COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF KENTUCKY-AMERICAN WATER COMPANY FOR AN ADJUSTMENT OF RATES, APPROVAL OF SYSTEM IMPROVEMENT PROGRAM, AND TARIFF CHANGES	**)** **)** **)** **)** **)**	**Case No. 2026-00094**

DIRECT TESTIMONY

AND EXHIBITS OF

AARON L. ROTHSCHILD

ON BEHALF OF THE

OFFICE OF THE ATTORNEY GENERAL OF THE COMMONWEALTH OF KENTUCKY

AND

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT

AND

GEORGETOWN MUNICIPAL WATER AND SEWER SERVICE

August 7, 2026

TABLE OF CONTENTS

PAGE

I. STATEMENT OF QUALIFICATIONS 1
II. INTRODUCTION 2
III. SUMMARY OF RECOMMENDATIONS 5
IV. REVENUE IMPACT ANALYSIS 15
V. COST OF EQUITY METHODOLOGY 17
VI. MARKET COST OF EQUITY (S&P 500 CONTEXT) 50
VII. CAPITAL STRUCTURE AND COST OF DEBT 55
VIII. EVALUATION OF KAWC'S RATE OF RETURN TESTIMONY 56
IX. KAWC'S PROPOSED SYSTEM IMPROVEMENT PROGRAM ("SIP") 76
X. CONCLUSION 82
APPENDIX A. RATE OF RETURN DEFINITIONS 84
APPENDIX B. CAPITAL ASSET PRICING MODEL 88
APPENDIX C. CAPM-IMPLIED COST OF EQUITY FOR BULKLEY PROXY GROUP OVER TIME SINCE ONSET OF COVID PANDEMIC 99
APPENDIX D. OPTION-IMPLIED GROWTH METHODOLOGY 100
APPENDIX E. MARKET-TO-BOOK RATIOS AND THE MARKET-BASED COE 102
APPENDIX F. RESUME OF AARON L. ROTHSCHILD 104
APPENDIX G. TESTIFYING EXPERIENCE OF AARON L. ROTHSCHILD 106

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 F for my resume.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION, OR OTHER STATE COMMISSIONS? IF SO, WHICH COMMISSIONS?

A. No, this is my first time testifying before the Kentucky Public Service Commission. My expert witness experience also includes testifying in over 100 cost of capital proceedings

before the following state commissions: California, Colorado, Connecticut, Delaware, District of Columbia, Florida, New Jersey, New York, Maryland, New Hampshire, North Dakota, Pennsylvania, Rhode Island, Tennessee, and Vermont. See Appendix G for the list of dockets for each of my testimonies.

Q. On whose behalf are you providing this testimony?

A. I am testifying on behalf of the Office of the Attorney General of the Commonwealth of Kentucky (KY AG), Lexington-Fayette Urban County Government ("LFUCG"), and Georgetown Municipal Water and Sewer Service ("GMWSS").

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 Kentucky-American Water Company (KAWC or Company) which includes the following three components:

1. Cost of Equity: The return investors require to provide equity capital to a utility with KAWC'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. HOW DO YOU DEFINE YOUR ROLE IN PROVIDING THIS ANALYSIS?

A. My role is to provide the Commission a position and recommendation based on an objective analysis of the Cost of Capital. While my primary recommendation focuses exclusively on the return investors require to fund a utility with KAWC's specific risk profile, my analysis also calculates the cost of equity for the overall market (market cost of equity. I provide this market cost of equity strictly as an economic benchmark and broader market context to ensure a principled and durable decision. My approach is grounded in the following framework:

- **The Commission as the Surrogate for Competition:** Because KAWC operates as a regulated monopoly, the natural price-disciplining pressures of a competitive market are absent. In this vacuum, the Commission 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 reflect its market cost, neither providing an unearned monopoly premium nor depriving the utility of the capital it needs to provide essential services.
- **Acknowledging the Weight of the Decision:** Former New York State Public Service Commission Chair Alfred Kahn reminds us in *The Economics of Regulation: Principles and Institutions* that the essence of regulation is the replacement of competition.[1] If the authorized return is disconnected from the actual cost of equity, the result is an involuntary subsidy from ratepayers to shareholders—an outcome that undermines the very purpose of regulation.

