State of New Hampshire

Before the

Public Utilities Commission

Public Service Company of New Hampshire Corp. d/b/a Eversource Energy

Distribution Service Rate Case

Docket No. DE-24-070

Testimony and Exhibits of

J. Randall Woolridge, Ph. D.
For the New Hampshire Department of Energy

January 24, 2025

Public Service Company of New Hampshire Corp.
d/b/a Eversource Energy

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I. Introduction

Q. Please state your full name.

A. My name is J. Randall Woolridge.

Q. By whom are you employed and what is your business address?

A. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration at the University Park Campus of Pennsylvania State University. I am also the Director of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A summary of my educational background, research, and related business experience is provided in Attachment JRW-2.

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

A. I have been asked by the New Hampshire Department of Energy ("DOE") to provide an opinion as to the overall fair rate of return or cost of capital for the regulated electric distribution service of the Public Service Company of New Hampshire Corp. ("PSCNH") d/b/a Eversource Energy ("Eversource" or the "Company") and to evaluate Eversource's rate of return testimony in this proceeding.

Q. How is your testimony organized?

A. First, I will review my cost of capital recommendation for Eversource and review

the primary areas of contention between Eversource's rate of return position and the DOE's. Second, I provide an assessment of capital costs in today's capital markets. Third, I discuss my proxy group of electric utility companies for estimating the cost of capital for Eversource. Fourth, I present my recommendations for the Company's capital structure and debt cost rate. Fifth, I discuss the concept of the cost of equity capital, and then estimate the equity cost rate for Eversource. Finally, I critique the Company's rate of return analysis and testimony. I have included a table of contents just after the title page for a more detailed outline.

A. Overview

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

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

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

A. An ROE is most simply described as the allowed rate of profit for a regulated

company. In a competitive market, a company's profit level is determined by a variety of factors, including the state of the economy, the degree of competition a company faces, the ease of entry into its markets, the existence of substitute or complementary products/services, the company's cost structure, the impact of technological changes, and the supply and demand for its services and/or products. For a regulated monopoly, the regulator determines the level of profit available to the utility. The United States Supreme Court established the guiding principles for establishing an appropriate level of profitability for regulated public utilities in two cases: (1) *Bluefield* and (2) *Hope*.[1] 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.

Thus, the appropriate ROE for a regulated utility requires determining the market-based cost of capital. The market-based cost of capital for a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. The purpose of all economic models and

[1] *Federal Power Commission v. Hope Natural Gas Co*., 320 U.S. 591 (1944) ("*Hope*") and *Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) ("*Bluefield*").

formulas in cost of capital testimony (including those presented later in my testimony) is to estimate, using market data of similar-risk firms, the rate of return equity investors require for that risk-class of firms in order to set an appropriate ROE for a regulated firm.

Q. Please review the company's proposed rate of return.

A. The Company has proposed a capital structure of 0.00% short-term debt, 46.15% long-term debt and 53.85% common equity. This includes the post-test year $300 million refinancing of short-term debt. The Company has recommended a long-term debt cost rate of 4.10%. Eversource witness Mr. Vincent V. Rea has recommended a common equity cost rate of 10.30% for the New Hampshire electric distribution operations of Eversource. The Company's overall proposed rate of return is 7.44%.

Table 1
Eversource's Recommended Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Short-Term Debt	0.00%	0.00%	0.00%
Long-Term Debt	46.15%	4.10%	1.89%
Common Equity	53.85%	10.30%	5.55%
Total	100.00%		7.44%

Q. What are your recommendations regarding the appropriate rate of return for Eversource?

A. I have reviewed the Company's proposed capital structure and overall cost of

capital. The Company's proposed capital structure has much more common equity and less financial risk than other electric utilities. As a result, I have used a capital structure that is more reflective of the capital structures of electric utility companies. I am using a capital structure consisting of 50.0% debt and 50.00% common equity.

To estimate an equity cost rate for the Company, I have applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to my proxy group of electric utility companies ("Electric Proxy Group"). I have also used Mr. Rea's Proxy Group. My analysis indicates a common equity cost rate in the range of 8.85% to 10.00% for the two groups. Since I rely primarily on the DCF model as well as the results for the Electric Proxy Group, I believe that the equity cost rate for these groups is in the 9.25% to 9.75% range. Given the recent rise in interest rates, I will use the midpoint of this range, 9.50%, for Eversource. This is very fair to the Company, given that: (1) I have recommended a capital structure with a higher common equity ratio and lower financial risk than the proxy groups; (2) Whereas Eversource's S&P and Moody's credit ratings indicate it is equal in investment risk to the proxy companies, PSCNH's S&P and Moody's credit ratings indicate that the Company's investment risk is below the averages of the proxy groups; and (3)

Eversource is a distribution-only electric utility. Given my proposed capital structure and senior capital cost rate for Eversource, I am recommending an overall fair rate of return or cost of capital of 6.80% for the Company. These recommendations are summarized in Table 2 and Attachment JRW-2.

Table 2
Eversource's Recommended Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Short-Term Debt	0.00%	0.00%	0.00%
Long-Term Debt	50.00%	4.10%	2.05%
Common Equity	50.00%	9.50%	4.75%
Total	100.00%		6.80%

Q. If the Commission adopts the Company's proposed capital structure with a common equity ratio of 53.85%, what is your ROE recommendation?

A. If the Commission adopts the Company's proposed capital structure with a common equity ratio of 53.85%, then my ROE recommendation goes to the bottom of my range, 9.25%.

B. Primary Rate of Return Issues in this Case

Q. Please summarize the primary issues regarding rate of return in this proceeding.

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

1. <u>Capital Market Conditions:</u> Mr. Rea's analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs. However, the post-Covid increases in inflation and interest rates have slowed, and the Federal Reserve has begun the process of lowering the discount rate, which signals lower rates are forthcoming.

2. <u>Capital Structure</u>: The Company has proposed a capital structure with a common equity ratio of 53.80%. This includes a higher common equity ratio and lower financial risk than the companies in the Electric Proxy Group as well as the Company's parent, Eversource Energy, Inc. I have recommended a capital structure with a common equity ratio of 50.00%.

3. <u>Eversource's Investment Risk is Similar to the Average of Other Electric Utility Companies, but PSCNH's Investment Risk is below Other Electric Utilities</u>: Eversource's S&P and Moody's issuer credit rating of BBB+ and Baa2 are equal to the averages of the two proxy groups, which indicates that its investment risk is similar to other electric utilities.[2]

[22] Both S&P and Moody's downgraded Eversource in December, 2024 from A- and Baa1 to BBB+ and Baa2. The downgrades were in response to rate case decisions in Connecticut regarding two

However, it should be noted the PSCNH's S&P and Moody's credit ratings are A- and A3, which indicate the Company's investment risk is below the proxy groups.

4. <u>DCF Approach</u>: Mr. Rea and I have both employed the traditional constant-growth DCF model. I have several issues with Mr. Rea's DCF equity cost rate: (1) the use of the non-regulated group to estimate an equity cost rate for the Company; (2) the asymmetric classification and elimination of DCF results for the groups; (3) the excessive reliance on the EPS growth rate forecasts of Wall Street analysts and *Value Line* as a DCF growth rate; (4) the leverage adjustment and (5) the flotation cost adjustment. On the other hand, when developing the DCF growth rate that I have used in my analysis, I have reviewed thirteen growth rate measures, including historical and projected growth rate measures, and have evaluated growth in dividends, book value, and earnings per share.

5. <u>CAPM Approach</u>: The CAPM approach requires an estimate of the risk-free interest rate, beta, and the market or risk premium. There are three issues with Mr. Rea's CAPM analysis: (1) he has employed the empirical

Eversource subsidiaries - Connecticut Natural Gas Corp. and Southern Connecticut Gas Co. Eversource previously was downgraded in July of 2019 due to the risks associated with the Company's offshore investments.

CAPM ("ECAPM") version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium; (2) he has made an inappropriate leverage adjustment to his betas and a size adjustment to his market risk premium; and (3) he has computed a market risk premium of 7.50% that is significantly larger than expectations. The market risk premium is larger than: (1) indicated by historic stock and bond return data; and (2) found in the published studies and surveys of the market risk premium. In addition, I demonstrate that the 7.50% market risk premium is based on totally unrealistic assumptions of future economic and earnings growth and stock returns.

As I highlight in my testimony, there are three commonly used procedures for estimating a market risk premium—historic returns, surveys, and expected return models. I have used a market risk premium of 5.0%, 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 5.0% figure reflects the market risk premiums: (1) determined in recent academic studies by leading finance scholars; (2) employed by leading investment banks and management

consulting firms; and (3) found in surveys of companies, financial forecasters, financial analysts, and corporate CFOs.

6. Risk Premium Approach: The equity cost rate using the risk-premium model ("RPM") is the sum of the base interest-rate yield plus a risk premium. The biggest issue with Mr. Rea's RMP approach is the size of the risk premium. Mr. Rea's uses the same risk premium methodologies as he used in developing the equity or market risk premium in Mr. Rea's CAPM approach. As such, the flaws in these approaches are summarized above. In short, with historical returns, there are a myriad of empirical problems, which result in historical market returns producing inflated estimates of expected risk premiums, including survivorship and unattainable return biases. With respect to projected market returns, Mr. Rea has used the DCF approach to the S&P 500 based on dividend yield and projected growth. I have illustrated above that the S&P 500 DCF approach produces unrealistic expected market returns because it uses the upwardly biased EPS growth rate projections of Wall Street analysts.

7. Non-Regulated Proxy Group: Mr. Rea has estimated an equity cost rate for the Company using a proxy group of ten unregulated, non-utility companies. This group includes such companies as Coca-Cola, Hershey, and McDonald's.

While many of these companies are large and successful, their lines of business are vastly different from the electric distribution business, and they do not operate in a highly regulated environment. In addition, the upward bias in the EPS growth rate forecasts of Wall Street analysts is particularly severe for non-regulated companies, and the DCF equity cost rate estimates for this group are therefore particularly overstated. As such, the non-regulated group is not an appropriate proxy for the Company, and therefore the equity cost rate results for this group should be ignored.

8. **Flotation Cost Adjustment**: Mr. Rea also includes a flotation cost adjustment to his equity cost rate approaches, which he discusses in Appendix D. However, he has not provided any evidence that the Company has paid any flotation costs. The Company should not be rewarded with higher revenues (through a higher ROE) for expenses which it does not incur.

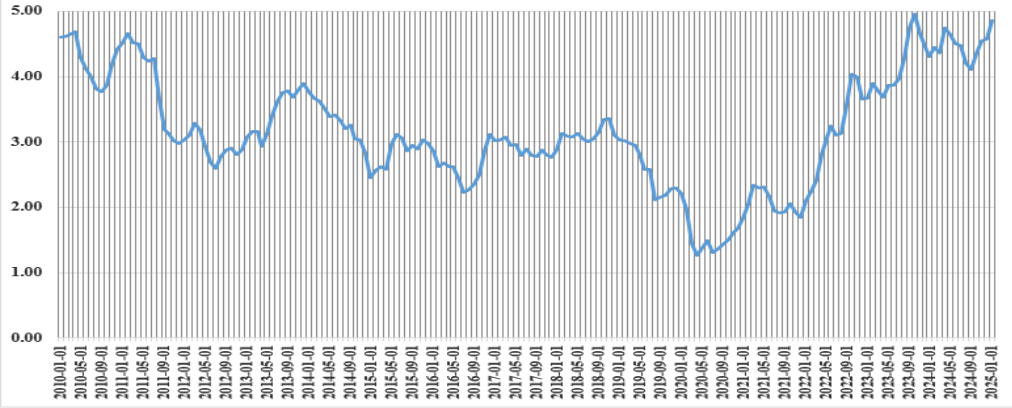
II. Capital Market Conditions and Authorized ROEs

Q. Please review recent developments the economy and capital markets.

A. Figure 1, below, shows 30-year Treasury yields over the past 15 years (2010 to 2025). In 2020, with the advent of the COVID-19 pandemic, 30-year Treasury yields declined to record low levels, dropping about 100 basis points to settle in

the 1.25% range. They began their recovery in the summer of 2020 and increased significantly in 2022 and 2023 with the massive government spending, improving economy, and higher inflation. In 2023, these yields peaked at about 5.00% range in the fourth quarter. These yields deceased in 2024, but have increased since the election in November and currently are in the 4.80% range.

Figure 1
30-Year Treasury Yields

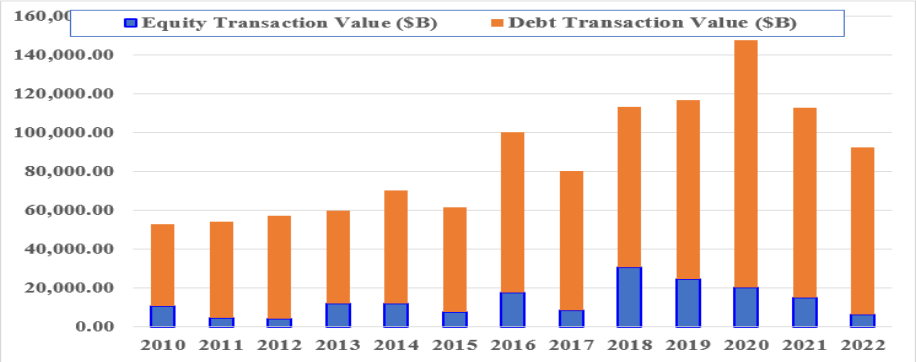


Data source: https://fred.stlouisfed.org/series/DGS30

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

A. Yes. Figure 2 shows the annual amounts of debt and equity capital raised by public utility companies over the past 13 years. Electric utility and gas distribution companies have taken advantage of the low interest rate and capital cost environment of recent years and raised record amounts of capital in the markets. In fact, in four of the past five years, public utilities have annually raised more than $100 billion in combined debt and equity capital.

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

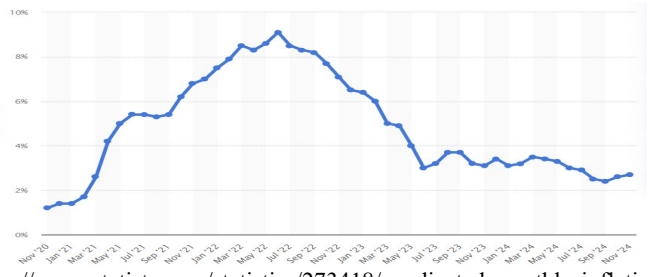


Data Source: S&P Global Market Intelligence, S&P Cap IQ, 204..

Q. Please discuss the increase in interest rates over the past three years.

A. Several factors led to higher interest rates in the 2022 – 2024 time period. Coming out of the pandemic, real GDP growth has increased 5.95% in 2021, 2.06% in 2022, and 3.25% in 2023, compared to a decline of -3.4% in 2020. In the 2022-24 years, the improving economy and business activity, supply chain shortages associated with the Covid shut downs, higher levels of business and consumer spending, and record increases in housing prices put pressure on inflation and interest rates. As shown in Figure 3, reported year-over-year inflation has been as high as 9.20% in 2022, and has declined to the 2.5%-3.0% range since that time. Year-over-year inflation was reported to be 2.9% as of January, 2025.

