BEFORE THE
CONNECTICUT PUBLIC UTILITIES REGULATORY AUTHORITY

APPLICATION OF
THE CONNECTICUT LIGHT & POWER COMPANY D/B/A EVERSOURCE ENERGY
FOR ADJUSTMENT OF RATES AND CHARGES

DOCKET NO. 26-05-10

DIRECT TESTIMONY
OF
AARON L. ROTHSCHILD

COST OF CAPITAL

ON BEHALF OF THE
CONNECTICUT PUBLIC UTILITIES REGULATORY AUTHORITY OFFICE OF
EDUCATION, OUTREACH, AND ENFORCEMENT

OCTOBER 21, 2026

Contents

I. STATEMENT OF QUALIFICATIONS 1
II. INTRODUCTION 2
III. SUMMARY OF RECOMMENDATIONS 8
IV. A SENSITIVITY ANALYSIS OF MS. BULKLEY'S GROWTH RATE ASSUMPTION 18
V. CAPITAL STRUCTURE AND COST OF DEBT 21
VI. COST OF EQUITY METHODOLOGY 26
A. Overview 26
B. Proxy Group Selection 31
C. Discounted Cash Flow Models 33
D. Constant Growth Form of the DCF Model 34
E. Capital Asset Pricing Model 41
VII. COE OF OVERALL MARKET 61
VIII. EVALUATION OF CL&P'S RATE OF RETURN TESTIMONY 66
B. DCF Method 70
C. CAPM Method 76
D. Empirical CAPM Method 82
E. Risk Premium Analysis 85
F. Business and Financial Risks and Other Considerations 87
IX. CONCLUSION 93
APPENDIX A. CAPITAL ASSET PRICING MODEL 94
APPENDIX B. CAPM-IMPLIED COST OF EQUITY FOR RFC PROXY GROUP OVER TIME SINCE ONSET OF COVID PANDEMIC 105
APPENDIX C. OPTION-IMPLIED GROWTH METHODOLOGY 106
APPENDIX D. RESUME OF AARON L. ROTHSCHILD 109
APPENDIX E. TESTIFYING EXPERIENCE OF AARON L. ROTHSCHILD 111

I. STATEMENT OF QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. My name is Aaron L. Rothschild. My title is President, and my business address is 15 Lake Road, Ridgefield, CT.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am President of Rothschild Financial Consulting ("RFC").

Q. PLEASE STATE YOUR EDUCATIONAL ACHIEVEMENTS AND PROFESSIONAL DESIGNATIONS.

A. I have a B.A. degree in mathematics from Clark University (1994) and an M.B.A. from Vanderbilt University (1996).

Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE.

A. I performed financial analysis in the telecom industry in the United States and Asia Pacific from 1996 to 2001, investment banking consulting in New York, complex systems science research regarding the power sector at an independent research institute, and I have prepared rate of return testimonies since 2002. See Appendix D for my resume.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE CONNECTICUT PUBLIC UTILITIES REGULATORY AUTHORITY, OR OTHER STATE COMMISSIONS? IF SO, WHICH COMMISSIONS?

A. Yes. I have testified before the Connecticut Public Utilities Regulatory Authority ("PURA").

My expert witness experience also includes testifying in over 100 cost of capital proceedings before the following additional state commissions: California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Kentucky, New Hampshire, New Jersey, New York, Maryland, North Dakota, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont and Washington State.

Q. ON WHOSE BEHALF ARE YOU PROVIDING THIS TESTIMONY?

A. I am testifying on behalf of the Connecticut Public Utilities Regulatory Authority Office of Education, Outreach, and Enforcement ("EOE").

II. INTRODUCTION

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to address the cost of capital for The Connecticut Light & Power Company d/b/a Eversource Energy ("CL&P" or the "Company") which includes the following three components:

1. **Cost of Equity ("COE"):** The return investors require to provide equity capital to a utility with CL&P's specific risk profile.
2. **Cost of Debt:** The prevailing market interest rates and terms associated with the Company's debt obligations.
3. **Capital Structure:** The relative proportions of equity and debt used to fund the Company's operations.

Based on my analysis of these cost of capital components, I recommend an allowed rate of return ("ROR") for ratemaking purposes, including an appropriate authorized return on equity ("ROE"), authorized cost of debt, and authorized capital structure. Please see Appendix A for a more detailed definition and discussion of these specific components.

Q. PLEASE DEFINE THE COE, COST OF DEBT, AND CAPITAL STRUCTURE.

A.

1. **COE:** My COE recommendation is my opinion of the return investors require to provide equity capital to CL&P based on current capital markets. Since investors must pay the market price of a stock to make an investment, investors' required returns are based on the return they expect to receive on the market price of stocks. In other words, CL&P's COE is forward-looking and "market-based." My recommendation is consistent with the following legal standards set by the United States Supreme Court for a fair rate of return:

> The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.[1]

And

> [S]ufficient to . . . support its credit and . . . raise the money necessary for the proper discharge of its public duties.[2]

2. **Cost of Debt:** My cost of debt recommendation is based on the actual cost of debt paid by the utility to its sources of credit. For example, if a utility has issued a bond with a 3% interest rate three years ago, its authorized cost of debt should be 3%, even if interest rates are currently higher or lower than 3%.

[1] *Fed. Power Comm'n v. Hope Nat. Gas Co.*, 320 U.S. 591, 603 (1944).
[2] *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n of the State of W. Va.* 262 U.S. 679, 692-693 (1923).

3. **Capital Structure:** Capital structure is the percentage of equity and debt that makes up the finances of a utility. For example, if a utility raises $1 million of equity capital and $1 million of debt capital, we say it has a capital structure containing 50% equity and 50% debt. The utility has the burden of proof to demonstrate that its requested capital structure for regulatory purposes produces the lowest, reasonable overall cost of capital. My capital structure recommendation is based on my review of CL&P's justification for its requested regulatory capital structure and the capital structure ratios of other electric utility companies. As discussed below, the reported capital structure of a regulated subsidiary is often not representative of how the regulated utility was financed. For example, the parent of a regulated utility can report funds raised through debt financing at the holding company level as equity financing on the books of its regulated utility subsidiary. Therefore, it is important to make sure Ms. Bulkley's recommended capital structure would not overcharge consumers by including a higher common equity ratio than is appropriate.[3]

Q. WHAT IS THE DIFFERENCE BETWEEN CL&P'S COST OF EQUITY AND ITS AUTHORIZED ROE?

A. The COE is the market-based return investors require to invest in any given stock. In other words, it is the return necessary to attract equity capital in a competitive market. The price investors pay for the stock reflects the expected value of regulatory outcomes, and the return they require reflects the risk of them.[4] When a cost is disallowed and investors

[3] A higher common equity ratio, all else equal, results in higher rates for consumers because equity is more expensive than debt.

[4] Investors who buy utility stock know that commissions disallow imprudent costs, exclude plant that is not used and useful, deny carrying charges, and set returns the utility considers too low.

absorb it, that outcome is one of the possibilities already reflected in the price they paid and the return they required. It is not a loss outside the bargain. A return set above the cost of equity in order to insulate investors from such decisions would leave them with the premium for bearing a risk they no longer bear: their expected return would exceed what they required, at customers' expense.

In this proceeding, CL&P's COE is estimated using cost of equity models, which rely on capital market data from a proxy group of publicly traded electric utility companies to measure investor return expectations and the returns they require to purchase a stock, as CL&P itself is not publicly traded. While the COE is often discussed in terms of investor expectations, it is fundamentally a required return—what investors demand to provide equity capital.

The appropriate authorized ROE is determined by PURA based on its assessment of the COE at the time of the proceeding, after reviewing the evidentiary record, which incorporates investor expectations. Once PURA issues an authorized ROE, the market-based cost of equity will continue to fluctuate as capital markets evolve. The authorized ROE, therefore, represents a snapshot of the COE at a specific point in time, even though the COE itself is continuously changing.

Q. PLEASE DEFINE THE APPROPRIATE RATE OF RETURN.

A. The appropriate Rate of Return (ROR) is based upon the weighted overall cost of capital (WACC) of the current costs of debt and equity at the time of this proceeding. The weighted cost rate is calculated by multiplying the capital structure ratios of the sources of capital (debt, preferred equity, and common equity) times their respective cost rates.

WACC = Cost of Debt X Debt Ratio + COE X Common Equity Ratio + Cost of Preferred Equity X Preferred Equity Ratio.

Q. HOW DO YOU DEFINE YOUR ROLE IN PROVIDING THIS ANALYSIS?

A. My role is to provide a recommendation based on an objective analysis of the Cost of Capital. While I define this fundamentally as the return investors require in exchange for providing funds to a utility with CL&P's specific risk profile, my analysis also provides a broader market context to ensure a principled and durable decision. My approach is grounded in the following framework:

- **The Authority as the Surrogate for Competition:** Because CL&P operates as a regulated monopoly, the natural price-disciplining pressures of a competitive market are absent. In this vacuum, the Authority must act as a surrogate for the market. This is a significant and often difficult responsibility. It requires that the "price" of capital charged to ratepayers reflects its market cost, neither providing an unearned monopoly premium[5] nor depriving the utility of the capital it needs to provide essential services.
- **Acknowledging the Weight of the Decision:** Former Commission Chair Alfred Kahn reminds us in *The Economics of Regulation: Principles and Institutions*, the essence of regulation is the replacement of competition.[6] If the authorized return is disconnected from the actual COE, the result is an

[5] A "monopoly premium" refers to the excess profits a company can extract simply because consumers have no alternative options. In a competitive market, these excess profits are naturally competed away. For a natural monopoly like CL&P, granting an authorized ROE that exceeds what investors require in the broader, competitive market allows the utility to capture a monopoly premium, ultimately operating against the public interest.

[6] Alfred E. Kahn, The Economics of Regulation: Principles and Institutions at 20 (MIT Press 1988).

involuntary subsidy from ratepayers to shareholders--an outcome that undermines the very purpose of regulation.

- **Providing an Informed Path Toward Market Alignment:** In this testimony I strive to provide the objective, market-based information that balances utility financial health with ratepayer protection.

Importantly, keeping authorized ROEs in line with the market-based cost of equity is not just good for residential consumers; it is pro-business and pro-economy. Small businesses, industrial customers, and commercial enterprises all rely on affordable, predictable water costs to compete and grow. Furthermore, lower utility bills mean that residential consumers retain more of their income to spend on other goods and services. This local spending directly stimulates the Connecticut economy, whereas excess utility profits are largely extracted and distributed to global investors outside of the state. Aligning CL&P's authorized ROE with its cost of equity helps businesses manage their costs, which strengthens the state's overall economy.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. First, I provide a summary of our recommendations and an overview of COE concepts. Second, I provide my capital structure and cost of debt recommendation. Third, I provide an explanation of the various models I used in my COE calculations. Fourth, I provide a COE analysis for the overall market ("Market COE") as context for the appropriate ROE for CL&P. Fifth, I provide an evaluation of CL&P's rate of return testimony Lastly, I provide my conclusion.

III. SUMMARY OF RECOMMENDATIONS

Q. PLEASE PROVIDE A SUMMARY OF YOUR RECOMMENDATIONS.

A. I recommend that the Authority reject Ms. Bulkley's recommended ROE of 10.25%[7] because it significantly exceeds CL&P's actual COE as indicated by current market data. Instead, I recommend that PURA calculate CL&P's rates based on the following:

- An overall cost of capital of 6.27% (5.90% - 6.36%);
- A ROE of 8.31% (7.43% - 8.53%)[8];
- A capital structure containing 41.61% common equity and 57.49% long-term debt; and
- A long-term debt cost rate of 4.81%.

A summary of my cost of capital recommendations for CL&P is presented in Table 1 below.

TABLE 1: ALR RECOMMENDED RANGE MIDPOINT - THE CONNECTICUT LIGHT & POWER COMPANY D/B/A EVERSOURCE ENERGY
Docket No. 26-05-10

	Capital Structure Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	57.49%	4.81%	2.77%
Short-Term Debt	0.00%	0.00%	0.00%
Preferred Equity	0.90%	4.75%	0.04%
Common Equity	41.61%	8.31%	3.46%
Rate of Return			6.27%

Exhibit ALR-1

[7] Ms. Bulkley's Direct Testimony, page 4, line 53.
[8] As discussed below, my ROE recommendation is based on implementing various COE models with a reasonable range of between 7.43% - 8.53%.

Q. ARE YOU RECOMMENDING A SPECIFIC ROE OF 8.31% OR AN ROE RANGE OF 7.43% TO 8.53%?

A. I recommend both a range of appropriate ROEs and a specific point within that range that I consider to be the most appropriate. It is not possible to measure CL&P's COE with the precision of measuring temperature with a thermometer. However, my recommended ROE range of 7.43% to 8.53% already eliminates the extreme ends of the results of my models and provides the Authority with a range of ROEs I feel confident will allow CL&P to raise the capital it needs to provide safe and reliable service.

I also recommend a specific point of 8.31% which is at the midpoint of that range. However, it is important to emphasize that PURA can adopt any authorized ROE lower than this specific recommendation, so long as it remains within my provided range. Even at the lower bound of 7.43%, CL&P would still be provided with sufficient cash flow to maintain its financial integrity and fulfill its service obligations.

Q. IS THERE ANYTHING ABOUT YOUR EVALUATION OF MS. BULKLEY'S TESTIMONY THAT THE AUTHORITY SHOULD UNDERSTAND AT THE OUTSET?

A. Yes. My evaluation of Ms. Bulkley's testimony contains two distinct kinds of analyses, and I want the difference between them to be clear from the start.

The first restates Ms. Bulkley's own DCF and CAPM models after replacing a single input: her assumption about investors' expected future growth, wherever that assumption appears in those models. Because her CAPM market risk premium is itself derived from a constant growth DCF applied to the S&P 500, the same growth assumption appears in both models and is replaced in both. Every other input (beta, risk free rate,

dividend yield, etc.) remains exactly as she filed it. As shown in Exhibit ALR-6, page 4, this restatement produces an indicated common equity cost rate of 7.68% to 8.51%, with an average of 8.12%.[9] This restated range is not my recommendation; it is simply Ms. Bulkley's own models, corrected for this single input. See Section IV for further discussion.

The second part of my evaluation of Ms. Bulkley's testimony involves a broader critique of her cost of equity models presented in Section VIII.

Q. PLEASE SUMMARIZE HOW YOU DETERMINED YOUR 8.31% COST OF EQUITY RECOMMENDATION FOR CL&P.

A. To arrive at my recommendation, I applied the Constant Growth[10] and Non-Constant Growth versions of the Discounted Cash Flow ("DCF") and eight variations of the CAPM methodologies[11] to a proxy group made up of the same 17 electric utility companies used by Ms. Bulkley. As discussed below, I utilize capital market data and cross-reference the model results of leading financial institutions as an additional check on the reasonableness of my model results.

I use a proxy group to calculate CL&P's cost of equity because CL&P does not have publicly traded stock data specific to itself. Additionally, using a proxy group provides more reliable results because it is less likely to be skewed by specific

[9] Note that the 8.59% average from this analysis is identical to the high end of my own range. It shows that replacing even this single input in Ms. Bulkley's own models no longer supports a cost of equity above the top of my recommended range.

[10] The constant growth DCF model is a variant, or version, of the single-stage DCF model that uses a consistent, never-changing growth rate component in perpetuity.

[11] CAPM stands for "Capital Asset Pricing Model." The CAPM relates return to risk; specifically, it relates the expected return on an investment in a security to the risk of investing in that security.

circumstances or anomalies faced by any individual company during the time when I take a snapshot of the COE.

As shown in Table 2 on page 12, Cost of Equity Model Results, the results of my cost of equity models, including eight variations of the CAPM and three variations of the DCF, range between 5.22% and 8.67%. Reducing the overall range of my results,[12] leads me to a reduced, unadjusted Cost of Equity range of 7.43% to 8.53%, with an unadjusted point estimate of 8.31%.

To arrive at my final recommendation of 8.31%, I consider whether an adjustment to this result is required to account for financial risk. A higher common equity ratio means less debt, a lower chance of financial stress (financial risk), and therefore a lower COE; a lower common equity ratio means more debt, a higher chance of financial stress, and therefore a higher COE. I am recommending a common equity ratio of 41.61% for CL&P, which is the average common equity ratio of the RFC Proxy Group companies whose market data produced my cost of equity results. Because the financial risk embedded in my recommended capital structure is the same as that of the proxy group, no adjustment to my 8.31% result is required.

[12] While my standard practice often involves the use of the 50th percentile (the median) to mitigate the impact of outliers, the data set in this proceeding exhibited a high degree of dispersion and a significant downward skew. If I had utilized my standard 50th percentile methodology, the resulting cost of equity would calculate to just 7.25%. However, relying on the median in a highly dispersed, downwardly skewed dataset introduces significant estimation risk. Therefore, to mitigate the asymmetric risk of underestimating the true cost of capital during anomalous market conditions, I have narrowed the focus to the upper end of the distribution, selecting the 87th percentile to arrive at 8.25%. This adjustment offsets the downward skew of the underlying data, ensuring the recommended ROE fully satisfies the requirement to attract capital.

TABLE 2: COST OF EQUITY MODEL RESULTS		
DCF	**Low**	**High**
Constant Growth - Sustainable Growth	8.47%	8.67%
Constant Growth - Option-Implied Growth	7.00%	7.35%
Non-Constant Growth	8.21%	8.56%
CAPM		
Spot (Sep. 30, 2026)		
Risk Free Rate - 3-Month T Bill	5.23%	6.58%
Risk Free Rate - 30-Yr T Bond	6.27%	7.11%
3-Mo. Weighted Average (Jul. to Sep. 2026)		
Risk Free Rate - 3-Month T Bill	5.22%	6.32%
Risk Free Rate - 30-Yr T Bond	6.20%	6.92%
Recommended Range	**7.43%**	**8.53%**
Midpoint of Range (Based on Percentiles)	**8.31%**	

Exhibit ALR-2

To ensure the robustness and real-world applicability of our findings, I validated these COE model results against the long-term capital market expectations of a broad cross-section of the financial community. As I explore in greater detail later in this testimony, this validation includes data from:

- Major financial institutions such as J.P. Morgan and Charles Schwab; and
- Institutional investors, specifically the capital market assumptions of 41 major investment firms and institutional asset managers, including Bank of New York Mellon, BlackRock, and Goldman Sachs Asset Management.

As shown in Table 3 on page 13, major financial institutions are informing their clients to expect returns on the overall market (S&P 500) of 5.9% to 10.68%.

TABLE 3: U.S. EQUITY RETURN EXPECTATIONS AMONG MAJOR FINANCIAL INSTITUTIONS	
J.P. Morgan Asset Management - Equity Long-Term Returns (2026) [1]	**6.70%**
Charles Schwab - 10-year U.S. Large Cap Returns (Jan 2026) [2]	**5.90%**
Horizon Actuarial Services, LLC Survey - 20 Year Horizon (August 2026) [3]	
U.S. Equity - Large Cap (4.6-9.1%, 50% Percentile - 7.0%)	**7.00%**
U.S. Equity - Small / Mid Cap (5.1-9.8%, 50% Percentile - 7.5%)	**7.50%**
Aswath Damodaran (October 2026) [4]	**8.99%**
Duff & Phelps / Kroll (September 2026) [5]	**10.68%**

Sources:
[1] J.P. Morgan Asset Management - 2026 Long-Term Capital Market Assumptions, 2025, page 12.
https://am.jpmorgan.com/content/dam/jpm-am-aem/americas/us/en/institutional/insights/portfolio-insights/ltcr
[2] Schwab's 2025 Long-Term Capital Market Expectations, January 3, 2025.
https://www.schwab.com/learn/story/whats-10-year-outlook-major-asset-classes
[3] Horizon Actuarial Services, LLC, Survey of Capital Market Assumptions Survey, August 2026.
Survey participants Include: Bank of New York Mellon, BlackRock, Goldman Sachs Asset Management, J.P. Morgan Asset Management, Merrill, Morgan Stanley Wealth Management, Royal Bank of Canada, UBS.
[4] New York University, Professor Aswath Damodaran
https://pages.stern.nyu.edu/~adamodar/
[5] Kroll Recommended U.S. ERP and Corresponding RFR to be Used in Computing Cost of Capital: January 2008 - Presen
https://www.kroll.com/en/reports/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk
Note: Duff & Phelps acquired Kroll in 2021 and rebranded itself as Kroll.
Note: J.P. Morgan's 2025 Long-Term Capital Market Assumptions is an annual report.

The fact that market participants, who are responsible for deploying hundreds of billions of dollars in capital, expect returns well below our recommendation of 8.31% provides a high degree of confidence and confirms that an 8.31% ROE is sufficient for CL&P to attract equity capital.

Q. DO THE LONG-TERM CAPITAL MARKET EXPECTATIONS OF THE FINANCIAL COMMUNITY HIGHLIGHT WHY YOUR ROE RECOMMENDATION AND MS. BULKLEY'S ARE SO DIFFERENT?

A. Yes. A primary driver of the discrepancy is Ms. Bulkley's reliance on inputs that introduce an upward bias into her market return expectation. Specifically, Ms. Bulkley applies the same Constant Growth DCF model she uses for her proxy group to the S&P 500—using a market-capitalization-weighted dividend yield of 1.29% and a weighted long-term

analysts' EPS growth rate of 12.02%—and derives an expected market return of 13.38% as of May 31, 2026.[13][14]

Ms. Bulkley's growth rates come from Value Line, Zacks, and S&P Capital IQ. While Value Line is an independent subscription service and does not face the exact same investment banking conflicts as traditional "sell-side" analysts, peer-reviewed academic research demonstrates that its long-term growth projections are nonetheless structurally inflated. A comprehensive study published in the *Journal of Banking & Finance* found that Value Line's 3- to 5-year projections for earnings and stock returns "exhibit large positive bias." The authors isolated the root of this bias, noting that it appears to be "entirely due to the extreme upward bias in projected profit margins."[15]

My goal is to ensure that the cost of equity estimates provided to the Authority are empirically sound and reflective of objective economic reality. The aforementioned study found that Value Line's 3- to 5-year projections lack predictive power, concluding that their "extreme upward bias...calls into question the common practice of using these predictions as proxies for the cost of equity in cost-of-capital studies."[16] By utilizing these specific projected growth rates, Ms. Bulkley's analysis structurally overstates the expected market return.

Grounding the analysis in broader, observable market data ensures that my recommendation more accurately reflects the actual economic environment. Specifically, my CAPM analysis utilizes an overall market return component of 7.96% to 8.03%,[17]

[13] Ms. Bulkley's Direct Testimony, page 30, line 705 and Schedule DWD-4, page 6.
[14] Ms. Bulkley's Direct Testimony, page 29, lines 682-696.
[15] Andrew C. Szakmary, C. Mitchell Conover, & Carol Lancaster, An examination of Value Line's long-term projections, *Journal of Banking & Finance 32* (2008) 820-833.
[16] Ibid., at 833.
[17] Exhibit ALR-4, page 4 and Exhibit ALR-4, page 6.

which is derived directly from capital market data, including publicly traded stock and stock option prices. This range avoids the well-documented positive bias inherent in Value Line's long-term profit margin and earnings forecasts.

As shown in Chart 1 on page 17, Ms. Bulkley's reliance on analysts' EPS growth rates produces a market return of 13.38%,[18] while broader perspectives and benchmarks from J.P. Morgan[19] (6.7%) and Horizon Actuarial Services[20] (7.0%) point to a reality that is roughly half of what Ms. Bulkley proposes.

Chart 1 also includes a 10.68% figure that I derived by applying Kroll's current cost of capital guidance.[21] Kroll recommends a U.S. equity risk premium of 5.0%, reaffirmed in September 2026, added to the spot yield on the 20-year U.S. Treasury bond as of the valuation date; that yield was 5.68% on September 30, 2026. It is the highest publicly available forward-looking estimate of the expected return on the overall market that I am aware of, and it is well below Ms. Bulkley's 13.38%. Two features of the Kroll figure should be understood. First, unlike the J.P. Morgan and Horizon figures, it is not a forecast of the returns investors expect from the stock market; it is a valuation convention

[18] Ms. Bulkley's Direct Testimony, page 30, lines 705 and Schedule DWD-4, page 6.

[19] J.P. Morgan Asset Management is a global asset management business that annually publishes its Long-Term Capital Market Assumptions to help institutional investors and advisors inform strategic asset allocation. Now in its 30th edition for 2026, this research provides projections that establish reasonable risk and return expectations over a 10- to 15-year time frame across more than 200 asset classes.

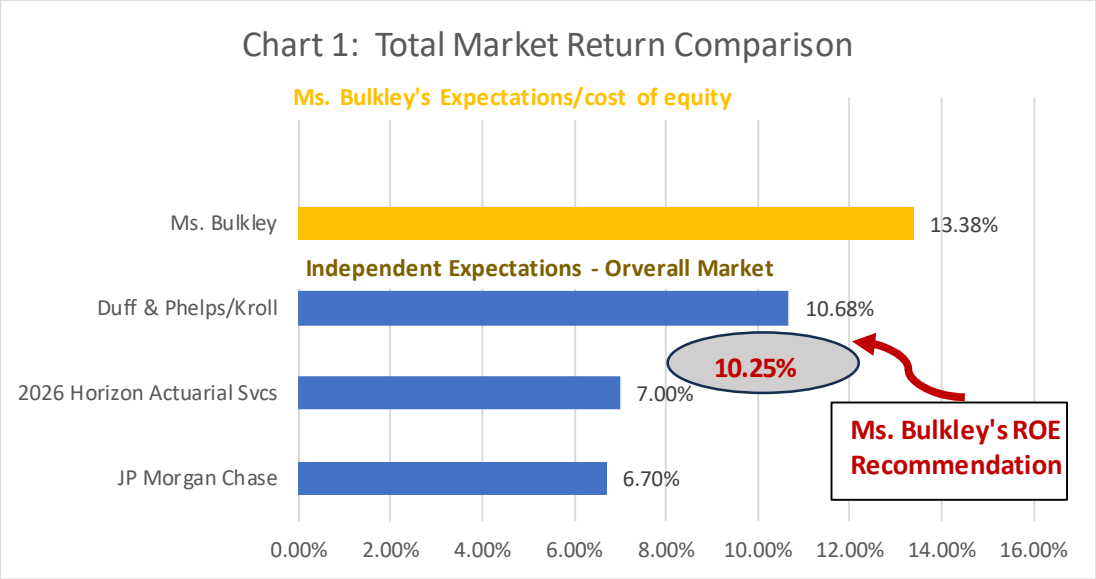
[20] Horizon Actuarial Services is an independent consulting firm that provides actuarial services to multiemployer defined benefit pension plans. In its annual Survey of Capital Market Assumptions, now in its 2026 edition, Horizon aggregates future risk and return expectations from 41 different investment advisory firms. This research provides composite forecasts over both 10-year and 20-year horizons to help evaluate the reasonableness of long-term investment return assumptions across various asset classes.

[21] Kroll, Kroll Cost of Capital Recommendations Updated to Use Spot Risk-Free Rates (September 10, 2026, effective for valuation dates on or after September 2, 2026): "Kroll is no longer recommending the use of the higher of normalized risk-free rates or spot rates," and "Kroll will no longer publish normalized risk-free rates for valuation dates on or after September 2, 2026." Available at https://www.kroll.com/en/reports/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates. The 20-year Treasury yield is from www.treasury.gov. The 10.68% figure is my calculation (5.68% + 5.0%); Kroll publishes the inputs, not a total.

that adds a fixed 5.0% premium to whatever the long-term Treasury yield happens to be, so it rises and falls one-for-one with interest rates. That one-for-one relationship is a simplification of Kroll's own framework. Kroll describes its ERP recommendation as conditional on market conditions, and its history shows the premium moving inversely with interest rates: Kroll raised its recommended ERP to 6.0% in 2020 when it lowered its risk-free rate assumption, and reduced it to 5.5% and then to 5.0% as Treasury yields rose in 2022 through 2024.[22] To the extent the equity risk premium contracts as interest rates rise, as Kroll's own revisions suggest, a 5.0% premium on top of a 5.68% Treasury yield is likely on the high side, and I would expect any further Kroll revision to move the figure down rather than up.

Second, and more important for this proceeding, the premium underlying the Kroll figure is 5.0%. Ms. Bulkley's market risk premium is 8.39% to 8.68%.[23] Even the benchmark that produces the highest market return in Chart 1 is built on a risk premium less than 60% of hers. Her 13.38% market return thus exceeds not only the forecasts of J.P. Morgan and Horizon but also the most generous practitioner convention available, by 270 basis points, and it is that excess, flowing through her CAPM and ECAPM, that accounts for much of the difference between our recommendations.

[22] Kroll, Recommended U.S. Equity Risk Premium and Corresponding Risk-Free Rates (table of recommendations, January 2008 to present), https://www.kroll.com/en/reports/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.
[23] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-5, pages 1–6, column [4].



Q. PLEASE COMPARE CL&P'S REVENUE REQUIREMENT IF YOUR RECOMMENDATIONS ARE ADOPTED INSTEAD OF MS. BULKLEY'S.

A. Based on the $6,925.16 million rate base requested by CL&P in its initial filing, the difference in the revenue requirement is substantial. If my 8.31% cost of equity and capital structure recommendations are adopted, the rate of return portion of the revenue requirement would be approximately $522.2 million.

Conversely, if Ms. Bulkley's 10.25% cost of equity and capital structure recommendations are used, the rate of return portion of the annual revenue requirement would rise to $676.8 million. This represents an annual overcharge to consumers of $154.6 million. It is important to note that this overcharge impacts all customer classes, not just residential ratepayers.

To provide further perspective on the drivers of this difference, if my recommended 8.31% cost of equity were applied to Ms. Bulkley's proposed capital structure, it would result in a $55.7 million annual revenue impact. This highlights that while the cost of

equity is the primary driver, the choice of capital structure also carries significant weight for ratepayers.

I must clarify that these calculations are based specifically on the company's requested rate base as filed. Because the final rate base is subject to the PURA's approval, the absolute dollar impact may vary slightly when final rates are set; however, the relative magnitude of the savings remains consistent regardless of the final rate base determination.

