Exhibit JRW-7 shows *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the proxy groups. As I state above, due to the presence of outliers the analysis uses the medians. For the Electric Proxy Group, Panel A of page four of Exhibit JRW-7 shows the medians range from 4.0 percent to 6.0 percent, with an average of the medians of 5.0 percent. The range of the medians for the Bulkley Proxy Group, shown in Panel B of page four of Exhibit JRW-9, is from 4.0 percent to 6.0 percent, with an average of the medians of 4.8 percent. The range of the medians for the Gas Proxy Group, shown in Panel C of page four of Exhibit JRW-10, is from 4.0 percent to 6.5 percent, with an average of the medians of 5.3 percent.[34]

[34] I give less weight to the projected *Value Line* growth rates due to the unique methodology used to measure growth. *Value Line* projects from a three-year historic base period to a three-year future period. Value Line's projected growth rates for gas companies are somewhat higher than Yahoo Finance and Zacks growth rates due to abnormally low earnings for several companies in the three-year historic period. The issue for gas companies also pronounced for this group due to the small number of gas companies in the group.

Page four of Exhibit JRW-7 provides the prospective sustainable growth rates for the companies in the proxy groups, as *Value Line*'s average projected retention rate and return on shareholders' equity measure them. As I note above, sustainable growth significantly and primarily drives long-run earnings growth. For the Electric, Bulkley and Gas Proxy Groups, the median prospective sustainable growth rates are 4.1 percent, 4.1 percent, and 4.3 percent respectively.

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

A. Yahoo, Zacks, and S&P Cap IQ collect, summarize, and publish Wall Street analysts' long-term EPS growth rate forecasts for the companies in the proxy groups. I provide these forecasts for the companies in the proxy groups on page five 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 since not all 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. The mean/median of analysts' projected EPS growth rates for the Electric, Bulkley, and Gas Proxy Groups are 6.3 percent/6.4 percent, 6.2 percent/6.5 percent, and 6.0 percent/6.1 percent respectively.[35]

[35] 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.

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

A. Page six 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 5.0 percent, and *Value Line*'s projected sustainable growth rate is 4.1 percent. The projected EPS growth rates of Wall Street analysts for the Electric Proxy Group are 6.3 percent and 6.4 percent, with an average of 6.35 percent, as measured by the mean and median growth rates. The overall range for the projected growth-rate indicators (ignoring historical growth) is 4.1 percent to 6.35 percent, and the average of the three projected growth rates is 5.15 percent (4.1%, 5.0%, and 6.35%). Giving more 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 in the range of 5.15 percent to 6.35 percent. Given this range, I will use 5.75 percent, which is the midpoint of the range, for 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 4.5 percent. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.8 percent, and *Value Line*'s projected sustainable growth rate is 4.1 percent. The projected EPS growth rates of

Wall Street analysts are 6.2 percent and 6.5 percent, with an average of 6.35 percent, as measured by the mean and median growth rates, respectively. The overall range for the projected growth-rate indicators (ignoring historical growth) is 4.1 percent to 6.35 percent, and the average of the three projected growth rates is 5.1 percent (4.8 percent, 4.1 percent, and 6.35 percent). Again, giving primary weight to the projected EPS growth rate of Wall Street analysts and *Value Line*, I believe that the appropriate projected growth rate is the range of 5.1 percent to 6.35 percent. I will use the midpoint of this range, 5.70 percent, as my DCF growth rate for the Bulkley Proxy Group. As with the Electric Proxy Group, this growth rate figure is in the upper end of the range of historic and projected growth rates for the group.

For the Gas Proxy Group, the historical growth rate indicators suggest a growth rate of 6.0 percent. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 5.3 percent, and *Value Line*'s projected sustainable growth rate is 4.3 percent. The projected EPS growth rates of Wall Street analysts are 6.0 percent and 6.1 percent, with an average of 6.05 percent, as measured by the mean and median growth rates, respectively. The overall range for the projected growth-rate indicators (ignoring historical growth) is 4.3 percent to 6.05 percent, and the average of the three projected growth rates is 5.2 percent (4.3 percent, 5.3 percent, and 6.05 percent). Again, giving primary weight to the projected EPS growth rate of Wall Street analysts and *Value Line*, I believe that the appropriate projected growth rate is the range of 5.2 percent to 6.05 percent. I will use the midpoint of this range, 5.65 percent, as my DCF

growth rate for the Gas Proxy Group. As with the groups, this growth rate figure is in the upper end of the range of historic and projected growth rates for the group.

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

A. I summarize my DCF-derived equity cost rates for the groups on page one of Exhibit JRW-7 and in Table 8, below.

Table 8
DCF-derived Equity Cost Rate/ROE

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	**4.05%**	**1.02875**	**5.75%**	**9.90%**
Bulkley Proxy Group	**4.05%**	**1.02850**	**5.70%**	**9.85%**
Gas Proxy Group	**3.80%**	**1.02825**	**5.65%**	**9.55%**

The DCF result for the Electric Proxy Group is the 4.05 percent dividend yield, times the one-and-one-half growth adjustment of 1.02875, plus the DCF growth rate of 5.75 percent, which results in an equity cost rate of 9.90 percent. The result for the Bulkley Proxy Group is 9.85 percent, which includes a dividend yield of 4.05 percent, an adjustment factor of 1.02850, and a DCF growth rate of 5.70 percent. For the Gas Proxy Group, the DCF result Group is the 3.80 percent dividend yield, times the one-and-one-half growth adjustment of 1.02825, plus the DCF growth rate of 5.65 percent, which results in an equity cost rate of 9.55 percent.

C. Capital Asset Pricing Model

Q. Please discuss the Capital Asset Pricing Model (CAPM).

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

$$k = R_f + RP$$

The yield on long-term U.S. Treasury securities is normally used as R_f. Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock: firm-specific risk or unsystematic risk, and market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

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

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

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* (β) 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 (β), 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. β, 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 one shows the results, and the following pages contain the supporting data.

Q. Please discuss the risk-free interest rate.

A. The yield on long-term U.S. Treasury bonds is usually viewed as the risk-free rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn, is 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 two of Exhibit JRW-8, the yield on 30-year U.S. Treasury bonds has been in the 1.3 percent to 5.00 percent range over the 2010-2024 time period. Kroll, a division of the investment firm Duff & Phelps, recommends using

a normalized risk-free interest rate.[36] 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. However, it also noted these yields are currently distorted: "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-year maturities."[37] The financial press also highlighted the illiquidity and resulting yield distortion.[38] As shown in Figure 5, on page 21 above, the yield curve is currently inverted with a yield "hump" at the 20-year mark. In 2024, the 30-year Treasury yield has been in the 4.00 percent to 5.00 percent range. The current 30-year Treasury yield is about 4.25 percent. Given the recent range of yields, I am using 4.25 percent as the risk-free rate, or R_f, in my CAPM.