Figure 3
Year-Over-Year Inflation Rates
2020-2024



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

In response to the higher inflation, the Federal Reserve in 2022 increased the discount rate by 25 basis points in March, 50 basis points in May, and 75 basis points in June, July, September, and November, 50 basis points in December, and 25 basis points in February, March, May, and July of 2023. The Fed held the discount rate firm at 5.50% until September 18, 2024, when it cut the rate by 50 basis points. Subsequently, the Fed cut the rate by 25 basis points at its November and December 2024 meetings. One conundrum in the current environment is that investors are looking for additional rate cuts. As a result, the government has been ad news on the economy is treated as a positive, and negative news is treated as a negative.

Investors' inflation expectations can be seen by looking at the difference between yields on ordinary Treasuries and the yields on inflation-protected Treasuries, known as TIPS. Figure 4 shows the expected inflation rate over the

last five, ten, and thirty years. One can see the big increase in 2022, although it has fallen off since mid-2022 and is now at an expected inflation rate of about 2.5%.

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

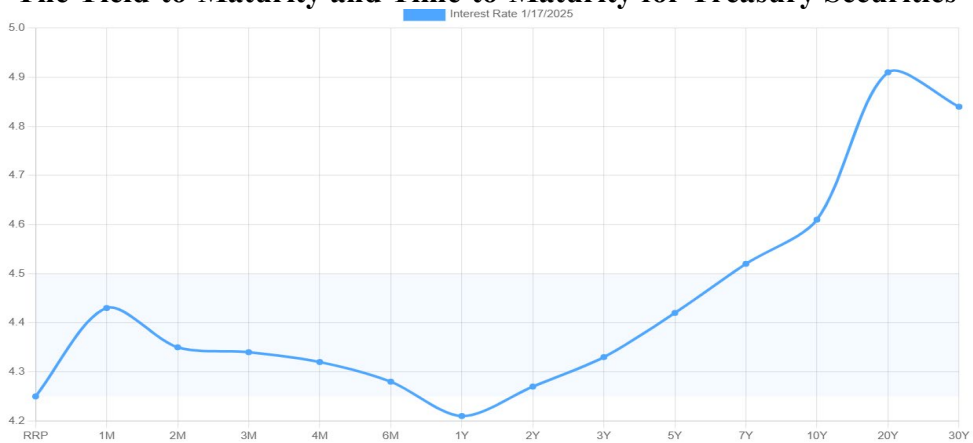
Date source: https://fred.stlouisfed.org/.

Q. Do you believe that interest rates will increase in 2025?

A. No. As discussed above, the recovery of the economy pushed up inflation and interest rates in the 2022-24 tine period. But inflationary expectations are now back to the 2.5% range. Figure 5 shows the yield curve, which plots the yield-to-maturity and time-to-maturity for Treasury securities. The yield curve is once again positively sloped which is normal and means that investors require higher returns to commit capital for longer periods of time. The yield curve was inverted for two years. which means that the yields on shorter-term maturity securities were higher than the yields on longer-term securities. This is primarily because the Federal Reserve raised the discount rate eleven times in 2022 and

2023 (from 0.25% to 5.25%) to address the increase in inflation and the rebounding economy associated with the economic recovery from the Covid pandemic. In 2024, as year-over-year inflation has subsided, the Federal Reserve began the process of normalizing interest rates by cutting the discount rate three times – most recently in December to 4.50%. As a result, with short-term rates declining and long-term rates remaining in the 4.0%-5.0% range, the yield curve is again positively sloped. But the curve is positively sloped but relatively flat, with long-term rates only being about 30 basis points above short-term rates. Interest rates have increased since the election, but the Federal Reserve is expected to cut rates again in 2025, and President Trump has called for lower interest rates, and so I do not expect rates to rise in 2025.

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



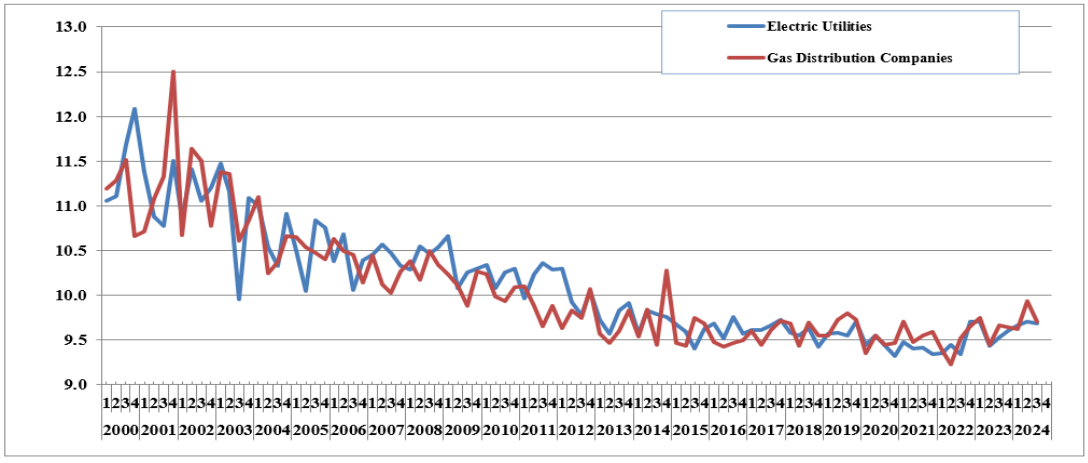
Source: https://www.ustreasuryyieldcurve.com/ - 1-20-25.

B. Authorized ROEs

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

A Figure 6 shows 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% for electric utilities in 2012. In 2020 and 2021, authorized ROEs for utilities hit an all-time low. Table 3 shows the average annual authorized ROEs for electric utility and gas distribution from 2010 to the third quarter of 2024.[3]

Figure 6
Authorized ROEs for Electric Utilities and Gas Distribution Companies
2000-2024



Data Source: S&P Global Market Intelligence, RRA *Regulatory Focus*, 2025.

[3] The data and numbers discussed in this section come from S&P Global Market Intelligence, RRA *Regulatory Focus*, 2025.

Table 3
Average Annual Authorized ROEs for Electric Utilities
and Gas Distribution Companies
2010–2024

	Electric	Gas		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	9.44	9.47
2014	9.91	9.78	2021	9.38	9.56
2015	9.78	9.6	2022	9.54	9.53
2016	9.77	9.54	2023	9.60	9.64
			Q3-2024	9.70	9.68

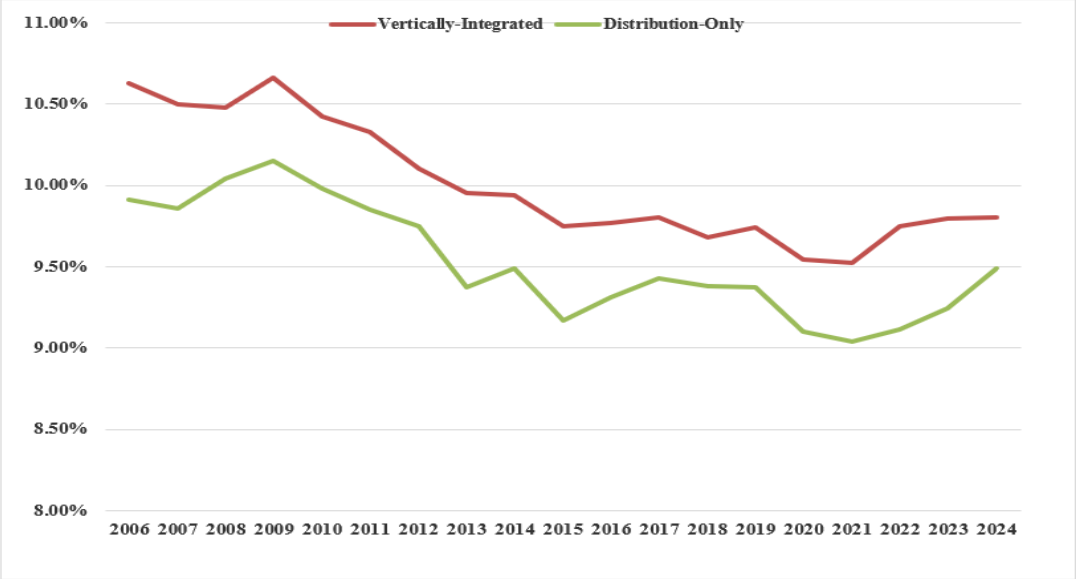
Data Source: S&P Global Market Intelligence, RRA Regulatory Focus, 2024.

Q. Do authorized ROEs for electric delivery companies like Eversource differ from the authorized ROEs for vertically-integrated electric utilities?

A. Yes. One consistent factor in electric utility authorized ROEs is that the ROEs for delivery or distribution companies have consistently been below those of vertically integrated utilities. This is shown in Figure 7 below. The lower authorized ROEs are usually attributed to the fact that delivery or distribution companies do not own and operate electric generation which is perceived to be the riskier part of electric utility operations. I believe that commissions in states who have deregulated the electric-utility industry recognize the lesser risk of "wires-only" companies like Eversource, and

award lower ROEs. The authorized ROEs for electric delivery companies have been 30 to 50 basis points below those of vertically integrated electric utilities in recent years. ROEs for electric delivery companies were 9.10% in 2020, 9.04% in 2021, 9.11% in 2022, 9.24% in 2023, and 9.49% in the first three quarters of 2024.[4]

Figure 7
Authorized ROEs for Vertically-Integrated versus
Delivery-Only Electric Utilities
2006-2024



Data Source: S&P Global Market Intelligence, RRA Regulatory Focus, 2024.

Q. Did the higher interest rates in 2022 and 2023 mean that authorized ROEs must increase in line with interest rates?

[4] *S*&P Global Market Intelligence, RRA *Regulatory Focus*, 2024.

A. Not necessarily. As noted above, authorized ROEs for utilities reached record low levels in 2020 and 2021 due to the record low interest rates and capital costs. However, authorized utility ROEs never declined to the same extent that interest rates declined in these two years. This implies that while utilities benefited from the low-cost environment, the benefit was not proportionally passed on to the ratepayers. In other words, regulated utilities have been relatively over-compensated at the expense of the ratepayers. Table 3 shows the average annual authorized ROEs for electric and gas distribution companies from 2018 to 2023. Table 4 shows the average annual 30-year Treasury yields and authorized ROEs for electric and gas distribution companies.

In Table 4, I have averaged the 2018/2019 (pre-COVID period) figures and the 2020/2021 (COVID period) figures for the Treasury yields and ROEs, and then compared the pre-COVID and COVID period ROEs and yields to those in 2022 and 2023 (post-COVID period). A key observation from Table 4 is that authorized ROEs for electric and gas distribution companies, despite hitting record lows in 2020–21, did not decline nearly as much as interest rates. The daily 30-year Treasury yield averaged 2.85% in 2018 and 2019, versus 1.81% in 2020 and 2021, a decrease of 104 basis points. However, the authorized ROE for electric and gas distribution companies averaged 9.38% and 9.65% in 2018

and 2019, respectively, and declined to an average of 9.07% and 9.51% in 2020 and 2021, respectively, a decline of only 31 and 14 basis points. In 2022, the average daily 30-year Treasury yield increased by 105 basis points to 3.11%, while authorized ROEs for electric and gas distribution companies increased by 0.07% and -0.03% to 9.11% and 9.53%, respectively. Likewise, the average daily 30-year Treasury yield increased by 92 basis points to 4.03% in 2023, while authorized ROEs for electric and gas distribution companies increased by 0.15% and 0.13% to 9.26% and 9.66%, respectively.

Table 4
Average Annual 30-Year Treasury Yields and Authorized ROEs
for Electric and Gas Distribution Companies
2018–2023

	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 Elec. Dist. ROE	9.38%	9.07%	-0.31%	9.11%	0.07%	9.26%	0.15%
Average Gas ROE	9.65%	9.51%	-0.14%	9.53%	-0.03%	9.66%	0.13%

Q. Please review the authorized ROEs in New Hampshire.

A. I have provided the authorized ROEs in New Hampshire in Table 5. Prior to the pandemic (2020-22), authorized ROEs in New Hampshire were in the 9.30%-9.50% range. During the 2020-22 time period, with the historic low interest rates, the authorized ROEs for New Hampshire electric utility and gas distribution companies declined to the 9.10%-9.30% range. In Eversource's last rate case (DE-

19-057), in its order dated 12-15-20, the Commission authorized a ROE of 9.3% with a capital structure with a common equity ratio of 54.0%.

Table 5
New Hampshire Electric and Gas Authorized ROEs
2010-2024

Company	SMBL	Docket	Service Type	Date	Decision Type	Revenue Increase	ROE (%)	CE Ratio
Public Service Co. of NH	ES	D-DE-09-035	Electric	6/28/2010	Settled	57.4	9.67	52.40
Liberty Utilities EnergyNorth	AQN	D-DG-10-017	Natural Gas	3/10/2011	Settled	6.8	NA	NA
Unitil Energy Systems Inc.	UTL	D-DE 10-055	Electric	4/26/2011	Settled	6.6	9.67	45.45
Northern Utilities Inc.	UTL	D-DG-11-069	Natural Gas	4/24/2012	Settled	2.7	9.50	40.25
Liberty Utilities Granite St	AQN	D-DE-13-063	Electric	3/17/2014	Settled	9.8	9.55	55.00
Northern Utilities Inc.	UTL	D-DG-13-086	Natural Gas	4/21/2014	Settled	4.6	9.50	51.76
Liberty Utilities EnergyNorth	AQN	D-DG-14-180	Natural Gas	6/26/2015	Settled	10.5	NA	NA
Liberty Utilities Granite St	AQN	D-DE-16-383	Electric	4/12/2017	Settled	3.8	9.40	50.00
Unitil Energy Systems Inc.	UTL	D-DE-16-384	Electric	4/20/2017	Settled	4.1	9.50	50.97
Liberty Utilities EnergyNorth	AQN	D-DG-17-048	Natural Gas	4/27/2018	Fully Litigated	8.1	9.30	49.21
Northern Utilities Inc.	UTL	D-DG-17-070	Natural Gas	5/2/2018	Settled	0.9	9.50	51.70
Liberty Utilities EnergyNorth	AQN	D-DG-19-161	Natural Gas	2/28/2020	NA	NA	NA	NA
Liberty Utilities Granite St	AQN	D-DE-19-064	Electric	6/30/2020	Settled	4.2	9.10	52.00
Public Service Co. of NH	ES	D-DE-19-057	Electric	12/15/2020	Settled	45.0	9.30	54.40
Liberty Utilities EnergyNorth	AQN	D-DG-20-105	Natural Gas	7/30/2021	Settled	6.3	9.30	52.00
Unitil Energy Systems Inc.	UTL	D-DE-21-030	Electric	5/12/2022	Settled	5.9	9.20	52.00
Northern Utilities Inc.	UTL	D-DG-21-104	Natural Gas	7/20/2022	Settled	6.1	9.30	52.00

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

A. Yes, I do. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital. As shown on page 3 of Attachment JRW-3, electric utilities have been earning ROEs in the range of 8.0% to 10.0% in recent years. With such a ROE, electric utilities such as those in the proxy

group have strong investment grade credit ratings, their stocks have been selling well over book value, and they have been raising large amounts of capital. While my recommendation is a little below the average authorized ROEs for electric utilities, it reflects the record low levels of interest rates and capital costs. Therefore, I believe that my ROE recommendation meets the criteria established in the *Hope* and *Bluefield* decisions.