TABLE 4: ANNUAL REVENUE IMPACT VS. ROTHSCHILD RECOMMENDATION - THE CONNECTICUT LIGHT & POWER COMPANY D/B/A EVERSOURCE ENERGY
($ million)

	Rate of Return Portion of Revenue Requirement	Difference versus Rothschild Recommendation
Rothschild ROE & Cap Structure	$522.2	
Rothschild ROE with Bulkley Cap Structure	$578.0	$55.7
Bulkley ROE & Cap Structure	$676.8	$154.6

Source/Inputs:

Requested Rate Base [1]	$6,925.2
Federal income tax rate	21.00%
State income tax rate	7.50%
Uncollectable Expense	0.00%

[1] Exhibit CLP-REVREQ-2, Schedule A-1.0

IV. A SENSITIVITY ANALYSIS OF MS. BULKLEY'S GROWTH RATE ASSUMPTION

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. The purpose of this section is to isolate the single most consequential variable in the Company's cost of equity calculation: Ms. Bulkley's assumption about investors' expected future growth. To assist PURA in evaluating the fundamental differences between my recommendation and the Company's proposal, I have conducted an analysis viewing the Company's models in the light most favorable to the Company. Specifically, I have utilized, for the sake of argument, all of Ms. Bulkley's model inputs, such as her risk-free rate and beta coefficients, with the sole exception of her assumption about investors' expected future growth, wherever that assumption appears in her DCF and CAPM models.

Q. WHY HAVE YOU CHOSEN TO ACCEPT THE MAJORITY OF MS. BULKLEY'S INPUTS FOR THIS SPECIFIC ANALYSIS?

A. I have done so to sharpen the conversation and prevent the most critical issue from getting lost in the weeds of standard methodological debates. In utility regulatory proceedings, the debate over risk-free rates and beta coefficients typically impacts the final cost of equity results by 10 to 30 basis points. However, Ms. Bulkley's growth rate assumption impacts her results by hundreds of basis points, across more than one model. By accepting her minor inputs, *for the sake of this argument*, I am able to highlight the primary driver of the Company's requested return. To use a practical analogy, debating the betas and risk-free rates in these models is akin to arguing over the $3 cost of peanuts on an airplane, when the material issue under review is the exorbitant price of the ticket itself. This section focuses entirely on the price of the ticket.

Q. DOES YOUR ADOPTION OF MS. BULKLEY'S RISK-FREE RATE AND BETA INPUTS IN THIS SECTION MEAN YOU AGREE WITH HER METHODOLOGIES FOR CALCULATING THEM?

A. No, it does not. I do not agree with her methodologies for those inputs, and my independent analysis, provided later in this testimony, remains more reasonable than the Company's witness's recommendation. I am simply adopting her inputs here arguendo - meaning solely for the sake of this specific demonstration.

Q. DOES THIS SAME GROWTH ASSUMPTION AFFECT MS. BULKLEY'S CAPM MODEL?

A. Yes, though the mechanics differ from her DCF. Ms. Bulkley's CAPM market risk premium is the difference between her expected return on the S&P 500 and her risk-free rate. Her 13.38% expected market return is itself a constant growth DCF applied to the companies in the S&P 500 Index, using a market-capitalization-weighted dividend yield of 1.29% and a weighted long-term analysts' EPS growth rate of 12.02%. In other words, her CAPM market risk premium is simply her growth assumption appearing in a different model. I replace that growth rate in the same manner and for the same reason that I replace her DCF growth rate. Because her ECAPM uses the same market risk premium, the correction flows through to her ECAPM results as well.

Q. WHAT DOES THIS ISOLATED ANALYSIS DEMONSTRATE TO THE AUTHORITY?

A. It demonstrates that even if PURA were to grant the Company every baseline assumption Ms. Bulkley advances regarding risk-free rates, betas, and other minor components, replacing just one flawed input, her assumption about investors' expected future growth, collapses her final conclusion. As discussed in my introduction above, this restatement of her DCF and CAPM models produces an indicated common equity cost rate of 7.68% to 8.51%, with an average of 8.12%, well below the results she reports. It proves that the Company's requested return is not the result of broadly differing economic frameworks, but is instead artificially driven by a single, highly sensitive, and unsupported growth assumption. By focusing purely on this isolated variable, PURA can clearly evaluate the true source of the discrepancy in our cost of equity results.

Q. ARE THE METHODOLOGICAL ERRORS DRIVING THIS INFLATED GROWTH RATE DISCUSSED FURTHER IN YOUR TESTIMONY?

A. Yes. In Section VIII of my testimony, I provide a comprehensive evaluation of Ms. Bulkley's rate of return testimony. In that section, I explain exactly why it is structurally incorrect to treat analysts' 3- to 5-year earnings growth forecasts as if they were growth rates in perpetuity. I also detail how this same growth assumption inappropriately inflates her CAPM and ECAPM results through her market risk premium. The purpose of this current section is simply to demonstrate and quantify the outsized mathematical impact of this single variable before detailing the mechanical flaws of her models in Section VIII.

V. CAPITAL STRUCTURE AND COST OF DEBT

Q. IS CL&P'S REQUESTED CAPITAL STRUCTURE OF 53.86% COMMON EQUITY, 0.90% PREFERRED STOCK AND 45.24% LONG-TERM DEBT APPROPRIATE?

A. No. CL&P's requested capital structure is not appropriate for setting rates in this proceeding for two reasons. First, its common equity ratio (53.86%) is significantly higher than the average common equity ratio of the electric utility companies in the RFC Proxy Group (41.6%)[24] Second, it is far higher than the consolidated common equity ratio of its parent, Eversource Energy, which Value Line reports at 38.0% for 2026 and projects at 39.5% for 2029 through 2031.[25]

[24] Exhibit ALR-5, page 4 (common equity ratios of the RFC Proxy Group, 2021–2025, as reported by Value Line).
[25] Value Line Investment Survey, Eversource Energy, August 7, 2026 (Common Equity Ratio: 36.5% in 2024, 37.2% in 2025, 38.0% estimated for 2026, 39.0% for 2027 and 39.5% for 2029–2031).

Ms. Bulkley supports the request by comparing it to the book capital structures of the utility operating subsidiaries of the proxy group companies, which she reports have a mean common equity ratio of 51.69% and a median of 51.94%,[26] and by pointing to CL&P's actual test-period equity ratio of 54.56%, which she attributes to under-recovery of storm and commodity costs in 2023 and 2024.[27] Neither justifies the request. The operating-subsidiary ratios are book ratios that the parent companies choose for their regulated subsidiaries; they are not the capital structures that investors price when they buy the proxy companies' stock, and they are considerably higher than the consolidated ratios with which those same companies actually finance themselves. And a decision by Eversource Energy to hold additional equity at CL&P during a period of cost under-recovery is a management choice. It does not change what it costs to finance CL&P's rate base, and ratepayers should not pay a permanent premium for it.

Q. WHAT CAPITAL STRUCTURE DO YOU RECOMMEND BE USED FOR CL&P'S OVERALL COST OF CAPITAL?

A. I recommend using a capital structure consisting of 41.61% common equity, 0.90% preferred stock and 57.49% long-term debt. A common equity ratio of 41.61% is the average, and also the median,[28] common equity ratio of the 17 electric utility companies in the RFC Proxy Group, as reported by Value Line. The common equity ratios of the individual proxy group companies range from 30.9% to 50.2%,[29] and the proxy group average is higher than the 38.0% common equity ratio with which Eversource Energy itself

[26] Ms. Bulkley's Direct Testimony, page 69, lines 4–10, and Exhibit CLP-ROE-12.
[27] Ms. Bulkley's Direct Testimony, page 70, lines 3–9.
[28] Mean and median happen to be the same.
[29] Exhibit ALR-5, page 4 (common equity ratios of the RFC Proxy Group, 2021–2025, as reported by Value Line).

is financed.[30] Absent evidence from CL&P in support of the need for a different capital structure, using a capital structure that is the same as the average of the proxy group, and that is closer to the capital structure of the parent company that actually raises CL&P's equity, is consistent with PURA's duty to set just and reasonable rates that consider both the utility's and its investors' needs as well as the needs of ratepayers.

There is no reason I am aware of for CL&P to require a significantly higher common equity ratio than Eversource Energy, the company that raises the equity it invests in CL&P. Eversource Energy's investors willingly provide capital to a company financed with 38% common equity, yet CL&P's ratepayers are being asked to pay for a 53.86% equity layer. Authorizing a regulatory capital structure for CL&P with a common equity ratio higher than those of comparable utility companies and its own parent, without justification, will result in unreasonably high rates. As shown in Table 1, my recommendations, including my capital structure recommendation, result in an overall rate of return of 6.27%. Ms. Bulkley's recommendations result in an overall rate of return of 7.74%. The authorized common equity ratio and the authorized ROE should be set together. A higher common equity ratio means less debt, lower financial risk, and a lower cost of equity; a lower ratio means the reverse. If PURA adopts a common equity ratio higher than 41.61%, the authorized ROE should be reduced accordingly; if PURA adopts a ratio below the proxy group average, closer to the ratio with which Eversource Energy is financed, the authorized ROE should be increased by the same measure.

[30] Value Line Investment Survey, Eversource Energy, August 7, 2026 (Common Equity Ratio: 36.5% in 2024, 37.2% in 2025, 38.0% estimated for 2026, 39.0% for 2027 and 39.5% for 2029–2031).

It cannot be overlooked that the authorized capital structure has a large impact on the Company's revenue requirement. If my cost of equity recommendation is applied to Ms. Bulkley's recommended capital structure instead of my recommended 41.61% common equity ratio, the annual revenue requirement would be approximately $55.7 million higher.[31]

Q. WHY DO YOU BASE YOUR RECOMMENDATION ON THE AVERAGE COMMON EQUITY RATIO OF THE RFC PROXY GROUP RATHER THAN ON THE CAPITAL STRUCTURE OF EVERSOURCE ENERGY?

A. Both measures point in the same direction, and both support a common equity ratio far below the 53.86% that CL&P requests. Of the two, the proxy group average is the more conservative because it gives CL&P more equity than its parent actually maintains. It also ties the ratemaking capital structure directly to my cost of equity. The cost of equity I derive from the market data of the RFC Proxy Group companies reflects the financial risk of the consolidated capital structures with which those companies are actually financed. Applying that cost of equity to a capital structure with the same average common equity ratio is internally consistent and requires no adjustment for financial risk. Eversource Energy's own capital structure is nonetheless relevant. It is the company that raises the equity it invests in CL&P, and its 38.0% common equity ratio demonstrates that investors willingly finance CL&P's parent with considerably less equity than I recommend.

Q. HAS PURA PREVIOUSLY RECOGNIZED THE RELEVANCE OF THE CAPITAL STRUCTURE OF A UTILITY'S PARENT COMPANY AND OF THE

[31] Exhibit ALR-7, page 1 (Table 4).

PROXY GROUP COMPANIES WHEN ESTABLISHING A RATEMAKING CAPITAL STRUCTURE?

A. Yes. In Docket No. 16-06-04, the Authority stated that, when establishing a ratemaking capital structure, it is the capital structure at the holding company level that matters, and that the capital structure ratios of the publicly traded companies in the proxy group are also relevant.[32] My recommendation applies both of these considerations: it is set at the average of the proxy group and it is far closer to the capital structure of CL&P's holding company than the capital structure CL&P requests.

Q. THE AUTHORITY APPROVED A 53.00% COMMON EQUITY RATIO FOR CL&P IN DOCKET NO. 17-10-46. WAS EVERSOURCE ENERGY'S CAPITAL STRUCTURE SIMILAR TO CL&P'S RATEMAKING CAPITAL STRUCTURE AT THAT TIME?

A. Yes. When CL&P prepared its application in Docket No. 17-10-46 in late 2017, the consolidated common equity ratio of Eversource Energy was close to 53.00%. Value Line reported a common equity ratio of 54.4% for 2016 and 48.2% for 2017.[33] Since then, Eversource Energy's common equity ratio has declined steadily, to 36.5% in 2024 and 37.2% in 2025, with 38.0% estimated for 2026.[34] The settlement approved in Docket No. 17-10-46 stated that a major objective of the Company was to align its ratemaking construct with its actual financial situation.[35] That alignment existed in 2018. It does not exist today.

[32] Docket No. 16-06-04 Application of the United Illuminating Company to Increase its rates and charges, Decision, December 14, 2016, Page 87.
[33] Value Line Investment Survey, Eversource Energy (Common Equity Ratio: 54.4% in 2016 and 48.2% in 2017).
[34] Value Line Investment Survey, Eversource Energy, August 7, 2026 (Common Equity Ratio: 36.5% in 2024, 37.2% in 2025, 38.0% estimated for 2026, 39.0% for 2027 and 39.5% for 2029–2031).
[35] Docket No. 17-10-46, Decision (April 18, 2018).

CL&P now requests a common equity ratio (53.86%) nearly 16 percentage points higher than the ratio with which its parent is financed. A ratemaking capital structure that has moved this far from the parent's actual capital structure cannot be justified by reference to a decision made when the two were aligned.

Q. WHAT COST OF DEBT DO YOU RECOMMEND?

A. I recommend CL&P adopt a cost of debt of 4.81%.

VI. COST OF EQUITY METHODOLOGY

A. Overview

Q. PLEASE PROVIDE AN OVERVIEW OF YOUR PERSPECTIVE REGARDING HOW CAPITAL MARKETS RELATE TO THE COE AND THE OVERALL COST OF CAPITAL.

A. The cost of capital is the return investors require to provide capital to CL&P based on current capital markets. To measure the cost of equity accurately, it is critical to use current market data because it increases the chance that the authorized ROE will match CL&P's market-based COE when it needs to raise equity capital.

My COE recommendation reflects the return investors require to provide equity capital to CL&P based on current capital markets. My recommendation is consistent with the following legal standards set by the United States Supreme Court for a fair rate of return: "[t]he return to the equity owner should be commensurate with returns on

investments in other enterprises having corresponding risks"[36] and "sufficient to… support its credit and… raise the money necessary for the proper discharge of its public duties."[37]

Because the cost of equity is not a published figure like a bond yield, some interpretation is required to determine the appropriate market price. My cost of equity recommendation is based on my computation of what the market indicates investors require (return on investment) to provide capital to companies with comparable risk to CL&P.

As explained below, I use current market prices (e.g., stocks, bonds, options), which measure investors' expectations directly, instead of relying solely on historical data and analyst forecasts.

A COE based on current market prices (market-based) is superior to a COE based on historical data in two respects:

1. The COE that CL&P has to pay investors is based on capital markets. Recent high inflation and increases in interest rates are not a secret and therefore market-based COE models will reflect investors' changing expectations.
2. Capital markets are unpredictable. Regarding capital markets' unpredictability, Warren Buffet gave the following advice to investors: "[t]hey should not listen to a lot of the jabbering about what the market is going to do tomorrow, or next week or next month because nobody knows."[38]

[36] Fed. Power Comm'n v. Hope Nat. Gas Co. v. Hope Nat. Gas Co., 320 U.S. 591, 603 (1944).
[37] Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n of the State of W. Va, 262 U.S. 679, 692-693 (1923).
[38] PBS News Hour, Part 1 – America should stand for more than just wealth, says Warren Buffett (June 26, 2017,) at www.pbs.org/newshour/show/pbs-newshour-full-episode-june-26-2017.

Current capital markets are our best source of investors' expectations regarding future capital markets. Current market prices of stocks and bonds reflect investors' forecasts for long-term interest rates and capital markets in general.

Q. HAS YOUR METHODOLOGY BEEN RECOGNIZED BY OTHER COMMISSIONS?

A. Yes. My CAPM method has also been recognized by state utility commissions. On April 9, 2020, the South Carolina Public Service Commission stated the following:

> Amongst the three witnesses, Consumer Affairs Rothschild's approach was unique in that he included the use of both historical and forward-looking, market-based data in his analysis. Based on the testimony and facts presented, the Commission therefore adopts the recommended ROE of 7.46% proposed by witness Rothschild.[39]

In a 2024 decision, the California Public Utilities Commission (CPUC) found merit in my analysis and used my cost of equity methodology, including the CAPM and DCF methods I use in this proceeding, to determine the authorized ROEs for California's ten Independent Small Telephone Companies (ILECs).[40]

Q. HOW DID YOU ARRIVE AT YOUR COE RECOMMENDATION?

A. To arrive at my recommendation, I applied the DCF model, including two Constant Growth and one Non-Constant Growth methods, and four variations of the CAPM analysis to a group of similar companies ("RFC Proxy Group") using data available through September 30, 2026, as discussed below. I also applied the same models to a broader group that adds the natural gas utilities included in Ms. Bulkley's Water and Gas Utility Proxy Group. In

[39] Order Ruling on Application for Adjustment in Rates, Docket No. 2019-290-WS, Order No. 2020-306, April 9, 2020, page 43.
[40] CPUC Decision Determining the Cost of Capital for Ratemaking Purposes for California's Independent Small Telephone Companies, Application 22-09-003, page 22.

all of my models, I use both historical averages and the most recently available spot data for the inputs wherever it is possible and applicable.

Q. CONSIDERING THAT STOCK AND OPTION PRICES AND BOND YIELDS CHANGE DAILY, WOULD IT NOT BE BETTER TO USE HISTORICAL AVERAGES EXCLUSIVELY FOR THE INPUTS IN YOUR MODELS?

A. Not necessarily. Most people would agree that the use of spot market data, the value of a particular input on a particular day, can lead to COE results that can vary over short periods of time. It may therefore be tempting to find a more stable value based on historical averages that are not overly influenced by short-term fluctuations in capital markets. When doing a forward-looking analysis, however, it is equally important to look at the most recent market data as an indication of trends and where a given value is more likely to be in the future. This is a broad and generally accepted principle, as made clear in the following example.

As a simple example using historical stock prices to make the point clear, if Company A's stock price were to go up linearly over the course of one year from $50 to $100, its average stock price over that year would be $75. If Company B's stock price declined linearly from $100 to $50 over the same year, it would have the same exact average stock price of $75. However, most people would agree that predicting both stock prices at $75 over the near future would be overly simplistic and leave readily accessible data unused. Without relying on any additional data, at the very least, it would stand to reason that in the near future, Company A's stock price is more likely to be between $75 and $100 than Company B's stock price, and that Company B's stock price is more likely to be between $50 and $75 than Company A's stock price. These observations cannot be

made by looking at the yearly averages alone and must take the most recent data into special consideration.

This does not eliminate concerns regarding the effect of daily fluctuations in market data, especially during periods of volatility. As a result, it is important to consider both historical averages and recent spot values when using market data for forward-looking analyses. That is precisely my approach when using market data that are expected to continue to fluctuate, such as stock prices, dividend yields, betas[41], and market risk premia.

Q. CAN A DIFFERENCE OF ONE DAY IN THE SELECTION OF SPOT DATA HAVE A SIGNIFICANT POSITIVE OR NEGATIVE EFFECT ON ROE RESULTS? IF SO, HOW DO YOU GO ABOUT CHOOSING WHICH DAY TO USE FOR MARKET-BASED SPOT DATA?

A. Daily fluctuations in stock prices, resulting dividend yields, betas, etc., all have an impact on resulting ROE calculations, especially when using recent spot values for market data. Such is the nature of market data, which changes from day to day. This is rightfully noted as a potential risk of using spot data, but, given the stated benefits of using recent spot data for forward-looking analyses, there are ways to address such potential pitfalls.

For this reason, it is very important to establish consistent methodologies that eliminate the possibility of personal bias, especially when using spot market data. I consistently use the last trading day of the month as the reference point for all market-based

[41] Beta is a component of the Capital Asset Pricing Model (CAPM) used to measure the systematic risk of a security relative to the overall market. Mathematically, it is the covariance of the return on an individual security with the return on the market portfolio, divided by the variance of the market return. In practice, Beta serves as a scaling factor: a Beta of 1.0 indicates a security that moves in tandem with the market, while a Beta below 1.0, typical for regulated utilities, indicates the security is less volatile than the broader market.

spot data. Additionally, this day serves as the cutoff for calculating all historical market-data averages.

It is important to keep in mind that even averages fluctuate over time, and all responsible data analysts must find a consistent and reproducible way to "freeze time" to work with such fluctuations while eliminating bias.

It is also important to point out once again that I use recent spot market data to establish one benchmark for market-based inputs, which are balanced by the use of historical averages, as stated previously.

B. Proxy Group Selection

Q. WHAT PROXY GROUPS DID YOU USE TO CALCULATE CL&P'S COE?

A. My comparable proxy group, shown on Table 5 on page 32 and referred to as the RFC Proxy Group, consists of the following 17 publicly traded electric utility companies covered by Value Line. Ms. Bulkley's proxy group contains the same 17 companies plus Global Water Resources, Inc., which I excluded because it does not have a full Value Line report.

TABLE 5: RFC PROXY GROUP COMPOSITION

	Company Name	Ticker
1	AMEREN	AEE
2	AMERICAN ELEC. PWR.	AEP
3	AVISTA CORP.	AVA
4	DUKE ENERGY	DUK
5	CON. EDISON	ED
6	EDISON INTERNAT'L	EIX
7	ENTERGY CORP.	ETR
8	EVERGY, INC.	EVRG
9	EXELON CORP.	EXC
10	FIRST ENERGY	FE
11	IDA CORP, INC.	IDA
12	ALLIANT ENERGY	LNT
13	OGE ENERGY CORP.	OGE
14	PINNACLE WEST	PNW
15	PPL CORPORATION	PPL
16	SOUTHERN COMPANY	SO
17	XCEL ENERGY	XEL

I chose this proxy group because I believe it contains companies that are relatively comparable in risk to CL&P. However, model results based on this proxy group should be viewed as a conservative estimate of CL&P's COE because these companies have some unregulated operations which are riskier than electric transmission and distribution services.

In a regulated environment, CL&P operates under a regulatory framework that provides for the recovery of prudently incurred costs and a reasonable opportunity to earn a return. Conversely, unregulated operations are riskier because they are subject to competition. Because investors demand a higher return to compensate for greater uncertainty, the proxy group's COE is likely higher than CL&P's.

C. Discounted Cash Flow Models

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF MODELS.

A. I used both the constant growth form of the DCF method, which determines growth based on the sustainable retention growth procedure, and a non-constant growth DCF method. The results of my constant growth DCF model range between 8.47% and 8.67% when using a sustainable growth rate and between 7.00% and 7.35% when using an option-implied growth rate.[42] The results of my non-constant growth DCF method indicate a COE of between 8.21% and 8.56% for the RFC Proxy Group.[43]

Q. WHAT IS THE DISCOUNTED CASH FLOW METHOD?

A. The DCF method is an approach to determine the COE. The method recognizes that investors purchase common stock to receive future cash payments. These payments come from: (a) current and future dividends, and (b) proceeds from selling stock. A rational investor will buy stock to receive dividends and ultimately to sell the stock to another investor at a gain. The price the new owner is willing to pay for stock is related to that buyer's expectation of future flow of dividends and the future expected selling price. The value of the stock is the discounted value of all future dividends until the stock is sold plus the value of proceeds from the sale of the stock.

[42] Exhibit ALR-3, page 1.
[43] Exhibit ALR-3, page 3 and Exhibit ALR-3, page 4.

D. Constant Growth Form of the DCF Model

Q. YOU STATE YOU USED THE CONSTANT GROWTH FORM OF THE DCF MODEL. WHAT IS THE CONSTANT GROWTH FORM OF THE DCF MODEL?

A. The constant growth form of the DCF model is a form of the DCF method that can be used in determining the COE when investors can reasonably expect that the growth of retained earnings and dividends will be constant.

Retained earnings are funds that a company keeps in its treasury, so that they are available for future needs, such as capital expenditures, debt payments, and new investments. These retained earnings show investors whether the company is growing, which, in turn, is a measure of the future indicator of dividends and the value of a company's stock.

Q. DESCRIBE HOW THE CONSTANT GROWTH MODEL WORKS.

A. The constant growth model is described by the equation k= D/P + g, where: 52F[44]

k= cost of equity (COE);
D=dividend; and
P=market price of stock at time of the analysis

and where:

g=the growth rate, where g= br + sv;
b=the earnings retention rate;
r=return on common equity investment (referred to below as "book equity");
v=the fraction of funds raised by the sale of stock that increases the book value of the existing shareholders' common equity; and
s=the rate of continuous new stock financing

The constant growth model is therefore correctly recognized to be:

[44] Myron J. Gordon, *Cost of Capital to a Public Utility*, p. 32-33 (MSU Public Utility Studies 1974).

k=D/P + (br +sv)

The COE demanded by investors is the sum of two factors. The first factor is the dividend yield. The second factor is growth (dividends and stock price). The logical relationship among these factors is as follows: the dividend yield is calculated based on current dividend payments while growth indicates what dividends and stock price will be in the future.

Q. WHAT OTHER FACTORS IMPACT HOW ONE USES THE CONSTANT GROWTH FORM OF THE DCF MODEL?

A. Sufficient care must be taken to be sure that the growth rate "g" is representative of the constant sustainable growth. To obtain an accurate constant growth DCF result, the mathematical relationship between earnings, dividends, book value and stock price must be respected.

The basic difference between the use of an analyst's earnings per share growth rate in the constant growth DCF formula and using the "br" (b (the earnings retention rate) X r (rate of return on common equity investment)) approach is that the "br" form, if properly applied, eliminates the mathematical error caused by an inconsistency between the expectations for earnings per share growth and dividends per share growth. Because it eliminates that error, the results of a properly applied "br" approach will be superior to the answer obtained from other approaches to the constant growth form of the DCF model. This is not to say that even a properly applied "br" approach will be perfect. The self-correcting nature of a properly applied "br" to forecasted differences in earnings per share and dividends per share growth rates helps to mitigate the resultant error but should not be viewed as the perfect way to quantify the impact of expected non-constant growth rates.

Q. HOW HAVE YOU IMPLEMENTED THE CONSTANT GROWTH FORM OF THE DCF MODEL IN THIS CASE?

A. I have applied the constant growth form of the DCF model by staying true to the mathematically derived "k=D/P + (br + sv)" form of the DCF model. I have also taken care to fully allocate all future expected earnings to either future cash flow in the form of dividends ("D") or to retained earnings (the retention rate, "b"). This extra accuracy is obtained only when the retention rate "b" is derived from the values used for "D" and "r," rather than independently.

Q. PLEASE EXPLAIN HOW YOU OBTAINED THE VALUES YOU USED IN THE CONSTANT GROWTH FORM OF THE DCF METHOD.

A. The DCF model generally calls for the use of the dividend expected over the next year. A reasonable way to estimate next year's dividend rate is to increase the quarterly dividend rate by half of the current actual quarterly dividend rate. This is a good approximation of the rate that would be obtained if the full prior year's dividend were escalated by the entire growth rate.[45]

I obtained the stock price—"P"—used in my DCF analysis from the closing prices of the stocks on September 30, 2026. I also obtained an average stock price for the 12 months ending September 30, 2026 by averaging the high and low stock prices for the year.

[45] For example, assume a company paid a dividend of $0.50 in the first quarter a year ago, and has a dividend growth rate of 4 % per year. This dividend growth rate equals (1.04)^4-1=0.00985 % per quarter. Thus, the dividend is $0.5049 in the second quarter, $0.5099 in the third quarter, and $0.5149 in the fourth quarter. If that 4 % per annum growth continues into the following year, then the dividend would be $0.5199 in the first quarter, $0.5251 in the second quarter, $0.5303 in the third quarter, and $0.5355 in the fourth quarter. Thus, the total dividends for the following year equal $2.111 (0.5199 + 0.5251 + 0.5303 + 0.5355). I computed the dividend yield by taking the current quarter (the $0.5149 in the fourth quarter in this example) and multiplying it by 4 to get an annual rate of $2.06. I then escalated this $2.06 by half the 4 % growth rate, which means it is increased by 2 %. $2.06 x 1.02= $2.101, which is within one cent of the $2.111 obtained in the example.

I based the value of the future expected return on equity— "r" —on the average return on book equity expected by Value Line, adjusted in consideration of recent returns. I also made a computation that was based on a review of both the earned return on equity consistent with analysts' consensus earnings growth rate expectations and on the actual earned returns on equity. For a stable industry such as utility companies, investors will typically look at actual earned returns on equity as one meaningful input into what can be expected for future earned returns on book equity.[46]

This return on book equity expectation used in the DCF method to compute growth must *not* be confused with the COE. Since the stock prices for the comparative companies are substantially higher than their book value, the return investors expect to receive on their market price investment is considerably less than the anticipated return on book value. If the market price is low relative to book value, the COE will be higher than the future expected return on book equity, and if the market price is high, then the return on book equity will be greater than the COE.

In addition to growing through the retention of earnings, utility companies also grow by selling new common stock. Selling new common stock increases a company's growth. I quantified this growth caused by the sale of new common stock by multiplying the amount that the actual market-to-book ratio exceeds 1.0, by the compound annual growth rate of stock that Value Line forecasts. As explained more in Appendix C, I used this formula because it represents the "sv" component of the sustainable growth equation, which captures the additional growth in book value per share that occurs when new equity

[46] Exhibit ALR-3, page 1.

is issued at a premium to book value. The results of that computation are shown on line 4 of Exhibit ALR-3, page 1.

Pure financial theory prefers concentrating on the results from the most current price because investors cannot purchase stock at historical prices. There is a legitimate concern, however, about the potential distortion of using just a single price. I present DCF results based on the most recent stock pricing data (September 30, 2026) as well as the average of the high and low stock price over the past 12 months to obtain a range of reasonable values. The DCF result based on the average of the high and low stock price for the year ending September 30, 2026, is 8.47%. As shown in Exhibit ALR-3, page 1, the DCF result based on the stock price as of September 30, 2026, is 8.67%. Exhibit ALR-3, page 1, shows more of the specifics of how I implemented the constant growth form of the DCF model for the RFC Proxy Group.

Q. PLEASE EXPLAIN HOW YOU DETERMINED WHAT VALUE TO USE FOR "r" WHEN COMPUTING GROWTH IN YOUR CONSTANT GROWTH FORM OF THE DCF MODEL.