Q. Does the 4.25 percent risk-free interest rate take into consideration forecasts of higher interest rates?

A. No. The 4.25 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

[36] *Cost of Capital Resource Center*, Kroll (Jun. 5, 2024) [hereinafter "Kroll Cost of Capital Resource Center"], https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.
[37] *Id.*
[38] *See, e.g.,* Duguid & Smith, *The Market is Just Dead - Investors Steer Clear of 20-Year Treasuries*, Financial Times (Jul. 22, 2022).

discussed below, my market risk premium is based on the results of many studies and surveys that have been published over time.

Q. Please discuss betas in the CAPM.

A. Beta (β) 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.

As shown on page three of Exhibit JRW-8, the slope of the regression line is the stock's β. 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 β and greater-than-average market risk. A less steep line indicates a lower β 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 the time period over which β is measured and 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 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:[39]

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

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

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

[39] *Value Line*: Smart Research Smarter Investing, *Investment Education > Glossary > B*, https://www.valueline.com/investment-education/glossary/b, (last visited July 17, 2024).

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.[40] The Blume adjustment procedure is:

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

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 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?

[40] M. Blume, *On the Assessment of Risk*, J. of Fin. (Mar. 1971).

A. In the past, I used *Value Line* betas exclusively. However, given the discussion above, I am also using betas published by S&P Capital IQ. S&P Capital IQ computes betas over a five-year period using monthly returns and the S&P 500 as the market return. S&P Capital IQ does not use the Blume adjustment, but I included that adjustment in my analysis. As shown on page three of Exhibit JRW-8, I averaged the *Value Line* betas and my adjusted S&P Capital IQ for the proxy groups. The median betas for the Electric, Bulkley, and Gas Proxy Groups are 0.81, 0.80, and 0.81, respectively.

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 resulted in 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.[41]

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

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

A. Page four 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 are also called "puzzle research" after the famous study by Rajnish Mehra

and Edward Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[42]

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 published a CFO Survey on a quarterly basis for over 10-years.[43] 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*.[44] This survey of professional economists has been published for almost 50-years. Additionally, Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision making.[45]

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

A. Richard Derrig and Elisha Orr, Pablo Fernandez, and Zhiyi Song completed the most comprehensive reviews of the research on the market risk premium.[46] The

[42] Rajnish Mehra & Edward C. Prescott, *The Equity Premium: A Puzzle*, J. Monetary Econ. 145 (1985).
[42] *See,* RichmondFed, *The CFO Survey*, Duke Univ. https://www.richmondfed.org/cfosurvey, (last visited July 30, 2024)
[43] *Id.*
[44] *Survey of Professional Forecasters*, Federal Reserve Bank of Phila. (Feb. 10, 2023), https://www.philadelphiafed.org/-/media/frbp/assets/surveys-and-data/survey-of-professional-forecasters/2023/spfq123.pdf (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.)
[45] Pablo Fernandez, Teresa Garcia, & Pablo Acín, *Survey: Market Risk Premium and Risk-Free Rate Used for 80 Countries in 2023, IESE Business School Working Paper* (Apr. 4, 2023).
[46] *See* Richard Derrig & Elisha Orr, *Equity Risk Premium: Expectations Great and Small (Version 3.0)*,

Derrig and Orr 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. Meanwhile, Fernandez examined four alternative measures of the market risk premium–historical, expected, required, and implied. He also reviewed the major studies of the market risk premium and presented the summary market risk premium results. Finally, Song provided an annotated bibliography and highlighted the alternative approaches to estimating the market risk premium.

Page five of Exhibit JRW-8 provides a summary of the results of the market risk premium studies that I 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 4.56 percent.

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

A. The studies cited on page five 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. Further, some of

(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 Business School Working Paper* (2007); Zhiyi Song, *The Equity Risk Premium: An Annotated Bibliography*, CFA Inst.

these studies were published in the early 2000s at the market peak. It should be noted that many of these studies used data over long periods of time–as long as 50 years of data–and did not estimate 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 reconstructed page five of Exhibit JRW-8 on page six of Exhibit JRW-8; however, and I eliminated all studies dated before January 2, 2010. The median market risk premium estimate for this subset of studies is 5.03 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: (1) historic stock and bond returns; (2) *ex ante* or expected returns models; and (3) surveys. The studies on page six of Exhibit JRW-8 can be summarized in the following manner:

1. **Historic Stock and Bond Returns**: Historic stock and bond returns suggest a market risk premium in the 4.40 percent to 6.80 percent range, depending on whether one uses arithmetic or geometric mean returns.
2. **Ex Ante Models**: Market risk-premium studies that use expected or ex ante return models indicate a market risk premium in the range of 2.61 percent to 6.00 percent.
3. **Surveys**: Market risk premiums developed from surveys of analysts, companies, financial professionals, and academics are lower, with a range from 3.40 percent to 5.70 percent.

4. **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 and surveys.

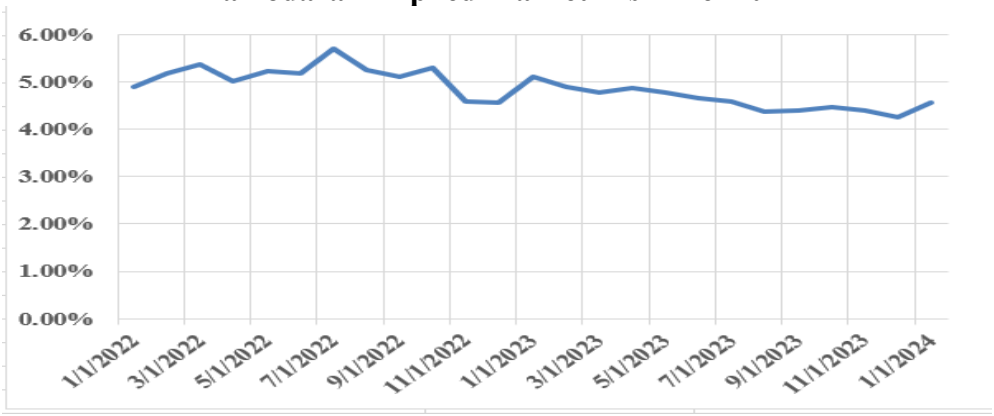
First, Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision-making.[47] His survey results are included on pages five and six of Exhibit JRW-8. The results of his 2024 survey of academics, financial analysts, and companies, which included 4,000 responses, indicated a mean market risk premium employed by U.S. analysts and companies of 5.5 percent.[48] His estimated market risk premium for the U.S. has been in the 5.0 percent to 5.7 percent range in recent years.