Q. With respect to this discussion, please discuss the *Wall Street Journal* article on utilities authorized ROEs.

A. The *Wall Street Journal* article, entitled "Utilities Have a High-Wire Act Ahead," discussed the issues utilities face today to meet the needs of their primary stakeholders – customers and investors.[5] The article also highlights current utility rate issues in the context of a recent study on rate of return regulation. Werner and Jarvis (2022) evaluated the authorized ROEs in 3,500 electric and gas rate case decisions in the U.S. from 1980-2021. They compared the allowed rate of return on equity to a number of capital cost benchmarks (government and corporate bonds, CAPM equity cost rate estimates, and U.K. authorized ROEs) and focused on three questions: (1) To what extent are utilities

[5] Jinjoo Lee, "Utilities Have a High-Wire Act Ahead," *Wall Street Journal*, October 9, 2022, p. C1,

being allowed to earn excess returns on equity by their regulators?; (2) How has this return on equity affected utilities' capital investment decisions?; and (3) What impact has this had on the costs paid by consumers?[6]

The authors reported the following empirical results:

(1) The real (inflation-adjusted) return regulators allow equity investors to earn has remained 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% to 5.50% 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% of allowed return on equity causes a utility's capital rate base to expand by an extra 5% on average. This supports the Averch-Johnson effect that utilities have the incentive to overinvest in capital projects if they are earning an outsized return on those investments;

(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. The time adjustment (i.e., the time lag) 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% being the most common authorized ROE;

[6] Karl Dunkle Werner and Stephen Jarvis, "Rate of Return Regulation Revisited," Working Paper, Energy Institute, University of California at Berkeley, 2022.

(7) Overall, based on the gap, consumers may be paying $2-$20 billion per year more than if authorized ROEs had fallen in line with other capital market indicators; and
(8) The authors also indicated that their results are similar to those found in a previous study by Rode and Fischback (2019).[7]

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.

III. Proxy Group Selection

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

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

[7] David C. Rode and Paul S. Fischbeck, "Regulated Equity Returns: A Puzzle." *Energy Policy,* October, 2019.

Q. Please describe the Electric Proxy Group.

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

(1) At least 50% of revenues from regulated electric operations as reported in SEC Form 10-K Report;

(2) Listed as a U.S.-based Electric Utility by *Value Line Investment Survey*;

(3) 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) Not involved in an acquisition of another utility, and not the target of an acquisition; and

(6) Analysts' long-term EPS growth rate forecasts available from investment information websites Yahoo Finance and/or Zack's.

The Electric Proxy Group includes twenty-four companies. Summary financial statistics for the proxy group are listed in Attachment JRW-4. The mean operating revenues and net plant among members of the Electric Proxy Group are $10.78 billion and $41.55 billion, respectively. The group on average receives 85% of its revenues from regulated electric operations, has a BBB+ bond rating from Standard & Poor's and a Baa2 rating from Moody's, a current average common equity ratio of 40.9%, and an earned return on common equity of 9.36%.

Q. Please discuss the Rea Proxy Group.

A. Mr. Rea's group is much smaller (only ten companies). Summary financial statistics for Mr. Rea's proxy group are provided in Panel B of page 1 of Attachment JRW-4. The median operating revenues and net plant for the Rea Proxy Group are $6.22 billion and $21.75 billion, respectively. The group on average receives 76% of its revenues from regulated electric operations, has a BBB+ bond rating from Standard & Poor's ("S&P's") and a Baa2 rating from Moody's, a common equity ratio of 44.0%, and a current earned return on common equity of 9.59%.

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

A. I believe that bond ratings provide a good assessment of the investment risk of a company. The S&P and Moody's issuer credit ratings for Eversource are BBB+ and Baa2, respectively. The average S&P and Moody's ratings for the Electric and Rea Proxy Groups are also BBB+ and Baa2. Overall, this indicates that the investment risk of Eversource is equal to the averages of the two groups. However, as noted above, both S&P and Moody's downgraded Eversource in December, 2024 from A- and Baa1 to BBB+ and Baa2. The downgrades were in response to rate case decisions in Connecticut regarding two Eversource

subsidiaries - Connecticut Natural Gas Corp. and Southern Connecticut Gas Co. However, it should be noted the PSCNH's S&P and Moody's credit ratings are A- and A3, which indicate the Company's investment risk is below the proxy groups.

On page 2 of Attachment JRW-4, I have assessed the riskiness of the two proxy groups using five different risk measures. These measures include Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price Stability. These risk measures indicate that the two proxy groups are similar in risk. The comparisons of the risk measures include Beta (0.93 vs. 0.93), Financial Strength (A vs. A) Safety (1.9 vs. 1.9), Earnings Predictability (87 vs. 93), and Stock Price Stability (87 vs. 88). On balance, these measures suggest that the investment risk of the two proxy groups is relatively low and is similar in risk.

IV. Capital Structure Ratios and Debt Cost Rate

Q. Please describe Eversource's proposed capital structure and senior capital cost rate.

A. The Company has proposed a capital structure of 0.00% short-term debt, 46.15% long-term debt and 53.85% common equity. This includes the post-test year $300 million refinancing of short-term debt. The Company has recommended a

long-term debt cost rate of 4.10%. Eversource witness Mr. Rea has recommended a common equity cost rate of 10.30% for Eversource. The Company's overall proposed rate of return is 7.44%.

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

A. As shown in Attachment JRW-4, the median common equity ratio for the companies in the Electric and Rea Proxy Groups are 40.9% and 44.0%. This indicates that the Company's proposed capitalization has a higher common equity ratio than the two proxy groups. It should be noted that the capitalization ratios of the proxy groups include total debt which consists of both short-term and long-term debt. In assessing financial risk, short-term debt is included because, just like long-term debt, short-term has a higher claim on the assets and earnings of the company and requires timely payment of interest and repayment of principal.

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

A. Yes. It is appropriate to use the common equity ratios of the utility holding companies because the *holding companies* are publicly traded, and their stocks are used in the cost-of-equity capital studies. The equities of the *operating*

utilities are not publicly traded, and hence their stocks cannot be used to compute the cost of equity capital for Eversource.

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

A. Yes. Short-term debt, like long-term debt, has a higher claim on the assets and earnings of the company and requires timely payment of interest and repayment of principal. Thus, in comparing the common equity ratios of the holding companies with Eversource's recommendation, it is appropriate to include short-term debt when computing the holding company common equity ratios. Additionally, the financial risk of a company is based on total debt, which includes both short-term and long-term debt.

Q. How does the company's proposed capitalization compare to that of its parent company, Eversource Energy?

A. Eversource Energy, Inc.'s common equity ratio as of December 31, 2023, was 34.5%, as shown in Panel A of page 1 of Attachment JRW-4. Hence, the Company is proposing a capitalization with a much higher common equity ratio (53.85%) than that of its parent company (34.5%).

Q. Please discuss the issue of public utility holding companies such as Eversource using debt to finance equity in subsidiaries.

A. Moody's published an article on the use of low-cost debt financing by public utility holding companies to increase their ROEs. The summary observations included the following about how these holding companies use "leverage" and how an increase in leverage at the parent holding company can "hurt the credit profiles of its regulated subsidiaries":

> U.S. utilities use leverage at the holding-company level to invest in other businesses, make acquisitions and earn higher returns on equity. In some cases, an increase in leverage at the parent can hurt the credit profiles of its regulated subsidiaries.[8]
>
> This financial strategy has traditionally been known as "double leverage."

Noting that "double leverage" results in a consolidated debt-to-capitalization ratio that is higher at the parent than at the subsidiary because of the additional debt at the parent," Moody's defined double leverage as follows:

> Double leverage is a financial strategy whereby the parent raises debt but downstreams the proceeds to its operating subsidiary, likely in the form of an equity investment. Therefore, the subsidiary's operations are financed by debt raised at the subsidiary level and by debt financed at the holding-company level. In this way, the subsidiary's equity is leveraged twice, once with the subsidiary debt and once with the holding-company debt. In a simple operating-company/holding-company structure, this

[8] *High Leverage at the Parent Often Hurts the Whole Family*, MOODY'S INVESTORS' SERVICE, May 11, 2015, at 1.

practice results in a consolidated debt-to-capitalization ratio that is higher at the parent than at the subsidiary because of the additional debt at the parent.[9]

Moody's goes on to discuss the potential risk "down the road" to utilities of this financing corporate strategy if regulators were to ascribe the debt at the parent level to the subsidiaries or adjust the authorized return on capital:

> **"Double leverage" drives returns for some utilities but could pose risks down the road.** The use of double leverage, a long-standing practice whereby a holding company takes on debt and downstreams the proceeds to an operating subsidiary as equity, could pose risks down the road if regulators were to ascribe the debt at the parent level to the subsidiaries or adjust the authorized return on capital.[10]

(emphasis added).

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

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

[9] *Id.* at 5.

[10] *Id.* at 1.

rates they pay.

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

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

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

A. Just as there is a direct correlation between the utility's authorized return on equity and the utility's revenue requirements (the higher the return, the greater the revenue requirement), there is a direct correlation between the amount of equity in the capital structure and the revenue requirements the customers are called on to bear. Again, equity capital is more expensive than debt. Not only

does equity command a higher cost rate, it also adds more to the income tax burden that ratepayers are required to pay through rates. As the equity ratio increases, the utility's revenue requirements increase and the rates paid by customers increase. If the proportion of equity is too high, rates will be higher than they need to be. For this reason, the utility's management should pursue a capital acquisition strategy that results in the proper balance in the capital structure to minimize the overall cost of capital.

Q. How have utilities typically struck this balance?

A. Due to regulation and the essential nature of its output, a regulated utility is exposed to less business risk than other companies that are not regulated. This means that a regulated electric utility company can reasonably carry relatively more debt in its capital structure than can most unregulated companies. Thus, a utility should take appropriate advantage of its lower business risk to employ cheaper debt capital at a level that will benefit its customers through lower revenue requirements.

Q. What can the Commission do when a utility proposes a capital structure with a high equity ratio?

A. When a regulated electric utility's actual capital structure contains a high equity ratio, the regulator's options are: (1) to impute a more reasonable capital

structure and to reflect the imputed capital structure in revenue requirements; or (2) to recognize the downward impact that an unusually high equity ratio will have on the financial risk of a utility and authorize a lower common equity cost rate than that for the proxy group.

Q. Please comment on Mr. Rea's capital structure study presented in Table 15 on page 87 of his testimony.

A. Mr. Rea supports the Company's proposed capital structure in a study he performed in Table 15. He reports that the average of the operating subsidiary companies owned by the proxy utilities is 53.2%, which is similar to the capitalization proposed by the Company. There are two errors in the study. First, the operating subsidiary companies are not the proxy utility companies in their proxy group. The proxy utilities are the parent holding companies that own the operating companies. As shown in Attachment JRW-4, the average common equity ratio for the parent holding companies in the Gas and Combination Proxy Groups as of December 31, 2023 were 40.9% and 44.0%. Hence, Mr. Rea's study does not support the Company's proposed capital structures since he did not use the actual proxy companies. Second, Mr. Rea's study does not include short-term debt for the proxy operating utilities. As discussed above, when assessing financial risk and computing a common equity ratio, it is appropriate to

include short-term debt. As noted, short-term debt, like long-term debt, has a higher claim on the assets and earnings of the company and requires timely payment of interest and repayment of principal. Therefore, the financial risk of a company is based on total debt, which includes both short-term and long-term debt. This is why credit rating agencies use total debt in assessing the leverage and financial risk of companies.

Q. Given that the Company's proposed capitalization has a higher common equity ratio than the average common ratio employed by the proxy groups and its parent company, what capital structure and debt cost rate are you recommending for Eversource?

A. As indicated, the Company's proposed capital structure has more equity and less financial risk than its parent and other electric utility companies. As a result, I am recommending a capital structure with a common equity ratio of 50.0%. This is the common equity ratio approved by the Commission in the Company's last rate case and still well above the average common equity ratios of the two proxy groups (40.9% and 44.0%).

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

A. Yes.

V. The Cost of Common Equity Capital

A. Utility Capital Cost Indicators

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

A. Page 1 of Attachment JRW-3 shows the yields on A-rated public utility bonds. These yields have gradually declined in the past decade from 7.5% to the 3.0% range. These yields bottomed out in the 3.0% range in 2020 and 2021 due to the economic fallout from the COVID-19 pandemic. They increased with interest rates in general beginning in 2022, and now are in the 5.75% range.

Page 2 of Attachment JRW-3 shows the average dividend yield for electric utilities. These yields declined over the past decade, bottoming out at 3.1% in 2019. They have increased since that time, and the average was 3.9% as of 2023. Page 3 of Attachment JRW-3 provides the average earned ROEs and market-to-book ratios for electric utilities. The average earned ROE has been in the 9.0% to 10.0% range over the past five years. The average market-to-book ratio has increased over past decade, peaked at 2.0X in 2019, and has declined since that time and was 1.50X in 2023. As discussed below, a ratio over 1.0X indicates a company is earning a ROE that is above the ROE investors require.

B. Overview

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

A. In a competitive industry, the return on a firm's common equity capital is determined through the competitive market for its goods and services. Due to the capital requirements needed to provide utility services and the economic benefit to society from avoiding duplication of these services and the construction of utility-infrastructure facilities, most public utilities are monopolies. Because of the lack of competition and the essential nature of their services, it is not appropriate to permit monopoly utilities to set their own prices.

Thus, regulation seeks to establish prices that are fair to consumers and, at the same time, sufficient to meet the operating and capital costs of the utility, *i.e.*, provide an adequate return on capital to attract investors.

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

A. The total cost of operating a business includes the cost of capital. The cost of common-equity capital is the expected return on a firm's common stock that the marginal investor would deem sufficient to compensate for risk and the time

value of money. In equilibrium, the expected and required rates of return on a company's common stock are equal.