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

- **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. Small businesses, industrial customers, and commercial enterprises all rely on affordable, predictable water costs to compete and grow. Aligning KAWC's authorized ROE with its cost of equity helps businesses manage their costs, which strengthens the state's overall economy.

Q. ARE YOUR RECOMMENDATIONS CONSISTENT WITH LEGAL REQUIREMENTS?

A. 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"[2] and "sufficient to… support its credit and… raise the money necessary for the proper discharge of its public duties."[3] My recommendations fulfill the *Hope* and *Bluefield* requirements that a utility should be able to raise capital on reasonable terms.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. First, I provide a summary of my recommendations and an overview of cost of equity concepts. Second, I provide a revenue impact analysis. Third, I provide an explanation of the various models I used in my cost of equity calculations. Fourth, I provide a cost of

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

equity analysis for the overall market (market cost of equity) as context for the appropriate ROE for KAWC. Fifth, I provide my capital structure and cost of debt recommendation. Sixth, I provide an evaluation of KAWC's rate of return testimony. And finally, I provide my conclusion.

III. SUMMARY OF RECOMMENDATIONS

Q. PLEASE PROVIDE A SUMMARY OF YOUR RECOMMENDATIONS.

A. I recommend that the Commission reject Ms. Bulkley's recommended ROE of 10.75% because it significantly exceeds KAWC's actual cost of equity as indicated by current market data. Instead, I recommend that the Commission calculate KAWC's rates based on the following:

- An overall cost of capital of 6.50% (6.43% - 7.03% range);
- An ROE of 8.07% (7.95% - 9.11% range);
- A capital structure containing 51.17% common equity, 48.09% long-term debt, 0.45% short-term debt, and 0.28% preferred equity; and,
- A long-term debt cost rate of 4.84%.

A summary of my cost of capital recommendations for KAWC's water distribution operations is presented in Table 1 on page 6.

TABLE 1: ALR RECOMMENDED RANGE MIDPOINT - KENTUCKY-AMERICAN WATER COMPANY Case No. 2026-00094			
	Capital Structure Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	48.09%	4.84%	2.33%
Short-Term Debt	0.45%	3.32%	0.02%
Preferred Equity	0.28%	8.50%	0.02%
Common Equity	51.17%	8.07%	4.13%
Rate of Return			6.50%

Exhibit ALR-1

In addition, if the Commission approves KAWC's proposed System Improvement Program ("SIP"), I recommend that it apply to investments recovered through the SIP an ROE 10 basis points below the ROE authorized for base rates, consistent with the Commission's long-standing practice for riders with true-up mechanisms. Under my recommended ROE of 8.07%, the SIP ROE would be 7.97%. I further recommend that the Commission modify the pre-tax return component of the SIP tariff to reflect that reduction. These recommendations are discussed in Section IX.

Q. ARE YOU RECOMMENDING A SPECIFIC ROE OF 8.07% OR AN ROE RANGE OF 7.95% TO 9.11%?

A. I recommend both a range of recommended ROEs and a specific point within that range that I consider to be the most appropriate. It is not possible to measure KAWC's cost of equity with the precision of measuring temperature with a thermometer. However, my recommended ROE range extends from the 80th to the 90th percentile (7.95% to 9.11%), which I derive by applying that percentile band to the complete set of my model results, without excluding any result. This provides the Commission with a range of ROEs I feel confident will allow KAWC to raise the capital it needs to provide safe and reliable service.

I also recommend a specific ROE of 8.07%, which is at the 85th percentile of my overall cost of equity results.