Second, 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.[49] His estimated market risk premium has been in the range of 4.0 percent to 6.0 percent since 2010. As shown in Figure 12 below, as of

[47] Pablo Fernandez, Teresa Garcia, & Pablo Acín, *Survey: Market Risk Premium and Risk-Free Rate Used for 80 Countries in 2024, IESE Business School Working Paper* (Mar. 2024).
[48] *Id.* at 3.
[49] Aswath Damodaran, *Damodaran Online*, N.Y. Univ., http://pages.stern.nyu.edu/~adamodar/ (last visited Apr. 25, 2024).

June 1, 2024, Damodaran's estimate of the equity risk premium was 4.12 percent.[50]

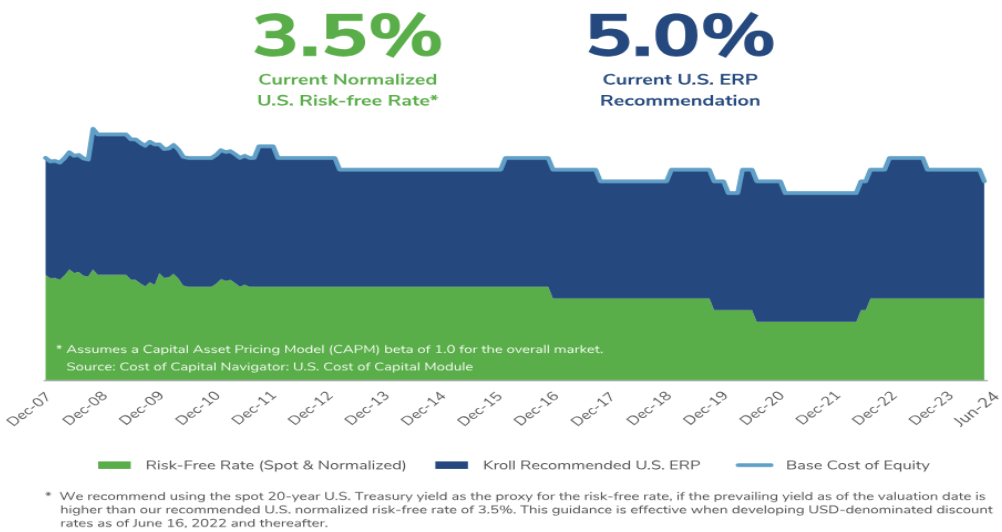
Figure 12
Damodaran Implied Market Risk Premium



Next, as explained previously, 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 to 2023 period are shown on page seven of Exhibit JRW-8 and are also depicted graphically in Figure 13, below. 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 range. Most recently, Kroll reduced its market risk premium from 6.00 percent to 5.50 percent on June 8, 2023, and to 5.00 percent on June 5, 2024.[51]

[50] *Id.* (On Aug. 12, 2023, Professor Damodaran appeared on CNBC to discuss the equity risk premium. *See* CNBC Television, *Equity Risk Premium is Core to Understanding Long-Term Market Returns, says NYU Aswath Damodaran*, YouTube https://www.youtube.com/watch?v=VPkQ7_3Sf1E (last visited Apr. 25, 2024)).
[51] *Cost of Capital Resource Center*, *supra* note 27.

Figure 13
Kroll Normalized Risk-Free Rate and Market Risk Premium Recommendations[52]



Fourth, Dr. David Kelly, the Chief Global Strategist at *J.P. Morgan Asset Management*, is one of the best-known market strategists on Wall Street. His annual publication and their monthly updates, the *JP Morgan Guide to the Markets*, is a must-read guide for stockbrokers and financial professionals.[53] In presenting their annual expectations for the markets, JP Morgan provides details about inputs and assumptions of expected market returns. In its 2023 update, JP Morgan details the 2023 expected long-term stock market return of 7.90 percent, bond yield of 3.50 percent, and resulting market risk premium of 4.40 percent.[54]

Finally, KPMG, the international accounting firm, regularly publishes an update to their market risk premium to be used in their valuation practice.

[52] *Kroll Recommended U.S. Equity Risk Premium and Corresponding Risk-Free Rates to be Used in Computing Cost of Capital: January 2008 – Present* (June 5, 2024). https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.
[53] JP Morgan, *2023 Long-Term Capital Market Assumptions*, 70 (2023).
[54] *Id.*

KPMG's market risk premium is shown in Figure 14 below, 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 6.00 percent on June 30, 2022, but lowered it to 5.75 percent on December 31, 2022, to 5.50 percent on March 31, 2023, to 5.25 percent on June 30, 2023, and to 5.00 percent on September 30, 2023.[55]

Figure 14
KPMG Market Risk Premium Recommendations 2020-2024[56]

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

A. The studies on page six of Exhibit JRW-8 and, more importantly, the more timely and relevant studies cited in the previous section, suggest that the appropriate market risk premium in the U.S. is in the 4.0 percent to 6.0 percent range. In the

[55] *KPMG Corporate Finance & Valuations NL Recommends A MRP of 5.0% as per March 31, 2024*, KMPG (Mar. 31, 2024). https://indialogue.io/clients/reports/public/5d9da61986db2894649a7ef2/5d9da 63386db2894649a7ef5.
[56] *Id.*

last year, as interest rates increased, estimates of the market risk premium declined. I give most weight to the market risk-premium estimates of Kroll, KPMG, JP Morgan, Damodaran, and the Fernandez and Duke-CFO surveys. Given the recent estimates, I believe a market risk premium of 5.00 percent is appropriate for use in my CAPM study.

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 one of Exhibit JRW-8 and in Table 9.

Table 9
CAPM-Derived Equity Cost Rate/ROE K = (Rf) + ß * [E(Rm) - (Rf)]

	Risk-Free Rate	Beta	Market Risk Premium	Equity Cost Rate
Electric Proxy Group	**4.25%**	**0.81**	**5.00%**	**8.30%**
Bulkley Proxy Group	**4.25%**	**0.80**	**5.00%**	**8.25%**
Gas Proxy Group	**4.25%**	**0.81**	**5.00%**	**8.30%**

For the Electric and Gas Proxy Groups, the risk-free rate of 4.25 percent plus the product of the beta of 0.81 times the equity risk premium of 5.00 percent results in an 8.30 percent equity cost rate. For the Bulkley Proxy Group, the risk-free rate of 4.25 percent plus the product of the beta of 0.80 times the equity risk premium of 5.00 percent results in an 8.25 percent equity cost rate.