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

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

cover capital costs. When these profits are in excess of those required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

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

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of cash flow, while low ROE companies in high-growth markets, such as Texas Instruments, barely generate enough cash flow to finance growth.
>
> A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically profitable and its market value will exceed book value. If, however, the business earns an ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value. [11]

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

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:

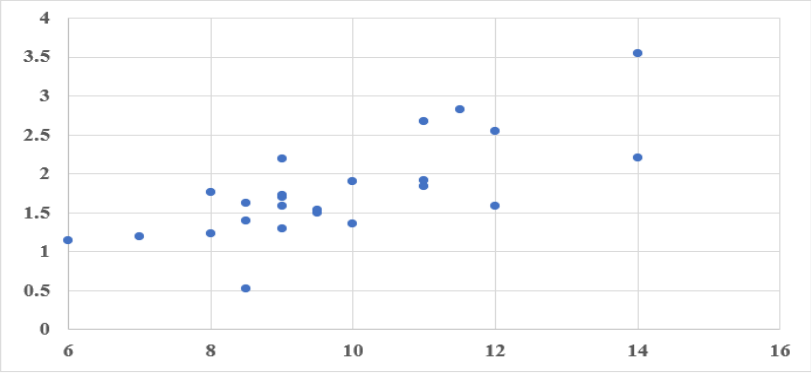
> For a given industry, more profitable firms – those able to generate higher returns per dollar of equity – should have higher market-to-book ratios. Conversely, firms which are unable to generate returns in excess of their cost of equity [(K)] should sell for less than book value.
>
> | *Profitability* | *Value* |
> |---|---|
> | *If ROE > K* | *then Market/Book > 1* |
> | *If ROE = K* | *then Market/Book =1* |
> | *If ROE < K* | *then Market/Book < 1*[12] |

To assess the relationship by industry, as suggested above, I performed a regression study between estimated ROE and market-to-book

[12] Benjamin Esty, "Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997.

ratios of the companies in the proxy group. The results are presented in Figure 8. The average R-square is 0.83.[13] This demonstrates the strong positive relationship between ROEs and market-to-book ratios for public utilities. Given that the market-to-book ratios have been above 1.0 for a number of years, this also demonstrates that utilities have been earning ROEs above the cost of equity capital for many years.

Figure 8
The Relationship Between Expected ROE and Market-to-Book Ratios
Electric Utility Companies



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

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

[13] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected ROE). R-squares vary between 0 and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

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

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

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

Table 6
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.

Table 6 provides an assessment of investment risk for 93 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*. *See* Table 6, below. The study shows that the investment risk

of utilities is low compared to other industries.[14] The average betas for electric, gas, and water utility companies are 0.89, 0.87, and 0.78, respectively.[15] As such, the cost of equity for utilities is the lowest of all industries in the U.S., based on modern capital market theory.

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

[14] 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.

[15] 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.

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"), but I give it less weight.

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.

C. Discounted Cash Flow 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:

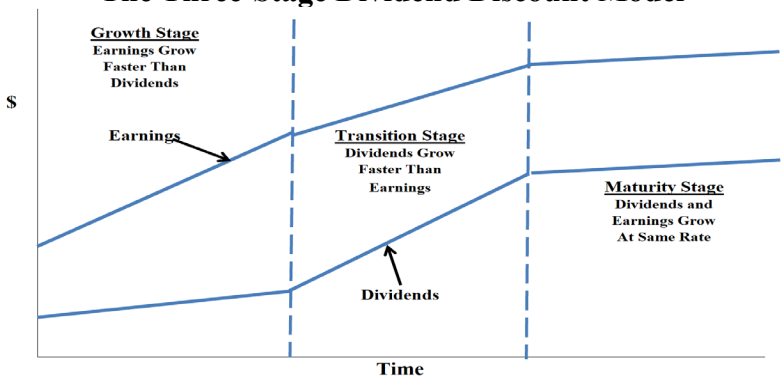
$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_n}{(1+k)^n}$$

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 9. This model presumes that a company's dividend payout progresses initially through a growth stage, then enters a transition stage, and finally reaches 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 9
The Three-Stage Dividend Discount Model



1. **Growth stage**: Characterized by rapidly expanding sales, high profit margins, and an abnormally high growth in earnings per share. Because of highly profitable expected investment opportunities, the payout ratio is low. Competitors are attracted by the unusually high earnings, leading to a decline in the growth rate.
2. **Transition stage**: In later years, increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings.
3. **Maturity (steady-state) stage**: Eventually, the company reaches a position where its new investment opportunities offer, on average, only slightly more attractive ROEs. At that time, its earnings growth rate, payout ratio, and ROE stabilize for the remainder of its life. As I will explain below, the constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using 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 briefly explain the concept of "Present Value."

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

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

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

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

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

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

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

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

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

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

consider recent firm performance, in conjunction with current economic developments and other information available to investors, to accurately estimate investors' expectations.

Q. What dividend yields have you reviewed?

A. I have calculated the dividend yields for the companies in the proxy group using the current annual dividend and the 30-day, 90-day, and 180-day average stock prices. These dividend yields are provided on page 2 of Attachment JRW-9. Using both the means and medians, the dividend yields range from 3.5% to 3.8% for the Electric Proxy Group and 3.5% to 3.9% for the Rea Proxy Group. The average of these yields is 3.7% for both groups, which I will use as the dividend yields for the Electric and Rea Proxy Groups.

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

A. According to the traditional DCF model, the dividend yield term relates to the dividend yield over the coming period. As indicated by Professor Myron Gordon, who is commonly associated with the development of the DCF model for popular use, this is obtained by: (1) multiplying the expected dividend over the coming quarter by 4, 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.[16]

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

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

A. I adjust the dividend yield by one-half (1/2) of the expected growth so as to reflect growth over the coming year. The DCF equity cost rate ("K") is computed as:

$$K = [(D/P) * (1 + 0.5g)] + g$$

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

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

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

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

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

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

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

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). The internal growth rate is computed as the retention rate times the return on equity. Internal growth is significant in determining long-run earnings and, therefore, dividends. Investors recognize the

importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

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

A. Analysts' EPS forecasts for companies are collected and published by a number of different investment information services, including Institutional Brokers Estimate System ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call and Reuters, among others. Thompson Reuters publishes analysts' EPS forecasts under different product names, including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, and Zacks publish their own set of analysts' EPS forecasts for companies. These services do not reveal: (1) the analysts who are solicited for forecasts; or (2) the identity of the analysts who actually provide the EPS forecasts that are used in the compilations published by the services. I/B/E/S, Bloomberg, FactSet, and First Call are fee-based services. These services usually provide detailed reports and other data in addition to analysts' EPS forecasts. Thompson Reuters and Zacks do provide limited EPS forecast data free-of-charge on the internet. Yahoo finance (http://finance.yahoo.com) lists Thompson Reuters as the source of its summary EPS forecasts. The Reuters website (www.reuters.com) also publishes EPS forecasts from Thompson Reuters, but with more detail. Zacks (www.zacks.com) publishes its summary forecasts on its website. Zacks estimates are also available

on other websites, such as MSN.Money (http://money.msn.com).

Q. Which of these EPS forecasts is used in developing a DCF growth rate?

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

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

A. There are several issues with using the EPS growth rate forecasts of Wall Street analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long term, dividend and earnings will have to grow at a similar growth rate. Therefore, consideration must be given to 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 not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[17] Employing data

[17] M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting (Vol. 8),* Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

over a twenty-year period, these authors demonstrate that using the most recent year's actual EPS figure to forecast EPS in the next 3-5 years proved to be just as accurate as using the EPS estimates from analysts' three-to-five year EPS growth-rate forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings growth-rate forecasts should be used with caution as inputs for valuation and cost-of-capital purposes.

Finally, and most significantly, it is well known that the long-term EPS growth-rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years.[18] Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate. On this issue, a study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to

[18] The studies that demonstrate analysts' long-term EPS forecasts are overly-optimistic and upwardly biased include: R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 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," *Journal of Finance,* pp. 643−684, (2003); M. Lacina, B. Lee, and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8),* Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101; and Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, "Equity Analysts, Still Too Bullish," *McKinsey on Finance*, pp. 14-17, (Spring 2010).

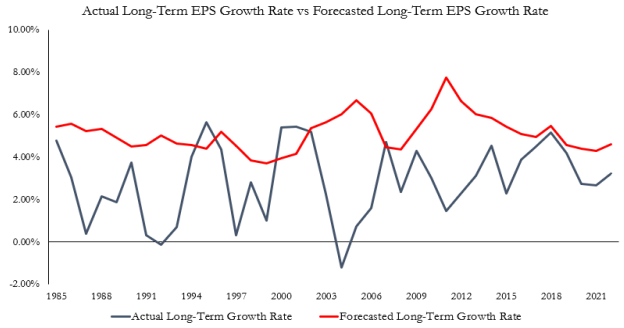
an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[19]

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

A. Yes. I have completed a study of the accuracy of analysts' EPS growth rates for utilities over the 1985-2023 time period. In the study, I used the utilities listed in the East, West, and Central Electric Utilities sectors by *Value Line*. I collected the three-to-five year projected EPS growth rate from I/B/E/S for each utility, and compared that growth rate to the utility's actual subsequent three-to-five year EPS growth rate. As shown in Figure 10, the mean forecasted EPS growth rate (depicted in the red line in Figure 10) is consistently greater than the achieved actual EPS growth rate over the time period, with the exception of 1994-96 and 2000-2002. Over the entire period, the mean forecasted EPS growth rate is over 200 basis points above the actual EPS growth rate. As such, the projected EPS growth rates for electric utilities are overly-optimistic and upwardly-biased.

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

Figure 10
Mean Forecasted vs. Actual Long-Term EPS Growth Rates
Electric Utilities
1985-2023



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

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

A. Yes. A study by Szakmary, Conover, and Lancaster (2008) evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a thirty-year time period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved.[20]

Szakmary, Conover, and Lancaster (SCL) studied the predicted versus the projected stock returns, sales, profit margins, and earnings per share made by

[20] Szakmary, A., Conover, C., & Lancaster, C. (2008), "An Examination of *Value Line*'s Long-Term Projections," *Journal of Banking & Finance*, May 2008, pp. 820-833.

Value Line over the 1969 to 2001 time period. *Value Line* projects variables from a three-year base period (e.g., 2019-2021) to a future three-year projected period (e.g., 2025-27). SCL used the sixty-five 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% for the Dow Jones' stocks in *Value Line*'s forecasts was nearly double the realized annual stock return. 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 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.

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

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

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

A. According to the DCF model, the equity cost rate is a function of the dividend yield

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

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

A. Page 3 of Attachment JRW-6 provides the 5- and 10- year historical growth rates for EPS, DPS, and BVPS for the companies in the two proxy groups, as published in the *Value Line Investment Survey.* The median historical growth measures for EPS, DPS, and BVPS for the Electric Proxy Group, as provided in Panel A, range from 3.5% to 5.0%, with an average of the medians of 4.3%. For the Rea Proxy Group, as shown in Panel B of page 3 of Attachment JRW-9, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 3.5% to 6.8%, with an average of the medians of 4.9%.

Q. Please summarize V*alue Line's* projected growth rates for the companies in the proxy group.

A. *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the proxy groups are shown on page 4 of Attachment JRW-6. As stated above, due to the presence of outliers, the medians are used in the analysis. For the

Electric Proxy Group, as shown in Panel A of page 4 of Attachment JRW-6, the medians range from 4.0% to 6.0%, with an average of the medians of 4.9%. The range of the medians for the Rea Proxy Group, shown in Panel B of page 4 of Attachment JRW-6, is from 4.3% to 6.0%, with an average of the medians of 5.0%.[21]

Also provided on page 4 of Attachment JRW-6 are the prospective sustainable growth rates for the companies in the two proxy groups as measured by *Value Line*'s average projected retention rate and return on shareholders' equity. As noted above, sustainable growth is a significant and a primary driver of long-run earnings growth. For the Electric and Rea Proxy Groups, the median prospective sustainable growth rates are 4.1% and 4.1%, respectively.

Q. Please assess growth for the proxy group as measured by analysts' forecasts of expected 5-year EPS growth.

A. Yahoo and Zacks collect, summarize, and publish Wall Street analysts' long-term EPS growth rate forecasts for the companies in the proxy group. These forecasts are provided for the companies in the proxy groups on page 5 of

[21] It should be noted that *Value Line* uses a different approach in estimating projected growth. *Value Line* does not project growth from today, but *Value Line* projects growth from a three-year base period – 2021-2023 – to a projected three-year period for the period 2029-2029. Using this approach, the three-year based period can have a significant impact on the *Value L*ine growth rate if this base period includes years with abnormally high or low earnings. Therefore, I evaluate these growth rates separately from analysts EPS growth rates.

Attachment JRW-6. I have reported both the mean and median growth rates for the groups. Since there is considerable overlap in analyst coverage between the three services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the three services for each company to arrive at an expected EPS growth rate for each company. The mean/median of analysts' projected EPS growth rates for the Electric and Rea Proxy Groups are 6.6%.6.6% and 6.8%/7.2%, respectively.[22]

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

A. Page 6 of Attachment JRW-6 shows the summary DCF growth rate indicators for the proxy group.

The historical growth rate indicators for my Electric Proxy Group imply a baseline growth rate of 4.3%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.9%, and *Value Line*'s projected sustainable growth rate is 4.1%. The projected EPS growth rates of Wall Street analysts for the Electric Proxy Group are 6.6% and 6.6% (average = 6.6%) as measured by the mean and median growth rates. The overall range for the

[22] Given variation in the measures of central tendency (term of art (to me!) - would "averages" work?) of analysts' projected EPS growth rates proxy groups, I have considered both the means and medians figures in the growth rate analysis.

projected growth-rate indicators (ignoring historical growth) is 4.1% to 6.6% and the average of the three projected growth rates is 5.2% (4.1%, 4.9%, 6.6%). Giving primary weight to the projected growth rates of Wall Street analysts and *Value Line*, but recognizing the upward bias nature of these forecasts, I believe that the appropriate projected growth rate is the range of 5.2% to 6.6%. I will use the midpoint of this range, 5.90%, as my DCF growth rate for the Electric Proxy group. This growth rate figure is in the upper end of the range of historic and projected growth rates for the Electric Proxy Group.

For the Rea Proxy Group, the historical growth rate indicators suggest a growth rate of 4.9%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 5.0%, and *Value Line*'s projected sustainable growth rate is 4.1%. The projected EPS growth rates of Wall Street analysts are 6.8% and 7.2% (average = 7.0%) as measured by the mean and median growth rates. The overall range for the projected growth-rate indicators (ignoring historical growth) is 4.1% to 7.0% and the average of the three projected growth rates is 5.4% (5.0%, 4.1%, 7.0%). Again, giving primary weight to the projected EPS growth rate of Wall Street analysts, but recognizing the upward bias nature of these forecasts, I believe that the appropriate DCF growth rate range is 5.4% to 7.0%. I will use the midpoint of this range, 6.2%, as my DCF growth rate for the

Rea Proxy Group. Similar to the Electric Proxy Group, this growth rate figure is in the upper end of the range of historic and projected growth rates for the Rea Proxy Group.