Q. PLEASE SUMMARIZE HOW YOU DETERMINED YOUR 8.07% COST OF EQUITY RECOMMENDATION FOR KAWC.

A. To arrive at my recommendation, I applied the Constant Growth[4] and Non-Constant Growth versions of the Discounted Cash Flow (DCF) and eight variations of the CAPM methodologies[5] to a proxy group of regulated utility companies (the same group 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 KAWC's cost of equity because KAWC does not have publicly traded stock data. Additionally, using a proxy group provides more reliable results because it is less likely to be skewed by specific circumstances or anomalies faced by any individual company during the time when I take a snapshot of the cost of equity.

As shown in Table 2, 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 5.32% and 9.66%. Applying the 80th to 90th percentile band to that complete set

[4] 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.
[5] 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.

of results produces my recommended cost of equity range of 7.95% to 9.11%, with a recommendation of 8.07%, the 85th percentile of my results.[6]

TABLE 2: COST OF EQUITY MODEL RESULTS		
DCF	**Low**	**High**
Constant Growth - Sustainable Growth	9.59%	9.66%
Constant Growth - Option-Implied Growth	6.78%	7.30%
Non-Constant Growth	7.91%	7.99%
CAPM		
Spot (Jun. 30, 2026)		
Risk Free Rate - 3-Month T Bill	5.32%	6.74%
Risk Free Rate - 30-Yr T Bond	6.01%	7.09%
3-Mo. Weighted Average (Apr. to Jun. 2026)		
Risk Free Rate - 3-Month T Bill	5.61%	6.75%
Risk Free Rate - 30-Yr T Bond	6.35%	7.22%
Recommended Range	**7.95%**	**9.11%**
Midpoint of Range (Based on Percentiles)	**8.07%**	

Exhibit ALR-2

To ensure the robustness and real-world applicability of my findings, I validated these cost of equity 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.

[6] I apply my recommended percentile range, between the 80th and 90th percentile, to the complete set of cost of equity model results shown in Table 2; no result is removed from the dataset at any stage. All model results are shown in Exhibit ALR-2. As discussed later in my testimony, I select a percentile range consistent with the regulatory principle of gradualism, which allows for a measured transition toward observed market-based costs of equity while ensuring the Company's financial stability is maintained during that transition.

As shown in Table 3 below, major financial institutions, consulting firms, fund managers, and academics inform their clients to expect returns on the overall market (S&P 500) of 5.90% to 8.65%.

TABLE 3: U.S. EQUITY RETURN EXPECTATIONS AMONG MAJOR FINANCIAL INSTITUTIONS	
J.P. Morgan Asset Management - Equity Long-Term Returns (2026) [1]	**6.7%**
Charles Schwab - 10-year U.S. Large Cap Returns (Jan 2026) [2]	**5.9%**
Horizon Actuarial Services, LLC Survey - 20 Year Horizon (August 2025) [3]	
U.S. Equity - Large Cap (4.8-9.3%, 50% Percentile - 7.1%)	**7.1%**
U.S. Equity - Small / Mid Cap (4.8-10.0%, 50% Percentile - 7.3%)	**7.3%**
Aswath Damodaran (July 1, 2026) [4]	**8.65%**
Duff & Phelps / Kroll (April 2026) [5]	**8.5%**

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/ltcma-full-rep
[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 2024, page 19.
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 - Present,
https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates
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.

Market participants responsible for deploying hundreds of billions of dollars in capital provide a range of return expectations that firmly support my 8.07% ROE recommendation. Firms such as Charles Schwab (5.90%), J.P. Morgan (6.70%), and the Horizon Actuarial Survey (7.10% for large-cap) project equity returns well below 8.07%. While sources like Kroll (8.50%) and Aswath Damodaran (8.65%) report a higher cost of equity, these figures apply to the broader overall market—comprising highly competitive, non-regulated companies such as Apple, Tesla, and Johnson & Johnson. Because a regulated utility like KAWC carries significantly lower risk than the broader market, its required return is inherently lower. Taken together, this data provides a high degree of

confidence and confirms that an 8.07% ROE is sufficient for KAWC to attract equity capital.