A. The inputs I considered are shown in Footnote [C] of Exhibit ALR-3, page 1. The value of "r" that is appropriate to use in the DCF formula is the value anticipated by investors to be maintained on average in the future. This Exhibit shows that the average future return on equity forecasted by Value Line for the RFC Proxy Group between 2026 and 2029-31 is 10.76%. The same footnote also shows that the future expected return on equity derived from the Zacks[47] consensus forecast is 11.07%, and that the actual returns on equity earned

[47] Zacks is a prominent research platform that aggregates earnings estimates from independent investment analysts.

by the RFC Proxy Group on average were 10.04% in 2023, 10.23% in 2024, and 10.50% in 2025. Based on the combination of the forecasted return on equity derived from the Zacks consensus, the recent historical actual earned returns, and Value Line's forecast, I made the DCF growth computation using a 10.60%[48] value of "r".

Q. WHAT COE IS INDICATED BY THE CONSTANT GROWTH FORM OF THE DCF METHOD THAT YOU RELY ON FOR YOUR RECOMMENDATION?

A. The result of my DCF analysis using the Constant Growth form of the DCF indicates a COE range of between 8.47% and 8.67% for the RFC Proxy Group.[49] Since these DCF findings use analysts' forecasts to derive sustainable growth (in part) and on analysts' forecasts of dividend growth and book value growth in the non-constant form of the DCF method, the results should be considered as conservatively high. This is because, as previously mentioned above, analysts' forecasts of such growth have been notoriously overstated, and because, as noted, the COE in general is declining.

My results are not as influenced by overly-optimistic analysts' forecasts as would have been the case had I merely used analysts' five-year earnings growth rate forecasts as a proxy for long-term growth. This is because the DCF methods I use compute sustainable growth rates, rather than growth rates that can exaggerate the growth rate due to assuming that a relatively short-term forecast (5 years) will remain indefinitely.

[48] I used 10.60% in consideration of historical returns, Zacks's projections, and Value Line projected returns for the RFC Proxy Group.
[49] Exhibit ALR-3, page 1.

Q. PLEASE EXPLAIN HOW YOU IMPLEMENTED THE NON-CONSTANT GROWTH FORM OF THE DCF MODEL.

A. The non-constant growth form of the DCF model determines the return on investment expected by investors based on an estimate of each separate annual cash flow the investor expects to receive. For the purpose of this computation, I have incorporated Value Line's detailed annual forecasts to arrive at the specific non-constant growth expectations that an investor who trusts Value Line would expect. This implementation is shown on Exhibit ALR-3, page 3 and Exhibit ALR-3, page 4. In the first stage, cash flow entry is the cash outflow an investor would experience when buying a share of stock at the market price. The subsequent years of cash flow are equal to the dividends per share that Value Line forecasts. For the intermediate years of the forecast period in which Value Line does not provide a specific dividend, the annual dividends were obtained by estimating that dividend growth would persist at a compound annual rate. The cash flow at the end of the forecast period consists of both the last year's dividend forecast by Value Line, and the proceeds from the sale of the stock. The stock price used to determine the proceeds from selling the stock was obtained by estimating that the stock price would grow at the same rate at which Value Line forecasts book value to grow.

Q. WHY DID YOU USE BOOK VALUE GROWTH TO PROVIDE THE ESTIMATE OF THE FUTURE STOCK PRICE?

A. For any given earned return on book equity, earnings are directly proportional to the book value. Furthermore, book value growth is the net result after the company produces earnings, pays a dividend and also, perhaps, either sells new common stock at market price or repurchases its own common stock at market price.

Once these cash flows are entered into an Excel spreadsheet, the compound annual return an investor would achieve as a result of making this investment was obtained by calculating the Internal Rate of Return (IRR).[50] This multi-stage DCF model produced an average indicated COE of 8.56% based on the year-end stock price, and 8.21% based on average prices for the year ending September 30, 2026, for the RFC Proxy Group as shown on Exhibit ALR-3, page 3 and Exhibit ALR-3, page 4.

Q. WHAT COST OF EQUITY DOES YOUR NON-CONSTANT GROWTH DCF METHOD INDICATE?

A. My non-constant growth DCF method indicates a cost of equity of between 8.21% and 8.56%.[51]

E. Capital Asset Pricing Model

Q. PLEASE DESCRIBE THE CAPM.

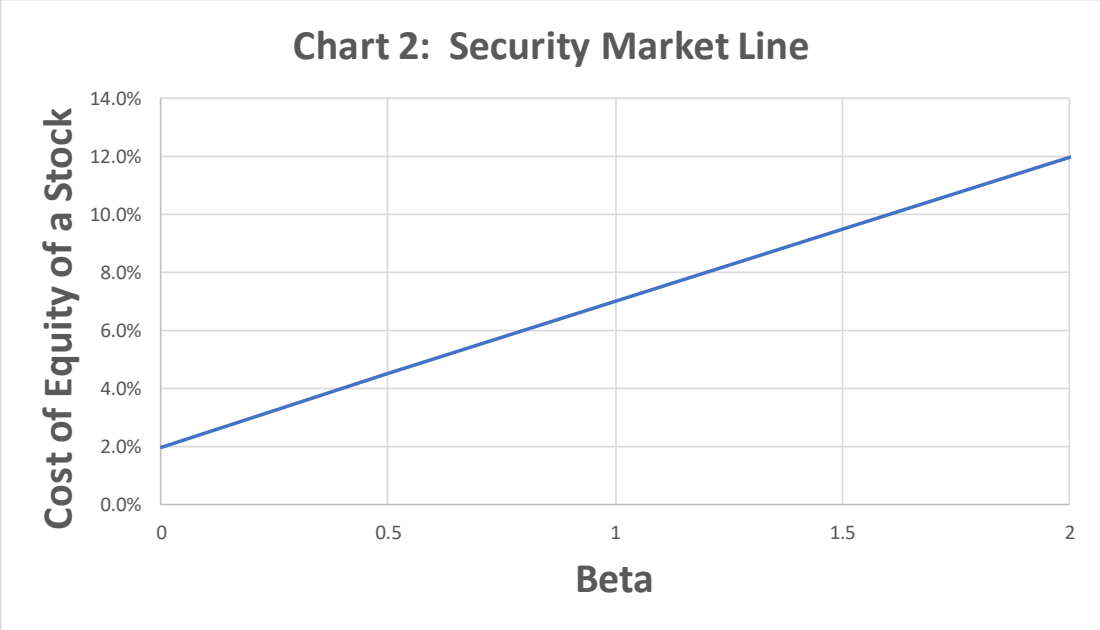
A. CAPM stands for "Capital Asset Pricing Model." The CAPM relates return to risk; specifically, it relates the expected return on an investment in a security to the risk of investing in that security. The riskier the investment, the greater the expected return (i.e., the cost of equity) investors require to make that investment.

[50] The IRR is the rate of return that an investment is expected to generate. On the other hand, the cost of capital is the minimum return an investment needs to make for it to be worthwhile.
[51] Exhibit ALR-3, page 3 and Exhibit ALR-3, page 4.

Investors in a firm's equity face two types of risks: (1) firm-specific risk and (2) market risk (financial analysts refer to this market risk as systematic risk). Firm-specific risk refers to risks unique to the firm, such as management performance and losing market share to a new competitor. Investors can reduce firm-specific risk by purchasing stocks as part of a diverse portfolio of companies if they construct the portfolio to cause the firm-specific risk of individual companies to balance out. Market-related risk refers to potential impacts from the overall market, such as a recession or interest rate changes. This risk cannot be removed by diversification, so the investor must bear it no matter what. Since the investor has no option but to bear market risk, the investor's cost of equity will reflect that risk.

The price of a stock with a beta of 1 tends to move with the market. If the market increases by 1%, the stock is also expected to increase by about 1%, and vice versa. The price of a stock with a beta less than 1 tends to be less volatile than the market. For example, a stock with a beta of 0.5 will on average be 50% less volatile than the market. If the market rises by 1%, the price of a stock with a beta of 0.5 is expected to rise by 0.5%, and if the market falls by 1%, the stock price is expected to decrease by 0.5%. On the other hand, the price of a stock with a beta greater than 1 tends to be less volatile than the market.

The CAPM predicts that for a given equity security, the cost of equity has a linear relationship to how sensitive the stock's returns are to movements in the overall market (e.g., S&P 500). A security's market sensitivity is measured by its beta. As shown in Chart 2 on page 43, the higher the beta of a stock, the higher the company's cost of equity—the return required by the investor to invest in the stock.



Here is the standard CAPM formula:

$$K = Rf + \beta i * (Rm - Rf)$$

Where:

K is the cost of equity;
Rf is the risk-free interest rate;
Rm is the expected return on the overall market (e.g., S&P 500);
[Rm – Rf] is the premium investors expect to earn above the risk-free rate for investing in the overall market ("equity risk premium" or "market risk premium"); and βi (Beta) is a specific asset's share of non-diversifiable, or systematic, risk.

Q. PLEASE EXPLAIN HOW YOU IMPLEMENTED THE CAPM.

A. First, I determined appropriate values or ranges for each of the three model inputs: (a) Risk-Free Rate, (b) Beta, and (c) Equity Risk Premium. Second, I used the equation above to calculate the cost of equity implied by the model. Below I will explain how I calculated the three model inputs and summarize the CAPM cost of equity numbers resulting from those inputs. Table 6 and Table 7 on page 60 show the results of my CAPM.

Risk-Free Rate

Q. WHAT RISK-FREE RATE DID YOU USE IN YOUR CAPM?

A. It is generally preferable to use the market yield on short-term U.S. Treasury securities as the risk-free rate because these assets have a beta close to zero. *Principles of Corporate Finance* states "The CAPM… calls for a short-term interest rate."[52] I chose to use a risk-free rate based on both long- and short-term Treasury yields. It is commonplace in utility rate case proceedings to consider a risk-free rate based on long-term investments. My short-term risk-free rate is based on the yield of 3-month U.S. Treasury bills and my long-term risk-free rate is based on the yield of 30-year U.S. Treasury bonds. In line with my Spot and Weighted Average CAPM approaches, I use both spot values as of September 30, 2026, and weighted averages over the 3 months ending on that date for these two yields.

As outlined in Exhibit ALR-4, page 2, my spot and weighted average short-term risk-free rates are 4.20% and 4.01%, respectively. My spot and weighted average long-term risk-free rates are 5.64% and 5.42%, respectively.

U.S. government bonds are reasonable to use as a risk-free rate because they have a negligible risk of default. The value of short-term U.S. Treasury bills has a relatively low exposure to swings in the overall market. The value of long-term U.S. Treasury bonds is relatively more exposed to the market and therefore must be used with caution.

Q. WHAT IS YOUR RESPONSE TO ANALYSTS WHO CLAIM THAT THE CAPM SHOULD BE IMPLEMENTED WITH A RISK-FREE RATE BASED ON A LONG-TERM INTEREST RATE (E.G., YIELD ON 30-YEAR TREASURY BOND)

[52] Richard Brealey, Stewart Myers, & Franklin Allen, *Principles of Corporate Finance*, p. 228, (McGraw-Hill Irwin, New York, 12th ed. 2017).

AND/OR BASED ON INTEREST RATE FORECASTS INSTEAD OF MARKET YIELDS.

A. As discussed in Section VI.E, a CAPM analysis that uses a risk-free rate based only on long-term interest rates may overstate the COE because these bonds do not have a zero beta. It is not appropriate to use a risk-free rate based on interest rate forecasts because it often does not represent investors' expectations.

Beta

Q. WHAT BETA DID YOU USE IN YOUR CAPM?

A. Since the cost of equity should be based on investor expectations, I chose to use two betas. My "forward beta" is based on forward-looking investor expectations of non-diversifiable risk. My "historical blended" beta is based on historical return data over 6-month, 2-year, and 5-year periods.

Most published betas are based exclusively on historical return data. For example, Value Line publishes a 5-year historical beta for each of the companies it covers. However, it is also possible to calculate betas based on investors' expectations of the probability distribution of future returns. This probability distribution of future returns expected by investors can be calculated based on the market prices of stock options.

Q. WHAT IS A STOCK OPTION?

A. A stock option is the right to buy or sell a stock at a specific price for a specified amount of time. A call option is the right to buy a stock at a specified exercise or strike price on or before a maturity date. A put option is the right to sell a stock at a specified exercise or strike price on or before a maturity date. For example, a call option to purchase 100 shares

of Apple Computer stock for $230 on January 17, 2020, allows the owner the option (not the obligation) to buy Apple stock for $230 on that date. At the end of July 2019, Apple stock was trading at about $215 per share. Why would anyone pay for the right to buy a stock higher than the current price? Investors who purchased those call options thought there was a chance Apple stock would be trading higher than $230 on January 17, 2020, and those options gave those investors the right to buy Apple stock for $230 and profit by selling it at the market price on that date, if it was higher. The price of Apple's stock was $317.98 at the close of trading on January 17, 2020. Therefore, the investor who purchased this call option for $635 on July 31, 2019, earned a profit of $8,163[53] at expiry on January 17, 2020. On the other hand, the investor who purchased an Apple put option with the same expiration date and strike price on July 31, 2019, would have lost the price of the option ($2,248) and gained nothing on the expiration date because the right to sell Apple stock for $230 when the price is over $300 is worthless.

Options can be used to assess future expectations for volatility because they track the type of variation in market price that investors bet will occur within the time frame during which an option can be exercised based on what type of option is purchased and what the difference is between the market price of stock and the option price, or the price that the option bets the stock will reach. As the distance between the market price and option price grows, more volatility is implied in the value of the stock over time. I used these option data to create an "implied volatility" value.

[53] $8,163 profit from exercising call option ($31,798 from selling at $317.98 market price - $23,000 cost to purchase at $230) - $635 ($6.35 X 100) option purchase price. Note: Each call option is the right to purchase 100 shares.

Q. PLEASE EXPLAIN THE TERM "STRUCTURE OF VOLATILITY."

A. Investors can expect volatility to increase or decrease over time. In general (i.e., in "normal" financial markets), investors expect higher volatility for longer time horizons. For example, investors generally expect that the chance stock prices will increase or decrease by 10% in 1 year to be greater than the chance of a 10% (annualized) move over the next 30 days. This makes sense because there is more uncertainty regarding economic and stock market changes the farther into the future you look.

However, during the height of a crisis, when volatility generally tends to rise in the short-term, investors often expect volatility to decrease in coming months or years. In other words, investors expect the current capital market hurricane to pass and the winds to die down. During the peak of implied volatility in mid-March 2020, shortly after the World Health Organization declared COVID-19 a pandemic, the data indicated that investors expected stock price volatility to decrease over time. This implies that investors expected the riskiness of equity investments to decrease over time. As shown in Chart 3 on page 49, before the COVID-19 outbreak, investors expected volatility to increase from less than 15% annually at the 1-month time frame to about 20% annually at the 24-month time frame. Investors' volatility expectations peaked in March 2020. At that time, investors expected stock price volatility would decrease from over 70% at the 1-month time frame to about 38% at the 24-month time frame. Chart 3 also shows that investors' volatility expectations were higher for all time frames when Russia invaded Ukraine as compared to 2021, but as of September 30, 2026 volatility expectations have dropped back closer to 2019 levels over the full term structure of volatility.

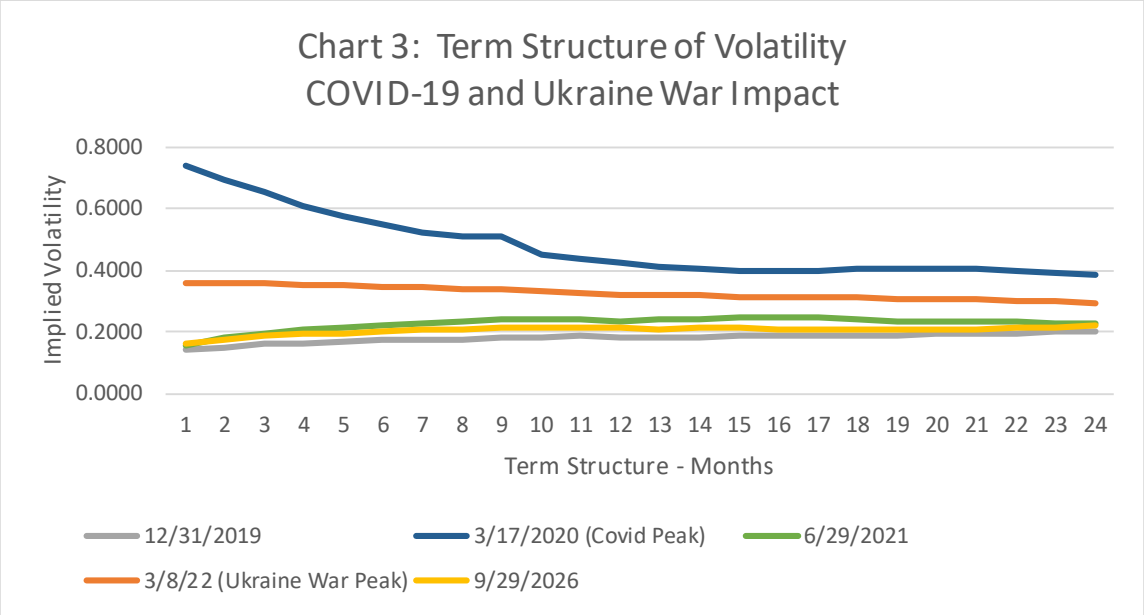
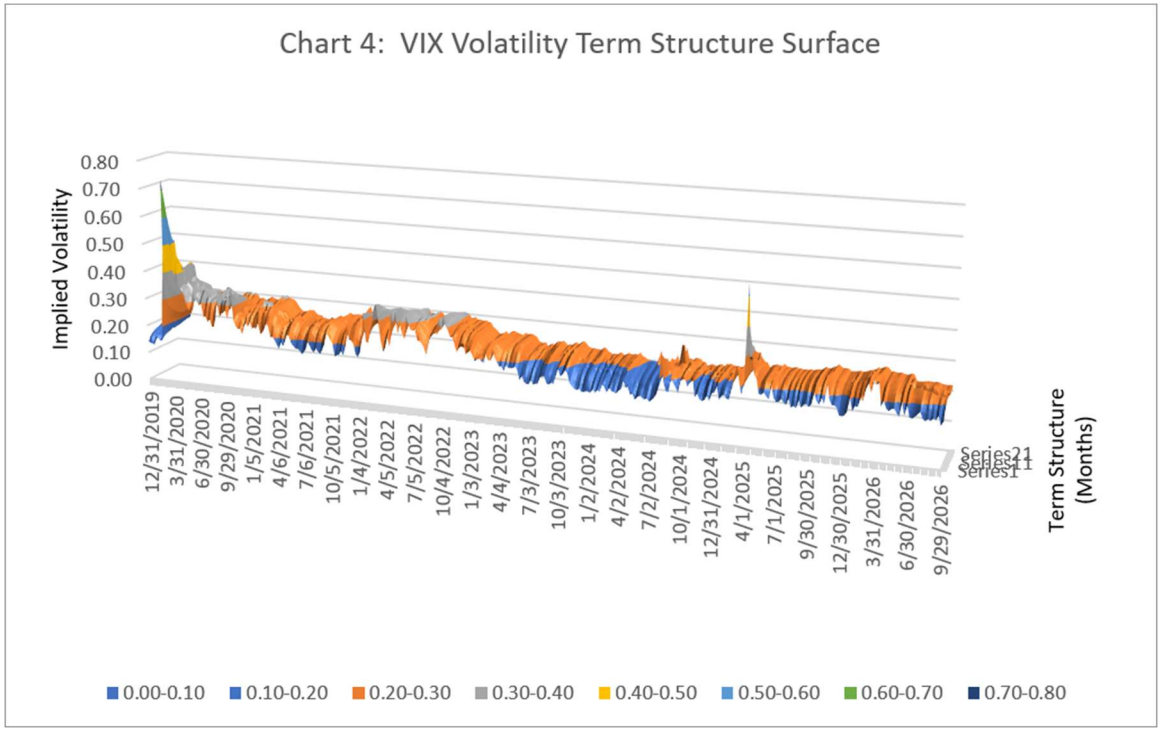


Chart 4 on page 49 provides a 3-dimensional surface[54] to show how the term structure of volatility has evolved since before the COVID-19 outbreak and how it has changed during and since the outbreak. As seen above in Chart 3 above, which shows five cross-sections of these data, during periods of low implied volatility – such as before the COVID-19 outbreak and at present – the slope of volatility expectations over time gently curves upwards, indicating lesser expectations of volatility in the short-term and greater in the long term. In Chart 4, this is represented by the surface of the line curving up and away during times of low volatility, while appearing to move downwards along the z-axis during the period of high volatility in March-April 2020 during the initial outbreak of the pandemic. Implied volatility can be seen to peak for both 1-month and 24-month time frames in mid-March 2020, with less dramatic spikes in February through October of 2022.

[54] The X axis shows the implied volatility. The Y axis shows the data. The Z axis shows market expectation of future implied volatility of different time frames. Series1 = 1 month, Series11 = 11 months, and Series24 = 24 months.

As of the end of June 30, 2026, the term structure of volatility has returned to near pre-COVID levels.



Q. PLEASE EXPLAIN HOW YOU CALCULATED THE BETAS USED IN YOUR CAPM.

A. Traditionally, the betas used in CAPM calculations are calculated from historical returns. This approach has strengths and weaknesses. An alternative way to calculate betas is to incorporate investors' return expectations by calculating option-implied betas as explained in the previous paragraph. As discussed below, I have chosen to use both historical and option-implied betas in my CAPM analysis. I chose to use option-implied betas in my CAPM analysis because, among other reasons, studies have found that betas calculated

based on investor expectations (option-implied) provide information regarding future perceived risks and expectations.[55]

As shown in Chart 5 below forward-looking betas for the RFC Proxy Group are higher than my historical blended betas, both on a spot basis and on a weighted basis, as of September 30, 2026. On a spot basis, my historical blended beta is 0.30, compared to an option-implied beta of 0.75; on a weighted basis (using an average of the last three months of data), my historical blended beta is 0.34, compared to an option-implied beta of 0.66. My historical blended beta is low primarily because I give a 50% weight to my 6-month historical beta, which is only 0.15; my 5-year historical beta, which receives a 20% weight, is 0.61. As a result, my CAPM result using the spot option-implied beta of 0.75 is about 100 to 200 basis points higher than my CAPM result based on the spot historical blended beta of 0.30. See Exhibit ALR-4, page 3.

[55] Bo-Young Chang, Peter Christoffersen, Kris Jacobs & Gregory Vainberg. Option-Implied Measures of Equity Risk, *Review of Finance*, Vol. 16, Issue 2, pp. 385-428 (April 2012) available at https://academic.oup.com/rof/article/16/2/385/1584560.

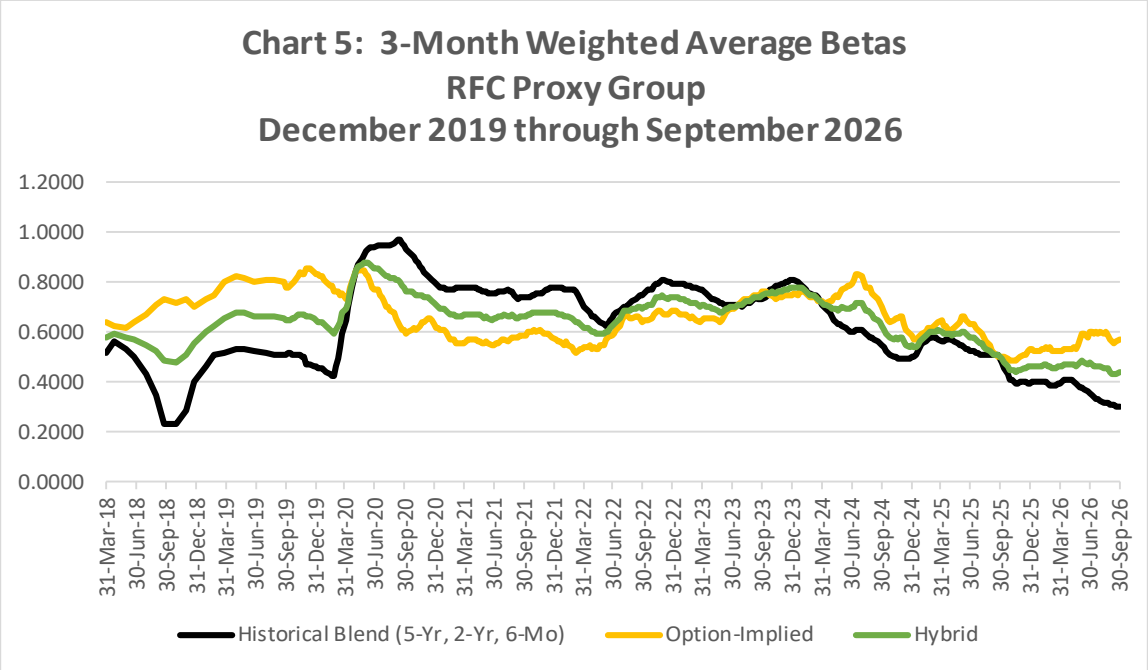


Exhibit ALR-4, page 3 contains the last three months of data used in creating Chart 5 on page 50, which is what I use in my CAPM analysis. Specifically, I use the following two betas in my CAPM analysis:

1. **Historical Blend:** 50% (6 months) + 30% (2 years) + 20% (5 years).
2. **Forward Beta:** 100% Option-Implied Beta (6 months).

Q. WHY DO YOU USE PERIODS OF 6 MONTHS, 2 YEARS, AND 5 YEARS FOR YOUR HISTORICAL BETA CALCULATIONS, AS OPPOSED TO RELYING EXCLUSIVELY ON THE 5-YEAR PERIOD USED BY VALUE LINE?

A. Using shorter periods for the return regression analysis portion of the historical beta calculation allows me to see if the correlation between the returns of each of the companies in my RFC Proxy Group and those of the S&P 500 Index has changed in the last 2 years or 6 months. Using a 5-year period exclusively tends to make recent changes in the correlation more difficult to identify because of the weight of 5 years of data.

Q. WOULD YOU AGREE THAT CHANGES IN MARKET DYNAMICS WILL HAVE A LARGER EFFECT ON 6-MONTH HISTORICAL BETAS THAN THEY WILL ON 2-YEAR OR 5-YEAR HISTORICAL BETAS?

A. Yes. As with other historical metrics based on a given time period, say, average stock prices, the longer the time horizon under consideration, the more data points are considered, and the smaller the effect of any one given change in the data set.

Q. IS THIS LARGER EFFECT ON 6-MONTH HISTORICAL BETAS FROM CHANGES IN MARKET DYNAMICS A GOOD OR A BAD THING?

A. The answer depends on what the beta will be used for. I would argue that in any attempt to forecast the beta coefficient of a company for any near-term forward-looking analysis such as the cost of capital calculations in this proceeding, more recent historical data should be given more relevance than data from 5 or 10 years ago. The weight of 10 years of data makes a beta coefficient react extremely slowly to market developments. Even pronounced permanent market changes can take more than 6 months to have a detectable effect on a 10-year beta.

As with using spot values and averages of historical market data, I believe the right answer is not to use *either* 6-month historical betas or historical betas with longer horizons, but to consider *both*. For this reason, I have created my historical blended betas, which take into consideration 6-month, 2-year, and 5-year historical betas.

Q. DO YOU THINK IT IS A GOOD IDEA TO RELY ON 6-MONTH HISTORICAL BETAS DESPITE MARKET DEVELOPMENTS IN THE PAST YEAR THAT SOME WOULD CALL "MARKET DISLOCATIONS?"

A. Financial markets are constantly in flux due to the influence of countless factors. So-called "market dislocations," are just some of the numerous factors that are constantly affecting markets. To attempt to separate any one specific factor from "real" underlying market dynamics would be an exercise in futility.

Furthermore, predicting the duration and impact of any single influencing factor on financial markets is extremely challenging, if not impossible. In 2008, when interest rates plummeted to unprecedented lows, numerous analysts deemed this a temporary anomaly. Contrary to these expectations, rates not only persisted at these low levels for more than ten years but dropped even further in response to the unforeseen COVID-19 pandemic, which significantly affected the global economy and financial markets.

So, in response, yes, I think it is a good idea to use 6-month historical betas to measure recent and current market dynamics regardless of recent developments. I use them as part of my historical blended betas in conjunction with longer-term historical betas and forward-looking, option-implied betas to achieve the most reasonable result.

Q. GIVEN THE SHORTER PERIOD COVERED BY 6-MONTH HISTORICAL BETAS, CAN THEY STILL BE CONSIDERED STATISTICALLY SIGNIFICANT? HOW MANY DATA POINT PAIRS ARE USED IN THE CALCULATION OF YOUR 6-MONTH HISTORICAL BETA COEFFICIENTS?

A. A 6-month historical beta based on weekly returns, calculated weekly, is calculated using 26 closing price points for a company and for its corresponding market index, in this case

the S&P 500 Index. This translates into 25 pairs of return data that are then used in the regression analysis. This is most certainly enough data to achieve statistical significance as addressed further below.

Furthermore, as stated above, the recent improvement in my calculation of historical betas of using weekly returns on every day of the week as opposed to using only one day of the week, as Value Line does, has the added benefit of providing significantly more data pairs to be used in the regression analysis used to calculate beta. For 6-month historical betas, instead of relying on 25 return pairs, the regression is performed on 117 return pairs.

Q. PLEASE EXPLAIN HOW YOU CALCULATED OPTION-IMPLIED BETAS.

A. Calculating option-implied betas of a company requires (1) obtaining stock option data for that company and a market index, (2) filtering the stock option data, (3) calculating the option-implied volatility for the company and for the index, (4) calculating the option-implied skewness for the company and for the index, and (5) calculating option-implied betas for the company based on implied volatility and skewness for the company and for the index. There are various ways one could choose to perform the steps above, but I chose to filter stock option data and calculate option-implied volatility[56] and skewness63F[57] following exactly the same methodology used by the Chicago Board of Options Exchange

[56] CBOE Volatility Index White Paper (2018) available at https://cdn.cboe.com/resources/indices/srvix-white-paper.pdf. Please note that the cover page says, "proprietary information." However, this document has been in the public domain for over 3 years.

[57] The CBOE SKEW Index (2010) available at: https://cdn.cboe.com/resources/indices/documents/SKEWwhitepaperjan2011.pdf. Please note that the cover page says, "proprietary information." However, this document has been in the public domain for over 3 years.