D. Equity Cost Rate Summary

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

A. Table 10 provides my DCF and CAPM analyses from the proxy group.

Table 10
ROEs Derived from DCF and CAPM Models

	DCF	CAPM
Electric Proxy Group	**9.90%**	**8.30%**
Bulkley Proxy Group	**9.85%**	**8.25%**

Gas Proxy Group	9.55%	8.30%

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

A. My analysis indicates a common equity cost rate in the range of 8.25 percent to 9.90 percent for the three groups. Given that I rely primarily on the DCF model, but recognizing the recent lower interest rates and CAPM equity cost rates, I believe that the common equity cost rate is in the 9.00 percent-9.75 percent range. Given these results, I recommend the midpoint of this range, 9.375 percent, as an equity cost rate for PSE. This is fair given: (1) PSE's investment risk relative to the three groups; and (2) the fact that I have employed a capital structure that has more common equity and less financial risk than the average of the three proxy groups as well as PSE's parent, Puget Energy.

Q. Please indicate why an equity cost rate of 9.375% is appropriate for PSE?

A. There are a number of reasons support an equity cost rate of 9.375% as appropriate and fair for PSE:

1. I have employed a capital structure which includes a higher common equity ratio and lower financial risk than the average of the proxy groups and of PSE parent;
2. As Table 7 (page 38) shows, the electric utility and gas distribution industries are 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.
3. As indicated by PSE's S&P and Moody's credit ratings, the Company's investment risk is a little below the average of the proxy groups.

4. While my ROE recommendation is below the average authorized ROEs for electric utility companies, as I discussed above, authorized ROEs have lagged behind capital market cost rates. This observation is supported by the Werner and Jarvis (2022) study which evaluated over 3,500 authorized ROEs over the past four decades authorized ROEs 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. Do you believe that your 9.375 percent ROE recommendations meet the *Hope* and *Bluefield* standards?

A. Yes, I do. 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 the company's credit and to attract capital. As page three of Exhibit JRW-4 shows, electric utility and gas distribution companies have been earning in the 8.0 percent to 10.0 percent range in recent years. With this level of profitability, electric and gas utility companies have strong S&P and Moody's credit ratings, have raised billions in capital, and their stocks are selling well above book value.

VII. CRITIQUE OF PSE'S RATE OF RETURN TESTIMONY

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

A. The Company has proposed a capital structure and cost of capital for the first year of the proposed MYRP and another capital structure and cost of capital for the

second year of the MYRP. The first-year proposal includes capital structure ratios of 1.81 percent short-term, 48.19 percent long-term debt and 50.0 percent common equity and short-term and long-term debt cost rates of 5.07 percent and 5.27 percent. PSE Witness Ann Bulkley proposes a ROE of 9.95 percent in year 1 of the MYRP. The Company's current approved capital structure includes a common equity ratio of 48.50 percent. The second-year proposal includes capital structure ratios of 1.91 percent short-term, 47.81 percent long-term debt and 51.0 percent common equity and short-term and long-term debt cost rates of 4.08 percent and 5.36 percent. Bulkley's recommended ROE is 10.50 percent for Year 2 of the MYRP. PSE's recommended rates of return for the first and second years of the MYRP are 7.65 percent and 7.99 percent. I summarize these recommendations on page one of Exhibit JRW-9.

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 Structure; (2) capital market conditions; (3) PSE's investment risk, (4) DCF Approach; (5) CAPM Approach; (6) the alternative risk premium model; (7) Expected Earnings Approach; and (8) Other Factors including the Company's capital expenditures and regulation risk. The capital structure, capital market conditions, PSE's investment risk, and other factors are discussed above. 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 companies and employs DCF, CAPM, an alternative risk premium model, and expected earnings equity cost rate approaches. Bulkley's equity cost rate estimates for PSE are summarized on page two Exhibit JRW-9. Based on these figures, Bulkley concludes that the appropriate equity cost rate is 10.5 percent for PSE's electric and gas distribution operations.

A. DCF Approach

Q. Please summarize Bulkley's DCF estimates.

A. On pages 36-42 of testimony and in Exhibit AEB-, Bulkley develops an equity cost rate by applying the DCF model to the gas group. Bulkley's DCF results are summarized on page two 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*.

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

A. The primary issue in Bulkley's DCF analyses is her exclusive use of the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*.

1. Upwardly Biased 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. It is highly unlikely that investors today would rely exclusively on the EPS growth rate forecasts of Wall Street analysts and ignore other growth rate measures in arriving at their expected growth rates for equity investments. As I previously indicated, the appropriate growth rate in the DCF model is the dividend growth rate, not 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, a study by Lacina, Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[57] Accordingly, the weight given to analysts' projected EPS growth rates should be limited. And finally, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.[58] Therefore, using these growth rates as a DCF growth rate produces an overstated equity cost rate.

A study by Easton and Sommers (2007) found that optimism in analysts' earnings growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[59] Thus, exclusive reliance on these forecasts for a DCF growth rate results in failure of one the basic inputs in the equation. In addition, as noted above, a study by Szakmary, Conover, and

[57] Michael Lacina, B. Brian Lee and Zhao Xu, *Advances in Business and Management Forecasting*, at 77-101 (Kenneth D. Lawrence, Ronald K. Klimberg eds., Emerald Grp. Publ'g Ltd. 2011).
[58] *See supra* note 15 at 44.
[59] Peter D. Easton, & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, J. of Accounting Research, 45, 983-1015 (2007).

Lancaster (2008) discovered that the three-to-five-year EPS growth rate forecasts of *Value Line*'s to be significantly higher than the EPS growth rates that these companies subsequently achieved.[60]

Q. Have changes in regulations impacting Wall Street analysts and their research impacted the upward bias in their projected EPS growth rates?

A. No. A number of studies I cite above demonstrate the upward bias has continued despite changes in regulations and reporting requirements over the past two decades. This observation is supported further 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 observations:[61]

> 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*

[60] Andrew C. Szakmary, C. Michelle Conover, & Carol Lancaster, *An Examination of Value Line's Long-Term Projections*, 32 J. of Banking & Fin. 820-33 (2008).
[61] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity Analysts, Still Too Bullish*, McKinsey on Fin., 14-17, (Spring 2010) (emphasis added).

> *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.*

This is the same observation made in a *Bloomberg Businessweek* article.[62] The author concluded**: "**Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects."

B. CAPM Approach

Q. Please discuss Bulkley's CAPM.

A. On pages 43-49 of testimony and in Exhibit AEB- 6, Bulkley develops an equity cost rate by applying the CAPM model to her proxy group. Bulkley's CAPM results are summarized on page two 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 gas 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 (4.77 percent), near-term projected (4.48 percent), and long-term projected (4.10 percent) 30-year Treasury yields; (2) betas from *Value Line* and Bloomberg, and a 10-year average; and (3) a market risk premium of 7.78 percent. Based on these figures, Bulkley finds CAPM/ECAPM equity cost rates ranging from 10.41 percent to 11.90 percent.