Q. PLEASE EXPLAIN THE RATIONALE BEHIND YOUR RECOMMENDED COST OF EQUITY RANGE OF 7.95% TO 9.11%, AND YOUR SPECIFIC RECOMMENDATION OF 8.07%.

A. My recommended range of 7.95% to 9.11% extends from the 80th to the 90th percentile, and my of 8.07% is at the 85th percentile of my overall cost of equity results.

A strict mathematical approach would point to the absolute 50th percentile (the median) of my results, which in this case is 6.93%. While I conclude this lower figure accurately reflects current, observable market-based realities, I am mindful that currently authorized ROEs across the utility industry remain disconnected from these lower market costs.

Rather than recommending an immediate drop to the 6.93% median, I have applied the regulatory principle of gradualism. To bridge the gap between currently authorized returns and actual market realities, I have consciously focused on the upper-tail of my results. By establishing a range between the 80th and 90th percentiles, I provide a measured, transitionary ROE recommendation that protects ratepayers from artificially inflated rates while ensuring the Company's financial stability is maintained during this market correction.

Q. IS THIS THE SAME PERCENTILE RANGE YOU USE IN ALL OF YOUR TESTIMONIES?

A. No, it is not, because the percentile range I apply is based on the distribution of results produced by my models in each case, evaluated against the same gradualism principle discussed above. For example, in my recent testimony before the Washington Utilities and Transportation Commission (the Puget Sound Energy case), the model results produced a lower median than in this case; to maintain a recommendation consistent with that gradualism principle under that different data distribution, I applied a wider 70th to 90th percentile range, which captured a broader portion of the upper-end results consistent with that principle. In this case, the distribution of results supports a range between the 80th and 90th percentiles, consistent with the same gradualism principle.

Q. HOW DID YOU ARRIVE AT YOUR SPECIFIC RECOMMENDATION OF 8.07%?

A. To arrive at my specific recommendation of 8.07%, I use the 85th percentile of my overall cost of equity results, the results of which come from multiple models. These results do not depend on selecting any one model or result over another. Selecting the 85th percentile (8.07%) reflects a position within the range that is consistent with the Commission's preference for gradual rate adjustments.

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, her Constant Growth DCF model relies on Value Line's projected earnings per share (EPS) growth rates for the S&P 500 to derive an expected market return, which she calculates at 12.99%.[7]

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 their long-term growth projections are nonetheless structurally inflated. A comprehensive study published in the *Journal of Banking & Finance* found that Value Line's three-to-five-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."[8]

My goal is to ensure that the cost of equity estimates provided to the Commission are empirically sound and reflective of objective economic reality. The aforementioned study found that Value Line's three-to-five-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."[9] By

[7] Ms. Bulkley's Direct Testimony at 33:14-18.
[8] Andrew C. Szakmary, C. Mitchell Conover, & Carol Lancaster, An examination of Value Line's long-term projections, *Journal of Banking & Finance* 820–833 (May 2008).
[9] *Id.* at 833.