("CBOE") in the calculation of their widely-used VIX (or Volatility Index) and SKEW Index, respectively.

I start my process with publicly available trading information for all the options for a given security (company or index) for a complete trading day. I then filter the option data as described by the CBOE using the following guidelines:

1. Use the mid-quote or mark (average of bid and ask) as the option price.
2. Use only out-of-the-money call and put options.
    - Determine the "moneyness" threshold where absolute difference between call and put prices is smallest (using CBOE "Forward Index Price" formula).
    - Include "at-the-money" call and put options and use average of call and put prices as price for "blended" option.
3. Exclude all zero bids.
4. Exclude remaining (more out-of-the-money) options when two sequential zero bids are found.

I then apply the series of formulas clearly described in both of the CBOE's white papers to the remaining options to calculate Option-Implied Volatility and Option-Implied Skewness. In the words of the CBOE, each of its two indices is "an amalgam of the information reflected in the prices betas using the following formula developed by Christoffersen, Chang, Jacobs and Vainberg (2011): [58]

[58] Bo-Young Chang, Peter Christoffersen, Kris Jacobs & Gregory Vainberg, Option-Implied Measures of Equity Risk, *Review of Finance* Volume 16, Issue 2, pp. 385-428 (April 2012) at https://academic.oup.com/rof/article/16/2/385/1584560

$$\beta_i = \left(\frac{SKEW_i}{SKEW_m}\right)^{1/3} \quad \left(\frac{VAR_i}{VAR_m}\right)^{1/2}$$

Where:

β_i: $option - implied\ beta\ of\ security\ (e.g. stock, fund)$;
$SKEW_i$: $skewness\ of\ security$;
$SKEW_m$: $skewness\ of\ overall\ market\ (S\&P\ 500)$;
VAR_i: $variance\ of\ security$;
VAR_m: $variance\ of\ overall\ market\ (S\&P\ 500)$.

Q. YOU CALCULATE YOUR OPTION-IMPLIED BETAS BASED ON A 6-MONTH HORIZON. WOULD IT NOT BE BETTER TO USE A LONGER FORECASTING HORIZON?

A. The methodology I use to calculate my option-implied betas "allows for the computation of a complete term structure of beta for each company so long as the options data are available,"[59] so there is nothing inherent in the methodology that limits it to a certain time horizon.

For many applications, including cost of capital, one could argue that the longer the time horizon for the option-implied betas, the better. However, the limitation on the forecasting horizon is always set by the longest expiration period of the options currently traded in the market. Some companies trade options with expiration periods up to 2 or 3 years into the future. As evidenced by the exhaustive option data in my working papers, the maximum expiration period for the options of the companies in my RFC Proxy Group is approximately 8 months. None of the 17 companies ever trade options with expiration periods of more than 8 months. New options are issued roughly every 3 months for all of

[59] Peter Christoffersen, Kris Jacobs, and Gregory Vainberg, *Forward-Looking Betas*, p. 24 (April 25, 2008) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=891467.

these companies, so the maximum expiration period on any given trading day is somewhere between 5 and 8 months. For consistency across companies in my proxy group and across dates within the 3-month period on which my analysis is focused (July through September 2026), I chose to use 6 months for the time horizon of my option-implied betas. If the maximum expiration period for the options of a given company on a given day is less than 6 months, I use the maximum expiration period as an approximation for the target 6-month horizon.

Simply because some may argue that it may be preferable to use longer time horizons in place of or in addition to a 6-month horizon, it does not mean that a 6-month option-implied beta is of no relevance or cannot be used. That would be tantamount to saying you cannot use a 1-year Value Line Earnings Per Share estimate, or that the minimum relevant forecast is 2 or 3 years. In fact, for purposes of option-implied betas, it would be difficult to say if a time horizon of 1 year, for instance, is necessarily always better than a time horizon of 6 months. An option-implied forward-looking beta, even with a time horizon of less than 6 months, is still a useful tool in interpreting the current expectations of investors at any given time, this is why it is one of the many tools I consider when arriving at my recommendations.

A final strong argument in support of using 6-month option-implied betas in a cost of capital calculation looking years into the future is that the authors of the paper on which I based my option-implied betas concluded that their predictive powers are not limited to 6 months into the future.[60] In fact, they conclude that 6-month option-implied betas have

[60] This is further expanded upon in my testimony starting on page 101.

stronger predictive power than 6-month, 1-year, or 5-year historical betas when attempting to forecast betas 1 or 2 years into the future.

Market Risk Premium

Q. PLEASE EXPLAIN HOW YOU CALCULATED THE EQUITY RISK PREMIUM USED IN YOUR CAPM.

A. Traditionally, the risk premium used in CAPM calculations is derived from historical returns and/or equity analyst projections. The former approach is historically accurate but does not take into account investors' expectations for future market risks and returns. The latter approach is based on analyst projections, which are not appropriate since they do not reflect current investor expectations. A superior market-based way to calculate the equity risk premium is to use option-implied return expectations, which is the approach I have used.

My equity risk premium is the expected return on the S&P 500 minus the risk-free rate. I calculate an expected return on the S&P 500 by using stock options traded on this index. To begin with, I use exactly the same methodology used by the Chicago Board of Options Exchange to filter stock option data and calculate option-implied volatility and skewness,[61] as described in detail in the Beta section on page 54. The volatility and skewness calculated in this way describe a probability distribution representing the possible trajectories for the S&P 500 implied by the options market. The resulting skewed probability distribution can be closely approximated by a log-normal distribution using established statistical formulas, which then make it straightforward to calculate the

[61] As used in the calculation of their widely-used VIX (or Volatility Index) and SKEW Index, respectively.

expected growth for the S&P 500 for any given cumulative probability. A cumulative probability of 50% represents the median of the probability distribution, or the option-implied market consensus, which is how I arrive at my calculation of expected market growth.

Once the option-implied growth rate of the S&P 500 has been estimated as described above, I add the dividend yield and subtract the risk-free rate to arrive at the market risk premium, as laid out in Exhibit ALR-4, page 4 and Exhibit ALR-4, page 6. In line with my Spot and Weighted Average CAPM approaches, I use both spot values as of September 30, 2026, and weighted averages over the 3 months ending on that date for option-implied growth, dividend yields, and short- and long-term risk-free rates in these calculations to arrive at a total of 4 estimated values for the market risk premium. The market risk premia I use in my Weighted Average CAPM analysis with short- and long-term risk-free rates are 4.01% and 2.61%, respectively. The market risk premia I use in my Spot CAPM analysis with short- and long-term risk-free rates are 3.76% and 2.32%, respectively.

Q. DID YOU TAKE INTO CONSIDERATION THE DIFFERENCE IN VOLATILITIES ACROSS EXPIRATION PERIODS IN THE OPTIONS TRADED ON THE S&P 500?

A. Yes. The volatility implied by the options market changes over time as investors' perception of risk changes. For example, during a crisis, implied volatility generally increases as investors expect that stock market prices have a greater chance of large swings compared to times when there is no crisis. As discussed earlier, investors also often have different volatility expectations over different time periods. For example, on any given

day, investors might expect volatility to be relatively high over the next 30 days and to decrease over the next year or longer. The same holds true for skewness, even though it is less intuitive to understand changes in skewness than in volatility. Because of these changes across option expiration periods, I take a weighted average of the entire term structure of the option-implied volatility and skewness, which for the S&P 500 typically goes out to 54 to 61 months[62], interpolating where necessary, and giving the most weight to the option expiration period of 12 months.

CAPM Results

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR CAPM.

A. Table 6 and Table 7 below show the results of my Weighted Average CAPM and Spot CAPM Analyses, respectively.

Weighted Average CAPM

TABLE 6: CAPITAL ASSET PRICING MODEL (CAPM) - INDICATED COST OF EQUITY
WEIGHTED - All Inputs Weighted From July to September 2026

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	4.01%	4.01%	5.42%	5.42%
Beta	0.30	0.57	0.30	0.57
Risk Premium	4.01%	4.01%	2.61%	2.61%
CAPM	5.22%	6.32%	6.20%	6.92%

Source: Exhibit ALR-4, page 1

[62] Prior to November 2021, the longest expiration period for stock options traded on the S&P 500 was 36 months.

Spot CAPM

TABLE 7: CAPITAL ASSET PRICING MODEL (CAPM) - INDICATED COST OF EQUITY (SPOT)
SPOT - All Inputs Based on Last Available Data as of September 30, 2026

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	4.20%	4.20%	5.64%	5.64%
Beta	0.27	0.63	0.27	0.63
Risk Premium	3.76%	3.76%	2.32%	2.32%
CAPM	5.23%	6.58%	6.27%	7.11%

Source: Exhibit ALR-4, page 5

As shown in Appendix B (Chart E-1), the results of my CAPM analysis applied to the RFC Proxy Group demonstrate how the cost of equity has evolved since the onset of the COVID-19 pandemic. The cost of equity briefly spiked in early 2020 but then declined as markets stabilized. Most importantly, since peaking at about 9.12% in November 2022, the CAPM-implied cost of equity for the proxy group has been on a clear downward trend, falling to under 7% by October 2024.

The only CAPM input that changes with the proxy group is beta.

VII. COE OF OVERALL MARKET

Q. HOW DOES YOUR COE CALCULATION FOR THE OVERALL MARKET RELATE TO YOUR 8.31% ROE RECOMMENDATION?

A. My COE for the overall market serves as a benchmark for the appropriate ROE for CL&P. It is grounded in a fundamental economic boundary: a low-risk, regulated monopoly utility cannot logically require a higher return than the riskier overall stock market.

Using forward-looking options data, I calculated the COE for the S&P 500 to be between 7.41% and 8.09% at the 1-year investment horizon and between 7.06% and 7.43% at the 5-year investment horizon, with a midpoint between the high and low of 7.84%.[63] I provide this analysis to offer direct insight into what current capital markets are indicating regarding the COE for the market as a whole. These calculations should not be interpreted as the COE applicable to CL&P or any utility company and instead serve as an upper bound guideline.

Q. HOW DID YOU CALCULATE THE COE FOR THE OVERALL MARKET?

A. I calculated the COE for the S&P 500 by using a DCF model. I used the prices of stock options traded on the S&P 500 to derive an option-implied growth rate. As discussed above, a stock option is a financial contract giving the holder the right to buy or sell a security at a specified price within a set timeframe, and they are useful for calculating the COE because their market prices reflect the probability distribution of future stock prices, allowing for the derivation of investors' expectations. Please see Appendix C for a discussion of how I calculated the option-implied growth rates.

Q. WHAT ARE THE RESULTS OF YOUR DCF COE ANALYSIS?

A. The results of our DCF models applied to the S&P 500 range between 7.04% and 8.89%. To properly interpret these results, it is critical to understand that they vary across two distinct dimensions: the investment horizon, or the time period over which the return is

[63] The full range at investment horizons between 6 months and 5 years is 7.04% and 8.89%, with a midpoint of 8.80%.

measured, and the date of analysis, which in this case comprises the market conditions averaged over the three-month period July through September 2026.

Q. PLEASE EXPLAIN HOW THE COE RESULTS VARY ACROSS THESE DIMENSIONS.

A. My analysis reveals a dynamic term structure where COE expectations shift depending on how far into the future we look.

The resulting option-implied COE can be summarized as follows:

1-Year Horizon: 7.41% to 8.09%

3-Year Horizon: 8.20% to 8.63%

5-Year Horizon: 7.06% to 7.43%

Generally speaking, there is a declining trend as one goes out from short-term to longer-term horizons.

Q. WHY DIDN'T YOU CALCULATE THE COE BEYOND THE FIVE-YEAR TIME FRAME?

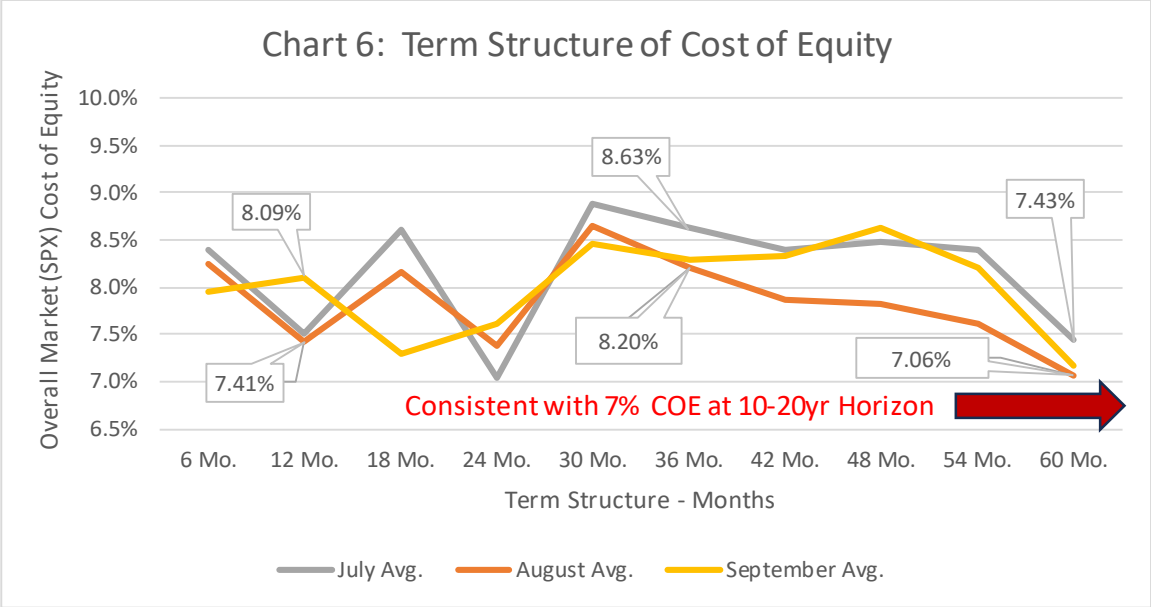
A. It is not possible to calculate an option-implied COE beyond the five-year horizon because a consistent market for such options does not exist. Publicly traded index options occasionally trade out to six years for a brief period but are only available consistently out to about five years.

Q. WHAT CONCLUSION DO YOU DRAW FROM THIS DECLINING TREND?

A. The data indicates that while short-term market expectations have risen in recent months, longer-term expectations remain anchored at lower levels.

This is significant because, for utility ratemaking purposes, the longer horizons are arguably the most relevant. While rates are set periodically, the cost of equity (COE) represents the return required to attract capital for long-lived assets. Because the primary investors in this sector, such as pension funds, match their investments to long-term liabilities, they price these securities based on a multi-decade horizon rather than shorter investment horizons.

As shown in Chart 6 on page 65, as we extend the timeline out to five years, the COE indicated by our stock option analysis is consistent with the longer-term forecasts of major financial institutions. Specifically, even the highest COE results in Chart 6 decline from 8.09% at the 1-year horizon to 7.43% at the 5-year horizon, trending directly toward the 10-to-20-year forecasts from firms like J.P. Morgan (6.7%) and the Horizon Actuarial Survey (approximately 7.0%), as shown in Table 3 on page 13. As discussed above, the Horizon survey is a significant industry benchmark that aggregates the capital market assumptions of 41 different investment advisory firms, including the Bank of New York Mellon, BlackRock, and Goldman Sachs.



It is important to recognize that relying on the higher end of these option-implied results to establish this benchmark represents a highly conservative estimation. I have intentionally structured this analysis to afford the Company every reasonable benefit of the doubt regarding long-term market expectations.

While this market-wide COE analysis does not directly dictate my ROE recommendation, it provides a critical benchmark for reasonableness. Specifically, it confirms that my recommended ROE of 8.31% is consistent with, and provides a modest, risk premium above, a broad cross-section of long-term institutional forecasts for the broader equity market. Notably, my 8.31% recommendation remains slightly below the 7.84% midpoint I calculated for the S&P 500. Chart 6 above shows the equity return expectations/COE for the S&P 500 over longer investment horizons are mostly around 8%. Because this 8.40% market benchmark was established using generous, conservative assumptions, the fact that my 8.33% recommendation aligns so closely with it confirms that my proposed ROE is more than sufficient to allow the Company to attract capital.

VIII. EVALUATION OF CL&P'S RATE OF RETURN TESTIMONY

Q. PLEASE SUMMARIZE THE TESTIMONY OF MS. BULKLEY.

A. Ms. Bulkley supports an authorized ROE of 10.25% for CL&P, based on a recommended range of 10.25% to 11.25%, and supports CL&P's proposed capital structure of 53.86% common equity, 0.90% preferred stock and 45.24% long-term debt.[64]

Ms. Bulkley supports the Company's requested 10.25% ROE based on the results of:

- Constant Growth Discounted Cash Flow (DCF) Model
- Capital Asset Pricing Model (CAPM)
- Empirical Capital Asset Pricing Model (ECAPM)
- Bond Yield Plus Risk Premium (BYRP or Risk Premium) Analysis

She concludes that "[t]he Company has materially greater business and regulatory risk than the proxy group on average, largely based on recent regulatory outcomes."[65]

Ms. Bulkley discusses two categories of company-specific regulatory and business risk (compared to the companies in her proxy group):

1. capital expenditures (net plant of $7.216 billion and projected 2027–2031 capital expenditures of $3.99 billion); and
2. regulatory risk, principally the Connecticut regulatory environment, the S&P (December 2024) and Moody's (June 2025) downgrades, SB 7, and RRA/S&P jurisdictional rankings.

[64] Ms. Bulkley's Direct Testimony, page 6, line 5 through page 7, line 6.
[65] Ms. Bulkley's Direct Testimony, page 70, lines 15–17.

Notably, she does not make any specific adjustments to her cost of equity results based on any of these factors, stating "Although I do not make specific adjustments to my recommended ROE for these factors, I do consider them in the aggregate when determining the reasonableness of CL&P's proposed ROE relative to the range of the analytical results."[66]

Ms. Bulkley also discusses CL&P's capital structure, comparing it to her proxy group, but does not propose any changes to the Company's proposed equity ratio of 53.86 percent, saying that the requested equity ratio "is within the range of the actual capital structures of the utility operating subsidiaries of the proxy group companies and is reasonable."[67] Her testimony notes that "[w]hile it is common to consider multiple models to estimate the cost of equity, it is particularly important when the range of results varies considerably across methodologies."[68]

Table 1: Ms. Bulkley's Cost of Equity Results

TABLE 8: MS. BULKLEY'S COST OF EQUITY RESULTS	
METHOD	**Model Results**
Constant Growth DCF - Earnings Growth	9.31% - 11.94%
CAPM	11.14% - 11.45%
ECAPM	11.70% - 11.94%
Bond Yield Risk Premium	10.61% - 10.78%
Ms. Bulkley's Average Cost of Equity Model Results	**9.31% - 11.94%**

[1] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE 2/Figure 13 (p. 72).

[66] Ms. Bulkley's Direct Testimony, page 3, lines 10–13.
[67] Ms. Bulkley's Direct Testimony, page 7, lines 4–6.
[68] Ms. Bulkley's Direct Testimony, page 6, lines 1–3.

Q. IS CL&P'S REQUESTED 10.25% ROE MARKET-BASED?

A. No. Ms. Bulkley states that the cost of equity is a "market-based concept,"[69] that "must be estimated based on observable market data,"[70] and that "[p]roviding the opportunity to earn a market-based cost of capital supports the financial integrity of the Company, which is in the interest of both customers and shareholders."[71] But when applying her approaches, there are key places where she fundamentally fails to use market data.

For example, the market risk premium portion of her CAPM is based on analyst EPS growth rate forecasts that are as high as 20.00 percent.[72] To calculate her 13.38 percent expected market return, she relies heavily on the subjective growth forecasts of the advisory services whose EPS growth forecasts she compiles for the S&P 500 companies. While these services provide respected opinions, analysts' opinions are not a "market."

Her reliance on equity analyst earnings forecasts and economist interest rate forecasts is problematic because she does not rely on market data nearly as much as she could. Her models are based on the speculations of individual analysts instead of the actual return expectations of the millions of investors that purchase stocks, bonds, and stock options.

In contrast, my analysis derives the expected market return directly from S&P 500 index options. This is a genuinely market-based measure because option pricing models extract the implied expected returns directly from the capital commitments of millions of investors. The S&P 500 options market is arguably the deepest, most liquid equity

[69] Ms. Bulkley's Direct Testimony, page 20, line 7.
[70] Ms. Bulkley's Direct Testimony, page 22, lines 8–9.
[71] Ms. Bulkley's Direct Testimony, page 11, lines 8–10.
[72] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-7, pages 1–7, columns [10] and [11] (companies with projected growth above 20 percent are excluded from her weighting).

derivative market in the world. It routinely executes three to five million contracts with over $1.5 to $2 trillion in notional volume in a single day—frequently exceeding the dollar trading volume of the underlying 500 stocks themselves.

The pricing of these options represents the aggregate, capital-backed consensus of global institutional investors, pension funds, and market makers. By relying on analysts' forecasts to establish a 13.38 percent market return, Ms. Bulkley has anchored her recommendation on a small financial island, divorced from the objective, capital-committed reality of the broader financial markets.

Q. DO THE RESULTS OF MS. BULKLEY'S COST OF EQUITY MODELS PROVIDE A RELIABLE INDICATION OF CL&P'S COST OF EQUITY?

A. No. CL&P's requested 10.25% ROE, which Ms. Bulkley supports, is significantly higher than CL&P's market-based cost of equity. If that request is used to set rates, consumers will be significantly overcharged. Ms. Bulkley's support for the 10.25% ROE is flawed largely because she abandons her own foundational definition of the cost of equity the moment she executes her calculations. While she correctly defines the cost of equity as a "market-based concept"[73] that "must be estimated based on observable market data,"[74] her actual calculations rely heavily on the subjective growth forecasts of equity analysts rather than objective, capital-backed market data. By inserting these opinion-based inputs into her models, her resulting calculations produce an inflated, artificial return rather than a genuine market-based cost of equity.

[73] Ms. Bulkley's Direct Testimony, page 20, line 7.
[74] Ms. Bulkley's Direct Testimony, page 22, lines 8–9.

Additionally, each of her COE models have specific issues that contribute to her unreasonably high results. First, I will address how her constant growth DCF method is unreliable because it mechanically uses analyst five-year EPS growth rates as a proxy for growth without considering the mathematical relationship between retention rates, dividend payments, and growth. A company cannot invest and grow with money it has paid out to investors as a dividend. Second, I will explain how her CAPM overstates the cost of equity by using an equity risk premium that is not reflective of investors' expectations as indicated by market data.

B. DCF Method

The central problem with Ms. Bulkley's testimony is that she treats analysts' 3-to 5-year earnings growth forecasts as if they were growth rates in perpetuity. That assumption drives her constant growth DCF results, which average 10.74%.[75] As discussed in Section IV, correcting this assumption alone substantially reduces her DCF result.

The same assumption that three- to five-year earnings growth forecasts are appropriate to use as if they were growth rates in perpetuity, applied to the S&P 500, produces the 13.38% market return that supplies her entire CAPM and ECAPM market risk premium;[76] and the same CAPM and ECAPM results are what she uses to justify placing her recommendation above her DCF results.[77][78] I address each point in more detail below. Ms. Bulkley's testimony contains other problems as well. In this section I address several of them: her historical risk premium measures, her Non-Price Regulated Proxy

[75] Ms. Bulkley's Direct Testimony, page 31, Figure 6, and Exhibit CLP-ROE-2.
[76] Ms. Bulkley's Direct Testimony, page 34, lines 6–13, and Exhibit CLP-ROE-7, page 1.
[77] Ms. Bulkley's Direct Testimony, page 6, line 5 through page 7, line 2, and page 71, lines 3–7.
[78] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-2.

Groups, her exclusive reliance on Value Line betas in her second set of results, and her credit risk and flotation cost adjustments. These issues are real, but they pale in comparison to the growth rate issue, which amounts to roughly 300 basis points in her DCF alone. My evaluation does not attempt to address every disagreement I have with Ms. Bulkley's testimony, and the fact that I do not address a particular aspect of her testimony should not be interpreted as agreement with it.

Q. WHAT GROWTH RATES DOES MS. BULKLEY USE IN HER CONSTANT GROWTH DCF MODEL?

A. Ms. Bulkley's growth estimate relies entirely on analysts' relatively short-term EPS growth forecasts. She mechanically uses analyst 3-5-year EPS growth rates from Value Line, Zacks, and S&P Capital IQ as a proxy for growth.[79] For her proxy group, these forecasts average 7.17%,[80] with individual company inputs as high as 13.30%.[81] Her own testimony describes these inputs as "consensus projected 3- to 5-year EPS growth rates."[82] This matters because Ms. Bulkley's constant growth DCF model requires a single growth rate that holds in perpetuity, yet the only growth rate she supplies is one her own sources label as a five-year estimate, not a perpetual one.

[79] Ms. Bulkley's Direct Testimony, page 26, lines 19–21.
[80] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-4, page 1, column [8].
[81] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-4, page 1, column [6] (Entergy Corporation, Zacks).
[82] Ms. Bulkley's Direct Testimony, page 27, lines 3–5.

Q. IS MS. BULKLEY'S GROWTH RATE APPROPRIATE FOR A CONSTANT GROWTH DCF MODEL?

A. No. Ms. Bulkley explains correctly that "[i]n its constant growth form, the DCF model … assumes a single growth estimate in perpetuity."[83] However, her DCF method contradicts her own description of how the constant growth model should be implemented.

It is not appropriate to mechanically use analyst EPS growth rate projections in a constant growth DCF model, as Ms. Bulkley has done, because relatively short-term growth rate projections (5-years), even if accurate, may not be realistic to achieve in the long-term. Using unrealistically high growth rates in the constant growth DCF model can significantly inflate the cost of equity.

A correct application of the DCF method requires that the dividend yield be computed properly, and that the growth rate used be derived from a careful study of what future sustainable growth in cash flow is anticipated by investors. Ms. Bulkley's testimony contains no analysis of long-term sustainable growth, does not state that her model assumes the five-year growth rates will continue beyond the forecast period, and it provides no support for that assumption.

Q. DO HER SOURCES HOLD THESE FIGURES OUT AS LONG-TERM GROWTH RATES SUITABLE FOR ESTIMATING GROWTH IN PERPETUITY?

A. No. Each of the three sources—Value Line, Zacks, and S&P Capital IQ—Ms. Bulkley relies upon presents its figure as an estimate covering approximately the next five years.[84]

[83] Ms. Bulkley's Direct Testimony, page 26, lines 3–4.
[84] Ms. Bulkley's Direct Testimony, page 27, lines 3–5, and Exhibit CLP-ROE-4, notes [5]–[7].

Neither Ms. Bulkley nor her sources present these figures as an estimate of growth in perpetuity, and Ms. Bulkley's testimony does not address the difference between the five-year period her sources cover and a growth rate in perpetuity.

A comprehensive study published in the Journal of Banking & Finance found that Value Line's 3-to-5-year projections for earnings and stock returns "exhibit large positive bias." The authors isolated the root of this bias, noting that it appears to be "entirely due to the extreme upward bias in projected profit margins."[85]

My goal is to ensure that the cost of equity estimates provided to the Authority are empirically sound and reflective of a more reasonable economic reality. The aforementioned study found that Value Line's 3- to 5-year projections lack predictive power, concluding that their "extreme upward bias … calls into question the common practice of using these predictions as proxies for the cost of equity in cost-of-capital studies."[86] By utilizing these specific projected growth rates, Ms. Bulkley's analysis structurally overstates the expected market return.

Q. MS. BULKLEY ARGUES THAT EPS GROWTH IS THE APPROPRIATE DCF GROWTH MEASURE BECAUSE DIVIDENDS CANNOT GROW WITHOUT EARNINGS GROWTH. DOES THAT ARGUMENT ADDRESS WHETHER HER FIVE-YEAR GROWTH RATES CAN BE USED IN PERPETUITY?

A. No, it does not.[87] Her argument says nothing about how long a forecast of that nature can be extended.

[85] Andrew C. Szakmary, C. Mitchell Conover & Carol Lancaster, "An examination of Value Line's long-term projections," Journal of Banking & Finance 32 (2008) 820-833.
[86] *Id.* page 833.
[87] Ms. Bulkley's Direct Testimony, page 26, lines 7–10.

Q. WHAT IS THAT ASSUMPTION WORTH IN HER DCF RESULT?

A. Roughly 235 basis points. As I discuss in Section IV, correcting this single assumption while holding every other input in her DCF model exactly as filed reduces her average DCF result from 10.74% to 8.40%, roughly 235 basis points.

Q. ARE YOU SAYING ANALYSTS' EPS GROWTH FORECASTS ARE USELESS?

A. No. Analysts' EPS growth rates are, however, very dangerous if used in a simplified DCF without proper interpretation. While they are not useful if used in their "raw" form, they can be very useful in computing estimates of what earned return on equity investors expect will be sustained in the future, and as such, are useful in developing long-term sustainable growth rates. This is exactly what I do in the application of my Constant Growth DCF Analysis.

Q. WHAT, THEN, IS THE CORRECT WAY TO USE ANALYSTS' FIVE-YEAR EPS FORECASTS IN ESTIMATING THE COST OF EQUITY?

A. There are at least two professionally recognized ways, and Ms. Bulkley used neither.

The first is to use them as inputs to a sustainable growth rate rather than as the growth rate itself, as I have just described. My constant growth DCF model is used by major financial institutions. J.P. Morgan Chase uses the sustainable growth form of the DCF method, as I do, in its Long-Term Capital Market Assumptions publication.[88] *Principles of Corporate Finance*, a leading financial textbook used in business schools and investment banks around the world, recommends using the very same method I use to

[88] J.P. Morgan Asset Management, Long-Term Capital Market Assumptions, 2019, pages 62-63.

calculate the cost of equity for regulated utility companies.[89] Major financial institutions like J.P. Morgan Chase do not use a growth rate based on analyst's 5-year EPS growth rates as a perpetual growth input as Ms. Bulkley has done.