[62] Roben Farzad, *For Analysts, Things are Always Looking Up*, Bloomberg Businessweek at 39–40 (June 14, 2010).

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 7.78 percent.

C. 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 (SML) 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. 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, 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. Hence, adjusting betas in this manner

provides higher returns for stocks with betas less than 1.0, and lower returns for stocks with betas more than 1.0, which is consistent with the empirical studies of the CAPM.

D. Excessive 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 11.90 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 11, below, Bulkley's estimated market return of 12.56 percent for the S&P 500 equals the sum of the dividend yield of 1.78 percent and expected EPS growth rate of 10.78 percent. The expected EPS growth rate is the average of the expected EPS growth rates from Bloomberg. 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 11
Bulkley CAPM Market Risk Premium

Dividend Yield	**1.78%**
+ Expected EPS Growth	**10.78%**
= Expected Market Return	**12.56%**
+ Risk-Free Rate	**4.77%**
= Market Risk Premium	**7.78%**

Q. Please provide additional insights into the expected stock market return of 12.56 percent.

A. Simply put, the assumption of a 12.56 percent expected stock market return is excessive and unrealistic. The compounded annual return in the U.S. stock market is about 10 percent (9.90 percent between 1928-2023 according to Damodaran).[63] Bulkley's CAPM results assume that return on the U.S. stock market will be almost **30 percent higher** in the resulting market risk premium and equity cost rate results, is directly related to computing the expected stock market return as the sum of the adjusted dividend yield plus the expected EPS growth rate of 10.78 percent.

Q. Is Bulkley's expected stock market return of 12.56 percent reflective of the stock market returns that investment firms tell investors to expect?

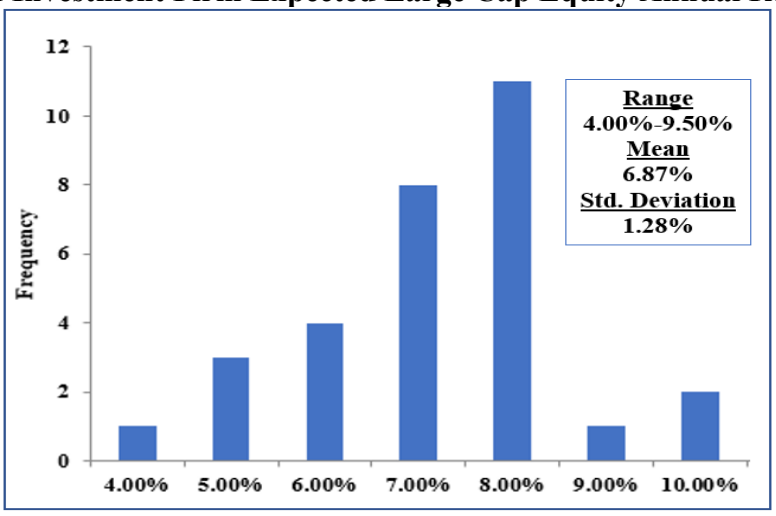
A. No. Many investment firms provide investors with their estimates of the annual stock returns that they should expect in the future. Most publish these expected returns in documents entitled "Capital Market Assumptions" and are available online at their websites. If you google 'Capital Market Assumptions,'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

[63] Aswath Damodaran, *Damodaran Online*, N.Y. Univ., http://pages.stern.nyu.edu/~adamodar/ (last visited July 20, 2024).

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 thirty 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 thirty firms manage more than $50 trillion in assets under management.

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.

Figure 15
Histogram of Investment Firm Expected Large Cap Equity Annual Returns 2023[64]



[64] Woolridge, Exh. JRW-10.

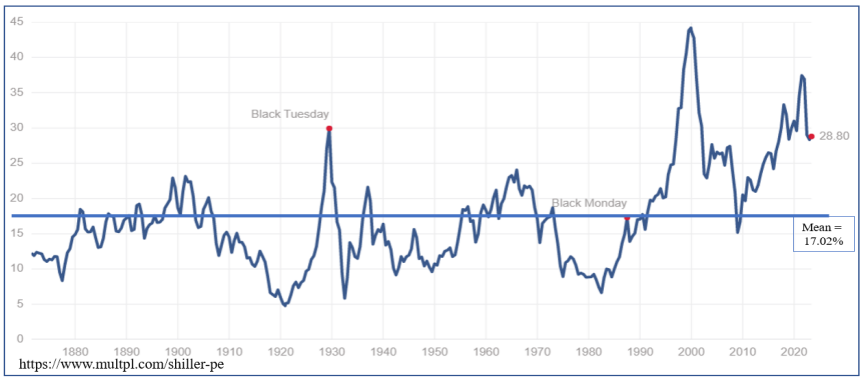
Q. What are your observations on the stock market returns that investment firms tell investors to expect?

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's average expected stock market return of 12.56 percent, which she calculates using three alternative models using *Value Line* and Bloomberg expected return data. In short, Bulkley's average expected market return of 12.56 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 must 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[65]



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.[66] 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

[65] 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).
[66] Such studies include: R.D. Harris, *The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts*, *J. of Business Fin. & Accounting*, 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 Accounting Research (2000); K. Chan, L., Karceski, J., & Lakonishok, J., *The Level and Persistence of Growth Rates*, *J. of Fin.* 643-84 (2003); 8 Michael Lacina, B. Brian Lee, and Zhao Xu, *Advances in Business and Management Forecasting*, at 77-101 (Kenneth D. Lawrence, Ronald K. Klimberg, eds., Emerald Grp. Publ'g Ltd. 2011).