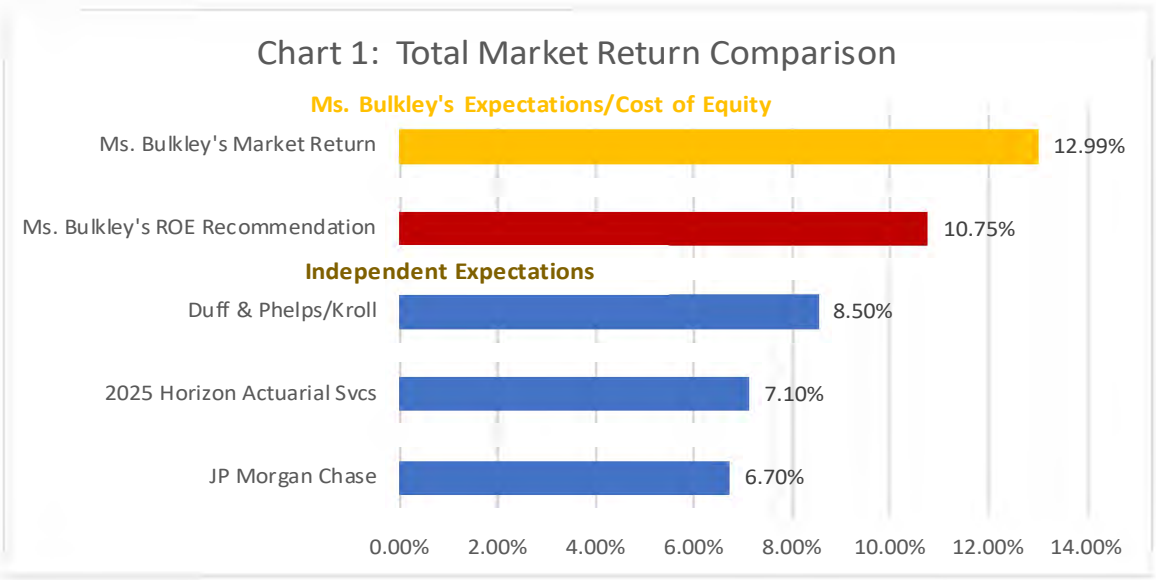
utilizing these specific projected growth rates, Ms. Bulkley's analysis structurally overstates the expected market return.

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 8.22% to 8.72%, 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 below, Ms. Bulkley's singular reliance on Value Line's EPS growth rates suggests a market return of 12.99%, while broader perspectives and benchmarks from J.P. Morgan[10] (6.70%) and Horizon Actuarial Services[11] (7.10%) point to a reality that is nearly half of what Ms. Bulkley proposes.

[10] 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.

[11] 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 2025 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.



Q. IN ITS MOST RECENT ORDER ADDRESSING KAWC'S RETURN ON EQUITY, DID THE COMMISSION ADDRESS THE USE OF NATURAL GAS UTILITIES IN A PROXY GROUP FOR A WATER UTILITY?

A. Yes. In KAWC's last rate case, the Commission stated its preference that future ROE analyses for investor-owned water utilities employ *both* a water-only proxy group and a combination gas and water proxy group, and that both be given appropriate weight.[12] The Commission also reaffirmed that gas and electric utilities absorb considerably more financial, environmental, and regulatory risk than a water utility, and that arguments treating those utilities as comparable in risk to KAWC are flawed.[13] I have therefore presented results for both proxy groups.

[12] Case No. 2025-00122, *Electronic Application of Kentucky-American Water Company for an Adjustment of Rates* at 65.
[13] *Id.* at 64–65.

Q. WHAT DID THE WATER-ONLY PROXY GROUP ANALYSIS SHOW?

A. Applying the same 80th to 90th percentile range used in my primary analysis, the water-only proxy group produces a range of 7.80% to 8.51%, with an 85th percentile of 7.99%, only 8 basis points below my 8.07% recommendation.[14] The more notable difference is at the high end, which narrows from 9.11% for the combination proxy group to 8.51% for the water-only group. That result is consistent with the Commission's own observation that using gas utilities in the proxy group, "may skew the results of the analysis upwards."[15]

I recognize the Commission also observed that a water-only group's small size presents its own limitations.[16] The Commission stated in the 2025 rate case that, "[t]he Commission appreciates the Attorney General/LFUCG's inclusion of both a water and combination utility proxy group in its analysis, the results of which present the Commission with a comparable view of the nuances with each scenario."[17] That is precisely why I present both proxy groups, as the Commission directed, rather than substituting one for the other.