Q. What are the results from your application of the DCF model?

A. My DCF-derived equity cost rate for the group is summarized on page 1 of Attachment JRW-6 and in Table 7 below.

Table 7
DCF-derived Equity Cost Rate/ROE

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	**3.70%**	**1.0295**	**5.90%**	**9.7%**
Rea Proxy Group	**3.70%**	**1.0310**	**6.20%**	**10.0%**

The overall DCF results for the Electric and Rea Proxy Groups are 9.7% and 10.0%, respectively.

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:

$$\boldsymbol{K = (R_f) + ß * [E(R_m) - (R_f)]}$$

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

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest (R_f), the beta (ß), and the expected

equity or market risk premium *[E(R_m) - (R_f)]*. *R_f* is the easiest of the inputs to measure – it is represented by the yield on long-term U.S. Treasury bonds. ß, the measure of systematic risk, is a little more difficult to measure because there are different opinions about what adjustments, if any, should be made to historical betas due to their tendency to regress to 1.0 over time. And finally, an even more difficult input to measure is the expected equity or market risk premium (*E(R_m) - (R_f)*). I will discuss each of these inputs below.

Q. Please discuss Attachment JRW-7.

A. Attachment JRW-7 provides the summary results for my CAPM study. Page 1 shows the results, and the following pages contain the supporting data.

Q. Please discuss the risk-free interest rate.

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

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

A. As shown on page 2 of Attachment JRW-7, the yield on 30-year U.S. Treasury bonds has been in the 1.3% to 5.00% range over the 2010–2025 time period. The current 30-year Treasury yield is in the upper end of this range. Kroll, a

division of the investment firm Duff & Phelps, recommends using a normalized risk-free interest rate.[23] Currently, Kroll is recommending a normalized risk-free interest rate of 3.50% or, if the spot 20-year Treasury yield is above 3.50%, Kroll recommends using the spot 20-year Treasury yield. However, they have also noted these yields are distorted currently. "We are aware of lack of liquidity issues in the U.S. Treasury market for the 20-year maturity, which is causing some distortion in the 20-year yield relative to that observed for 10- and 30-year maturities."[24] The illiquidity and resulting yield distortion has also been highlighted in the financial press.[25] As shown in Figure 5 (page 14), the yield curve is currently inverted with a yield "hump" at the 20-year. Given the recent range of yields, and recognizing the "hump," I am using 4805% as the risk-free rate, or R_f, in my CAPM.

[23] Kroll, *Cost of Capital Resource Center* (2023). https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.

[24] Duff & Phelps, "Impact of High Inflation and Market Volatility on Cost of Capital Assumptions – October 2022 Update." - //efaidnbmnnnibpcajpcglclefindmkaj/https://www.kroll.com/-/media/cost-of-capital/impact-high-inflation-market-volatility-coc-assumptions-2022.pdf.

[25] For example, see Duguid and Smith, "The market is just dead - Investors steer clear of 20-year Treasuries," *Financial Times*, July 22, 2022.

Q. Does the 4.80% risk-free interest rates take into consideration of forecasts of higher interest rates?

A. No, it does not. Forecasts of higher interest rates have been notoriously wrong for a decade.[26] My 4.80% risk-free interest rate considers the range of interest rates in the past and effectively synchronizes the risk-free rate with the market risk premium. The risk-free rate and the market risk premium are interrelated in that the market risk premium is developed in relation to the risk-free rate. As discussed below, my market risk premium is based on the results of many studies and surveys that have been published over time. Therefore, my risk-free interest rate of 4.80% is effectively a normalized risk-free rate of interest.

[26] Ben Eisen, "Yes, 100% of economists were dead wrong about yields, *Market Watch*," October 22, 2014. Perhaps reflecting this fact, *Bloomberg* reported that the Federal Reserve Bank of New York has stopped using the interest rate estimates of professional forecasters in the Bank's interest rate model due to the unreliability of those interest rate forecasts. See Susanne Walker and Liz Capo McCormick, "Unstoppable $100 Trillion Bond Market Renders Models Useless," *Bloomberg.com* (June 2, 2014). http://www.bloomberg.com/news/2014-06-01/the-unstoppable-100-trillion-bond-market-renders-models-useless.html. Joe Weisenthal, "How Interest Rates Keep Making People on Wall Street Look Like Fools," Bloomberg.com, March 16, 2015. http://www.bloomberg.com/news/articles/2015-03-16/how-interest-rates-keep-making-people-on-wall-street-look-like-fools. Akin Oyedele, "Interest Rate Forecasters are Shockingly Wrong Almost All of the Time," Business *Insider*, July 18, 2015. http://www.businessinsider.com/interest rate-forecasts-are-wrong-most-of-the-time-2015-7. "*Market Watch*," October 22, 2014.

Q. What betas are you employing in your CAPM?

A. Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the market also has a beta of 1.0. A stock 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 3 of Attachment JRW-7, the slope of the regression line is the stock's ß. A steeper line indicates that the stock is more sensitive to the return on the overall market. This means that the stock has a higher ß and greater-than-average market risk. A less steep line indicates a lower ß and less market risk. Several online investment information services, such as Yahoo and Reuters, provide estimates of stock betas. Usually these services report different betas for the same stock. The differences are usually due to: (1) the time period over which ß is measured; and (2) any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time.

Q. Please discuss the change in betas in 2020.

A. I have traditionally used the betas as provided in the *Value Line Investment Survey*. The betas for utilities recently increased significantly in 2020 as a result of the volatility of utility stocks during the stock market meltdown associated with the onset of COVID-19. 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 about 0.30 to the average utility beta.

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

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

[27] https://www.valueline.com/investment-education/glossary/b.

utility stocks during March 2020 were impacted by using weekly and not monthly returns. Yahoo Finance uses five years of monthly returns to compute betas, and Yahoo Finance's betas for utilities are lower than *Value Lin*e's.

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

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

The Blume adjustment procedure is:

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

For example, suppose a company has an observed past beta of 0.50. The

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

regressed (Blume-adjusted) beta would be:

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

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

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

A. In the past, I have 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 have included that adjustment in my analysis. As shown on page 3 of Attachment JRW-7, I have averaged the *Value Line* betas and my adjusted S&P Capital IQ for the proxy groups. The median betas for the Gas and Combination Proxy Groups are 0.82 and 0.81.

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 been developed with significantly different magnitudes for $E(R_m)$. As Merton Miller, the 1990 Nobel Prize winner in economics indicated, $E(R_m)$ is very difficult to measure and is one of the "great mysteries in finance."[29]

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

A. Page 4 of Attachment JRW-7 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

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

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 have been criticized in numerous academic studies, which I shall 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 financial and valuation data reviewed as part of the studies. These studies, which fall under the category "*ex ante* models and market data," compute *ex ante* expected returns using market data to arrive at an expected equity risk premium. These studies have also been called "puzzle research" after the famous study by Mehra and Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[30]

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

In addition, there are a number of surveys of financial professionals regarding the market risk premium, as well as several published surveys of academics on the equity risk premium. Duke University has published a CFO Survey on a quarterly basis for over 10 years.[31] 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*.[32] This survey of professional economists has been published for almost 50 years. In addition, Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision [33]

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

[31] *The CFO Survey*, DUKE UNIVERSITY, https://www.richmondfed.org/cfosurvey.

[32] *Survey of Professional Forecasters*, FEDERAL RESERVE BANK OF PHILADELPHIA (Feb. 10, 2023), https://www.philadelphiafed.org/-/media/frbp/assets/surveys-and-data/survey-of-professional-forecasters/2020/spfq120.pdf?la=en. 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.

[33] Pablo Fernandez, Teresa Garcia, and Pablo Acín, SURVEY: MARKET RISK PREMIUM AND RISK-FREE RATE USED FOR 80 COUNTRIES IN 2023, IESE BUSINESS SCHOOL WORKING PAPER (April 4, 2023).

A. Derrig and Orr, Fernandez, and Song completed the most comprehensive reviews of the research on the market risk premium.[34] Derrig and Orr's study evaluated the various approaches to estimating market-risk premiums, discussed the issues with the alternative approaches, and summarized the findings of the published research on the market risk premium.

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

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

Q. Please discuss page 5 of Attachment JRW-7.

A. Page 5 of Attachment JRW-7 provides a summary of the results of the market risk-premium studies that I have reviewed. These include the results of: (1) the various studies of the historical risk premium, (2) *ex ante* market risk-premium studies, (3) market risk-premium surveys of CFOs, financial forecasters,

[34] *See* Richard Derrig & Elisha Orr, EQUITY RISK PREMIUM: EXPECTATIONS GREAT AND SMALL, Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, (Aug. 28, 2003); Pablo Fernandez, EQUITY PREMIUM: HISTORICAL, EXPECTED, REQUIRED, AND IMPLIED, IESE Business School Working Paper (2007); Zhiyi Song, THE EQUITY RISK PREMIUM: AN ANNOTATED BIBLIOGRAPHY, CFA Institute (2007).

analysts, companies and academics, and (4) the Building Blocks approach to the market risk premium. There are also results reported for over 30 studies, and the median market-risk premium of these studies is 4.55%.

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

A. The studies cited on page 5 of Attachment JRW-7 include every market risk premium study and survey I could identify that was published over the past 25 years and that provided a market risk premium estimate. Many of these studies were published prior to the financial crisis that began in 2008. In addition, some of these studies were published in the early 2000s at the market peak. It should be noted that many of these studies (as indicated) used data over long periods of time (as long as 50 years of data) and so were not estimating a market risk premium as of a specific point in time (e.g., the year 2001). To assess the effect of the earlier studies on the market risk premium, I have reconstructed page 5 of Attachment JRW-7 on page 6 of Attachment JRW-7; however, I have eliminated all studies dated before January 2, 2010. The median market risk premium estimate for this subset of studies is 5.03%.

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

A. As noted above, there are three approaches to estimating the market-risk premium – historic stock and bond returns, *ex ante* or expected returns models, and surveys. The studies on page 6 of Attachment JRW-7 can be summarized in the following manners:

Historic Stock and Bond Returns - Historic stock and bond returns suggest a market-risk premium in the 4.40% to 6.80% range, depending on whether one uses arithmetic or geometric mean returns.

Ex Ante Models - Market risk-premium studies that use expected or ex ante return models indicate a market-risk premium in the range of 2.51% to 6.00%.

Surveys – Market-risk premiums developed from surveys of analysts, companies, financial professionals, and academics are lower, with a range from 3.40% to 5.70%.

Building Block – The mean reported market risk premiums reported in studies using the building block approach range from 3.0% to 5.21%.

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

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

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.[35] His survey results are included on pages 5 and 6 of Attachments JRW-7. 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%.[36] His estimated market risk premium for the U.S. has been in the 5.00% to 5.70% 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.[37] His estimated market risk premium has been in the range of 4.0% to 6.0% since 2010. As shown in Figure 11, as of January 1, 2025, Damodaran's estimate of the equity risk premium was 4.00%.[38]

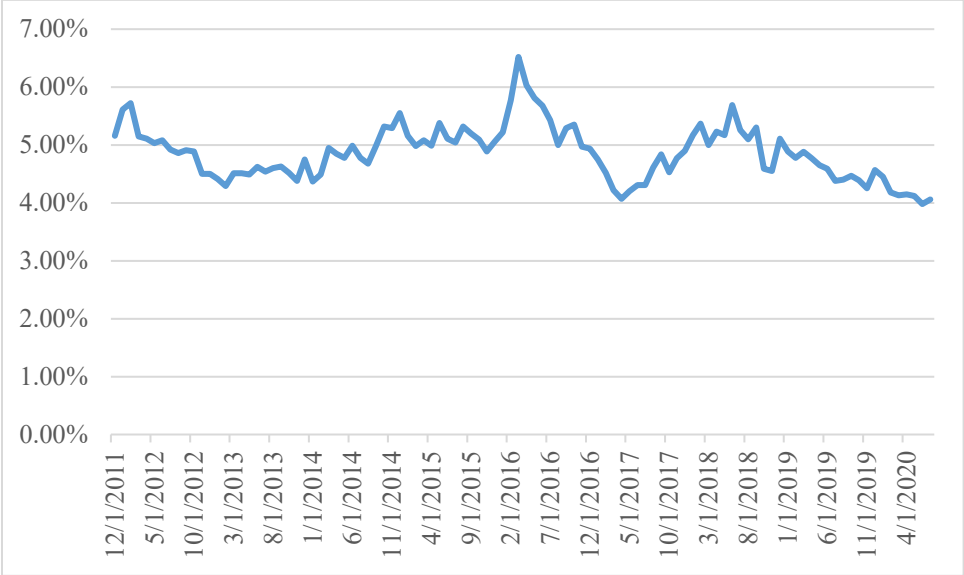
[35] Pablo Fernandez, Teresa Garcia, & Pablo Acín, *Survey: Market Risk Premium and Risk-Free Rate Used for 80 Countries in 2024, IESE Business School Working Paper* (March 2024).

[36] *Id.* at 3.

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

[38] Aswath Damodaran, DAMODARAN ONLINE, N.Y. UNIV., http://pages.stern.nyu.edu/~adamodar/. On August 12, 2023, Professor Damodaran appeared on CNBC to discuss the equity risk premium. See https://www.youtube.com/watch?v=VPkQ7_3Sf1E.

Figure 11
Damodaran Implied Market Risk Premium

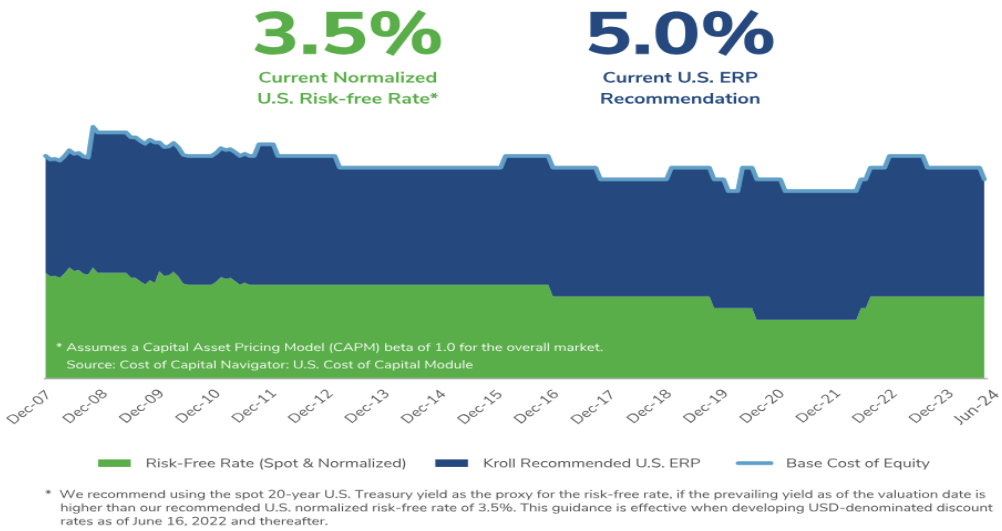


Source: http://pages.stern.nyu.edu/~adamodar/.