The second is to use the forecasts for the period they cover—as the first stage of a multi-stage model—with a long-term growth rate thereafter. That is how the forecasts are applied by others who rely on them. Professor Aswath Damodaran of NYU uses analyst growth estimates for the first five years of his widely followed implied equity risk premium calculation, and thereafter caps growth at the Treasury bond rate as a proxy for the growth of the economy: in his words, the Treasury rate serves "as our proxy for nominal growth in the long term, and thus as a cap on the growth rate in earnings beyond year 5."[90] His current calculation applies analyst-based earnings growth of 10.50% through 2027, and "dropping to 4.18% over the following years" in perpetuity, a rate which is set equal to the U.S. Treasury bond rate.[91]

In 2014, the Federal Energy Regulatory Commission adopted a two-step DCF for electric utilities, observing that the prior one-step model relied on "growth projections by investment advisory services for relatively short periods of years,"[92] and anchoring the long-term stage of the two-step model to projected GDP growth.[93]

And Robert B. Hevert, another frequent cost of equity witness for utilities, has presented multi-stage DCF models in utility rate proceedings, explaining that the multi-

[89] Richard A. Brealey, Stewart C. Myers & Franklin Allen, Principles of Corporate Finance, 12th Edition, McGraw-Hill Irwin, pp. 86-87.
[90] Aswath Damodaran, Equity Risk Premiums (ERP): Determinants, Estimation, and Implications – The 2026 Edition (paper updated, March 5, 2026), page 101.
[91] *Id.,* p. 103, Figure 11 (Implied Equity Risk Premium on January 1, 2026).
[92] *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234, at P 34 (2014).
[93] *Id.* at PP 39-40, *vacated on other grounds sub nom. Emera Maine v. FERC*, 854 F.3d 9 (D.C. Cir. 2017); *see also* Opinion No. 569, 169 FERC ¶ 61,129 (2019).

stage form "avoids the sometimes limiting assumption that the subject company will grow at the same, constant rate in perpetuity," with long-term growth reverting toward GDP.[94]

Q. WHAT DO YOU CONCLUDE REGARDING MS. BULKLEY'S CONSTANT GROWTH DCF RESULT OF 10.74%?

A. Ms. Bulkley's DCF result should be given no weight. On its own terms, her constant growth DCF requires a perpetual growth rate;[95] the inputs she supplied are five-year forecasts;[96] and her testimony provides no analysis connecting the two.

C. CAPM Method

Q. PLEASE DESCRIBE MS. BULKLEY'S CAPM METHOD.

A. Ms. Bulkley explains that the CAPM method "estimates the cost of equity for a given security as a function of a risk-free return plus a risk premium to compensate investors for the non-diversifiable or 'systematic' risk of that security."[97] She says that this method is defined by the following four components:

$$K_e = r_f + \beta\,(r_m - r_f)$$

Where:

K_e	=	the required ROE for a given security;
β	=	Beta coefficient of an individual security;
r_f	=	the risk-free rate of return; and
r_m	=	the required return on the market as a whole.[98]

[94] Direct Testimony of Robert B. Hevert, Okla. Gas & Elec. Co., Ark. Pub. Serv. Comm'n Docket No. 16-052-U, page 29, line 11 and page 30, line 1 (2016).
[95] Ms. Bulkley's Direct Testimony, page 26, lines 3–4.
[96] Ms. Bulkley's Direct Testimony, page 27, lines 3–5.
[97] Ms. Bulkley's Direct Testimony, page 32, lines 4–6.
[98] Ms. Bulkley's Direct Testimony, page 32, lines 7–13.

Q. WHAT RISK-FREE RATE DOES MS. BULKLEY USE IN HER CAPM?

A. She uses the following three risk-free rates: (1) current 30-day average yield on 30-year Treasury bonds (4.99 percent), (2) projected 30-year Treasury yield for the third quarter of 2026 through the third quarter of 2027 (4.88 percent), and (3) projected yield 30-year Treasury bonds between 2028-2032 (4.70 percent).[99]

Q. WHAT BETA COEFFICIENT DOES MS. BULKLEY USE IN HER CAPM?

A. She uses the following two historical beta coefficients, both from Value Line: (1) the current Value Line beta, based on five years of weekly returns relative to the New York Stock Exchange Composite Index; and (2) a long-term average of the Value Line beta coefficients for her proxy group calculated over 2013 through 2025.[100]

Q. WHAT RISK PREMIUM DOES MS. BULKLEY USE IN HER CAPM?

A. Ms. Bulkley estimates her market risk premium as the difference between an implied expected equity market return and the risk-free rate. As shown in Exhibit CLP-ROE-7, she calculates the expected market return by applying a constant growth DCF model to the companies in the S&P 500 Index, using a market capitalization-weighted dividend yield of 1.29 percent and a weighted long-term analyst growth rate of 12.02 percent, producing an estimated required market return of 13.38 percent as of May 31, 2026.[101] Measured against her three risk-free rates, this produces market risk premiums of 8.39 percent to 8.68 percent.[102]

[99] Ms. Bulkley's Direct Testimony, page 33, lines 10–14.
[100] Ms. Bulkley's Direct Testimony, page 33, line 16 through page 34, line 5, and Exhibit CLP-ROE-6.
[101] Ms. Bulkley's Direct Testimony, page 34, lines 6–13, and Exhibit CLP-ROE-7, page 1.
[102] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-5, pages 1–6, column [4].

Q. DOES MS. BULKLEY USE AN APPROPRIATE RISK-FREE RATE IN HER CAPM?

A. In principle, no. As discussed below, when selecting a security to estimate the risk-free rate, it is important to choose one with a beta coefficient as close to zero as possible because, by definition, the risk-free rate in the CAPM model should have no correlation with market movements. This is where the 30-year Treasury bond yield falls short, as it has an established non-zero beta, meaning it does not behave as a truly risk-free asset. In contrast, the three-month Treasury bill yield has a considerably lower beta, making it a superior choice for estimating the risk-free rate.

Additionally, 30-year U.S. Treasury bonds are not truly risk-free. Holding a long-term Treasury bond exposes investors to interest rate risk throughout its life. The collapse of Silicon Valley Bank (SVB) in 2023 underscores this risk. As interest rates rose sharply, the market value of SVB's bond portfolio fell by over $17 billion, leaving the bank with substantial unrealized losses. This portfolio did not consist of short-term instruments like three-year bonds; rather, it was heavily concentrated in long-duration assets, with over 94 percent of SVB's held-to-maturity securities having maturities greater than 10 years.[103] When depositors attempted to withdraw $42 billion in a single day, SVB lacked the liquidity to meet these demands, in part because it could not hold its bonds to maturity without realizing those losses.[104] This contributed to SVB's downfall, demonstrating that

[103] *SVB Financial Group*, Form 10-K, SEC EDGAR, at 66, https://www.sec.gov/Archives/edgar/data/719739/000071973923000021/sivb-20221231.htm (last visited July 22, 2026). The table detailing the remaining contractual principal maturities for Held-to-Maturity (HTM) securities shows that of the $91.3 billion total net carry value of the HTM portfolio, $86.0 billion was categorized in the "After Ten Years" maturity bucket (approximately 94.2 percent).

[104] Telis Demos, *What Happened With Silicon Valley Bank?*, WSJ (Mar. 14, 2023), https://www.wsj.com/articles/silicon-valley-bank-svb-financial-what-is-happening-299e9b65?msockid=03d6b6f63a2464242c0ba1563b396569.

long-term Treasury bonds carry significant risk and may not be the best proxy for the risk-free rate in CAPM calculations.

As outlined in Rothschild, Exhibit ALR-4, page 2, my spot and weighted average short-term risk-free rates are 4.20% and 4.01%, respectively. My spot and weighted average long-term risk-free rates are 5.64% and 5.42%, respectively. These four rates average 4.81%. The risk-free rate component of Ms. Bulkley's CAPM analysis ranges between 4.70% and 4.99%.[105]

Ms. Bulkley's use of interest rate forecasts to determine the risk-free rate is flawed in principle because current market yields on U.S. Treasury bonds already reflect investor expectations. As discussed above, CL&P's authorized ROE should be based on market data, since investors provide the capital. While in this case, her use of forecasts does not artificially inflate her CAPM results, her approach introduces unnecessary subjectivity and could lead to inaccurate cost of equity estimates (either too high or too low) under different capital market conditions. Therefore, her CAPM methodology should not be used to set rates in future proceedings.

Q. DO MS. BULKLEY'S BETA COEFFICIENTS OVERSTATE THE COST OF EQUITY?

A. Yes. Ms. Bulkley's CAPM results are not a reliable indicator of the cost of equity because she uses historical beta coefficients. Her current Value Line betas average 0.74 for the proxy group, and her long-term average beta—the mean of the annual Value Line betas from 2013 to 2025—is 0.77.[106] Over the past three months, my forward-looking option-

[105] Ms. Bulkley's Direct Testimony, page 33, lines 10–14, and Exhibit CLP-ROE-5, pages 1–6, column [1].
[106] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-5, page 1, column [2], and Exhibit CLP-ROE-6, column [14].

implied betas have had a weighted average of 0.57,[107] and my six-month and two-year historical betas for the RFC Proxy Group have had a weighted average of 0.135 and 0.383, respectively, over the past three months.[108]

Q. DO YOU BELIEVE MS. BULKLEY'S MARKET RISK PREMIUM PORTION OF HER CAPM ANALYSIS IS REASONABLE?

A. No, I believe Ms. Bulkley's market risk premium components between 8.39 percent and 8.68 percent are excessive and lead to an inflated CAPM result.[109] As explained in the CAPM section starting on page 41, I determined that investors are demanding a significantly lower equity risk premium of between 2.32% and 4.01%.[110]

This conclusion is supported by prominent valuation authorities who arrive at figures substantially lower than Ms. Bulkley's. For example, Professor Aswath Damodaran of NYU estimates an implied equity risk premium (trailing 12-month, adjusted payout) of 4.20 percent as of October 1, 2026,[111] which further supports the conclusion that Ms. Bulkley's equity risk premium is excessively high.

Additionally, based on calculations by P. Brett Hammond[112] and Martin L. Leibowitz,[113] which were based on a literature survey and estimates from participants in

[107] Rothschild, Exhibit ALR-4, page 3 (Capital Asset Pricing Model).
[108] *Exhibit ALR-4,* page 3.
[109] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-5, pages 1–6, column [4].
[110] Rothschild, Exhibit ALR-4, page 1 (Capital Asset Pricing Model); *Id.* at 5.
[111] Aswath Damodaran, PhD., *Damodaran Online*, Stern School of Bus., NYU, https://pages.stern.nyu.edu/~adamodar/ (last visited Oct. 8, 2026).
[112] P. Brett Hammond is a Research Professional at the Capital Group and a former Managing Director and Chief Investment Strategist at TIAA-CREF. He has authored numerous studies on asset allocation and retirement security and serves as a Research Fellow for the CFA Institute Research Foundation.
[113] Martin L. Leibowitz is the President of Advanced Portfolio Studies LLC and a former Vice Chairman and Chief Investment Officer of TIAA-CREF. A widely recognized authority on fixed-income analysis and portfolio strategy, he has authored several seminal books on finance, including Inside the Yield Book, and is a recipient of numerous awards from the CFA Institute.

the Equity Risk Premium Forum, they found the most frequent estimate of the 10-year equity risk premium to be four percent.

The authors of *Revisiting the Equity Risk Premium* noted "Despite radically different market environments, it is striking that the estimates in all three forums were so similar. They tended to be in the three percent–five percent range, and notably, in comparison to historical returns, none of them included estimates above seven percent or below zero." The three forums were in 2001, 2011, and 2021.[114] Ms. Bulkley's 8.39 percent to 8.68 percent market risk premium exceeds the entire three percent to five percent range produced by three decades of expert consensus.

In summary, Ms. Bulkley's CAPM results are unreasonably high, because her equity risk premium component is above current market-based indicators, in comparison to my own analysis which is based on stock option prices and the conclusions of prominent research.

Q. DO MS. BULKLEY'S CAPM RESULTS OVERSTATE THE COE BECAUSE THE MARKET RISK PREMIUM PORTION OF HER ANALYSIS IS HIGHER THAN INVESTORS' EXPECTATIONS?

A. Yes. Ms. Bulkley's CAPM uses a market risk premium of 8.39 percent to 8.68 percent based on an expected market return on the S&P 500 of 13.38 percent.[115] The equity risk premium portion of my CAPM, which is based directly on a measure of investors' expectations, is significantly lower than Ms. Bulkley's. The market risk premia I use in my

[114] P. Brett Hammond, Martin L. Leibowitz, Laurence B. Siegel, and Paul McCaffrey, *Revisiting the Equity Risk Premium, Introduction: Three Decades of Equity Risk Premium Forums,* at VI*,* CFA Inst. Research Foundation (2023), https://www.cfainstitute.org/-/media/documents/article/rf-brief/Revisiting-the-Equity-Risk-Premium.pdf.
[115] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-5, pages 1–6, columns [3] and [4], and Exhibit CLP-ROE-7, page 1.

Weighted Average CAPM analysis with short- and long-term risk-free rates are 4.01% and 2.61%, respectively.[116] The market risk premia I use in my Spot CAPM analysis with short- and long-term risk-free rates are 3.76% and 2.32%, respectively.[117]

D. Empirical CAPM Method

Q. PLEASE SUMMARIZE MS. BULKLEY'S USE OF THE EMPIRICAL CAPITAL ASSET PRICING MODEL (ECAPM) AND HER JUSTIFICATION FOR ITS INCLUSION.

A. Ms. Bulkley utilizes the ECAPM as a variant of the CAPM designed to address what she describes as "the tendency of the 'traditional' CAPM to underestimate the cost of equity for companies with low beta coefficients such as regulated utilities."[118] She implements the formula $k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f)$, which applies a 25.00 percent weight to the market risk premium without any effect from the beta coefficient, and scales only the remaining 75.00 percent by beta.[119] The only authority she cites is Dr. Roger Morin's *New Regulatory Finance*, and she asserts that "the ECAPM is not redundant to the use of adjusted betas in the traditional CAPM."[120]

Q. PLEASE RESPOND TO MS. BULKLEY'S USE OF THE ECAPM.

A. The Authority should view Ms. Bulkley's use of the ECAPM with significant skepticism. While it is presented as a necessary technical correction, the model is far from universally accepted; in fact, many highly respected financial scholars are deeply critical of such

[116] Rothschild, Exhibit ALR-4, page 1 (Capital Asset Pricing Model).
[117] *Exhibit ALR-4,* page 5.
[118] Ms. Bulkley's Direct Testimony, page 36, lines 6–7.
[119] Ms. Bulkley's Direct Testimony, page 35, lines 3–8.
[120] Ms. Bulkley's Direct Testimony, page 36, lines 8–9.

empirical "fudge factors." Under the standard CAPM, a company with a beta coefficient below 1.00 (one less risky than the overall market) receives a proportionally smaller risk premium. The ECAPM overrides part of that proportionality: it awards 25 percent of the full market risk premium to every company regardless of its risk, and scales only the remaining 75 percent by each proxy company's beta. In effect, one quarter of the premium is granted as though each proxy company were as risky as the market as a whole. Because regulated utilities essentially always have betas below 1.00—every beta in Ms. Bulkley's analysis is between 0.63 and 0.95[121] — this adjustment can only raise the indicated COE relative to the standard CAPM. The effect is visible in her own results: every ECAPM figure exceeds its CAPM counterpart, with mean results of 11.70 to 11.94 percent and individual company results as high as 12.75 percent.[122]

- **Double-Counting an Existing Adjustment:** Ms. Bulkley's ECAPM compounds an adjustment that is already embedded in her inputs. The Value Line betas she uses are published on an adjusted basis—pushed upward toward 1.0 before publication. Her [123]own equation concedes as much: she defines the beta input to her ECAPM as the "adjusted beta coefficient of an individual security," and describes the model as applying its weighting to "the product of the adjusted beta coefficient and the market risk premium."[124] Applying the ECAPM's 75/25 weighting on top of betas that

[121] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-5, pages 1–6, column [2], and Exhibit CLP-ROE-6, column [14].
[122] Ms. Bulkley's Direct Testimony, Exhibit CLP-ROE-2 and Exhibit CLP-ROE-5, pages 1–6, column [6].
[123] Value Line's "How to Use Beta" educational guide and their direct reference to Marshall Blume's 1971 *Journal of Finance* paper. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BFDB60A53-1930-4DC0-B15C-B6037AE901D8%7D
[124] Ms. Bulkley's Direct Testimony, page 36, line 3, and page 35, lines 3–4.

have already been adjusted toward the market average double-counts the same purported low-beta effect, and her assertion that the two are "not redundant" rests solely on Dr. Morin.

- **Critique of "Data Mining":** Leading authorities like Professor Aswath Damodaran and the standard textbook *Principles of Corporate Finance* (Brealey, Myers, and Allen) have warned that these types of empirical adjustments are often the product of data mining. While certain "anomalies" (like the low-beta bias) may appear in historical data, they often fade or disappear entirely once they are widely recognized by the market.[125]
- **Highly Biased Academic Source:** It is instructive that the only authority Ms. Bulkley cites in support of the ECAPM is Dr. Roger Morin, who served as an expert witness for utility companies for decades. It is unsurprising that the model she champions consistently produces higher authorized returns for utilities.
- **Violation of an Economic Boundary:** Regardless of the mathematical complexity added, Ms. Bulkley's ECAPM results violate a basic economic boundary. Her ECAPM indicates that low-risk regulated utilities require a return of 11.70 percent to 11.94 percent—roughly 300 basis points *higher* than the 7.04% to 8.89% cost of equity that current market data indicate for the competitive S&P 500 as a whole. There is no credible evidence that

[125] Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, at 228, (McGraw-Hill Irwin, New York, 12th Ed. 2017).

investors demand a materially higher return from a rate-regulated monopoly than from the overall equity market.

In summary, the ECAPM is an analytically unsound methodology rooted in historical data mining rather than current market reality, and its results should be disregarded.

E. Risk Premium Analysis

Q. PLEASE DESCRIBE MS. BULKLEY'S RISK PREMIUM ANALYSIS.

A. In her Risk Premium analysis, Ms. Bulkley estimates the cost of equity for CL&P by assessing the historical spread between authorized utility ROEs and long-term government bond yields. Her approach follows these key steps:

1. Concept of the Model:

- The method assumes that investors require a premium above risk-free bond yields to invest in utility equities.
- This risk premium reflects the additional return investors expect for taking on equity risk relative to bonds.

2. Methodology:

- She compares authorized ROEs for electric utilities to historical yields on long-term U.S. Treasury bonds.[126]
- By analyzing past relationships, she derives an average historical risk premium (i.e., the spread between ROEs and bond yields).

[126] Ms. Bulkley's Direct Testimony, page 37, line 14 through page 39, line 13, and Exhibit CLP-ROE-8.

- This spread is then applied to current bond yields to estimate CL&P's cost of equity.

3. Findings and Conclusion:

- Using this approach, Ms. Bulkley's Risk Premium analysis produces cost of equity estimates of 10.61 percent to 10.78 percent, based on a regression of authorized ROEs for electric utilities against 30-year Treasury yields.[127]
- She asserts that this aligns with her broader analysis and supports the Company's requested ROE of 10.25%.

Q. SHOULD MS. BULKLEY'S BOND YIELD PLUS RISK PREMIUM ANALYSIS BE CONSIDERED?

A. No. The overriding problem with Ms. Bulkley's bond yield plus Risk Premium analysis is that it does not address the cost of equity at all. She simply calculates the historical relationship between authorized ROEs and interest rates. Authorized ROEs are applied to *book equity* and therefore, in order to determine investors' return expectations, it is required to consider the *market price* investors are willing to pay for the companies with these authorized ROEs. The market-to-book ratios of the electric utility stocks in my proxy group are about 1.8.[128] Therefore, with such a high market-to-book ratio, the return to equity investors will likely be significantly lower than the return on book equity Ms. Bulkley uses in her Risk Premium Analysis.

[127] Ms. Bulkley's Direct Testimony, page 40, Figure 10, and Exhibit CLP-ROE-8.
[128] Exhibit ALR-3, pages 1 and 2a (Discounted Cash Flow).

F. Business and Financial Risks and Other Considerations

Q. HOW DOES MS. BULKLEY JUSTIFY HER CLAIM THAT CL&P FACES HIGHER BUSINESS AND REGULATORY RISKS THAN HER PROXY GROUP?

A. She concludes that "[t]he Company has materially greater business and regulatory risk than the proxy group on average, largely based on recent regulatory outcomes."[129] She relies on two factors. The first is CL&P's capital expenditure program: net utility plant of approximately $7.216 billion and projected 2027 through 2031 capital expenditures of approximately $3.99 billion.[130] The second is the Connecticut regulatory environment, for which she cites RRA's "Below Average/3" ranking and S&P's "Credit Supportive" classification of Connecticut,[131] the December 2024 S&P and June 2025 Moody's downgrades of CL&P,[132] Senate Bill 7,[133] and CL&P's earned returns below its authorized 9.25 percent since 2018.[134]

Q. WHAT IS THE TOTAL MAGNITUDE OF THE ADJUSTMENTS MS. BULKLEY MAKES TO HER COST OF EQUITY RESULTS FOR THESE RISKS?

A. Zero. She makes no numerical adjustment for any of them: "Although I do not make specific adjustments to my recommended ROE for these factors, I do consider them in the aggregate when determining the reasonableness of CL&P's proposed ROE relative to the range of the analytical results."[135] The Company's requested 10.25 percent sits at the very

[129] Ms. Bulkley's Direct Testimony, page 70, lines 15–17.
[130] Ms. Bulkley's Direct Testimony, page 41, lines 6–8.
[131] Ms. Bulkley's Direct Testimony, page 65, lines 1–9; page 65, line 18 through page 66, line 4; Exhibits CLP-ROE-10 and CLP-ROE-11.
[132] Ms. Bulkley's Direct Testimony, page 57, lines 14–17; page 59, lines 6–14; page 69, lines 16–20.
[133] Ms. Bulkley's Direct Testimony, page 58, lines 6–19.
[134] Ms. Bulkley's Direct Testimony, page 60, lines 11–15, and Figure 11.
[135] Ms. Bulkley's Direct Testimony, page 3, lines 10–13.

bottom of her 10.25 percent to 11.25 percent range,[136] so her risk discussion does not move her recommendation within her own range. Its only function is to lend an air of reasonableness to a range that, as shown above, is itself the product of inflated growth and market risk premium inputs.

Q. DO CL&P'S CAPITAL EXPENDITURES MAKE IT RISKIER THAN THE PROXY GROUP?

A. No. Ms. Bulkley presents no comparison of CL&P's capital program to the capital programs of the proxy group companies. She offers only industry-wide commentary from the rating agencies, and that commentary describes a condition the proxy group companies share. S&P's observation that "[c]apital spending is exploding" and that "IOU capital spending will grow at unprecedented levels during the next decade"[137] applies to the entire industry, including each of the 17 companies whose market data she uses. The returns investors require of those companies already reflect their capital programs.

Her own evidence confirms that CL&P is not disadvantaged. She reports that approximately 78 percent of the operating utilities of the proxy group have a capital cost recovery mechanism in place,[138] and that if the capital support framework CL&P proposes in this case is approved, "the implementation of a mechanism to support the costs of the Company's capital investments between rate proceedings would result in the Company having similar risk to the proxy group companies, all else equal."[139] Her capital expenditure

[136] Ms. Bulkley's Direct Testimony, page 6, line 7 through page 7, line 2.
[137] Ms. Bulkley's Direct Testimony, page 42, line 24 through page 43, line 2.
[138] Ms. Bulkley's Direct Testimony, page 43, lines 16–20, and Exhibit CLP-ROE-9.
[139] Ms. Bulkley's Direct Testimony, page 44, lines 4–8.

argument thus reduces to a request that PURA raise the ROE in case it rejects the Company's other proposals. That is not evidence of CL&P's cost of equity.

Finally, treating capital expenditures as a risk double counts their effect. Investors do not view a utility's rate base growth as a burden; it is the principal driver of the analysts' earnings growth forecasts that Ms. Bulkley uses in her DCF model and in her 13.38 percent expected market return. Having already captured the upside of CL&P's capital program in her growth rates, she cannot also claim a premium for its risk.

Q. DOES THE CONNECTICUT REGULATORY ENVIRONMENT JUSTIFY AN ROE ABOVE THE PROXY GROUP RESULTS?

A. No, for four reasons.

First, Ms. Bulkley's own comparison of regulatory mechanisms finds CL&P comparable to the proxy group. She concedes that "the Company has timely cost recovery through regulatory adjustment mechanisms that is similar to the proxy group,"[140] that "[t]he Company does currently have protection against volumetric risk in Connecticut, through a revenue decoupling mechanism,"[141] and that earnings sharing and decoupling mechanisms are in place for Connecticut's electric utilities.[142] Her conclusion that CL&P is riskier does not rest on the mechanisms that actually govern its cash flows; it rests on third-party opinions of the regulator.

Second, those opinions are not measures of the cost of equity, and relying on them is circular. RRA's stated reason for ranking Connecticut Below Average/3 is that PURA

[140] Ms. Bulkley's Direct Testimony, page 67, lines 1–2.
[141] Ms. Bulkley's Direct Testimony, page 63, lines 6–7.
[142] Ms. Bulkley's Direct Testimony, page 55, lines 14–19.

"has authorized well below industry average equity returns."[143] Ms. Bulkley's argument is therefore that because PURA has authorized returns below the national average, it must now authorize a return above the market-based cost of equity. Under that logic no commission could ever set a market-based return: any authorized ROE below the national average would lower the state's ranking, and the lower ranking would then be cited as a risk requiring a higher ROE. The national average of authorized ROEs measures what other commissions have done, not what investors require. The question under Hope and Bluefield is what return investors require for an enterprise of comparable risk, and that question is answered by market data, not by rankings of regulators. It is also worth noting that the rankings she cites are already moving: RRA now observes that the new composition of PURA "may provide a moderating influence, as early signals from the new leadership point to a more measured and less adversarial regulatory posture,"[144] and Ms. Bulkley herself reports that S&P has acknowledged "changes in the composition of the commission and more recent constructive regulatory outcomes."[145]

Third, the downgrades do not establish that CL&P cannot attract capital on reasonable terms. CL&P remains solidly investment grade, rated A- by S&P and Baa1 by Moody's,[146] and Ms. Bulkley does not quantify any effect of the downgrades on CL&P's cost of debt, on its access to capital, or on its cost of equity. The relevant question for PURA is a cost-benefit question: what a one-notch rating change actually costs customers through the Company's cost of newly issued debt, compared with what an ROE premium

[143] Ms. Bulkley's Direct Testimony, page 53, lines 11–13.
[144] Ms. Bulkley's Direct Testimony, page 54, lines 19–24.
[145] Ms. Bulkley's Direct Testimony, page 58, lines 23–26.
[146] Ms. Bulkley's Direct Testimony, page 20, lines 1–3.

would cost them every year on the entire equity portion of rate base. On the Company's requested rate base of approximately $6.9 billion and 53.86 percent equity ratio, each 25 basis points of ROE costs customers approximately $9 million per year before income tax gross-up. Her testimony does not attempt that comparison.

Ms. Bulkley also points to CL&P's earned returns below its authorized 9.25 percent since 2018, most recently 5.73 percent to 6.12 percent.[147] An authorized ROE is an opportunity to earn a return, not a guarantee. She attributes the shortfall to under-recovery of storm and commodity costs in 2023 and 2024[148] and to the rate freeze under CL&P's 2021 settlement[149]—matters of cost recovery and timing that are addressed through the cost recovery provisions in this case, not through the cost of equity. Raising the authorized return to make up for past earnings shortfalls would charge customers for a return that investors do not require.

Q. IS MS. BULKLEY'S RISK COMPARABILITY ANALYSIS COMPLETE?

A. No, it is fundamentally incomplete. Ms. Bulkley points to factors like regulatory rankings and capital expenditures to qualitatively argue that CL&P faces greater risk than her proxy group, yet she fails to provide any specific quantification of how these factors actually impact the cost of equity. While she relies on these unquantified risks to justify a premium return, she simultaneously ignores offsetting risks that exist within her own proxy group, notably, unregulated business operations.

[147] Ms. Bulkley's Direct Testimony, page 60, lines 11–15, and Figure 11.
[148] Ms. Bulkley's Direct Testimony, page 70, lines 3–7.
[149] Ms. Bulkley's Direct Testimony, page 59, lines 8–10.

Her screening criteria require only that a company "derive more than 70 percent of total operating income from regulated electric operations."[150] By construction, her proxy group can include companies that derive a minority of their income from unregulated, competitive businesses. Even when this unregulated portion is relatively small, it is inherently riskier than regulated utility service because it is subject to competition: a competitive business that loses money cannot file a rate case to recover the shortfall, while a regulated utility can. Because investors demand a higher return to compensate for greater uncertainty, the presence of unregulated operations tends to push the proxy group's measured cost of equity above that of a comparable purely regulated utility. Ms. Bulkley neither examines this factor nor quantifies its effect.

That omission is notable given her own treatment of capital structure, where Ms. Bulkley eliminates the impacts of unregulated operations by benchmarking CL&P against the utility operating subsidiaries of the proxy group companies, which she describes as "most risk-comparable to the Company."[151] She cannot have it both ways. If holding-company-level data are too contaminated by unregulated operations to benchmark capital structure, they also affect the risk—and therefore the measured cost of equity—of the very same proxy companies whose holding-company stock prices drive her model results. By failing to quantify the purported risks of these factors, while concurrently failing to account for these higher-risk, non-utility operations within her proxy group, she has not met the burden of establishing true risk comparability.

[150] Ms. Bulkley's Direct Testimony, page 21, lines 8–9.
[151] Ms. Bulkley's Direct Testimony, page 68, line 22 through page 69, line 1.

IX. CONCLUSION

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS IN THIS CASE.

A. The Commission should reject Ms. Bulkley's recommended ROE of 10.25% because it significantly exceeds CL&P's actual cost of equity as indicated by current market data. Instead, I recommend that the PURA set CL&P's rates based on the following:

- An overall cost of capital of 6.27% (5.90% - 6.36%);
- ROE of 8.31% (7.43% - 8.53%);
- A capital structure containing 41.61% common equity, 57.49% long-term debt, and 0.90% preferred equity; and
- A long-term debt cost rate of 4.81%.