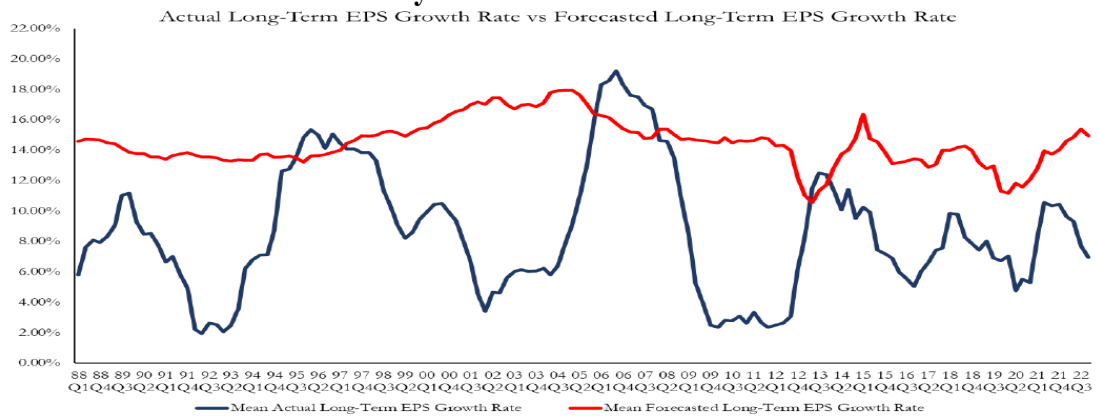
notoriously inaccurate). The overly optimistic inaccuracy of analysts' growth rate forecasts leads to an upward bias in equity cost estimates estimated at about 300 basis points.[67]

I have also completed studies on the accuracy of analysts' projected EPS growth rates. In Figure 11 (page 53), 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 16, 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.

[67] 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 Accounting Research*, 983-1015 (2007).

Figure 17
Mean Forecasted vs. Actual Long-Term EPS Growth Rates All Companies Covered by I/B/E/S 1985-2022[68]



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 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.[69] 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 earnings are no more accurate than their forecasts of the next

[68] Data Source: I/B/E/S, 2023.
[69] Such studies include: R.D. Harris, *The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts*, J. of Business Fin. & Accounting, 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 Accounting Research (2000); K. Chan, L., Karceski, J., & Lakonishok, J., *The Level and Persistence of Growth Rates*, J. of Fin. 643-84 (2003); 8 Michael Lacina, B. Brian Lee, and Zhao Xu, *Advances in Business and Management Forecasting*, at 77-101 (Kenneth D. Lawrence, Ronald K. Klimberg, eds., Emerald Grp. Publ'g Ltd. 2011).

single year's EPS growth (and the single year forecasts are notoriously inaccurate). The overly optimistic inaccuracy of analysts' growth rate forecasts leads to an upward bias in equity cost estimates estimated at about 300 basis points.[70]

Q. Is Bulkley's market risk premium of 7.78 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 market risk premiums by leading academic scholars, (2) produced by analyses of historic stock and bond returns, and (3) found in surveys of financial professionals. Page six of Exhibit JRW-8 provides the results of over 30 market risk premiums studies from the past 15 years.[71] Historic stock and bond returns suggest a market risk premium in the 4.40-6.80 percent range, depending on whether one uses arithmetic or geometric mean returns. There have been many studies using expected return (also called *ex ante*) models, and their market risk premiums results vary from as low as 2.61 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 3.40 percent to 5.70 percent. The bottom line is that there is no support in historic return data, surveys, academic studies, or reports for investment firms for a market risk premium as high as the 7.78 percent used by Bulkley, which is derived from only one source–*Value Line Investment Survey*.

[70] 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 Accounting Research, 983-1015 (2007).
[71] *See* Woolridge, Exh. JRW-8 at 6.

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 10.78 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 10.78 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 Percent through the7 Percent 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.[72]

Table 12
GDP, S&P 500 Stock Price, EPS, and DPS Growth 1960-Present

Nominal GDP	**6.45%**
S&P 500 Stock Price	**7.25%**
S&P 500 EPS	**7.00%**
S&P 500 DPS	**5.81%**
Average	**6.63%**

The results show that the historical long-run growth rates for GDP, S&P EPS, and S&P DPS are in the 6 percent to 7 percent range. By comparison,

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

Bulkley's long-run growth rate projection of 10.78 percent is at best 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 her 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:[73]

> 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 two of Exhibit JRW-9. Nominal GDP growth was in the four percent range over the past

[73] Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* at 63 (January-February 2010).

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, 8 percent in 2022, and 6.0 percent in 2023. The components of nominal GDP growth are real GDP growth and inflation. Exhibit JRW-11, at page three, shows the annual real GDP growth rate between 1961 and 2023. 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, 2.1 percent in 2022, and 2.50 percent in 2023.

The second component of nominal GDP growth is inflation. Exhibit JRW-11, at page four, shows inflation as measured by the annual growth rate in the Consumer Price Index (CPI) from 1961 to 2023. 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 dropped from above 10.0 percent to about 4.0 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 dropped to 4.0 percent in 2023. However, as noted above, longer-term inflation is expected to be in the 2.25 percent range.

The graphs in Exhibit JRW-11, at 2-4, 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 13 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 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 13
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%**

Long-Term GDP Projections also Indicate Slower GDP Growth in the Future:

A lower range is also consistent with long-term GDP forecasts. There are several forecasts of annual GDP growth that are available from economists and government agencies. These are listed in Panel B of Exhibit JRW-11, at 5.

The mean 10-year nominal GDP growth forecast (as of February 2024) by economists in the recent *Survey of Financial Forecasters* is 4.24 percent.[74] 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

[74] Ten-year 2024 median projected real GDP growth of 2.00 percent and CPI inflation of 2.24 percent. *Survey of Professional Forecasters*, Fed. Reserve Bank of Philadelphia, https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/.

period 2023 to 2053.[75] The Congressional Budget Office (CBO), in its forecasts for the period 2023 to 2053, projects a nominal GDP growth rate of 3.8 percent.[76] Finally, the Social Security Administration (SSA), in its Annual OASDI Report, provides a projection of nominal GDP from 2023 to 2100.[77] SSA's projected growth GDP growth rate over this period is 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's average projected EPS growth rate of 10.78 percent is more than double the projected GDP growth.

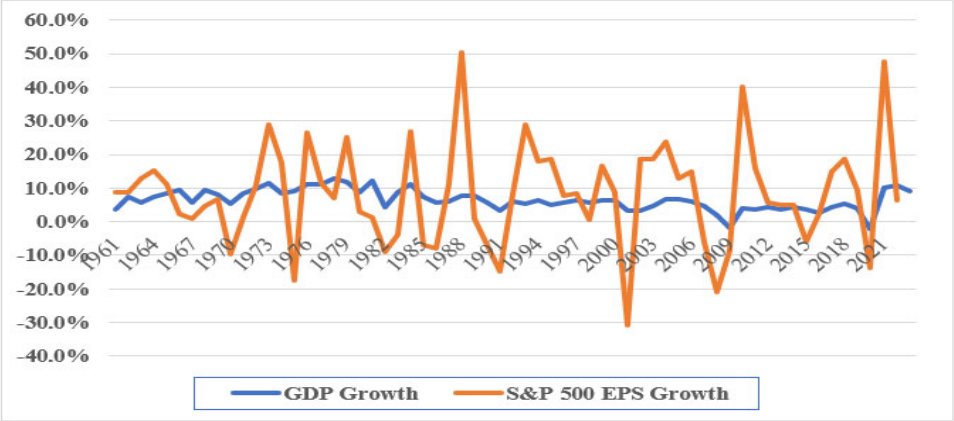
Q. Over the medium to long run, is S&P 500 EPS growth likely to outpace GDP growth?