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 7 of Attachment JRW-7 and are also depicted graphically in Figure 12 below. Over the past decade, Kroll's recommended normalized risk-free interest rates have been in the 2.50% to 4.50% range and market risk premiums have been in the 5.0% to 6.0% range. Most recently, Kroll reduced its market risk premium from 6.00% to 5.50% on June 8, 2023 and to 5.00% on June 5, 2024.[39]

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

Figure 12
Kroll
Normalized Risk-Free Rate and Market Risk Premium
Recommendations
2007–2025



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

Finally, KPMG, the international accounting firm, regularly publishes an update to their market risk premium to be used in their valuation practice. KPMG's market risk premium is shown in Figure 13, which was as high as 6.75% in 2020, and was lowered to as low as 5.00% on September 30, 2021. KPMG increased its market risk premium to 6.00% on June 30, 2022, but

lowered it to 5.75% on December 31, 2022, to 5.50% on March 31, 2023, to 5.25% on June 30, 2023, and to 5.00% on September 30, 2023.[40]

Figure 13
KPMG
Market Risk Premium Recommendations
2020–2025

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

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

A. The studies on page 6 of Attachment JRW-7 and, more importantly, the more timely and relevant studies cited in the previous section, suggest that the

[40] *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/5d9da61986db2894649a7ef2/5d9da63386db2894649a7ef5.

appropriate market risk premium in the U.S. is in the 4.0% to 6.0% range. In the last year, as interest rates have increased, estimates of the market risk premium have 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 in the 5.00% range should be used 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 1 of Attachment JRW-7 and in Table 8.

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

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Gas Proxy Group	**4.80%**	**0.82**	**5.00%**	**8.90%**
Combination Proxy Group	**4.80%**	**0.81**	**5.00%**	**8.85%**

For the Electric Proxy Group, the risk-free rate of 4.80% plus the product of the beta of 0.82 times the equity risk premium of 5.00% results in an 8.90% equity cost rate. For the Rea Proxy Group, the risk-free rate of 4.80% plus the product of the beta of 0.81 times the equity risk premium of 5.00% results in an 8.85% equity cost rate.

E. Equity Cost Rate Summary

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

A. My DCF and CAPM results are summarized in the table below.

Table 9
ROEs Derived from DCF and CAPM Models

	DCF	CAPM
Electric Proxy Group	**9.70%**	**8.90%**
Rea Proxy Group	**10.00%**	**8.85%**

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

A. Given these results, I conclude that the appropriate equity cost rate for companies in the Electric and Rea Proxy Groups is in the 8.85% to 10.00% range. However, since I rely primarily on the DCF model as well as the results for the Electric Proxy Group, I believe that the equity cost rate for these groups is in the 9.25% to 9.75% range. Given the recent rise in interest rates, I will use the midpoint of this range, 9.50%, for Eversource. This is very fair to the Company, given that: (1) I have recommended a capital structure with a higher common equity ratio and lower financial risk than the proxy groups; (2) Whereas Eversource's S&P and Moody's credit ratings s it is equal in investment risk to the proxy companies, PSCNH's S&P and Moody's credit ratings suggest that the Company's investment risk is below the averages of the proxy groups; and (3) Eversource is a distribution-only electric utility.

Q. If the Commission adopts the Company's proposed capital structure with a common equity ratio of 53.85%, what is your ROE recommendation?

A. If the Commission adopts the Company's proposed capital structure, then my ROE recommendation goes to the bottom of my range, 9.25%.

Q. Please indicate why an equity cost rate of 9.50% is appropriate for the electric operations of Eversource.

A. There are a number of reasons why an equity cost rate of 9.50% is appropriate and fair for the Company in this case:

1. As shown in Attachment JRW-7, page 1, capital costs for utilities, as indicated by long-term bond yields, are still at relatively low levels.

2. As shown in Table 6, the electric utility industry is among the lowest risk industries in the U.S. as measured by beta. As such, the cost of equity capital for this industry is amongst the lowest in the U.S., according to the CAPM.

3. Whereas Eversource's S&P and Moody's credit ratings suggest it is equal in investment risk to the proxy companies, PSCNH's S&P and Moody's credit ratings indicate that the Company's investment risk is below the averages of the proxy groups;

4. The authorized ROEs for electric distribution companies have declined from 9.10% in 2020, 9.04% in 2021, 9.11% in 2022, 9.24% in 2023, and 9.49%

in the first three quarters of 2024.[41] However, as I previously discussed, the Werner and Jarvis (2022) study 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.

Q. Do you believe that your 9.50% ROE recommendation meets *Hope* and *Bluefield* standards?

A. Yes. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital.

As shown on page 3 of Attachment JRW-7, utilities have been earning ROEs of about 9.0% (on average) in recent years. As shown on page 1 of Attachment JRW-4, utilities in the proxy group earned an average ROE of 9.36% in 2023. And, as shown in Figure 2, utilities have been raising about $100 billion a year in debt and equity capital in recent years. Therefore, I believe that my ROE recommendation meets the criteria established in the *Hope* and *Bluefield* decisions.

[41] S&P Global Market Intelligence, RRA *Regulatory Focus*, 2019.

VI. Critique of Eversource Rate of Return Testimony

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

A. The Company has proposed a capital structure of 0.00% short-term debt, 46.15% long-term debt and 53.85% common equity. This includes the post-test year $300 million refinancing of short-term debt. The Company has recommended a long-term debt cost rate of 4.10%. Eversource witness Mr. Vincent Rea has recommended a common equity cost rate of 10.30% for Eversource. The Company's overall proposed rate of return is 7.44%. This is summarized on page 1 of in Attachment JRW-8.

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

A. As reviewed above, the primary issues related to the Company's rate of return include the following: (1) capital structure; (2) capital market conditions; (3) Eversource's investment risk; (4) DCF approach; (5) CAPM approach; (6) the RPM approach; (7) the non-regulated proxy group; and (8) the flotation cost adjustment. The capital structure, capital market conditions, Eversource's investment risk, and the impact of the Company's proposed MRP were previously discussed. The other items are addressed below.

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

A. Mr. Rea has developed a proxy group of electric utility companies, a proxy group of gas companies, and a proxy group of non-regulated companies, and employs DCF, CAPM, and RPM equity cost rate approaches. Mr. Rea's equity cost rate estimates for Eversource are summarized on page 2 of Attachment JRW-8. Based on these figures, he concludes that the appropriate equity cost rate is 10.30% for Eversource's electric distribution operations.

A. Non-Regulated Proxy Group

Q. Please discuss Mr. Rea's proxy group.

A. Mr. Rea has used three proxy groups to estimate an equity cost rate for the Company. These include: (1) electric group—a group of fifteen electric utility companies; (2) s gas LDC group—a group of six gas companies; and (3) a combination group—the companies in both the electric and non-regulated groups.

Q. Please discuss the problem with Mr. Rea's non-regulated proxy group.

A. As noted, Mr. Rea has estimated an equity cost rate using a proxy group of twelve unregulated, non-utility companies. These companies are listed in Attachment ES-VVR-6. This group includes such companies as Coca-Cola, Home Depot, and

McDonald's. While many of these companies are large and successful, their lines of business are vastly different from the electric distribution business, and they do not operate in a highly regulated environment. In addition, the upward bias in the EPS growth rate forecasts of Wall Street analysts is particularly severe for non-regulated companies, and therefore the DCF equity cost rate estimates for this group are particularly overstated. As such, the non-regulated group is not an appropriate proxy for the Company, and therefore the equity cost rate results for this group should be ignored.

B. DCF Approach

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

A. On pages 51 to 60 of his testimony, in Appendix A, and in Attachment Nos. ES-VVR-4 and ES-VVR-5, Mr. Rea develops an equity cost rate by applying a DCF model to his proxy groups. In the traditional DCF approach, the equity cost rate is the sum of the dividend yield and expected growth rate. For the DCF growth rate, Mr. Rea uses four measures of projected EPS growth—the projected EPS growth of Wall Street analysts as compiled by Yahoo and Zacks, *Value Line*'s projected EPS growth rate, a *Value Line* retention growth measure that is computed as the sum of

internal ("*br*") and external ("*sv*") growth, and a *Value Line* historical growth rate measure. Mr. Rea makes two additional adjustments to his DCF result. He includes a leverage adjustment which adjusts his DCF results for the difference in the market value and book value capital structures of his proxy group companies. He also makes a flotation cost adjustment to account for stock issuance costs. The average of Mr. Rea's DCF results are 10.74% for his electric group, 10.44% for his gas group, and 10.90% for the non-regulated group.

Q. Please express your concerns with Mr. Rea's DCF study.

A. I have several issues with Mr. Rea's DCF equity cost rate: (1) the use of the non-regulated group to estimate an equity cost rate for the Company; (2) the asymmetric classification and elimination of DCF results for the groups; (3) the excessive reliance on the EPS growth rate forecasts of Wall Street analysts and *Value Line* as a DCF growth rate; (4) the leverage adjustment; and (5) the flotation cost adjustment. The errors in the non-regulated proxy group were discussed above. The use of analysts' EPS growth rate forecasts, asymmetric classification and elimination of DCF results, and the leverage and flotation cost adjustments are addressed below.

1. Asymmetric Elimination of Low-End DCF Results

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

A. One error with Mr. Rea's DCF equity cost rate for his electric group is his asymmetric elimination of DCF results. In deriving a DCF equity cost rate, Mr. Rea has labeled equity cost rates below 7.0% and above 19.4% as extreme outliers.[42] These screens eliminate only two of his DCF results for his electric group, both are on the low end. By eliminating only low outliers and not also eliminating high outliers, Mr. Rea biases his DCF equity cost rate study and reports a higher DCF equity cost rate than the data indicate.

2. Analysts' EPS Growth Rates

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

A. Mr. Rea and Mr. Wall's exclusive reliance on the projected growth rates published by Wall Street analysts and *Value Line* inflates their estimates of growth rates. It seems highly unlikely that investors today would rely exclusively on the EPS growth-rate forecasts of Wall Street analysts and *Value*

[42] In contrast, I have not labeled observations as outliers, but I have used the median as a measure of central tendency to minimize the impact of outliers.

Line and ignore other growth-rate measures in arriving at their expected growth rates for equity investments.

As I stated previously, the appropriate growth rate in the DCF model is the dividend growth rate rather than the earnings growth rate. Hence, consideration must be given to other indicators of growth, including historical prospective dividend growth, internal growth, as well as projected earnings growth. Due to the inaccuracy of analysts' long-term-earnings and growth-rate forecasts, the weight given to analysts' projected EPS growth rates should be limited.

Finally, not only are those forecasts inaccurate, but they are also overly optimistic and upwardly biased. I have provided a full discussion of this issue on pages 49-54 of this testimony and report on a study I conducted in Figure 11. Using the electric utilities and gas-distribution companies covered by *Value Line*, this study demonstrates that the mean forecasted EPS growth rates are consistently greater than the achieved actual EPS growth rates over the 1985-2022 time period. Over the entire period, the mean forecasted EPS growth rate is over 200 basis points above the actual EPS growth rate. As such, the projected EPS growth rates for utilities are overly optimistic and upwardly based. Hence, exclusively using these growth rates to create a DCF growth rate produces an overstated equity-cost rate. In addition, I also highlighted a study by Szakmary,

Conover, and Lancaster (2008) who evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a thirty-year time period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved.[43]

Finally, 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.[44] 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.[45] Hence, 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.[46] Therefore, exclusive reliance on these forecasts for a DCF growth rate results in failure of one of the

[43] Szakmary, A., Conover, C., & Lancaster, C., *An Examination of* Value Line*'s Long-Term Projections*, J. BANKING & FIN., May 2008, at 820–33.

[44] M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8),* Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101

[45] See references in footnotes 13-16.

[46] Easton, P., & Sommers, G. (2007). Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. *Journal of Accounting Research*, 45(5), 983–1015.

basic inputs in the equation.

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 the studies I have cited above demonstrate that the upward bias has continued despite changes in regulations and reporting requirements over the past two decades. This observation is highlighted by a 2010 McKinsey study entitled "Equity Analysts: Still Too Bullish," which involved a study of the accuracy of analysts' long-term EPS growth rate forecasts. The authors conclude that after a decade of stricter regulation, analysts' long-term earnings forecasts continue to be excessively optimistic. They made the following observation:[47]

> 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

[47] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, "Equity Analysts, Still Too Bullish," *McKinsey on Finance*, pp. 14-17, (Spring 2010) (emphasis added).

> they did, for example, in 1988, from 1994 to 1997, and from 2003 to 2006. *Moreover, analysts have been persistently overoptimistic for the past 25 years, with estimates ranging from 10 to 12 percent a year, compared with actual earnings growth of 6 percent. Over this time frame, actual earnings growth surpassed forecasts in only two instances, both during the earnings recovery following a recession. On average, analysts' forecasts have been almost 100 percent too high.*
>
> This is the same observation made in a *Bloomberg Businessweek* article.[48]

The author concluded:

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

3. Leverage Adjustment

Q. Please review Mr. Rea's leverage adjustment.

A. Mr. Rea's DCF results include a leverage adjustment of 0.49% for his electric group and 0.63% for his non-regulated group. Mr. Rea claims that an upward adjustment is needed for his DCF results because: (1) market values are greater than book values for utilities, and (2) the overall rate of return is applied to a book

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

value capitalization in the ratemaking process. This adjustment is unwarranted for the following reasons:

(1) The market value of a firm's equity exceeds the book value of equity when the firm is expected to earn more on the book value of an investment than investors require. This relationship is described very succinctly in the Harvard Business School case study, which I quote earlier in my testimony at pages 40-1. As such, the reason that market values exceed book values is that the Company is earning a return on equity in excess of its cost of equity.

(2) Despite Mr. Rea's contention that this represents a leverage adjustment, there is no change in leverage. The Company's financial statements and fixed financial obligations remain the same. Thus, there is no need for a leverage adjustment because there is no change in leverage.

(3) Finally, financial publications and investment firms report capitalizations on a book value and not a market value basis.

Q. Are you aware of any regulatory commissions that have adopted a leverage adjustment based on market value and book value capital structures?

A. No. I believe that Mr. Rea's leverage adjustment has been rejected by regulatory commissions because it increases the ROEs for utilities that have high returns on common equity and decreases the ROEs for utilities that have low returns on

common equity.