These recommendations satisfy the *Hope* and *Bluefield* standards, they are grounded in current market data, provide CL&P a reasonable opportunity to attract capital on fair terms, and protect customers from paying too much above the market-based cost of equity.

APPENDIX A. CAPITAL ASSET PRICING MODEL

Risk Free Rate: When looking for a security to calculate an estimate of the risk-free rate, it could be argued that it is appropriate to find one with a term or maturity that best matches the life of the asset being financed. In that sense, the 30-year Treasury bond yield can be argued to be ideal for this specific application. However, it is equally important to find a security that has a beta coefficient with the overall market as close to zero as possible, because by the very definition of the risk-free rate in the CAPM model, its movements should have no correlation to the movements of the market. And this is where the problem with the 30-year Treasury bond yield arises, as it has an established non-zero beta. The 3-month Treasury bill yield has a considerably lower beta, and therefore is superior in that respect to the 30-year Treasury bond yield. Neither one is a perfect fit on both fronts, which is why I have chosen to consider both as proxies for the risk-free rate to establish a range for my CAPM results.

It is important to recognize that current long-term Treasury bond yields represent a direct observation of investor expectations and there is no need to use "expert" forecasts such as Blue Chip to determine the appropriate risk-free rate to use in a CAPM analysis or any other cost of equity calculations.

Many economists and forecasters will continue to be quoted in the press prognosticating on possible developments that are truly unpredictable. The Nobel Laureate Economist Daniel Kahneman stated the following regarding forecasting:

> It is wise to take admissions of uncertainty seriously, but declarations of high confidence mainly tell you that an individual has constructed a coherent story in his mind, not necessarily that the story is true.[152]

Historical Beta: I calculate historical betas following the methodology used by Value Line, with some modifications. Specifically, Value Line adheres to the following guidelines:

1. Returns for each security are regressed against returns for the overall market in the following form:

$$\ln (p^{I}_{t} / p^{I}_{t-1}) = a_{I} + B_{I} * \ln (p^{m}_{t} / p^{m}_{t-1})$$

   Where:

   - p^{I}_{t} is the price of the security I at time t
   - p^{I}_{t-1} is the price of the security I one week before time t
   - p^{m}_{t} and p^{m}_{t-1} are the corresponding values of the market index
   - B_I is the regression estimate of Beta for the security against the market index

2. The natural log of the price ratio is used as an approximation of each return and no adjustment is made for dividends paid during the week.
3. Weekly returns are calculated on one day of the week, with a stated preference for Tuesdays to minimize the effect of holidays as much as possible.

[152] DANIEL KAHNEMAN, *Thinking Fast and Slow*, p. 212(New York: Farrar, Straus, and Giroux, 2011).

4. Betas calculated using the regression method above are adjusted as per Blume (1971)[153] using the following formula:[154]

$$\text{Adjusted } B_I = 0.35 + 0.67 * \text{Calculated } B_I$$

There are four differences between my historical beta calculations and Value Line's calculations:

1. The first significant difference is that whereas Value Line uses the New York Stock Exchange Composite Index as the market index, I use the S&P 500 Index.
2. Another important difference is that whereas Value Line calculates weekly returns on one day of the week, with a stated preference for Tuesdays, I calculate weekly returns on all days of the week.
3. Value Line only calculates betas every 3 months in their quarterly company reports, whereas I use the same consistent methodology to calculate betas every week during the most recent 3 complete months (July through September 2026).
4. Value Line always uses a 5-year period for the return regression,[155] whereas I calculate historical betas for periods of 6 months, 2 years, and 5 years.

---

[153] M. Blume, On the Assessment of Risk, *The Journal of Finance*, Vol. XXVI (March 1971) at www.stat.ucla.edu/~nchristo/Fiatlux/blume2.pdf.

[154] Michelfelder and Theodossiou (2013) have discredited the Blume adjustment for regulated public utility stocks, but Gombola and Kahl (1990) found that, while their betas do not approach unity, they are nonstationary. My use of the Blume adjustment, then, is "conservative", from the perspective of the EOE.

Michelfelder, R.A. & Theodossiou, P. (2013). Public utility beta adjustment and biased costs of capital in public utility rate proceedings, *Electricity Journal* 26(9), 60 68. https://doi.org/10.1016/j.tej.2013.09.017

Gombola, M. & Kahl, D. (1990). Time-series processes for utility betas: implications for forecasting systematic risk, *Financial Management* 19(3), 84–93. https://www.jstor.org/stable/3665827

[155] They offer betas calculated over different time periods on their website, including 3 years and 10 years.

In the following pages, I explain my rationale for making the four modifications above to Value Line's beta calculation methodology.

Choice of Market Index (S&P 500 vs. NYSE): A critical factor in the calculation of a beta coefficient is the choice of index to represent the overall market. Using exactly the same beta calculation methodology with a different market index will result in different values of beta for a given company or portfolio ¬– sometimes drastically different values. It is easy to jump to the conclusion that this points to a flaw in CAPM theory, as different values of beta would result in a different implied cost of equity. However, another key component of the CAPM, the market risk premium, also depends on the choice of the market index, which in theory would have an offsetting effect on the cost of equity calculation. This points to the most important aspect of selecting a market index for a CAPM analysis, which is to be consistent and use the same index for the calculation of beta as for the calculation of the market risk premium. This is a fundamental concept of the CAPM, and using betas based on one index with a market risk premium based on a different index yields invalid results.

As stated above, Value Line calculates its published betas based on the NYSE Composite Index. Most methodologies used to calculate the market risk premium, including those I rely on, are based on the S&P 500 Index, so using them in the CAPM together with Value Line betas exactly as published would yield invalid results.

For this reason, I calculate my historical betas versus the S&P 500 Index, making my CAPM approach entirely consistent.

As an aside related to my option-implied betas, using the S&P 500 Index consistently throughout my CAPM has the added benefit that this index has a much larger

number of options traded, which makes the calculation of option-implied betas more reliable.

Daily vs. Single-Day Weekly Return Calculations: Using one day of the week to calculate weekly returns for use in the regression analysis used to calculate historical betas has the unintended effect of generating different values of betas depending on the day of the week that is used. To clarify, if one were to use Value Line's precise methodology for calculating a 5-year historical beta for a given company using weekly returns calculated on Tuesdays, the resulting beta value would be different than the resulting value if one were to use the same exact methodology, but using weekly returns calculated on Wednesdays, or any other day of the week. Even though 5-year historical betas should in theory be quite stable and should not change very much from one day to the next, calculating returns on only one day of the week results in differences that can be significant and make no sense conceptually.

It is easy to understand why it happens. Even though there is some correlation due to some overlap, the set of weekly returns calculated on Mondays is a completely different set of numbers than the set of weekly returns calculated on Tuesdays. As a result, there are five 5-year betas that can result from Value Line's methodology, and even though the Monday beta for a given company will change slowly from week to week, the change between the Monday beta and the Tuesday beta, calculated just one trading day apart, can be quite significant.

Since I became aware of this undesirable effect, I began calculating my historical betas based on an all-encompassing set of weekly returns calculated on every trading day in the beta calculation period. This methodology has the effect of averaging out the five

possible betas that could result from using only one day of the week for the return calculations,[156] as Value Line does. In this way, a 5-year beta calculated on any two consecutive trading days would only change minimally, as it should.

Using a daily calculation of weekly returns could be criticized for the resulting overlap in a weekly return from Monday to Monday with that from Tuesday to Tuesday. However, given that the overlap is consistent and equal for the net effect of every trading day, no trading day is given undue weight in the regression. Even though the effect of each trading day appears 5 times in the weekly return data, there are also 5 times the total number of weekly returns in the overall set used in the regression, so any individual trading day has the same relative weight than in Value Line's methodology. The fact that the resulting beta value of this aggregate approach turns out to be a sort of average of the five possible values that would result from Value Line's methodology on different days of the week is the final confirmation that this is the superior approach for calculating a historical beta based on weekly returns.

Using a daily calculation of weekly returns has the added benefit of providing more data pairs to be used in historical beta calculations for shorter periods, such as for 6-month historical betas, where instead of 25 return pairs, the regression is performed on 117 return pairs.

Benefits of Independent Calculations & Statistical Significance: Doing my own historical beta calculations using Value Line's established methodology allows me to see how beta values change from week to week and to use the most up-to-date beta calculations

[156] The resulting beta is not a direct arithmetic or geometric average of the other five betas, but rather a regression based on the union of all five possible sets of weekly returns.

instead of relying on stale beta values that can be more than 3 months old, inappropriate for the up-to-date snapshot of the market that I am taking.

Regarding the number of data point pairs necessary to estimate the relationship between two variables in a regression analysis, establishing a minimum number is somewhat subjective, though various authorities on statistics argue the number is between 3 and 8 data pairs. While one can broadly correctly generalize that the more data point pairs one uses, the more certain one can be about the significance of the results of any correlation analysis, this is very different from stating that one cannot achieve statistical significance with a relatively low number of data pairs. In fact, it is important to realize that one can achieve statistical significance with fewer than 10 data pairs, and that even hundreds of data pairs do not guarantee statistical significance. For precisely this reason, statisticians have developed a tool that helps determine statistical significance based on the number of data pairs in a regression analysis.

A "table of critical values" of Pearson's correlation, which can be readily found online[157] or in most statistics books, tells a statistician that for 25 data point pairs (implying N-2=23 "degrees of freedom"), a correlation, or beta, coefficient of 0.505 or higher will occur *by chance* with a probability of only 0.01.[158] As explained in more detail in the text regarding how to use the table of critical values,[159] any beta coefficient above this level, and certainly above the 0.135 3-month average for the recent 6-month betas for my RFC Proxy Group, by definition are considered statistically significant. The threshold for

[157] University of Connecticut, *r Critical Value Table*, available at: https://researchbasics.education.uconn.edu/r_critical_value_table/#

[158] In fact, many researchers use a more lenient "alpha level" of 0.05 for determinations of statistical significance.

[159] University of Connecticut, *Statistical Significance: Is there a relationship (difference) or isn't there a relationship (difference)?* at https://researchbasics.education.uconn.edu/statistical_significance

statistical significance for 117 data point pairs (implying 115 "degrees of freedom"), is so low that it is not even included in the table of critical values. The maximum "degrees of freedom" listed is 100, with an already very low threshold of 0.254.

Historical Blended Beta: I am not aware of any academic study specifically focused on the optimal relative weight of historical betas to predict future betas. However, the authors of the paper I relied upon for guidance on the calculation of my option-implied betas did attempt to quantify the predictive power of 6-month option-implied ("forward-looking") betas as well as that of 6-month ("180-day"), 1-year, and 5-year historical betas by back-testing historical predictions with actual *expost* results, or "realized" betas, for the 30 companies in the Dow Jones Index. In addition to using each of the betas above independently, they also measured the predictive power of a "mixed" beta consisting of a simple average of the six-month option-implied beta and the 6-month historical beta.

Their conclusions for predicting 6-month future betas are as follows:

> The forward-looking beta outperforms the other methods ten times, and the same is true for the 180-day historical beta. The mixed beta is the best performer in seven cases, and the 1-year historical beta in three cases. The 5-year historical beta is always outperformed by at least one other method, and it often ranks last. The 180-day historical beta clearly dominates the two other historical methods.[160]

Their conclusions for predicting 1-year and 2-year future betas are as follows:

> Somewhat unexpectedly, the performance of the forward-looking beta compared to that of the 180-day historical beta is much better [for the one-year prediction] than [for the six-month prediction], and this conclusion carries over to [the two-year prediction]. The mixed beta also perform [sic] well. It is perhaps not surprising that the performance of the 180-day historical beta [for the one- and two-year predictions] is poorer than [for the six-month prediction], because the horizons used in the construction of realized betas are no longer equal to 180 days. What is harder to explain is

[160] Peter Christoffersen, Kris Jacobs, & Gregory Vainberg, *Forward-Looking Betas*, p. 16 (April 25, 2008) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=891467.

> why the correlation between realized beta and forward-looking beta is in many cases higher [for the one- and two-year predictions] than [for the six-month prediction]. Finally, it is also interesting that the 1-year and 5-year historical betas do not perform well [for the one-and two-year predictions]. In summary, [for the one-year prediction] either the forward-looking beta or the mixed beta is the best performer in nineteen out of thirty cases. [For the two-year prediction], this the case twenty-two times out of thirty.[161]

Their conclusions strongly support the use of 6-month historical betas, 6-month option-implied betas, and/or an average of the two as predictors of future betas 6 months, 1 year, or 2 years into the future. Therefore, considering a historical blended beta in conjunction with option-implied betas to calculate the cost of equity is consistent with research findings that combining historical and option-implied betas is the best predictor of future betas.

I decided on the composition of my historical blended betas primarily based on the conclusions of the authors above. Though the predictive power of longer-term historical betas seems to be quite reduced, it is not zero, so in an effort to preserve the effect of longer-term market trends in my historical blended betas, I chose to incorporate 5-year historical betas.

Market Risk Premium: I used a cumulative probability of 50.0% in the calculation of my option-implied growth for the S&P 500, which results in a value of 7.82% as of September 30, 2026 and a value of 6.90% for the weighted average of the 3 months ending on that date. As stated above, a cumulative probability of 50% represents the median of the probability distribution, or in this case the option-implied market consensus, which is why I have chosen to use this level.

---

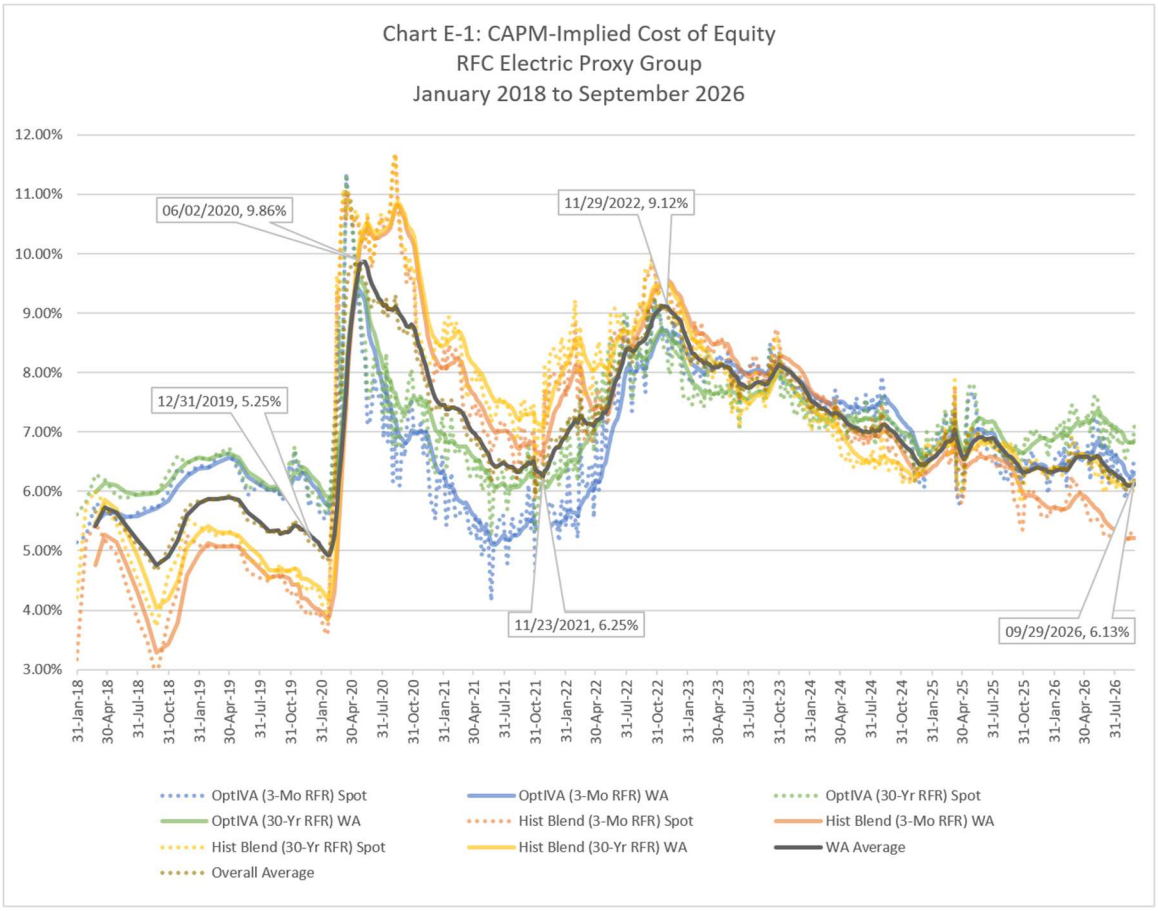
161 *Id. at 17.*

The cumulative probabilities referred to in this case are directly comparable to the cumulative probabilities I have used or referred to in my prior filed testimonies. In late 2020, after significant efforts related to the complexities in processing extremely large volumes of option data, I was finally able to use option-implied volatility and option-implied skewness to come up with a log-normal distribution that approximates the probability distribution of the possible trajectories for the S&P 500 implied by the options market as of any given day, as explained above. All of the testimonies I have filed since then, starting in 2021, have used this complete and superior approach along with a cumulative probability of 50%, representing the median of the probability distribution, or the option-implied market consensus, to estimate expected market growth. Any references to cumulative probability in these testimonies are directly comparable.

Prior to incorporating skewness into the approximation, I used a normal function to estimate the same probability distribution referred to above. Using a normal distribution as an approximation is a simplification used commonly in economics, including in the Black-Scholes formula for a single option. However, unlike a skewed log-normal distribution, a normal distribution has the same median and mean, meaning that when applied in this case, the option-implied market consensus of this simplified approximation implies market growth of 0%. As a result, before using log-normal distributions, I had to resort to finding an adequate level of cumulative probability above 50% to estimate market growth, which is admittedly somewhat subjective. To be conservative, I often used a cumulative probability of 68.3%, which is the probability found within one standard deviation of the mean of a normal distribution, which I understood would lead to a conservatively high estimate for market growth.

It is important to point out that the cumulative probabilities of the simplified normal distribution approximation I used in cases before 2021 cannot be directly compared to the cumulative probabilities of the superior log-normal distribution approximation, which takes skewness into account. The considerably improved approximation based on a log-normal distribution eliminates all subjectivity in arriving at the implied market consensus and allows a much better measure of implied cumulative probabilities of deviations from that market consensus.

APPENDIX B. CAPM-IMPLIED COST OF EQUITY FOR RFC PROXY GROUP OVER TIME SINCE ONSET OF COVID PANDEMIC



Notes regarding the content of this chart:

- *The information in this chart is the property of Rothschild Financial Consulting ("RFC") and may not be used for any purpose without the express written consent of RFC. Even when the underlying data are publicly available from another source, the results of analyses performed by RFC and the way of presenting the data are and remain the property of RFC.*

- *The data presented herein may not agree 100% with past recommendations by RFC for numerous reasons, including differences in the underlying proxy group and the fact that this chart represents only results based on the CAPM, whereas RFC usually bases recommendations on the CAPM and other models, such as various forms of the DCF.*

APPENDIX C.OPTION-IMPLIED GROWTH METHODOLOGY

The "Inverse Problem" Approach (Market-Implied Expectations): My methodology solves what economists call the "inverse problem." Historically, academics used theoretical assumptions to guess what a stock's price should be. My approach reverses this logic: instead of guessing, I look at what the price is in the options market, and I work backward to mathematically determine the exact growth and return expectations that justify that price.

Extracting Expectations from Stock Options: It is a fundamental economic reality that the price investors pay for an option today is directly determined by their expectations of the stock's future value. To extract this information, my analysis is based on an extremely large set of market data, making it highly robust. To avoid short-lived changes in the market, I gathered data weekly over the course of the last quarter on 13 sequential Tuesdays between July 2026 and September 2026.

The depth of this data is substantial. On any given date, the option contracts analyzed cover between 4,277 and 5,197 different strike prices. Even after applying strict filtering criteria to remove illiquid quotes, the dataset remains massive: the average number of share equivalents covered across the 13 dates is 1,051 million (over 1 billion shares) per week, providing an undeniable, real-time market signal.

An Established, Institutional Methodology: This is not a novel or experimental method. It is the foundation of the exact same mathematical framework utilized by the Federal Reserve Bank of Minneapolis to estimate market probabilities, and by the Chicago Board Options Exchange (CBOE) to calculate global benchmarks like the VIX and SKEW indices.

The 5-Step Calculation Process: To calculate the option-implied growth of the S&P 500, I rely on the exact same proven mathematical frameworks utilized by the CBOE. I perform the following steps:

4. Gather and Filter Data: I obtain S&P 500 option data and apply the CBOE's strict filtering rules (e.g., utilizing mid-quotes, removing zero bids, and cleaning out inactive options) to ensure only valid, high-quality pricing signals are used.
5. Calculate Option-Implied Volatility: Using the CBOE methodology, I calculate the expected magnitude of future stock price movements (risk).
6. Calculate Option-Implied Skewness: I then calculate the market's expectation regarding the shape of that risk—specifically, the fear of a sudden market crash (tail risk).
7. Extract the Probability Distribution: Using a standard mathematical framework originating with the Breeden-Litzenberger theorem, I measure how these option prices change across different strike prices to reveal the exact probability distribution the market assigns to the stock's future trajectory.
8. Determine Expected Growth: Finally, I convert this distribution into the specific growth investors expect. Financial theory dictates that investors require a higher return (a "risk premium") for assets that are volatile or prone to sudden crashes. This step mathematically converts the "fear" measured by volatility and skewness into the specific "return" investors demand to compensate them for that fear.

The median of this distribution represents the true market consensus of expected growth. This forward-looking, market-derived Option-Implied Growth Rate is what I then

use in my DCF analysis, providing a vastly superior reflection of current economic reality than a reliance on short-term analyst forecasts.

APPENDIX D.RESUME OF AARON L. ROTHSCHILD

SUMMARY

Rate of return expert witness preparing testimonies focused on utility cost of capital, specifically the cost of equity, cost of debt, and capital structure, to recommend allowed rates of return. Expertise includes measuring the consequences of alternative regulatory outcomes on utility credit metrics using stress testing and credit-risk analyses. Actively contributing to advances in cost-of-capital regulation, including the development of a probability distribution-free Value at Risk (VaR) framework that extracts the market cost of equity directly from index option prices to establish a real-time, forward-looking term structure, with this recent research submitted for presentation at the University of Vienna. Methodologies have been formally adopted by state regulatory bodies. Notably, the South Carolina Public Service Commission adopted analytical approaches using option-implied cost of equity models. This decision was subsequently upheld by the Supreme Court of South Carolina, while the California Public Utilities Commission (CPUC) has adopted testimony using this approach to determine authorized ROEs. Business experience includes complex systems science research regarding the power sector at an independent research institute, investment banking consulting in New York, and financial analysis in the telecom industry across the United States and Asia Pacific.

EXPERIENCE

Rothschild Financial Consulting, Ridgefield, CT
Independent consulting firm specializing in utility sector
President (November 2001 – Present)

- Deliver expert financial testimony and robust discovery requests regarding cost of capital and rate of return in regulatory dockets across jurisdictions including South Carolina, Rhode Island, New York, Connecticut, and Rhode Island.
- Develop advanced, option-implied cost of equity models that have been formally adopted by public utility commissions and upheld by state supreme courts for rate-setting purposes.
- Pioneer a distribution-free Value at Risk (VaR) framework that extracts the market expected rate of return directly from S&P 500 index option prices, equipping regulators with a real-time, forward-looking term structure.
- Served on the bond advisory team for Duke Energy Carolinas' 2025 South Carolina storm-recovery bond financing ($561.4 million), on behalf of the South Carolina Department of Consumer Affairs.
- Assess whether the incremental credit-risk cost of a regulatory decision, such as potential downgrade risks or market-spread effects, offsets the consumer savings of a lower authorized ROE or lower equity ratio.
- Present analytical methods at major utility regulation conferences (e.g., NARUC/NASUCA, MARC), with recent sessions focusing on beta coefficients at SURFA

in Charlotte, having previously presented on topics such as complex systems science, power purchase agreements, and subsidy auctions.

360 Networks, Hong Kong
Pioneer of the fiber optic telecommunications industry
Senior Manager (January 2001 – October 2001)

- Led business development and investment evaluation initiatives.
- Negotiated landing rights and formed local partnerships in Korea, Japan, Singapore, and Hong Kong for a $1 billion undersea cable project.
- Structured a fiber optic bandwidth swapping agreement with Enron and Global Crossing.
- Established relationships with Hong Kong-based investment bankers to communicate Asia Pacific objectives and accomplishments to Wall Street.

Dantis, Chicago, IL
Start-up managed data-hosting services provider
Director (July 2000 – December 2000)

- Built capital raise valuation models and negotiated with potential investors.
- Collaborated with a team to raise $100M from a venture capital firm through valuation negotiations and internal strategic analysis.

MFS, MCI-WorldCom, Chicago, Hong Kong, Tokyo
American Telecommunications Company
Head of Business Analysis for Japan Operations (September 1996 – July 2000)

- Managed a staff of 5 business development analysts.
- Raised $80M internally for a Japanese national fiber network expansion plan by conducting an investment evaluation and presenting findings to the CEO of international operations in London, UK.
- Built a financial model for local fiber optic investment evaluation that was used by business development offices in Oak Brook, IL, and Sydney, Australia.

EDUCATION

Vanderbilt University, Nashville, TN
MBA, Finance (1994 – 1996)

- Completed business plan for Nextlink Communications in support of their national fiber optic network expansion, including identifying opportunities from passage of Telecom Act of 1996
- Developed analytical framework to evaluate predictability of rare events
- Provided financial and accounting analysis to Chicago's consumer advocate, the Citizens Utility Board (CUB) as a summer intern

Clark University, Worcester, MA
BA, Mathematics (1990 – 1994)

APPENDIX E. TESTIFYING EXPERIENCE OF AARON L. ROTHSCHILD

Filed Rate of Return Testimonies:

California

- Pacific Gas and Electric Company, Application 25-03-010, Rate of Return, July 2025
- Southern California Edison, Application 25-03-011, Rate of Return, July 2025
- San Diego Gas & Electric Company, Application 25-03-012, Rate of Return, July 2025
- Southern California Gas Company Application 25-03-013, Rate of Return, July 2025
- Pacific Gas and Electric, Application 22-04-008 et al, Rate of Return/Cost of Capital Mechanism, January 2024
- Liberty Utilities, Application A.23-05-004, Rate of Return, August 2023
- San Gabriel Water Company, Application 23-05-001, Rate of Return, August 2023
- Suburban Water Company, Application 23-05-003, Rate of Return, August 2023
- Great Oaks Water Company, Application 23-05-002, Rate of Return, August 2023
- Incumbent Local Exchange Carriers (ILECs), Application 22-09-003, Rate of Return, May 2023
- Pacific Gas and Electric Company, Application 22-04-008, Rate of Return, August 2022
- Southern California Edison, Application 22-04-009, Rate of Return, August 2022
- San Diego Gas & Electric Company, Application 22-04-012, Rate of Return, August 2022
- California American Water Company, Application 21-05-001, Rate of Return, January 2022
- California Water Service Company, Application 21-05-002, Rate of Return, January 2022
- Golden State Water Company, Application 21-05-003, Rate of Return, January 2022
- San Jose Water Company, Application 21-05-004, Rate of Return, January 2022
- Southern California Edison, Application 21-08-013, Rate of Return/Cost of Capital Mechanism, January 2022
- San Diego Gas & Electric Company, Application 21-08-014, Rate of Return/Cost of Capital Mechanism, January 2022
- Pacific Gas and Electric Company, Application 21-08-015, Rate of Return/Cost of Capital Mechanism, January 2022
- Pacific Gas and Electric Company, Application 21-01-004, Securitization, February 2021
- Pacific Gas and Electric Company, Application 20-04-023, Securitization, October 2020
- Southern California Edison, Application 20-07-008, Securitization, September 2020
- San Diego Gas & Electric Company, Application 19-04-017, Rate of Return, August 2019
- Southern California Gas Company, Application 19-04-016, Rate of Return, August 2019
- Pacific Gas and Electric Company, Application 19-04-015, Rate of Return, August 2019
- Southern California Edison, Application 19-04-014, Rate of Return, August 2019
- Liberty Utilities, Application A.18-05-006, Rate of Return, August 2018
- San Gabriel Water Company, Application 18-05-005, Rate of Return, August 2018
- Suburban Water Company, Application 18-05-004, Rate of Return, August 2018
- Great Oaks Water Company, Application 18-05-001, Rate of Return, August 2018
- California Water Service Company, Application 17-04-006, Rate of Return, August 2017
- California American Water Company, Application 17-04-003, Rate of Return, August 2017
- Golden State Water Company, Application 17-04-002, Rate of Return, August 2017
- San Jose Water Company, Application 17-04-001, Rate of Return, August 2017

Colorado
- Public Service Company of Colorado, Docket No. 11AL-947E, Rate of Return, March 2012

Connecticut
- The Connecticut Water Company, Docket No. 26-03-15, Rate of Return, July 2026
- Aquarion Water Company of Connecticut, Docket No. 25-12-12, Rate of Return, June 2026
- Yankee Gas Service Company, Docket No. 24-14-01, Rate of Return, March 2025
- United Illuminating Company, Docket No. 24-10-04, Rate of Return, February 2025
- Connecticut Natural Gas Corporation, Docket No. 23-11-02, Rate of Return, February 2024
- The Southern Connecticut Gas Company, Docket No. 23-11-02, Rate of Return, February 2024
- The Connecticut Water Company, Docket No. 23-08-32, Rate of Return, December 2023
- United Illuminating Company, Docket No. 22-08-08, Rate of Return, December 2022
- Aquarion Water Company of Connecticut, Docket No. 22-07-01, Rate of Return, October 2022
- Eversource and United Illuminating, Docket No. 17-12-03RE11, Rate of Return / Interim Rate Reduction, April 2021
- United Water Connecticut, Docket No. 07-05-44, Rate of Return, November 2008
- Valley Water Systems, Docket No. 06-10-07, Rate of Return, May 2007

Delaware
- Tidewater Utilities, Inc., PSC Docket No. 11-397, Rate of Return, April 2012

District of Columbia
- Washington Gas Light Company, Formal Case No. 1180, Rate of Return, January 2025
- Washington Gas Light Company, Formal Case No. 1169, Rate of Return, May 2023