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 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.[78] Volatility aside, however, it is clear that over the

[75] *Annual Energy Outlook 2023*, U.S. ENERGY INFORMATION ADMINISTRATION, Table: Macroeconomic Indicators.
[76] *The 2023 Long-Term Budget Outlook*, CONGRESSIONAL BUDGET OFFICE, July 15, 2023.
[77] Social Security Administration, *2023 Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance (OASDI) Program*, Table VI.G4, (July 1, 2023). The 4.1 percent growth rate is the growth in projected GDP from 2023 to 2100.
[78] 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 Accounting and Economics* 76-88 (2014).

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 1960-2023[79]



A fuller understanding of the relationship between GDP and S&P 500 EPS growth requires consideration of at least three factors, as follows.

Corporate Profits are Constrained by GDP:

In a *Fortune* magazine article, Milton Friedman, the winner of the 1976 Nobel Prize in Economic Sciences, warned investors and others not to expect corporate-profit growth to sustainably exceed GDP growth, stating, "Beware of predictions that earnings can grow faster than the economy for long periods. When earnings are exceptionally high, they don't just keep booming."[80] In that 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

[79] Data Sources: GDPA - http://research.stlouisfed.org/fred2/series/GDPA/downloaddata. S&P EPS - http://pages.stern.nyu.edu/~adamodar/.
[80]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/.

for the S&P 500 companies, using 2022 figures, represent 6.11 percent of nominal GDP.

Table 14
S&P 500 Aggregate Net Income as a Percent of GDP[81]

	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%

Short-Term Factors Impact S&P 500 EPS:

The growth rates in the S&P 500 EPS and GDP can diverge on a year-to-year basis due to short-term factors that impact S&P 500 EPS in a much greater way than GDP. As shown above, S&P EPS growth rates are much more volatile than GDP growth rates. The EPS growth for the S&P 500 companies has been influenced by low labor costs and interest rates, commodity prices, the recovery of different sectors such as the energy and financial sectors, 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.

The Differences Between the S&P 500 EPS and GDP:

In the last two years, as the EPS for the S&P 500 has grown at a faster rate than U.S. nominal GDP, some have pointed to the differences between the S&P 500 and GDP.[82] These differences include: (a) corporate profits are about 2/3

[81] Data Sources: 2022 Net Income for S&P 500 companies. https://www.gurufocus.com/economic_indicators/5749/sp-500-net-income-ttm. 2023 Nominal GDP – https://pages.stern.nyu.edu/~adamodar/.

[82] *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,

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.[83]

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

Q. Please provide additional evidence showing that Bulkley's S&P 500 EPS growth rate of 10.78 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

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/.

[83] 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.

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 500 companies, I used Bulkley's average projected S&P 500 EPS growth rate of 10.78 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 using Bulkley's 10.78 percent EPS growth rate of 10.78 percent is $25.54 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 (10.78 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 32.13 percent of GDP in 2050. It is totally unrealistic for the net income of the S&P 500 to become such a large component of GDP.

Table 154
Projected S&P 500 Earnings and Nominal GDP 2022-2050 S&P 500 Aggregate Net Income as a Percent of GDP[84]

	2022 Value ($B)	Growth Rate	No. of Years	2050 Value ($B)
Aggregate Net Income for S&P 500	$1,555.98	10.51%	28	$ 25,541.62
2021 Nominal U.S. GDP	$25,461.34	4.15%	28	$ 79,495.21
Net Income/GDP (%)	6.11%			32.13%

[84] 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

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 Buffett made the following observation:[85]

> 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 10.78 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

average projected S&P 500 EPS growth rate of 10.78 percent; Nominal GDP Growth Rate – 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 = 4.15 percent).

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

growth matching analysts' near-term projections is absurd: "The idea of 8% or 10% or 12% growth is ridiculous. It will not happen."[86]

E. Bond Yield Plus Risk Premium Approach

Q. Please review Bulkley's alternative risk premium.

A. On pages 49-54 of testimony and in Exhibit AEB-9, Bulkley estimates an equity cost rate using a risk premium model. Using the quarterly authorized ROEs for electric utility and gas distribution companies from Q1 1992 until Q4 2023, Bulkley develops an equity cost rate by regressing the authorized returns on equity for electric utility and gas distribution companies on the 30-year Treasury Yield. Bulkley then adds the risk premium established by regressing the authorized returns on equity to each of her three different 30-year Treasury yields: (a) a current yield of 4.77 percent, (b) a near-term projected yield of 4.48 percent, and (c) a long-term projected yield of 4.10 percent. Bulkley's risk premium results are provided in page 2 of Exhibit JRW-11. Bulkley reports risk premium equity cost rates ranging from 10.13 percent to 10.74 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, 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

[86] 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/.

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.

Second, 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.

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 and gas companies?

A. Bulkley reports results as high as 10.74 percent from her risk premium model. The 2023 authorized ROEs for electric utilities and gas distribution companies were 9.60 percent and 9.64 percent.

F. The Expected Earnings Approach

Q. Please discuss Bulkley's expected earnings approach.

A. On pages 54-56 of testimony and in Exhibit AEB-11, Bulkley estimates an equity cost rate for PSE using her expected earnings approach. Bulkley's expected earnings methodology is to compute the expected ROE for the companies in her proxy group based the projected ROE by *Value Line*.

Q. Please discuss Bulkley's expected earnings approach.

A. There are several significant issues with her expected earnings approach. These 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 percent for example, investor requirements and the cost of equity should increase

commensurably, but if regulation is based on accounting returns, no immediate change in equity cost results."[87] 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 in the proxies requires an associated analysis of the proxies' market-to-book ("M/B") ratios. In addition, as I demonstrated in Figure 9 (page 37), there is a strong positive relationship between expected ROEs and the M/B ratios for electric utility and gas distribution companies.

Changes in ROE Ratios do not Track Capital Market Conditions:

As also indicated by Morin, "The denominator of accounting return, book equity, is a historical cost-based concept, which is insensitive to changes in

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

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."[88]

The Expected Earnings Approach is Circular:

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

The Proxies' ROEs Reflect Earnings on Business Activities that are not Representative of PSE's Rate-Regulated Utility Activities:

The numerators of the proxy companies' ROEs include earnings from business activities that are riskier and produce more projected earnings per dollar of book investment than does regulated electric utility service. These include earnings from: (1) unregulated businesses including merchant generation; (2) electric generation; and (3) international operations.