In the graphs presented in Figure 8 (page 42), I have demonstrated that there is a strong positive relationship between expected returns on common equity and market-to-book ratios for public utilities. Hence, in the context of Mr. Rea's leverage adjustment, this means that: (1) for a utility with a relatively high market-to-book ratio (e.g., 2.5) and ROE (e.g., 12.0%), the leverage adjustment will increase the estimated equity cost rate, while (2) for a utility with a relatively low market-to-book ratio (e.g., 0.5) and ROE (e.g., 5.0%), the leverage adjustment will decrease the estimated equity cost rate. Therefore, the adjustment will result in even higher market-to-book ratios for utilities with relatively high ROEs and even lower market-to-book ratios for utilities with relatively low ROEs.

4. Flotation Cost Adjustment

Q. Please discuss Mr. Rea's adjustment for flotation costs.

A. Mr. Rea also includes a flotation cost adjustment to his equity cost rate approaches, which he discusses in Appendix D. This adjustment factor is erroneous for several reasons. First, he has not provided any evidence that the Company has paid flotation costs. The Company should not be rewarded with

higher revenues (through a higher ROE) for expenses which it does not incur. In addition, it is commonly argued that a flotation cost adjustment (such as that used by the Company) is necessary to prevent the dilution of the existing shareholders. In this case, a flotation cost adjustment is justified by reference to bonds and the manner in which issuance costs are recovered by including the amortization of bond flotation costs in annual financing costs. However, this is incorrect for several reasons:

(1) If an equity flotation cost adjustment is similar to a debt flotation cost adjustment, the fact that the market-to-book ratios for electric utility companies are over 1.5X actually suggests that there should be a flotation cost reduction (and not increase) to the equity cost rate. This is because when (a) a bond is issued at a price in excess of face or book value, and (b) the difference between market price and the book value is greater than the flotation or issuance costs, the cost of that debt is lower than the coupon rate of the debt. The amount by which market values of electric utility companies are in excess of book values is much greater than flotation costs. Hence, if common stock flotation costs were exactly like bond flotation costs, and one was making an explicit flotation cost adjustment to the cost of common equity, the adjustment would be downward.

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

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

(4) Flotation costs, in the form of the underwriting spread, are a form of a

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

Q. Please summarize your assessment of Mr. Rea's DCF equity cost rate study.

A. Mr. Rea's DCF equity cost rates are overstated because he has (1) eliminated low-end DCF results for his electric group; (2) relied excessively on the upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*; (3) included results for a non-regulated group; and (4) made inappropriate adjustments for leverage and flotation costs. This latter point is especially true for his non-utility group. The DCF results for his non-regulated group should be rejected by the Commission in its analysis. He has also included inappropriate leverage and

flotation cost adjustments.

C. CAPM Approach

Q. Please discuss Mr. Rea's CAPM.

A. On pages 62 to 75 of his testimony and Attachment No. ES-VVR-7, Mr. Rea applies the CAPM method to his groups. He reports results using both a traditional CAPM and an empirical CAPM. For each group, he calculates a CAPM equity cost rate using (1) a prospective risk-free bond rate of 4.21%, and (2) a market risk premium of 7.0%. He uses the average leverage-adjusted beta for the electric group (0.91). He also adds a size premium to his CAPM equity cost rates of 0.61% for his electric group. He reports CAPM ROEs of 11.18% for his electric group.

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

A. There are numerous flaws with Mr. Rea's CAPM analysis: (1) his use of the so-called empirical CAPM ("ECAPM"); (2) the use of leverage-adjusted betas for the groups; (3) the equity or market risk premium of 7.0%; (4) the inclusion of a size premium; and (5) the flotation cost adjustment. The last issue was addressed above. The others are reviewed below.

1. ECAPM

Q. What issues do you have with Mr. Rea's ECAPM.

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

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

2. Leverage-Adjusted Betas

Q. Please discuss Mr. Rea's use of leveraged-adjusted betas in his CAPM.

A. Mr. Rea has adjusted the beta upwards for the companies in all three groups to account for the book value/market value capitalization difference. In doing so, he has effectively made the same leverage adjustment to his betas that he made to his DCF results to reflect the difference between the market values and the book values of the companies in his proxy group. The errors in this leverage adjustment approach for his CAPM analysis are the same as those discussed above for his DCF analysis.

3. Overstated Market Risk Premium

Q. Please discuss the errors in Mr. Rea's CAPM market risk premium.

A. The primary problem with Mr. Rea's CAPM analysis is the size of the market or equity risk premium. Mr. Rea develops a market risk premium of 7.00%, which is computed as the average risk premium of: (1) Historical market risk premium - the 1926 to 2023 historical risk premium results from the Kroll of 7.17% and (2) Prospective market risk premium - a projected market risk premium of 6.82% using

an expected market return, which is the average of (a) *Value Line's* 3- to 5-year annual return projection and (b) a DCF expected market return using the S&P 500. The primary error with Mr. Rea's equity risk premium is that both the historical returns and Mr. Rea's projected market returns are poor measures of expected market risk premiums.

Q. Is Mr. Rea's overall market risk premium of 6.82% reflective of the market risk premiums found in published studies and surveys?

A. No. It is in excess of the market risk premiums: (1) found in studies of the 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 5 of Attachment JRW-6 provides the results of over thirty market risk premiums studies from the past fifteen years. Historic stock and bond returns suggest a market risk premium in the 4.5% to 7.0% 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 2.0% to as high as 7.31%. Finally, the market risk premiums developed from surveys of analysts, companies, financial professionals, and academics suggest lower market risk premiums, in a range from 1.85% to 5.70%. 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 those used by Mr. Rea.

Q. Please discuss the errors in Mr. Rea's historical risk premium.

A. Mr. Rea computes a historical risk premium of 7.17% based on the difference between the arithmetic mean stock and bond income returns over the 1926 to 2023 period. There are a number of empirical issues with using historical returns to measure an *ex ante* equity risk premium.[49] This approach can produce differing results depending on several factors, including the measure of central tendency used, the time period evaluated, and the stock-market index employed. In addition, there are a myriad of empirical problems in the approach, which result in historical market returns producing inflated estimates of expected risk premiums. Among the errors are the U.S. stock market survivorship bias (the "Peso problem"); the company survivorship bias (only successful companies survive—poor companies do not survive); the measurement of central tendency (the arithmetic versus geometric mean, where geometric means tend to better capture negative returns and thus investor loss); the historical time horizon used;

[49] These issues are addressed in a number of studies, including: Aswath Damodaran, EQUITY RISK PREMIUMS (ERP): DETERMINANTS, ESTIMATION AND IMPLICATIONS—THE 2017 EDITION, NYU WORKING PAPER, 2017, 30–44; *see* Richard Roll, *On Computing Mean Returns and the Small Firm Premium*, J. FIN. ECON. (1983), 371–86; Jay Ritter, *The Biggest Mistakes We Teach*, J. FIN. RES. (Summer 2002); BRADFORD CORNELL, THE EQUITY RISK PREMIUM (New York, John Wiley & Sons) (1999), 36–78; and J. P. Morgan, "The Most Important Number in Finance," p. 6.

the change in risk and required return over time; the downward bias in bond historical returns; and unattainable return bias (the return computation procedure presumes monthly portfolio rebalancing). The bottom line is that there are a number of empirical problems in using historical stock and bond returns to measure an expected equity risk premium.

Q. What source did Mr. Rea use for his historical returns in his market risk premium calculation?

A. He uses the historical returns that are compiled by Kroll, an investment advisory firm formerly known are Duff & Phelps.

Q. Is Kroll a respected financial firm?

A. Yes. Kroll is a global investments advisory firm with offices in twenty-eight countries and 3,500 employees.

Q. What is Kroll's opinion regarding the use of historical stock market returns to estimate an equity risk premium?

A. In its Client Update on the equity risk premium, dated March 16, 2016, Duff & Phelps made the following statements regarding using historical returns to compute an equity risk premium ("ERP") (emphasis added):[50]

> In estimating the conditional ERP, <u>valuation analysts cannot simply use the long-term historical ERP, without further analysis.</u> A better alternative

[50] Duff & Phelps, Client Alert, March 16, 2016, p. 37 (emphasis added).

would be to examine approaches that are sensitive to the current economic conditions. As previously discussed, Duff & Phelps employs a multi-faceted analysis to estimate the conditional ERP that takes into account a broad range of economic information and multiple ERP estimation methodologies to arrive at its recommendation.

Q. Does Kroll use a historic stock market return figure as its recommended equity or market risk premium?

A. No.

Q. What does Kroll say about the expected the expected market risk premium and historical returns?

A. Kroll provides details about its perspective on historical returns versus its estimation of the ERP:[51]

> ERP is a forward-looking concept. It is an expectation as of the valuation date for which no market quotes are directly observable. While an analyst can observe premiums realized over time by referring to historical data (i.e., realized return approach or ex post approach), such realized premium data do not represent the ERP expected in prior periods, nor do they represent the current ERP estimate. Rather, realized premiums represent, at best, only a sample from prior periods of what may have then been the expected ERP. To the extent that realized premiums on the average equate to expected premiums in prior periods, such samples may be representative of current expectations. But to the extent that prior events that are not expected to recur caused realized returns to differ from prior expectations, such samples

[51] *Id.* at 35 (emphasis added).

should be adjusted to remove the effects of these nonrecurring events. Such adjustments are needed to improve the predictive power of the sample.

Q. Does Kroll publish its recommended market or equity risk premium?

A. Yes. In fact, on the same site (https://www.kroll.com/) at which they sell their annual valuation handbook used by Mr. Rea, Kroll publishes its estimate of the equity or market risk premium. As discussed above, Kroll decreased its U.S. equity risk premium from 5.50% to 5.00% on June 5, 2024.[52]

Page 7 of Attachment JRW-8 of my testimony shows Kroll's equity risk premium recommendations. I find it puzzling that Mr. Rea would use the historical average annual stock return from the Kroll book and then ignore Kroll recommendation as to the appropriate ERP.

Q. Do you agree that a U.S. equity of risk premium of 5.0% is reasonable and is week-supported number in today's financial markets?

A. Yes.

Q. Please critique Mr. Rea's prospective equity risk premium of 6.82%.

A. Mr. Rea computes an expected equity risk premium of 6.82% by applying the DCF model to the S&P 500 companies and to the *Value Line* 1,700 companies, and the

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

subtracting the risk-free rate of interest. This is summarized in Table 8, which shows the DCF expected market return (dividend yield plus projected EPS growth) and resulting market risk premium for the S&P 500 companies and the *Value Line*'s 1,700 companies. The primary error is Mr. Rea's application of a DCF model to the S&P 500 and the *Value Line* 1700 is the expected DCF growth rate. As shown in Table 10, the average DCF growth rate of the two approaches is 9.21%. Mr. Rea's expected DCF growth rate is based on analysts' overly optimistic and upwardly biased projected EPS growth rates as published by Bloomberg, and these inflated growth rates produce an unrealistic average expected market return (11.03%) and market risk premium (6.82%).

Table 10
Rea CAPM Prospective Market Risk Premium

	S&P 500	*VL* 1700	Average
Dividend Yield	1.62%	2.20%	1.91%
+ Expected EPS Growth	10.29%	7.94%	9.12%
= Expected Market Return	11.91%	10.14%	11.03%
+ Risk-Free Rate	4.21%	4.21%	4.21%
= Market Risk Premium	7.70%	5.93%	6.82%

Q. Please once again address the issues with Bloomberg's EPS growth rate forecasts.

A. The key point is that Mr. Rea's CAPM market risk premium methodology is based entirely on the concept that Bloomberg's projections of companies' EPS growth rates reflect investors' expected *long-term* EPS growth for those

companies. However, this seems highly unrealistic given the research on these projections. As noted above, analysts' EPS growth rate forecasts have been significantly higher than the EPS growth rates that these companies subsequently achieve.

Q. Is there other evidence that indicates that Mr. Rea's market risk premium developed using Bloomberg's EPS growth rates is excessive?

A. Yes. The fact is that a long-term EPS growth rate of 9.12% 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 Mr. Rea's projected EPS growth rate of 9.12%; (2) as discussed below, long-term EPS and GDP growth are directly linked; and (3) more recent trends in GDP growth, as well as projections of GDP growth, suggest slower economic and earnings growth in the future.

Long-Term Historic EPS and GDP Growth have been in the 6%-7% Range - In Attachment JRW-10, 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 Attachment JRW-10, and a summary is shown in Table 11, below.

Table 11
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% to 7% range. By comparison, Mr. Rea's long-run growth rate projection of 9.12% 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 100% 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 Attachment JRW-10 and Table 5 show that historically there has been a close link between long-term EPS and GDP growth rates. Brad Cornell of the California Institute of Technology published a study on GDP growth, earnings growth, and equity returns. He finds that long-term EPS growth in the U.S. is directly related to GDP growth, with GDP growth providing an upward limit on

EPS growth. In addition, he finds that long-term stock returns are determined by long-term earnings growth. He concludes with the following observations:[53]

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

The Trend and Projections Indicate Slower GDP Growth in the Future - The components of nominal GDP growth are real GDP growth and inflation. As discussed above and shown on pages 2-5 of Attachment JRW-10, real GDP growth has gradually declined from the 5.0% to 6.0% range in the 1960s to the 2.0% to 3.0% range during recent years, with the exception of GDP growth in the Covid years of 2020-21. In addition, with the exception of the higher inflation tied to the Covid recovery in recent years, the annual growth rate as measured by the Consumer Price Index, has been in the 2.0%-3.0% range in recent years.

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

The graphs on pages 2, 3, and 4 of Attachment JRW-10 provide evidence of the decline in nominal GDP as well as its components, real GDP and inflation, in recent decades. To gauge the magnitude of the decline in nominal GDP growth, Table 12 and page 5 of Attachment JRW-10 provide the compounded GDP growth rates for 10-, 20-, 30-, 40- and 50- years. Whereas the 50-year compounded GDP growth rate is 6.45%, there has been a decline in nominal GDP growth over subsequent 10-year intervals. These figures suggest that nominal GDP growth in recent decades has slowed and that a growth rate in the range of 4.5% to 5.0% is more appropriate today for the U.S. economy.

Table 12
Historic GDP Growth Rates

10-Year Average	**5.12%**
20-Year Average	**4.52%**
30-Year Average	**4.77%**
40-Year Average	**5.21%**
50-Year Average	**6.12%**

Long-Term GDP Projections 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 Attachment JRW-10, 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%.[54] The Energy Information Administration (EIA), in its projections used in preparing *Annual Energy Outlook*, forecasts long-term GDP growth of 4.3% for the period 2023 to 2053.[55] The Congressional Budget Office (CBO), in its forecasts for the period 2023 to 2053, projects a nominal GDP growth rate of 3.8%.[56] Finally, the Social Security Administration (SSA), in its Annual OASDI Report, provides a projection of nominal GDP from 2023 to 2100.[57] SSA's projected GDP growth rate over this period is 4.1%. The average projected GDP growth rate for these four forecasts is 4.15%.

The bottom line is that the trends and projections suggest a long-term GDP growth rate in the 4.5% range. As such, Mr. Rea's average projected EPS growth rate of 9.12% is double the projected GDP growth.