Florida
- Florida Power & Light (FPL), Docket No. 070001-EI, October 2007
- Florida Power Corp., Docket No. 060001 Fuel Clause, September 2007

Kentucky
- Kentucky-American Water Company, Case No. 2026-00094, Rate of Return, August 2026
- Columbia Gas of Kentucky, Inc., Case No. 2026-00099, Rate of Return, August 2026

Maryland
- Delmarva Power & Light, Case No. 9317, Rate of Return, June 2013
- Columbia Gas of Maryland, Case No. 9316, Rate of Return, May 2013
- Potomac Electric Power Company, Case No. 9286, Rate of Return, March 2012
- Delmarva Power & Light, Case No. 9285, Rate of Return, March 2012

New Jersey
- Aqua New Jersey, Inc., BPU Docket No. WR11120859, Rate of Return, April 2012

New York
- Consolidated Edison Company of New York, Inc., Docket No. 2025-S-0741, March 2026

New Hampshire
- Public Service Company Of New Hampshire., Docket No. DG 24-07,0 Rate of Return, January 2025
- Liberty Utilities (Energy North Natural Gas) Corp., Docket No. DG 23-067, Rate of Return, February 2024
- Liberty Utilities (Granite State Electric) Corp., Docket No. DE 23-039, Rate of Return, December 2023

North Dakota
- Montana-Dakota Utilities Co., Case No. PU-20-379, Rate of Return, January 2021

- Otter Tail Power Company, Case No. PU-17-398, Rate of Return, May 2018
- Montana-Dakota Utilities Co., Case No. PU-15-90, Rate of Return, August 2015
- Northern States Power, Case No. PU-400-04-578, Rate of Return, March 2005

Pennsylvania

- Aqua Pennsylvania, Inc., Docket No. R-2024-3047822, Rate of Return, August 2024
- Peoples Natural Gas Company LLC, Docket No. R-2023-304459, Rate of Return, March 2024
- UGI Utilities, Inc. – Electric Division, Docket No. R-2022-3037368, Rate of Return, April 2023
- Pennsylvania American Water Company, Docket No. R-2022-3031672 and R-2022-3031673, Rate of Return, July 2022
- UGI Utilities, Inc. – Electric Division, Docket No. R-2021-3023618, Rate of Return, May 2021
- Pennsylvania American Water Company, Docket No. P-2021-3022426, Rate of Return, February 2021
- Audubon Water Company, Docket No. R-2020-3020919, Rate of Return, November 2020
- Pennsylvania American Water Company, Docket No. R-2020-3019369 and R-2020-3019371, Rate of Return, September 2020
- Twin Lakes Utilities, Inc., Docket No. R-2019-3010958, Rate of Return, October 2019
- City of Lancaster Sewer Fund, Docket No. R-2019-3010955, Rate of Return, October 2019
- Community Utilities of Pennsylvania Inc. Wastewater Division, Docket No. R-2019-3008948, Rate of Return, July 2019
- Community Utilities of Pennsylvania Inc. Water Division, Docket No. R-2019-3008947, Rate of Return, July 2019
- Newtown Artesian Water Company, Docket No. R-20019-3006904, Rate of Return, May 2019
- Hidden Valley Utility Services, L.P. – Wastewater Division, Docket No. R-2018-3001307, Rate of Return, September 2018
- Hidden Valley Utility Services, L.P. – Water Division, Docket No. R-2018-3001306, Rate of Return, September 2018
- The York Water Company, Docket No. R-2018-3000019, Rate of Return, August 2018
- SUEZ PA Pennsylvania, Inc., Docket No. R-2018-000834, Rate of Return, July 2018
- UGI Utilities, Inc. – Electric Division, Docket No. R-2017-2640058, Rate of Return, April 2018
- Wellsboro Electric Company, Docket No. R-2016-2531551, Rate of Return, December 2016
- Citizens' Electric Company of Lewisburg, PA, Docket No. R-2016-2531550, Rate of Return, December 2016
- Columbia Gas of Pennsylvania, Inc., Docket No. R-2016-2529660, Rate of Return, June 2016
- Columbia Gas of Pennsylvania, Inc., Docket No. R-2015-2468056, Rate of Return, June 2015
- Pike County Light & Power Company, Docket No. R-2013-2397353 (gas), Rate of Return, April 2014
- Pike County Light & Power Company, Docket No. R-2013-2397237 (electric), Rate of Return, April 2014
- Columbia Water Company, Docket No. R-2013-2360798, Rate of Return, August 2013
- Peoples TWP LLC, Docket No. R-2013-2355886, Rate of Return, July 2013
- City of Dubois – Bureau of Water, Docket No. R-2013-2350509, Rate of Return, July 2013
- City of Lancaster – Sewer Fund, Docket No. R-2012-2310366, Rate of Return, December 2012
- Wellsboro Electric Company, Docket No. R-2010-2172665, Rate of Return, September 2010
- Citizens' Electric Company of Lewisburg, PA, Docket No. R-2010-2172662, Rate of Return, September 2010
- T.W. Phillips Gas and Oil Company, Docket No. R-2010-2167797, Rate of Return, August 2010
- York Water Company, Docket No. R-2010-2157140, Rate of Return, August 2010
- Joint Application of The Peoples Natural Gas Company, Dominion Resources, Inc. and Peoples Hope Gas Company LLC, Docket No. A-2008-2063737, Financial Analysis, December 2008
- York Water Company, Docket No. R-2008-2023067, Rate of Return, August 2008

Rhode Island
- Rhode Island Energy, Docket No. 25-45-GE, Rate of Return, April 2026

South Carolina
- Piedmont Natural Gas Company, Inc., Docket No. 26-61-G, Rate of Return, July 2026
- Dominion Energy South Carolina, Inc., Docket No. 2025-325-E, Rate of Return, March 2026
- Kiawah Island Utility, Inc., Docket No., Rate of Return, 2025-243-WS, December 2025
- Duke Energy Carolinas, LLC., Docket No. 2025-172-E, Rate of Return, October 2025
- Duke Energy Progress, LLC., Docket No. 2025-154-E, Rate of Return, September 2025
- Duke Energy Carolinas, LLC., Docket No. 2025-65-E, Securitization, May 2025
- Dominion Energy South Carolina, Inc., Docket No. 2024-34-E, Rate of Return, June 2024
- Duke Energy Carolinas, LLC., Docket No. 2023-388-E, Rate of Return, April 2024
- Duke Energy Progress, LLC., Docket No. 2023-89-E, Securitization, September 2023
- Dominion Energy South Carolina, Inc., Docket No. 2023-170-G, Rate of Return, July 2023
- Duke Energy Progress, LLC., Docket No. 2022-254-E, Rate of Return, December 2022
- Daufuskie Island Utility Company, Inc., Docket No. 22-142-WS, Rate of Return, September 2022
- Piedmont Natural Gas Company, Inc., Docket No. 22-89-G, Rate of Return, July 2022
- Kiawah Island Utility, Inc., Docket No. 2021-324-WS, Rate of Return, February 2022
- Palmetto Wastewater Reclamation, Inc., Docket No. 2021-153-S, Rate of Return, September 2021
- Dominion Energy South Carolina, Inc., Docket No. 2020-125-E, Rate of Return, November 2020
- Palmetto Utilities, Inc., Docket No. 2019-281-S, Rate of Return, May 2020
- Palmetto Utilities, Inc., Docket No. 2019-281-S, Accounting, May 2020
- Blue Granite Water Company, Docket No. 2019-290-WS, Rate of Return, January 2020

Tennessee
- Limestone Water Utility Operating Company, Inc., Docket No. 24-00044, Rate of Return, December 2024
- Tennessee American Water Company, Inc., Docket No. 24-00032, Rate of Return, September 2024
- Kingsport Power Company D/B/A AEP Appalachian Power, Docket No. 21-00107, Rate of Return, March 2022

Vermont
- Central Vermont Public Service Corp., Docket No. 7321, Rate of Return, September 2007

Washington
- Puget Sound Energy, Dockets UE-260005 and UG-260006, Rate of Return, July 2026

Wisconsin
- American Transmission Company, LLC, ITC, Midwest, LLC, Case No. 19-CV-3418, financial and regulatory analysis regarding requested temporary injunction to halt the construction in Wisconsin of the proposed Cardinal-Hickory Creek transmission line, October 2021

OVERALL COST OF CAPITAL
The Connecticut Light & Power Company d/b/a Eversource Energy

	Ratios		Cost Rate		Weighted Cost Rate
					[D]
Long-Term Debt	57.49%	[A]	4.81%	[B]	2.77%
Short-Term Debt	0.00%	[B]	0.00%	[B]	0.00%
Preferred Equity	0.90%	[B]	4.75%	[B]	0.04%
Common Equity	41.61%	[A]	8.31%	[C]	3.46%
	100.00%				**6.27%**

RECOMMENDED RANGES

	Low		High
Proxy Group Cost of Equity Range	7.43%		8.53%
Proxy Group Cost of Equity		8.31%	
Based on RFC Capital Structure Recommendation			
Capital Structure Risk Adjustment [E]		0.00%	
Adjusted Recommended Cost of Equity Range	**7.43%**		**8.53%**
Company Specific Cost of Equity Recommendation		**8.31%**	
Cost of Capital Range	5.90%		6.36%
Based on Ms. Bulkley's Capital Structure Recommendation			
Capital Structure Risk Adjustment [F]		-0.49%	
Adjusted Recommended Cost of Equity Range	**6.94%**		**8.04%**
Company Specific Cost of Equity Recommendation		**7.82%**	
Cost of Capital Range	5.96%		6.55%
Comprehensive Cost of Capital Range			
Cost of Debt Range	4.81%		3.64%
Common Equity Ratio Range	41.61%		39.74%
Comprehensive Cost of Capital Range	5.90%		5.59%

Sources:
[A] Exhibit ALR-5, page 5
[B] Exhibit CLP-REVREQ-2, Schedule D-1.0
[C] Company Specific Cost of Equity Recommendation
[D] Ratios times Cost Rate
[E] It would be appropriate to adjust my ROE recommendation downward to account for the different financial risk levels if PURA authorizes a different capital structure
[F] Based on estimate of 0.04% change in Cost of Equity for each 1% difference in Common Equity Ratio compared to the average of my Proxy Group (Exhibit ALR-5, page 4).

COST OF EQUITY SUMMARY

RFC Proxy Group (17 Companies)

		Low	High	Percentile			
				50.0% (Median)	70.0%	80.0%	90.0%
DCF		**7.00%**	**8.67%**				
Constant Growth - Sustainable Growth	[A]	8.47%	8.67%				
Constant Growth - Option-Implied Growth	[B]	7.00%	7.35%				
Non-Constant Growth	[C]	8.21%	8.56%				
CAPM		**5.22%**	**7.11%**				
3-Mo. Weighted Average (Jul. to Sep. 2026)							
3-Month Treasury Bill Risk-Free Rate	[D]	5.22%	6.32%				
30-Year Treasury Bond Risk-Free Rate	[D]	6.20%	6.92%				
Spot (Sep. 30, 2026)							
3-Month Treasury Bill Risk-Free Rate	[E]	5.23%	6.58%				
30-Year Treasury Bond Risk-Free Rate	[E]	6.27%	7.11%				
Proxy Group Cost of Equity				6.96% Median of Overall Range of Results	**7.43%**	**8.31% COE Recommendation**	**8.53%**
					<---- Recommended Range ---->		

Sources:
[A] Exhibit ALR-3, page 1
[B] Exhibit ALR-3, page 2
[C] Exhibit ALR-3, page 3 and Exhibit ALR-3, page 4
[D] Exhibit ALR-4, page 1
[E] Exhibit ALR-4, page 5

CONSTANT GROWTH DISCOUNTED CASH FLOW (DCF) - INDICATED COST OF EQUITY
RFC Proxy Group (17 Companies)

			Based on Average Market Price For Year Ending 9/30/2026	Based On Market Price As Of 9/30/2026
1	Dividend Yield On Market Price	[A]	3.48%	3.80%
2	Retention Rate:			
	a) Market-to-Book Ratio	[A]	1.97	1.77
	b) Dividend Yield on Book	[B]	6.84%	6.74%
	c) Expected Return on Equity	[C]	10.60%	10.60%
	d) Retention Rate	[D]	35.46%	36.44%
3	Reinvestment Growth	[E]	3.76%	3.86%
4	New Financing Growth	[F]	1.15%	0.92%
5	Total Estimate of Investor Anticipated Growth	[G]	4.91%	4.78%
6	Increment to Dividend Yield for Growth to Next Year	[H]	0.09%	0.09%
7	**Indicated Cost of Equity**	**[I]**	**8.47%**	**8.67%**

Sources:

[A] Exhibit ALR-5, page 1

[B] Line 1 x Line 2a

[C] Some of the considerations for determining Future Expected Return on Equity:

	Median	Mean	From
Value Line Expectation	**10.50%**	**10.76%**	Exhibit ALR-5, page 2
Return on Equity to Achieve Zacks Growth	11.35%	11.07%	Exhibit ALR-5, page 3
Average Historical Growth	9.68%	10.26%	
Earned Return on Equity in 2025	10.05%	10.50%	Exhibit ALR-5, page 2
Earned Return on Equity in 2024	9.60%	10.23%	Exhibit ALR-5, page 2
Earned Return on Equity in 2023	9.39%	10.04%	Exhibit ALR-5, page 2

[D] 1 - Line 2b / Line 2c

[E] Line 2c x Line 2d

[F] S x V = (Ext. Fin Rate) x (Line 2a - 1) Ext. Fin. Rate = 1.19% From Exhibit ALR-3, page 5

S = rate of continuous new stock financing

V = fraction of funds raised by sale of stock that increases the book value of existing shareholders' common equity

[G] Line 3 + Line 4

[H] Line 1 x one-half of Line 5

[I] Line 1 + Line 5 + Line 6

CONSTANT GROWTH DISCOUNTED CASH FLOW (DCF) - INDICATED COST OF EQUITY
RFC Proxy Group (17 Companies)

			Based On Weighted Averages As Of 9/30/2026	Based On Spot Market Values As Of 9/30/2026
1	Dividend Yield On Market Price	[A]	3.48%	3.80%
2	Total Estimate of Investor Anticipated Growth	[B]	3.46%	3.48%
3	Increment to Dividend Yield for Growth to Next Year	[C]	0.06%	0.07%
4	**Indicated Cost of Equity**	**[D]**	**7.00%**	**7.35%**

Sources:
[A] Exhibit ALR-5, page 1
[B] 6-Month Option-Implied Growth
[C] Line 1 x one-half of Line 2
[D] Line 1 + Line 2 + Line 3

NON-CONSTANT GROWTH DISCOUNTED CASH FLOW (DCF) - INDICATED COST OF EQUITY
(BASED ON VALUE LINE FORECASTS AND CLOSING STOCK PRICE)
RFC Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
		Forecasted Dividends per Share					Growth	Book Value		Closing Stock Price		Cash Flow From Buying and Selling Stock (At Closing Price)					
		2026	2027	2028	2029	2030	2027-30	9/30/26	9/30/30	9/30/2026	9/30/2030	2026	2027	2028	2029	2030	IRR / DCF
		[A]	[A]	[B]	[B]	[A]	[B]	[C]	[C]	[D]	[E]	[F]	[F]	[F]	[F]	[F]	[G]
ALLIANT ENERGY	LNT	$2.15	$2.28	$2.42	$2.56	$2.72	6.06%	$29.42	$33.53	$63.30	$72.14	($62.76)	$2.28	$2.42	$2.56	$74.18	7.08%
AMEREN	AEE	$3.00	$3.20	$3.32	$3.44	$3.57	3.71%	$48.50	$52.64	$99.38	$107.88	($98.63)	$3.20	$3.32	$3.44	$110.56	5.38%
AMERICAN ELEC. PWR.	AEP	$3.88	$3.96	$4.04	$4.12	$4.20	1.98%	$55.68	$61.60	$118.64	$131.25	($117.67)	$3.96	$4.04	$4.12	$134.40	5.90%
AVISTA CORP.	AVA	$2.10	$2.20	$2.26	$2.33	$2.40	2.94%	$33.93	$34.92	$35.09	$36.11	($34.57)	$2.20	$2.26	$2.33	$37.91	7.25%
DUKE ENERGY	DUK	$4.30	$4.42	$4.70	$4.99	$5.30	6.24%	$67.35	$80.22	$114.01	$135.81	($112.94)	$4.42	$4.70	$4.99	$139.78	8.47%
CON. EDISON	ED	$3.55	$3.80	$4.04	$4.28	$4.55	6.19%	$69.55	$83.08	$102.21	$122.10	($101.32)	$3.80	$4.04	$4.28	$125.51	8.37%
EDISON INTERNAT'L	EIX	$3.56	$3.76	$3.99	$4.23	$4.48	6.01%	$46.54	$59.68	$52.86	$67.80	($51.97)	$3.76	$3.99	$4.23	$71.16	13.62%
ENTERGY CORP.	ETR	$2.60	$2.80	$3.04	$3.31	$3.60	8.74%	$39.62	$52.03	$99.26	$130.38	($98.61)	$2.80	$3.04	$3.31	$133.08	9.95%
EVERGY, INC.	EVRG	$2.78	$2.82	$2.91	$3.00	$3.10	3.21%	$49.87	$55.71	$78.44	$87.62	($77.75)	$2.82	$2.91	$3.00	$89.94	6.45%
EXELON CORP.	EXC	$1.68	$1.76	$1.85	$1.94	$2.04	5.04%	$29.05	$37.61	$40.40	$52.31	($39.98)	$1.76	$1.85	$1.94	$53.84	10.99%
FIRST ENERGY	FE	$1.86	$1.94	$2.04	$2.14	$2.24	4.91%	$22.48	$30.03	$43.33	$57.90	($42.87)	$1.94	$2.04	$2.14	$59.58	11.91%
IDA CORP, INC.	IDA	$3.65	$4.00	$4.11	$4.23	$4.35	2.84%	$68.22	$76.59	$130.73	$146.78	($129.82)	$4.00	$4.11	$4.23	$150.04	6.00%
OGE ENERGY CORP.	OGE	$1.70	$1.70	$1.75	$1.80	$1.85	2.86%	$24.15	$29.60	$44.99	$55.14	($44.57)	$1.70	$1.75	$1.80	$56.53	8.94%
PINNACLE WEST	PNW	$3.67	$3.73	$3.94	$4.16	$4.40	5.66%	$58.82	$74.77	$93.04	$118.27	($92.12)	$3.73	$3.94	$4.16	$121.57	10.22%
PPL CORPORATION	PPL	$1.14	$1.19	$1.27	$1.35	$1.44	6.56%	$20.85	$23.36	$32.89	$36.85	($32.61)	$1.19	$1.27	$1.35	$37.93	6.70%
SOUTHERN COMPANY	SO	$3.04	$3.14	$3.25	$3.36	$3.48	3.49%	$34.59	$40.41	$82.89	$96.82	($82.13)	$3.14	$3.25	$3.36	$99.43	7.76%
XCEL ENERGY	XEL	$2.37	$2.52	$2.73	$2.96	$3.20	8.29%	$40.25	$52.36	$70.48	$91.68	($69.89)	$2.52	$2.73	$2.96	$94.08	10.47%
Maximum		$4.30	$4.42	$4.70	$4.99	$5.30	8.74%	$69.55	$83.08	$130.73	$146.78	($32.61)	$4.42	$4.70	$4.99	$150.04	13.62%
Minimum		$1.14	$1.19	$1.27	$1.35	$1.44	1.98%	$20.85	$23.36	$32.89	$36.11	($129.82)	$1.19	$1.27	$1.35	$37.91	5.38%
Median		$2.78	$2.82	$3.04	$3.31	$3.48	5.04%	$40.25	$52.36	$78.44	$91.68	($77.75)	$2.82	$3.04	$3.31	$94.08	8.37%
Average		$2.77	$2.90	$3.04	$3.19	$3.35	4.98%	$43.46	$51.66	$76.58	$90.99	($75.89)	$2.90	$3.04	$3.19	$93.50	**8.56%**

Sources:

[A] Value Line: Most current data available at time of schedule preparation. 2030 data is VL forecast for 2029-31.

[B] Straight line interpolation based on Value Line data, assuming constant dividend growth for 2027-30.

[C] Straight line interpolation based on Value Line data, assuming constant book value growth for 2027-30.

[D] EOD Data: Market Data as of September 30, 2026.

[E] Stock Price projected assuming constant Market to Book Ratio (Exhibit ALR-5, page 1) and using VL projected Book Value.

[F] Cash Flow from purchasing stock on October 1, 2026, receiving dividends through 2030, and selling on September 30, 2030.
Negative number in 2026 reflects cash outflow required to purchase stock.
Cash flow sources are 1) dividends and 2) proceeds of stock sale.
1 of 4 dividends assumed received in 2026 and 3 of 4 in 2030 based on purchase and sale date.

[G] Total return on equity to investor who purchased, held, and sold stock as described above,
assuming Value Line projections of Dividends and Book Value are correct and
assuming Stock Price grows at same rate as Book Value.
DCF result is an Internal Rate of Return computation made using the "IRR" function built into Microsoft Excel
based on projected cash flows from 2026 to 2030.

NON-CONSTANT GROWTH DISCOUNTED CASH FLOW (DCF) - INDICATED COST OF EQUITY
(BASED ON VALUE LINE FORECASTS AND LTM AVERAGE STOCK PRICE)
RFC Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
		Forecasted Dividends per Share					Growth	LTM Avg. Book Value		LTM Avg. Stock Price		Cash Flow From Buying and Selling Stock (At LTM Average Price)					
		2026	2027	2028	2029	2030	2027-30	2026	2030	9/30/26	9/30/30	2026	2027	2028	2029	2030	IRR / DCF
		[A]	[A]	[B]	[B]	[A]	[B]	[C]	[C]	[D]	[E]	[F]	[F]	[F]	[F]	[F]	[G]
ALLIANT ENERGY	LNT	$2.15	$2.28	$2.42	$2.56	$2.72	6.06%	$28.83	$32.86	$70.76	$80.64	($70.22)	$2.28	$2.42	$2.56	$82.68	6.68%
AMEREN	AEE	$3.00	$3.20	$3.32	$3.44	$3.57	3.71%	$48.04	$52.15	$107.45	$116.64	($106.70)	$3.20	$3.32	$3.44	$119.32	5.13%
AMERICAN ELEC. PWR.	AEP	$3.88	$3.96	$4.04	$4.12	$4.20	1.98%	$55.76	$61.68	$125.13	$138.42	($124.16)	$3.96	$4.04	$4.12	$141.57	5.72%
AVISTA CORP.	AVA	$2.10	$2.20	$2.26	$2.33	$2.40	2.94%	$33.37	$34.34	$39.00	$40.14	($38.48)	$2.20	$2.26	$2.33	$41.94	6.59%
DUKE ENERGY	DUK	$4.30	$4.42	$4.70	$4.99	$5.30	6.24%	$66.11	$78.75	$123.45	$147.04	($122.37)	$4.42	$4.70	$4.99	$151.02	8.17%
CON. EDISON	ED	$3.55	$3.80	$4.04	$4.28	$4.55	6.19%	$67.82	$81.01	$105.60	$126.14	($104.71)	$3.80	$4.04	$4.28	$129.56	8.24%
EDISON INTERNAT'L	EIX	$3.56	$3.76	$3.99	$4.23	$4.48	6.01%	$44.44	$56.99	$66.36	$85.11	($65.47)	$3.76	$3.99	$4.23	$88.47	12.14%
ENTERGY CORP.	ETR	$2.60	$2.80	$3.04	$3.31	$3.60	8.74%	$38.23	$50.21	$104.66	$137.47	($104.01)	$2.80	$3.04	$3.31	$140.17	9.80%
EVERGY, INC.	EVRG	$2.78	$2.82	$2.91	$3.00	$3.10	3.21%	$46.99	$52.49	$80.02	$89.38	($79.32)	$2.82	$2.91	$3.00	$91.70	6.38%
EXELON CORP.	EXC	$1.68	$1.76	$1.85	$1.94	$2.04	5.04%	$28.43	$36.81	$45.19	$58.51	($44.77)	$1.76	$1.85	$1.94	$60.04	10.53%
FIRST ENERGY	FE	$1.86	$1.94	$2.04	$2.14	$2.24	4.91%	$22.06	$29.47	$47.51	$63.48	($47.04)	$1.94	$2.04	$2.14	$65.16	11.52%
IDA CORP, INC.	IDA	$3.65	$4.00	$4.11	$4.23	$4.35	2.84%	$66.24	$74.37	$139.52	$156.64	($138.60)	$4.00	$4.11	$4.23	$159.90	5.81%
OGE ENERGY CORP.	OGE	$1.70	$1.70	$1.75	$1.80	$1.85	2.86%	$24.02	$29.44	$46.15	$56.56	($45.72)	$1.70	$1.75	$1.80	$57.95	8.84%
PINNACLE WEST	PNW	$3.67	$3.73	$3.94	$4.16	$4.40	5.66%	$58.35	$74.18	$98.67	$125.43	($97.75)	$3.73	$3.94	$4.16	$128.73	9.98%
PPL CORPORATION	PPL	$1.14	$1.19	$1.27	$1.35	$1.44	6.56%	$20.24	$22.67	$35.84	$40.15	($35.55)	$1.19	$1.27	$1.35	$41.23	6.38%
SOUTHERN COMPANY	SO	$3.04	$3.14	$3.25	$3.36	$3.48	3.49%	$33.09	$38.65	$91.27	$106.60	($90.51)	$3.14	$3.25	$3.36	$109.21	7.41%
XCEL ENERGY	XEL	$2.37	$2.52	$2.73	$2.96	$3.20	8.29%	$38.57	$50.18	$76.48	$99.48	($75.88)	$2.52	$2.73	$2.96	$101.88	10.18%
Maximum		$4.30	$4.42	$4.70	$4.99	$5.30	8.74%	$67.82	$81.01	$139.52	$156.64	($35.55)	$4.42	$4.70	$4.99	$159.90	12.14%
Minimum		$1.14	$1.19	$1.27	$1.35	$1.44	1.98%	$20.24	$22.67	$35.84	$40.14	($138.60)	$1.19	$1.27	$1.35	$41.23	5.13%
Median		$2.78	$2.82	$3.04	$3.31	$3.48	5.04%	$38.57	$50.21	$80.02	$99.48	($79.32)	$2.82	$3.04	$3.31	$101.88	8.17%
Average		$2.77	$2.90	$3.04	$3.19	$3.35	4.98%	$42.39	$50.37	$82.53	$98.11	($81.84)	$2.90	$3.04	$3.19	$100.62	**8.21%**

Sources:

[A] Value Line: Most current data available at time of schedule preparation. 2030 data is VL forecast for 2029-31.

[B] Straight line interpolation based on Value Line data, assuming constant dividend growth for 2027-30.

[C] Straight line interpolation based on Value Line data, assuming constant book value growth for 2027-30.

[D] EOD Data: Market Data as of September 30, 2026.

[E] Stock Price projected assuming constant Market to Book Ratio (Exhibit ALR-5, page 1) and using VL projected Book Value.

[F] Cash Flow from purchasing stock on October 1, 2026, receiving dividends through 2030, and selling on September 30, 2030.
Negative number in 2026 reflects cash outflow required to purchase stock.
Cash flow sources are 1) dividends and 2) proceeds of stock sale.
1 of 4 dividends assumed received in 2026 and 3 of 4 in 2030 based on purchase and sale date.

[G] Total return on equity to investor who purchased, held, and sold stock as described above,
assuming Value Line projections of Dividends and Book Value are correct and
assuming Stock Price grows at same rate as Book Value.
DCF result is an Internal Rate of Return computation made using the "IRR" function built into Microsoft Excel
based on projected cash flows from 2026 to 2030.

COMMON SHARES OUTSTANDING AND EXTERNAL FINANCING RATE
RFC Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
		Common Stock Outstanding (Millions of Shares)								Annual Growth Rate		
		2021	2022	2023	2024	2025	2026	2027	2030	2021-25	2025-30	2021-30
		[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[B]	[B]	[B]
ALLIANT ENERGY	LNT	249.9	250.5	251.1	256.1	256.7	256.8	258.5	260.0	0.68%	0.26%	0.44%
AMEREN	AEE	253.3	257.7	262.0	266.3	269.9	276.4	275.0	285.0	1.60%	1.09%	1.32%
AMERICAN ELEC. PWR.	AEP	496.6	504.2	513.9	526.2	532.9	540.9	545.0	550.0	1.78%	0.63%	1.14%
AVISTA CORP.	AVA	69.2	71.5	75.0	78.1	80.0	82.2	83.0	85.0	3.69%	1.21%	2.30%
DUKE ENERGY	DUK	769.0	769.0	770.0	771.0	776.0	778.0	780.0	790.0	0.23%	0.36%	0.30%
CON. EDISON	ED	342.3	354.0	355.0	345.4	346.6	361.1	369.0	380.0	0.31%	1.86%	1.17%
EDISON INTERNAT'L	EIX	378.9	380.4	382.2	383.9	384.8	384.8	388.0	405.0	0.39%	1.03%	0.74%
ENTERGY CORP.	ETR	400.5	405.3	422.4	425.7	429.6	452.3	475.0	500.0	1.77%	3.08%	2.50%
EVERGY, INC.	EVRG	226.8	229.3	229.6	229.7	230.0	230.3	230.5	230.5	0.34%	0.05%	0.18%
EXELON CORP.	EXC	976.0	979.0	994.0	999.0	1,005.0	1,023.0	1,023.0	1,023.0	0.73%	0.36%	0.52%
FIRST ENERGY	FE	543.1	570.3	572.1	574.3	576.6	577.9	585.0	625.0	1.51%	1.62%	1.57%
IDA CORP, INC.	IDA	50.5	50.5	50.6	50.6	54.0	54.9	55.5	56.0	1.69%	0.74%	1.16%
OGE ENERGY CORP.	OGE	200.1	200.1	200.2	200.3	201.0	206.1	207.0	207.0	0.11%	0.59%	0.38%
PINNACLE WEST	PNW	112.8	113.0	113.2	113.4	119.1	120.9	128.0	140.0	1.38%	3.29%	2.43%
PPL CORPORATION	PPL	768.9	735.1	736.5	737.1	738.0	751.4	737.5	738.0	-1.02%	0.00%	-0.45%
SOUTHERN COMPANY	SO	1,056.5	1,060.0	1,089.0	1,091.0	1,096.0	1,119.4	1,130.0	1,200.0	0.92%	1.83%	1.43%
XCEL ENERGY	XEL	537.4	544.0	549.6	554.9	574.4	623.6	650.0	710.0	1.68%	4.33%	3.14%
Maximum		1,056.5	1,060.0	1,089.0	1,091.0	1,096.0	1,119.4	1,130.0	1,200.0	3.69%	4.33%	3.14%
Minimum		50.5	50.5	50.6	50.6	54.0	54.9	55.5	56.0	-1.02%	0.00%	-0.45%
Median		378.9	380.4	382.2	383.9	384.8	384.8	388.0	405.0	0.92%	1.03%	1.16%
Average		437.2	439.6	445.1	447.2	451.2	461.2	465.9	481.4	1.05%	1.31%	1.19%
								Sustainable Growth	**[C]**			**1.19%**

Sources:
[A] Value Line: Most current data available at time of schedule preparation.
[B] Annualized Growth Rate calculation.
[C] Estimated Sustainable Growth in Common Stock based on analysis of historical and projected growth rates.