Q. Please summarize your analysis of 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 a number of other empirical issues. Therefore, the Commission should ignore this approach in determining the appropriate ROE for PSE.

Q. Finally, please discuss the Expected Earnings approach in light of a study of *Value Line* projected earnings.

[88] *Id.*

A. Bulkley's Expected Earnings approach uses *Value Line*'s adjusted forecast for proxy utility ROEs. Hence, the ROE specified by the Expected Earnings approach is dependent on the forecast of one variable (net income/shareholder's equity) by one analyst firm (*Value Line*), with the same single individual authoring most of the *Value Line* reports for the various proxy companies. Neither the Commission nor other parties have assessed the accuracy of these forecasts. However, a study by Szakmary, Conover, and Lancaster (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.[89] 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., 2012-2014) to a future three-year projected period (e.g., 2016-18). 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 20 percent for the Dow Jones' stocks *Value Line*'s forecasts was nearly double the realized annual stock return.[90] The authors also found that Value Line's forecasts of earnings per share and profit margins were termed "strikingly overoptimistic." Value Line's forecasts of annual sales were

[89] Andrew C. Szakmary, C. Mitchell Conover, & Carol Lancaster. *An Examination of Value Line's Long-Term Projections*, J. of Banking & Fin. 820-833 (2008).
[90] *Id.* at 825.

higher than achieved levels, but not statistically significant. SCL concluded that the overly optimistic projected annual stock returns were attributable to *Value Line's* upwardly biased forecasts of earnings per share and profit margins.[91]

The SCL results suggest that *Value Line*'s projection of return on equity is upwardly biased. As noted above, the EPS and profit margins as projected by *Value Line* over this 30-year period were termed "strikingly overoptimistic." This is because *Value Line's* projected earnings is the numerator for their calculation of return on equity (net income/book value). Therefore, the Expected Earnings approach proposed by Bulkley is based on an upwardly biased measure forecasted by one analyst.

G. Other Factors

Q. What other factors has Bulkley considered in her ROE recommendation for PSE?

A. Bulkley considered four other factors in arriving at her ROE recommendation for PSE: (1) the MYRP; (2) wildfire risks; (3) capital investment; and (4) regulatory risk, including operating and fuel costs, authorized ROEs, regulatory rankings. Bulkley discusses these factors and implies that despite the presence and positive consequences of PSE's MYRP, PSE deserves additional return consideration due to its exposure to wildfire risks, high level of capital investment, and regulatory risks associated with regulation by WUTC, including the Commission's history of authorizing relatively low ROEs and equity ratios.

[91] *Id.*

As previously noted, the four factors considered by Bulkley are also considered by rating agencies like S&P and Moody's in the credit rating process. And, as I noted, PSE's S&P and Moody's issuer credit ratings of BBB+ and Baa1 suggest the Company's investment risk is slightly below the average of the proxy groups. Furthermore, a review of recent credit reports suggests that many of the concerns expressed by Bulkley have been considered by the rating agencies. These include:

1. It appears that the credit rating agencies have already built in assumptions regarding the relatively low ROEs and equity ratios from Washington. For example, in Fitch's April 2020 report, noted PSE's relatively low ROE, but still gave PSE a stable credit rating.
2. Second, these ratings do not account for some significant wins for PSE on the legislative front. These include:
    a. the passage of Senate Bill 5295 on May 3, 2021, which transformed utility regulation into multi-year rate plan and performance-based rate-making. The legislation is expected to reduce regulatory lag and cashflow volatility;
    b. PSE recently got a decarbonization bill passed (March 2024) that permits accelerated depreciation for gas assets, a return on purchased power agreements, and construction while in progress funding for decarbonization investment projects. Credit rating agencies have historically reacted positively to legislation like this with upgrades to credit ratings;

c. PSE won a significant victory related to its LNG facility, allowing almost half of that investment to be placed into rates. The unregulated LNG program was viewed as a credit negative risk by credit rating agencies;

d. PSE received authority to collect all of the Climate Commitment Act compliance costs from ratepayers, which should provide a significant boost to cash flow in 2024; and

e. In Fitch's December 2023 rating, it noted that PSE's ROE for trailing twelve months (TTM) September 30, 2023, was 6.6 percent, which is far less than the authorized 9.4 percent. And yet, despite identifying this ROE "miss" as a negative risk factor, Fitch did not downgrade PSE but confirmed BBB+ with a stable outlook. If PSE was able to maintain sufficient cash flow and credit metrics despite an actual ROE at 6.6 percent, a lower ROE may not have a significant impact on risk.

Q. Please summarize your assessment of the other factors considered by Bulkley in developing her ROE recommendation for PSE?

A. In my opinion, the four other factors considered by Bulkley in arriving at her ROE recommendation for PSE are already considered by credit agencies in rating PSE's credit worthiness and financial risk. In addition, PSE has had some significant legislative "wins" in terms of regulation which should be credit positives to the Company in the years to come.

VIII. SUMMARY AND CONCLUSIONS

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

A. The Company's proposed capital structure includes a higher common equity ratio than: (1) the average of the three proxy groups and PSE's parent, Puget Sound Energy. As a result, I have recommended a capital structure with a common equity ratio of 49.0 percent which was the capitalization approved by the Commission in the last rate case. This capitalization is: (1) consistent with the Company's historic capitalization, which PSE has used to finance its operations and maintained its credit ratings; (2) consistent with the Commission's past policies on utility capitalizations; and (3) more reflective of the capital structures of proxy groups of electric, combination electric and gas, and gas distribution companies. I have adopted PSE's proposed short-term and long-term debt cost rates, and have averaged these Year 1 and Year 2 cost rates for my proposed short-term 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, the group developed by PSE witness Bulkley, and a group of gas distribution companies. My analysis indicates a common equity cost rate in the range of 8.25 percent to 9.90 percent for the three groups. Given that I rely primarily on the DCF model, but recognizing the recent lower interest rates and CAPM equity cost rates, I believe that the common equity cost rate is in the 9.00 percent to 9.75 percent range. Given these results, I recommend the midpoint of this range, 9.375 percent, as the authorized ROE for PSE. Effectively, I do not believe the evidence supports increasing PSE's authorized ROE higher than the current level

(9.40 percent). This is fair given that I have employed a capital structure that has more common equity and less financial risk than the average of the three proxy groups as well as PSE's parent, Puget Energy. My overall cost of capital is 6.99 percent. This recommendation is summarized in Table 2 and Exhibit JRW-3.

Q. Does that conclude your testimony?

A. Yes, it does.