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

[55] *Annual Energy Outlook 2023*, U.S. ENERGY INFORMATION ADMINISTRATION, Table: Macroeconomic Indicators.

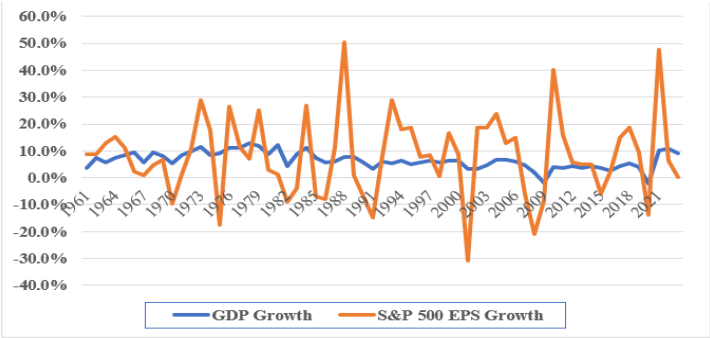
[56] *The 2023 Long-Term Budget Outlook*, CONGRESSIONAL BUDGET OFFICE, July 15, 2023.

[57] 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% growth rate is the growth in projected GDP from 2023 to 2100.

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

A. No. Figure 14 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.[58] Volatility aside, however, it is clear that over the medium to long run, S&P 500 EPS growth does not significantly outpace GDP growth.

Figure 14
Average Annual Growth Rates - GDP and S&P 500 EPS
1960-2023



Data Sources: GDPA - http://research.stlouisfed.org/fred2/series/GDPA/downloaddata.

[58] 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).

S&P EPS - http://pages.stern.nyu.edu/~adamodar/

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

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."[59] 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 for the S&P 500 companies, using 2022 figures, represent 6.11% of nominal GDP.

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

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

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

[59] 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/.

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.[60] These differences include: (a) corporate profits are about 2/3 manufacturing driven, while GDP is 2/3 services driven; (b) consumer discretionary spending accounts for a smaller share of S&P 500 profits (15%) than of GDP (23%); (c) corporate

[60] *See* the following studies: Burt White and Jeff Buchbinder, *The S&P and GDP are not the Same Thing*, LPL Fin. (Nov. 4, 2014, 11:31 AM), https://www.businessinsider.com/sp-is-not-gdp-2014-11; Matt Comer, *How Do We Have 18.4% Earnings Growth In A 2.58% GDP Economy*?, Seeking Alpha (Apr. 19, 2018, 1:04 PM), https://seekingalpha.com/article/4164052-18_4-percent-earnings-growth-2_58-percent-gdp-economy; Shaun Tully, *How on Earth Can Profits Grow at 10% in a 2% Economy*?, Fortune, (July 27, 2017, 1:26 PM), http://fortune.com/2017/07/27/profits-economic-growth/.

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.[61]

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 Mr. Rea's S&P 500 projected EPS growth rate of 9.12% 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

[61] 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% 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 Mr. Rea's average projected S&P 500 EPS growth rate of 9.12%. 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%, 4.4%, 4.1%, and 4.3%, respectively), which is 4.15%. The projected 2050 level for the aggregate net income level for the S&P 500 companies using Mr. Rea's EPS growth rate of 9.12% is $27.70 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 Mr. Rea (9.12%), and if nominal GDP grows at rates projected by major government agencies (4.15%), the net income of the S&P 500 companies will represent growth from 6.11% of GDP in 2022 to 22.54% 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 14
Projected S&P 500 Earnings and Nominal GDP
2022-2050
S&P 500 Aggregate Net Income as a Percent of GDP

	2022 Value ($B)	Growth Rate	No. of Years	2050 Value ($B)
Aggregate Net Income for S&P 500	$1,555.98	9.12%	28	$ 17,919.52
2021 Nominal U.S. GDP	$25,461.34	4.15%	28	$ 79,495.21
Net Income/GDP (%)	6.11%			22.54%

Data Sources: 2022 Net Income for S&P 500 companies
https://www.gurufocus.com/economic_indicators/5749/sp-500-net-income-ttm.
Growth Rate - Mr. Rea's average projected S&P 500 EPS growth rate of 9.12%.
Nominal GDP Growth Rate – The average of the long-term projected GDP growth rates from CBO, SFF, SSA, and EIA (3.8%, 4.4%, 4.1%, and 4.3% = 4.15%).

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

A. The long-term link between corporate profits and GDP is inevitable. The short-term differences in growth between the two indicate that corporate profits as a share of GDP tend to go far higher after periods where they are depressed, and then drop sharply after they have been hovering at historically high levels. In a famous 1999 *Fortune* article, Warren Buffet made the following observation:[62]

> 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

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

wildly optimistic to believe that corporate profits as a percent of GDP can, for any sustained period, hold much above 6%.

In sum, Mr. Rea's average long-term S&P 500 EPS growth rate of 9.12% is grossly overstated and has little (if any) basis in economic reality. In the end, the question remains whether corporate profits can grow faster than GDP. Jeremy Siegel, the renowned finance professor at the Wharton School of the University of Pennsylvania, believes that going forward, earnings per share can grow about half a point faster than nominal GDP, or about five percent, due to the big gains in the technology sector. But Siegel also believes that sustained EPS growth matching analysts' near-term projections is absurd: "The idea of 8% or 10% or 12% growth is ridiculous. It will not happen."[63]

4. Size Adjustment

Q. Please discuss Mr. Rea's size adjustment.

A. Mr. Rea includes a size adjustment of 0.61% in his CAPM approach for the size of the electric group. This adjustment is based on the historical stock market returns studies as performed by Duff & Phelps (formerly Ibbotson Associates).

[63] 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/.

There are numerous errors in using historical market returns to compute risk premiums. These errors provide inflated estimates of expected risk premiums. As noted above, these include survivorship and unattainable return biases. The net result is that Ibbotson's size premiums are poor measures for risk adjustment to account for the size of the Company.

In addition, Professor Annie Wong has tested for a size premium in utilities and concluded that, unlike industrial stocks, utility stocks do not Attachment a significant size premium.[64] As explained by Professor Wong, there are several reasons why such a size premium would not be attributable to utilities. Utilities are regulated closely by state and federal agencies and commissions, and their financial performance is therefore monitored on an ongoing basis by both the state and federal governments. In addition, public utilities must gain approval from government entities for common financial transactions such as the sale of securities. Furthermore, unlike their industrial counterparts, accounting standards and reporting are fairly standardized for public utilities. Finally, a utility's earnings are predetermined to a certain degree through the ratemaking process, in which performance is reviewed by state commissions and other interested parties.

[64] Annie Wong, *Utility Stocks and the Size Effect: An Empirical Analysis*, J. MIDWEST FIN. ASSOC. (1993), 95–101.

Overall, in terms of regulation, government oversight, performance review, accounting standards, and information disclosure, utilities are much different than industrials, which could account for the lack of a size premium.

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

A. Clifford Ang, in his publication, "The Absence of a Size Effect Relevant to the Cost of Equity," tested for a company-size effect over the time period of 1981 to 2016.[65] He used value-weighted, size-based decile returns obtained from French's Data Library, with the smallest size-based decile as a proxy for small stocks and the largest size-based decile as a proxy for large stocks. He found that small stocks underperformed large stocks by 12% over the period 1981 to 2016. He claims that this result is consistent with other studies showing that the size effect vanished in the 1980s. He concluded that "practitioners should abandon the practice of augmenting or modifying the CAPM Cost of Equity with a size premium":[66]

> My review of the evidence and analysis strongly suggests the proponents of the size effect are nowhere close to meeting their burden. I find that investors use the CAPM and do not demand

[65] Clifford Ang, *The Absence of a Size Effect Relevant to the Cost of Equity*, 37 BUS. VALUATION REV. 3, at 87 (2018), https://www.cliffordang.com/ang_bvr_2018.pdf .

[66] *Id.* at 6.

compensation for size when setting their required rate of return, which directly contradicts the need to augment or modify the CAPM Cost of Equity with a size premium. I show that small stocks do not outperform large stocks, which calls into question the very premise of a size effect. I also find that studies finding a size effect suffer from the twin fatal flaws of lacking a theoretical basis and data mining, which are very difficult, if not impossible, to overcome. Given the above, practitioners should abandon the practice of augmenting or modifying the CAPM Cost of Equity with a size premium.

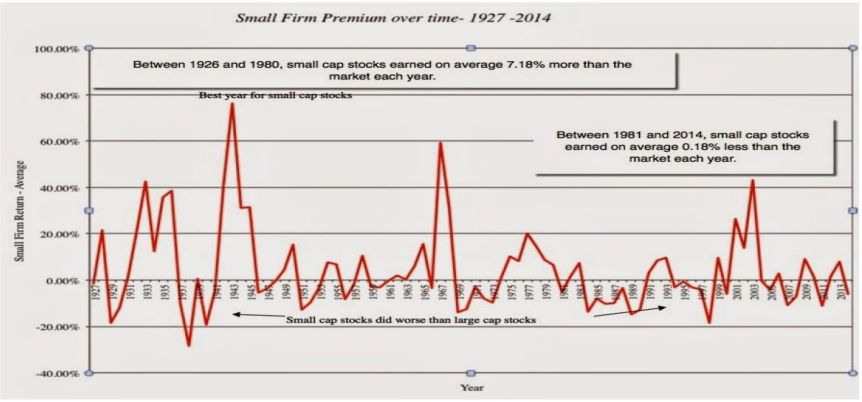
In addition, Professor Damodaran, the New York University valuation guru, has provided a thorough analysis and review of the company-size effect, which he terms the small-firm or cap premium. Figure 11 traces the small-firm premium over the 1927 to 2014 time period.[67] Damodaran has studied the issue for years and makes a number of observations on the company-size premium or effect: (1) the effect has largely disappeared since 1980, which is the year the Banz article was published; (2) the small-firm premium tends to come and go over time; (3) the small-firm premium tends to be associated with the January effect (small companies earn abnormal returns only in the first two weeks of January); (4) the small-cap premium seems to actually be a microcap premium, as it disappears when companies with market capitalizations below $5 million

[67] Damodaran, *The Small Cap Premium: Where is the Beef*, 34 BUS. VALUATION REV. 4, at 152–57 (Winter 2015).

are removed; (5) Damodaran does not find a small-cap premium when he estimates a small-firm required return; and (6) he has never used a small-cap premium when valuing small companies.

Professor Damodaran blames three factors for some analysts' continued use of a small-cap premium: (i) intuition (it *seems* smaller companies should be riskier); (ii) inertia (individuals and institutions are slow to change and to adopt new ideas); and (iii) bias (analysts prefer higher discount rates and lower valuations).

Figure 15
The Small Firm Premium
1927–2014



Source: Aswath Damodaran, "The Small Cap Premium - Where is the beef," *Business Valuation Review*: Winter 2015, Vol. 34, No. 4, pp. 152–57, 2015

In sum, it is erroneous for Mr. Rea to inflate his CAPM equity cost rates estimates by including a size adjustment.

D. Risk Premium Approach

Q. Please discuss Mr. Rea's risk premium approach ("RPM").

A. At pages 75 to 86 of his testimony and in Attachment No. ES-VVR-8, Mr. Rea estimates equity cost rates for his electric group of 10.83% using the RPM approach. As a base yield, he uses a prospective yield on "Aaa"-rated corporate bond yield (4.95%) and adds 87 BPs to arrive at a prospective utility bond yield (5.81%). His overall risk premium of 5.01% for the electric group is the average of a total market return risk premium of 5.45% and a public utility index risk premium of 4.57%. The total market return risk premium uses the average of the historical relationship between stock and bond returns over the 1926 to 2022 time period (5.90%) and the prospective stock market return of 6.09% develop for his CAPM approach above. He then adjusts the prospective market risk premium by the levered beta of the electric group. The public utility risk premium is developed as the difference between the returns on the S&P utility index and A-rated Moody's bonds over the 1926 to 2022 time period. The RPM studies are also performed for the gas utility and non-regulated groups.

Q. What are the errors in Mr. Rea's risk premium approach ("RPM").

A. The primary error in Mr. Rea's RPM analysis is the risk premium of 5.01% for the

electric group, which is based on historical and projected market returns.

1. Risk Premium

Q. Please critique Mr. Rea's risk premium approach ("RPM").

A. As indicated, Mr. Rea has computed a total market return risk premium of 5.45% and a public utility index risk premium of 4.57% in developing a risk premium of 5.01% for his electric group. The total market return risk premium uses historical stock and bond returns over the 1926 to 2022 time period and the prospective stock market return to develop his CAPM approach above. This premium is then adjusted by the levered beta of the electric group. The public utility risk premium uses historical stock and bond returns from the S&P utility index and A-rated Moody's bonds over the 1926 to 2020 time period.

These risk premium methodologies are the same overall approach as those used in developing the equity or market risk premium in Mr. Rea's CAPM approach. As such, the flaws in these approaches have already been addressed. The errors associated with computing an expected equity risk premium using historical stock and bond returns was discussed. In short, there are a myriad of empirical problems, which result in historical market returns producing inflated

estimates of expected risk premiums, including survivorship and unattainable return biases. With respect to projected market returns, Mr. Rea has used the DCF approach to the S&P 500 based on dividend yield and projected growth. I have illustrated above that the S&P 500 DCF approach produces unrealistic expected market returns because it uses the upwardly biased EPS growth rate projections of Wall Street analysts.

VII. Summary and Conclusions

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

A. I have reviewed the Company's proposed capital structure and overall cost of capital. The Company's proposed capital structure has much more common equity and less financial risk than other electric utilities. As a result, I have used a capital structure that is more reflective of the capital structures of electric utility companies. I am using a capital structure consisting of 50.0% debt and 50.00% common equity.

To estimate an equity cost rate for the Company, I have applied the DCF and CAPM models my Electric Proxy Group and Mr Rea's proxy group. My analysis indicates a common equity cost rate in the range of 8.85% to 10.00% for

the two groups. Since I rely primarily on the DCF model as well as the results for the Electric Proxy Group, I believe that the equity cost rate for these groups is in the 9.25% to 9.75% range. Given the recent rise in interest rates, I use the midpoint of this range, 9.50%, for Eversource. This is very fair to the Company, given that: (1) I have recommended a capital structure with a higher common equity ratio and lower financial risk than the proxy groups; (2) Whereas Eversource's S&P and Moody's credit ratings indicate it is equal in investment risk to the proxy companies, PSCNH's S&P and Moody's credit ratings indicate that the Company's investment risk is below the averages of the proxy groups; and (3) Eversource is a distribution-only electric utility. Given my proposed capital structure and senior capital cost rate for Eversource, I am recommending an overall fair rate of return or cost of capital of 6.80% for the Company. These recommendations are summarized in Table 2 and Attachment JRW-2.

Q. Does this conclude your testimony.

A. Yes.