CAPITAL ASSET PRICING MODEL (CAPM) - INDICATED COST OF EQUITY

WEIGHTED - All Inputs Weighted From July to September 2026

RFC Proxy Group

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	4.01%	4.01%	5.42%	5.42%
Beta	0.30	0.57	0.30	0.57
Risk Premium	4.01%	4.01%	2.61%	2.61%
CAPM (Weighted)	5.22%	6.32%	6.20%	6.92%

CAPITAL ASSET PRICING MODEL (CAPM) - RISK-FREE RATE

Spot (Sep. 30, 2026)	
3-Month Treasury Bill	4.20%
30-Year Treasury Bond	5.64%
3-Mo. Weighted Average (Jul. to Sep. 2026)	
3-Month Treasury Bill	4.01%
30-Year Treasury Bond	5.42%

Source: www.treasury.gov

CAPITAL ASSET PRICING MODEL (CAPM) - BETAS

(BASED ON HISTORICAL AND OPTION-IMPLIED RETURNS)
RFC Proxy Group

Betas	06/30/2026	07/07/2026	07/14/2026	07/21/2026	07/28/2026	08/04/2026	08/11/2026	08/18/2026	08/25/2026	09/01/2026	09/08/2026	09/15/2026	09/22/2026	09/29/2026	Average	Time Avg.
Forward (6 months)	0.69	0.61	0.51	0.63	0.57	0.65	0.56	0.58	0.55	0.49	0.52	0.51	0.64	0.63	0.581	0.574
Historical (6 months)	0.16	0.16	0.16	0.17	0.17	0.13	0.15	0.14	0.16	0.15	0.13	0.12	0.15	0.08	0.146	0.135
Historical (2 yrs)	0.38	0.38	0.38	0.39	0.40	0.39	0.37	0.37	0.38	0.38	0.38	0.39	0.39	0.39	0.383	0.383
Historical (5 yrs)	0.60	0.60	0.60	0.60	0.59	0.59	0.59	0.59	0.59	0.59	0.58	0.59	0.58	0.58	0.589	0.587
Weighting																
Forward (6 months)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%		
Historical (6 months)	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%		
Historical (2 yrs)	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%		
Historical (5 yrs)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%		
Historical Blended Beta	**0.32**	**0.31**	**0.32**	**0.32**	**0.32**	**0.30**	**0.30**	**0.30**	**0.31**	**0.31**	**0.30**	**0.29**	**0.31**	**0.27**	0.306	0.300
Slope	15%															
Points	0.00	1.00	1.15	1.32	1.52	1.75	2.01	2.31	2.66	3.06	3.52	4.05	4.65	5.35		
Time Weight	0.0%	2.9%	3.3%	3.8%	4.4%	5.1%	5.9%	6.7%	7.7%	8.9%	10.2%	11.8%	13.5%	15.6%		

CAPM Betas	Spot (Sep 29, 2026)	Weighted (Jul - Sep 2026)
Forward	0.63	0.57
Historical Blended	0.27	0.30

Note: Historical betas are calculated on Tuesdays, following Value Line's methodology. Forward (option-implied) betas are also calculated on Tuesdays for the sake of compatibility.

CAPITAL ASSET PRICING MODEL (CAPM) - MARKET RISK PREMIUM

WEIGHTED - All Inputs Weighted From July to September 2026

Cumulative Probability	50.00%	
S&P 500 Option-Implied Growth Rate	6.95%	
S&P 500 Dividend Yield	1.07%	
S&P 500 Market Return	8.03%	
	3-Month Treasury Bill	**30-Year Treasury Bond**
Risk-Free Rate	4.01%	5.42%
Option-Implied Market Risk Premium (Weighted)	4.01%	2.61%

CAPITAL ASSET PRICING MODEL (CAPM) - INDICATED COST OF EQUITY

SPOT - All Inputs Based on Last Available Data as of September 30, 2026

RFC Proxy Group

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	4.20%	4.20%	5.64%	5.64%
Beta	0.27	0.63	0.27	0.63
Risk Premium	3.76%	3.76%	2.32%	2.32%
CAPM (Spot)	5.23%	6.58%	6.27%	7.11%

CAPITAL ASSET PRICING MODEL (CAPM) - MARKET RISK PREMIUM

SPOT - All Inputs Based on Last Available Data as of September 30, 2026

Cumulative Probability	50.00%	
S&P 500 Option-Implied Growth Rate	6.90%	
S&P 500 Dividend Yield	1.06%	
S&P 500 Market Return	7.96%	
	3-Month Treasury Bill	**30-Year Treasury Bond**
Risk-Free Rate	4.20%	5.64%
Option-Implied Market Risk Premium (Spot)	3.76%	2.32%

MARKET TO BOOK RATIO AND DIVIDEND YIELD
RFC Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
		Book Value per Share															
		Actual				Estimated			Market Price			Mkt. to Book Ratio		Dividend Rate		Dividend Yield	
		12/31/22	12/31/23	12/31/24	12/31/25	9/30/25	9/30/26	12/31/26	9/30/26	LTM High	LTM Low	9/30/26	LTM Avg.	MRQ	Annual	9/30/26	LTM Avg.
		[A]	[A]	[A]	[A]	[B]	[B]	[A]	[C]	[C]	[C]	[D]	[D]	[A]	[E]	[F]	[F]
ALLIANT ENERGY	LNT	$24.99	$26.46	$27.29	$28.56	$28.24	$29.42	$29.70	$63.30	$78.81	$62.70	2.15	2.45	$0.535	$2.140	3.38%	3.02%
AMEREN	AEE	$40.11	$42.62	$44.88	$48.48	$47.58	$48.50	$48.50	$99.38	$118.32	$96.57	2.05	2.24	$0.750	$3.000	3.02%	2.79%
AMERICAN ELEC. PWR.	AEP	$46.50	$48.06	$50.63	$57.57	$55.84	$55.68	$55.05	$118.64	$140.58	$109.67	2.13	2.24	$0.950	$3.800	3.20%	3.04%
AVISTA CORP.	AVA	$31.15	$31.83	$32.37	$32.96	$32.81	$33.93	$34.25	$35.09	$43.50	$34.50	1.03	1.17	$0.493	$1.970	5.61%	5.05%
DUKE ENERGY	DUK	$61.51	$61.15	$63.34	$65.38	$64.87	$67.35	$68.00	$114.01	$134.49	$112.40	1.69	1.87	$1.085	$4.340	3.81%	3.52%
CON. EDISON	ED	$58.28	$61.25	$63.36	$66.99	$66.08	$69.55	$70.40	$102.21	$116.23	$94.96	1.47	1.56	$0.888	$3.550	3.47%	3.36%
EDISON INTERNAT'L	EIX	$35.70	$36.02	$36.18	$44.39	$42.34	$46.54	$47.25	$52.86	$81.62	$51.10	1.14	1.49	$0.878	$3.510	6.64%	5.29%
ENTERGY CORP.	ETR	$30.70	$34.35	$35.11	$37.41	$36.84	$39.62	$40.35	$99.26	$118.45	$90.87	2.51	2.74	$0.640	$2.560	2.58%	2.45%
EVERGY, INC.	EVRG	$41.32	$42.06	$43.29	$44.39	$44.12	$49.87	$51.70	$78.44	$88.62	$71.41	1.57	1.70	$0.695	$2.780	3.54%	3.47%
EXELON CORP.	EXC	$24.89	$25.78	$26.79	$28.15	$27.81	$29.05	$29.35	$40.40	$50.65	$39.73	1.39	1.59	$0.420	$1.680	4.16%	3.72%
FIRST ENERGY	FE	$17.77	$18.17	$21.60	$21.65	$21.64	$22.48	$22.75	$43.33	$52.34	$42.67	1.93	2.15	$0.465	$1.860	4.29%	3.92%
IDA CORP, INC.	IDA	$55.52	$57.44	$61.73	$65.11	$64.27	$68.22	$69.25	$130.73	$154.91	$124.12	1.92	2.11	$0.880	$3.520	2.69%	2.52%
OGE ENERGY CORP.	OGE	$22.05	$22.52	$23.09	$24.15	$23.89	$24.15	$24.15	$44.99	$50.59	$41.70	1.86	1.92	$0.425	$1.700	3.78%	3.68%
PINNACLE WEST	PNW	$53.45	$54.47	$56.71	$58.28	$57.89	$58.82	$59.00	$93.04	$111.16	$86.18	1.58	1.69	$0.910	$3.640	3.91%	3.69%
PPL CORPORATION	PPL	$18.89	$18.90	$19.07	$19.81	$19.63	$20.85	$21.20	$32.89	$40.11	$31.56	1.58	1.77	$0.285	$1.140	3.47%	3.18%
SOUTHERN COMPANY	SO	$27.93	$28.82	$29.85	$32.17	$31.59	$34.59	$35.40	$82.89	$100.84	$81.69	2.40	2.76	$0.760	$3.040	3.67%	3.33%
XCEL ENERGY	XEL	$30.34	$31.74	$33.99	$37.86	$36.89	$40.25	$41.05	$70.48	$84.23	$68.72	1.75	1.98	$0.593	$2.370	3.36%	3.10%
Maximum		$61.51	$61.25	$63.36	$66.99	$66.08	$69.55	$70.40	$130.73	$154.91	$124.12	2.51	2.76	$1.085	$4.340	6.64%	5.29%
Minimum		$17.77	$18.17	$19.07	$19.81	$19.63	$20.85	$21.20	$32.89	$40.11	$31.56	1.03	1.17	$0.285	$1.140	2.58%	2.45%
Median		$31.15	$34.35	$35.11	$37.86	$36.89	$40.25	$41.05	$78.44	$88.62	$71.41	1.75	1.92	$0.695	$2.780	3.54%	3.36%
Average		$36.54	$37.74	$39.37	$41.96	$41.31	$43.46	$43.96	$76.58	$92.09	$72.97	1.77	1.97	$0.685	$2.741	3.80%	3.48%

Sources:
[A] Value Line: Most current data available at time of schedule preparation.
[B] Straight-line interpolation of Actual and Estimated VL year-end values.
[C] EOD Data: Market Data as of September 30, 2026.
[D] Market Price divided by Book Value per Share.
[E] Most Recent Quarterly Dividend multiplied by 4.
[F] Dividend Rate divided by Market Price.

EARNINGS PER SHARE AND RETURN ON EQUITY
RFC Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
		Earnings per Share				**Return on Equity**			
		2022	**2023**	**2024**	**2025**	**2023**	**2024**	**2025**	**VL Future Exp.**
		[A]	[A]	[A]	[A]	[B]	[B]	[B]	[A]
ALLIANT ENERGY	LNT	$2.73	$2.78	$2.69	$3.14	10.81%	10.01%	11.24%	13.50%
AMEREN	AEE	$4.14	$4.38	$4.42	$5.03	10.59%	10.10%	10.78%	10.00%
AMERICAN ELEC. PWR.	AEP	$4.51	$5.25	$5.58	$5.96	11.10%	11.31%	11.02%	11.00%
AVISTA CORP.	AVA	$2.12	$2.24	$2.29	$2.55	7.11%	7.13%	7.81%	9.00%
DUKE ENERGY	DUK	$5.27	$5.56	$5.90	$6.31	9.07%	9.48%	9.80%	11.00%
CON. EDISON	ED	$4.55	$5.04	$5.38	$5.68	8.43%	8.63%	8.71%	9.00%
EDISON INTERNAT'L	EIX	$4.63	$4.76	$4.91	$6.53	13.27%	13.60%	16.21%	12.00%
ENTERGY CORP.	ETR	$2.69	$3.39	$3.66	$3.91	10.42%	10.54%	10.78%	13.00%
EVERGY, INC.	EVRG	$3.26	$3.17	$3.79	$3.83	7.60%	8.88%	8.74%	9.00%
EXELON CORP.	EXC	$2.27	$2.38	$2.45	$2.76	9.39%	9.32%	10.05%	11.50%
FIRST ENERGY	FE	$2.41	$2.56	$2.63	$2.54	14.25%	13.23%	11.75%	12.00%
IDA CORP, INC.	IDA	$5.11	$5.14	$5.50	$5.90	9.10%	9.23%	9.30%	9.50%
OGE ENERGY CORP.	OGE	$3.32	$2.07	$2.19	$2.32	9.29%	9.60%	9.82%	10.50%
PINNACLE WEST	PNW	$4.26	$4.41	$5.24	$5.05	8.17%	9.43%	8.78%	9.50%
PPL CORPORATION	PPL	$1.41	$1.60	$1.68	$1.81	8.47%	8.85%	9.31%	9.50%
SOUTHERN COMPANY	SO	$3.61	$3.64	$4.06	$4.30	12.83%	13.84%	13.87%	12.50%
XCEL ENERGY	XEL	$3.17	$3.35	$3.50	$3.80	10.79%	10.65%	10.58%	10.50%
Maximum		$5.27	$5.56	$5.90	$6.53	14.25%	13.84%	16.21%	13.50%
Minimum		$1.41	$1.60	$1.68	$1.81	7.11%	7.13%	7.81%	9.00%
Median		$3.32	$3.39	$3.79	$3.91	9.39%	9.60%	10.05%	10.50%
Average		$3.50	$3.63	$3.87	$4.20	10.04%	10.23%	10.50%	10.76%

Sources:
[A] Value Line: Most current data available at time of schedule preparation.
[B] Earnings per Share divded by average Book Value. Book Values shown on Exhibit ALR-5, page 1.

RETURN ON EQUITY IMPLIED BY ZACKS GROWTH RATES

RFC Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
						Analyst-Implied		Analyst-Implied			
		Book Value	EPS	Annual Dividend	Analyst 5 Year	Book Value before SV		Book Value Incl. SV		Implied EPS	Analyst-Implied
		12/31/25	2025	Rate	Growth Rate	12/31/2029	12/31/2030	12/31/2029	12/31/2030	2030	ROE
		[A]	[A]	[A]	[B]	[C]	[C]	[C]	[C]	[C]	[C]
ALLIANT ENERGY	LNT	$28.56	$3.14	$2.140	6.90%	$33.30	$34.70	$33.72	$35.24	$4.38	12.71%
AMEREN	AEE	$48.48	$5.03	$3.000	6.30%	$57.96	$60.72	$62.34	$66.51	$6.83	10.60%
AMERICAN ELEC. PWR.	AEP	$57.57	$5.96	$3.800	7.40%	$67.93	$71.02	$69.26	$72.76	$8.52	11.99%
AVISTA CORP.	AVA	$32.96	$2.55	$1.970	4.10%	$35.53	$36.24	$36.41	$37.37	$3.12	8.45%
DUKE ENERGY	DUK	$65.38	$6.31	$4.340	6.40%	$74.60	$77.29	$76.23	$79.40	$8.60	11.06%
CON. EDISON	ED	$66.99	$5.68	$3.550	4.70%	$76.56	$79.24	$79.93	$83.62	$7.15	8.74%
EDISON INTERNAT'L	EIX	$44.39	$6.53	$3.510	4.10%	$57.76	$61.45	$60.64	$65.31	$7.98	12.68%
ENTERGY CORP.	ETR	$37.41	$3.91	$2.560	10.20%	$44.33	$46.53	$50.35	$54.55	$6.35	12.11%
EVERGY, INC.	EVRG	$44.39	$3.83	$2.780	9.10%	$49.64	$51.26	$49.64	$51.26	$5.92	11.73%
EXELON CORP.	EXC	$28.15	$2.76	$1.680	6.40%	$33.21	$34.68	$33.21	$34.68	$3.76	11.09%
FIRST ENERGY	FE	$21.65	$2.54	$1.860	6.30%	$24.83	$25.75	$28.18	$30.16	$3.45	11.82%
IDA CORP, INC.	IDA	$65.11	$5.90	$3.520	9.10%	$77.00	$80.68	$78.34	$82.43	$9.12	11.35%
OGE ENERGY CORP.	OGE	$24.15	$2.32	$1.700	6.30%	$27.05	$27.89	$27.05	$27.89	$3.15	11.46%
PINNACLE WEST	PNW	$58.28	$5.05	$3.640	5.80%	$64.79	$66.66	$74.58	$79.49	$6.69	8.69%
PPL CORPORATION	PPL	$19.81	$1.81	$1.140	5.30%	$22.86	$23.73	$22.89	$23.76	$2.34	10.05%
SOUTHERN COMPANY	SO	$32.17	$4.30	$3.040	8.20%	$38.33	$40.20	$44.20	$48.04	$6.38	13.83%
XCEL ENERGY	XEL	$37.86	$3.80	$2.370	7.20%	$44.69	$46.71	$52.09	$56.58	$5.38	9.90%
Maximum		$66.99	$6.53	$4.340	10.20%	$77.00	$80.68	$79.93	$83.62	$9.12	13.83%
Minimum		$19.81	$1.81	$1.140	4.10%	$22.86	$23.73	$22.89	$23.76	$2.34	8.45%
Median		$37.86	$3.91	$2.780	6.40%	$44.69	$46.71	$50.35	$54.55	$6.35	11.35%
Average		$41.96	$4.20	$2.741	6.69%	$48.84	$50.87	$51.71	$54.65	$5.83	11.07%

Sources:
[A] Value Line: Most current data available at time of schedule preparation.
[B] Zacks: Data as of October 02, 2026.
[C] Analyst-Implied Book Value and Return on Equity is obtained by escalating both Dividends and Earnings per Share by the stated Analyst Growth Rate and adding Earnings and subtracting Dividends for each projected year.
"SV" = S X V, where S = rate of continuous new stock financing and V = rate of return on common equity investment.

CAPITAL STRUCTURE WITH SHORT TERM DEBT
RFC Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
		% Common Equity					($ millions)						Percentage			
		2021	2022	2023	2024	2025	Total Debt	LT Debt	ST Debt	Pfd Stock	Equity	Total Capital	LT Debt	ST Debt	Pfd Stock	Equity Ratio
		[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[B]	[B]	[B]	[B]
ALLIANT ENERGY	LNT	47.1%	45.0%	45.2%	44.7%	40.1%	$ 12,118.0	$ 10,636.0	$ 1,482.0	$ -	$ 7,120.3	$ 19,238.3	55.3%	7.7%	0.0%	37.0%
AMEREN	AEE	43.3%	43.4%	42.9%	41.2%	42.4%	$ 21,304.0	$ 19,003.0	$ 2,301.0	$ 129.0	$ 14,083.3	$ 35,516.3	53.5%	6.5%	0.4%	39.7%
AMERICAN ELEC. PWR.	AEP	41.7%	41.5%	40.2%	40.7%	41.0%	$ 51,109.0	$ 47,987.0	$ 3,122.0	$ -	$ 33,346.9	$ 84,455.9	56.8%	3.7%	0.0%	39.5%
AVISTA CORP.	AVA	52.5%	49.6%	48.8%	49.0%	49.1%	$ 3,191.0	$ 2,806.0	$ 385.0	$ -	$ 2,706.8	$ 5,897.8	47.6%	6.5%	0.0%	45.9%
DUKE ENERGY	DUK	43.1%	40.7%	38.8%	38.9%	38.6%	$ 90,245.0	$ 80,477.0	$ 9,768.0	$ 973.0	$ 51,204.7	$ 142,422.7	56.5%	6.9%	0.7%	36.0%
CON. EDISON	ED	47.0%	50.7%	49.1%	47.1%	48.6%	$ 26,673.0	$ 25,554.0	$ 1,119.0	$ -	$ 24,162.0	$ 50,835.0	50.3%	2.2%	0.0%	47.5%
EDISON INTERNAT'L	EIX	33.2%	30.6%	28.7%	27.1%	30.9%	$ 41,549.0	$ 37,311.0	$ 4,238.0	$ 2,177.0	$ 17,658.2	$ 61,384.2	60.8%	6.9%	3.5%	28.8%
ENTERGY CORP.	ETR	31.7%	35.2%	38.6%	36.0%	37.6%	$ 30.0	$ 27.0	$ 3.0	$ 219.4	$ 148.5	$ 397.9	6.8%	0.8%	55.1%	37.3%
EVERGY, INC.	EVRG	49.9%	48.9%	46.6%	45.7%	43.9%	$ 13.8	$ 12.3	$ 1.5	$ -	$ 9.6	$ 23.4	52.5%	6.4%	0.0%	41.1%
EXELON CORP.	EXC	49.1%	41.0%	39.1%	38.3%	37.6%	$ 50,850.0	$ 47,859.0	$ 2,991.0	$ -	$ 28,838.1	$ 79,688.1	60.1%	3.8%	0.0%	36.2%
FIRST ENERGY	FE	28.1%	32.4%	31.3%	35.6%	32.9%	$ 28,983.0	$ 27,102.0	$ 1,881.0	$ -	$ 13,288.5	$ 42,271.5	64.1%	4.4%	0.0%	31.4%
IDA CORP, INC.	IDA	57.2%	56.1%	51.2%	52.2%	50.2%	$ 3,641.8	$ 3,641.8	$ -	$ -	$ 3,671.1	$ 7,312.9	49.8%	0.0%	0.0%	50.2%
OGE ENERGY CORP.	OGE	47.4%	55.4%	51.0%	48.0%	48.1%	$ 5,843.2	$ 5,598.2	$ 245.0	$ -	$ 5,188.3	$ 11,031.5	50.7%	2.2%	0.0%	47.0%
PINNACLE WEST	PNW	46.1%	43.9%	45.0%	45.6%	43.4%	$ 10,996.0	$ 9,802.0	$ 1,194.0	$ -	$ 7,516.0	$ 18,512.0	52.9%	6.4%	0.0%	40.6%
PPL CORPORATION	PPL	56.3%	51.9%	48.8%	46.9%	45.3%	$ 20,238.0	$ 19,024.0	$ 1,214.0	$ -	$ 15,754.8	$ 35,992.8	52.9%	3.4%	0.0%	43.8%
SOUTHERN COMPANY	SO	35.6%	36.5%	37.6%	35.6%	36.0%	$ 74,522.0	$ 67,148.0	$ 7,374.0	$ 242.0	$ 37,906.9	$ 112,670.9	59.6%	6.5%	0.2%	33.6%
XCEL ENERGY	XEL	41.8%	42.2%	41.4%	41.6%	41.6%	$ 38,331.0	$ 35,850.0	$ 2,481.0	$ -	$ 25,537.0	$ 63,868.0	56.1%	3.9%	0.0%	40.0%
Maximum		57.2%	56.1%	51.2%	52.2%	50.2%	$ 90,245.0	$ 80,477.0	$ 9,768.0	$ 2,177.0	$ 51,204.7	$ 142,422.7	64.1%	7.7%	55.1%	50.2%
Minimum		28.1%	30.6%	28.7%	27.1%	30.9%	$ 13.8	$ 12.3	$ -	$ -	$ 9.6	$ 23.4	6.8%	0.0%	0.0%	28.8%
Median		46.1%	43.4%	42.9%	41.6%	41.6%	$ 21,304.0	$ 19,024.0	$ 1,482.0	$ -	$ 14,083.3	$ 35,992.8	53.5%	4.4%	0.0%	39.7%
Average		44.2%	43.8%	42.6%	42.0%	41.6%	$ 28,214.0	$ 25,872.8	$ 2,341.1	$ 220.0	$ 16,949.5	$ 45,383.5	52.1%	4.6%	3.5%	**39.7%**

Sources:

[A] Value Line: Most current data available at time of schedule preparation.

[B] Percentage calculated on Total Capital including Short Term Debt.

CAPITAL STRUCTURE WITHOUT SHORT TERM DEBT
RFC Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
		% Common Equity					($ millions)						Percentage			
		2021	2022	2023	2024	2025	Total Debt	LT Debt	ST Debt	Pfd Stock	Equity	Total Capital	LT Debt	ST Debt	Pfd Stock	Equity Ratio
		[A]	[A]	[A]	[A]	[A]	[A]	[A]	[B]	[A]	[A]	[A]	[B]	[B]	[B]	[B]
ALLIANT ENERGY	LNT	47.1%	45.0%	45.2%	44.7%	40.1%	$ 12,118.0	$ 10,636.0		$ -	$ 7,120.3	$ 17,756.3	59.9%	0.0%	0.0%	40.1%
AMEREN	AEE	43.3%	43.4%	42.9%	41.2%	42.4%	$ 21,304.0	$ 19,003.0		$ 129.0	$ 14,083.3	$ 33,215.3	57.2%	0.0%	0.4%	42.4%
AMERICAN ELEC. PWR.	AEP	41.7%	41.5%	40.2%	40.7%	41.0%	$ 51,109.0	$ 47,987.0		$ -	$ 33,346.9	$ 81,333.9	59.0%	0.0%	0.0%	41.0%
AVISTA CORP.	AVA	52.5%	49.6%	48.8%	49.0%	49.1%	$ 3,191.0	$ 2,806.0		$ -	$ 2,706.8	$ 5,512.8	50.9%	0.0%	0.0%	49.1%
DUKE ENERGY	DUK	43.1%	40.7%	38.8%	38.9%	38.6%	$ 90,245.0	$ 80,477.0		$ 973.0	$ 51,204.7	$ 132,654.7	60.7%	0.0%	0.7%	38.6%
CON. EDISON	ED	47.0%	50.7%	49.1%	47.1%	48.6%	$ 26,673.0	$ 25,554.0		$ -	$ 24,162.0	$ 49,716.0	51.4%	0.0%	0.0%	48.6%
EDISON INTERNAT'L	EIX	33.2%	30.6%	28.7%	27.1%	30.9%	$ 41,549.0	$ 37,311.0		$ 2,177.0	$ 17,658.2	$ 57,146.2	65.3%	0.0%	3.8%	30.9%
ENTERGY CORP.	ETR	31.7%	35.2%	38.6%	36.0%	37.6%	$ 30.0	$ 27.0		$ 219.4	$ 148.5	$ 394.9	6.8%	0.0%	55.6%	37.6%
EVERGY, INC.	EVRG	49.9%	48.9%	46.6%	45.7%	43.9%	$ 13.8	$ 12.3		$ -	$ 9.6	$ 21.9	56.1%	0.0%	0.0%	43.9%
EXELON CORP.	EXC	49.1%	41.0%	39.1%	38.3%	37.6%	$ 50,850.0	$ 47,859.0		$ -	$ 28,838.1	$ 76,697.1	62.4%	0.0%	0.0%	37.6%
FIRST ENERGY	FE	28.1%	32.4%	31.3%	35.6%	32.9%	$ 28,983.0	$ 27,102.0		$ -	$ 13,288.5	$ 40,390.5	67.1%	0.0%	0.0%	32.9%
IDA CORP, INC.	IDA	57.2%	56.1%	51.2%	52.2%	50.2%	$ 3,641.8	$ 3,641.8		$ -	$ 3,671.1	$ 7,312.9	49.8%	0.0%	0.0%	50.2%
OGE ENERGY CORP.	OGE	47.4%	55.4%	51.0%	48.0%	48.1%	$ 5,843.2	$ 5,598.2		$ -	$ 5,188.3	$ 10,786.5	51.9%	0.0%	0.0%	48.1%
PINNACLE WEST	PNW	46.1%	43.9%	45.0%	45.6%	43.4%	$ 10,996.0	$ 9,802.0		$ -	$ 7,516.0	$ 17,318.0	56.6%	0.0%	0.0%	43.4%
PPL CORPORATION	PPL	56.3%	51.9%	48.8%	46.9%	45.3%	$ 20,238.0	$ 19,024.0		$ -	$ 15,754.8	$ 34,778.8	54.7%	0.0%	0.0%	45.3%
SOUTHERN COMPANY	SO	35.6%	36.5%	37.6%	35.6%	36.0%	$ 74,522.0	$ 67,148.0		$ 242.0	$ 37,906.9	$ 105,296.9	63.8%	0.0%	0.2%	36.0%
XCEL ENERGY	XEL	41.8%	42.2%	41.4%	41.6%	41.6%	$ 38,331.0	$ 35,850.0		$ -	$ 25,537.0	$ 61,387.0	58.4%	0.0%	0.0%	41.6%
Maximum		57.2%	56.1%	51.2%	52.2%	50.2%	$ 90,245.0	$ 80,477.0		$ 2,177.0	$ 51,204.7	$ 132,654.7	67.1%	0.0%	55.6%	50.2%
Minimum		28.1%	30.6%	28.7%	27.1%	30.9%	$ 13.8	$ 12.3		$ -	$ 9.6	$ 21.9	6.8%	0.0%	0.0%	30.9%
Median		46.1%	43.4%	42.9%	41.6%	41.6%	$ 21,304.0	$ 19,024.0		$ -	$ 14,083.3	$ 34,778.8	57.2%	0.0%	0.0%	41.6%
Average		44.2%	43.8%	42.6%	42.0%	41.6%	$ 28,214.0	$ 25,872.8		$ 220.0	$ 16,949.5	$ 43,042.3	54.8%	0.0%	3.6%	**41.6%**

Sources:

[A] Value Line: Most current data available at time of schedule preparation.

[B] Percentage calculated on Total Capital excluding Short Term Debt.