IV. REVENUE IMPACT ANALYSIS

Q. PLEASE COMPARE KAWC'S REVENUE REQUIREMENT IF THE COMMISSION ADOPTS YOUR RECOMMENDATIONS INSTEAD OF MS. BULKLEY'S RECOMMENDATIONS.

A. Based on the $735.66 million rate base requested by KAWC in its initial filing, the difference in the revenue requirement is substantial. If my 8.07% cost of equity and capital

[14] Exhibit ALR-7
[15] Case No. 2025-00122 at 65.
[16] *Id.* at 64–65.
[17] *Id*. at 65.

structure recommendations are adopted, the rate of return portion of the revenue requirement would be approximately $58.0 million.

Conversely, if Ms. Bulkley's 10.75% cost of equity and capital structure recommendations are used, the rate of return portion of the annual revenue requirement would rise to $72.2 million. This represents an annual overcharge to consumers of $14.2 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 8.07% cost of equity were applied to Ms. Bulkley's proposed capital structure, it would result in a $0.3 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 Commission 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 - KENTUCKY-AMERICAN WATER COMPANY
($ million)

	Rate of Return Portion of Revenue Requirement	Difference versus Rothschild Recommendation
Rothschild ROE & Cap Structure	$58.0	
Rothschild ROE with Bulkley Cap Structure	$58.2	$0.3
Bulkley ROE & Cap Structure	$72.2	$14.2

Source/Inputs:

Requested Rate Base [1]	$735.7
Federal income tax rate	21.00%
State income tax rate	5.00%
Uncollectable Expense	0.00%

[1] Mr. Watkins' Direct Testimony, Page 20, Figure 2.

V. COST OF EQUITY METHODOLOGY

A. Overview

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

A. The cost of capital is the return investors require to provide capital to KAWC 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 KAWC's market-based cost of equity when it needs to raise equity capital.

My cost of equity recommendation reflects the return investors require to provide equity capital to KAWC 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"[18] and "sufficient to… support its credit and… raise the money necessary for the proper discharge of its public duties."[19]

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 KAWC.

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[18] *Hope Nat. Gas*, 320 U.S. at 603.
[19] *Bluefield Water Works*, 262 U.S. at 692–93.

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 cost of equity based on current market prices (market-based) is superior to a cost of equity based on historical data in two respects:

1. The cost of equity that KAWC has to pay investors is based on capital markets. The current state of inflation and interest rates are not a secret and therefore market-based cost of equity 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."[20]

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. HAVE YOUR OVERALL METHODOLOGIES BEEN RECOGNIZED BY OTHER COMMISSIONS?

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

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[20] PBS News Hour, *America should stand for more than just wealth, says Warren Buffett*, Part 1 (June 26, 2017), www.pbs.org/newshour/show/pbs-newshour-full-episode-june-26-2017.

> 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.[21]

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).[22]

Q. HOW DID YOU ARRIVE AT YOUR COST OF EQUITY RECOMMENDATION?

A. To arrive at my recommendation, I applied the DCF model, including two Constant Growth and one Non-Constant Growth methods, and eight variations of the CAPM analysis to a group of similar companies (Bulkley Proxy Group) using data available through June 30, 2026, as discussed below. In all of my models, I use both historical averages and the most recently available spot data for the inputs wherever 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 cost of equity results that can vary over

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[21] S. Carolina Pub. Serv. Comm'n, *In Re the Application of Blue Granite Water Company for Approval to Adjust Rate Schedules and Increase Rates*, Order Ruling on Application for Adjustment in Rates, Docket No. 2019-290-WS, Order No. 2020-306, at 43 (Apr. 9, 2020), https://dms.psc.sc.gov/Attachments/Order/6bc32f94-f706-4d01-bd64-7be95ae75612.

[22] CPUC, *Decision Determining the Cost of Capital for Ratemaking Purposes for California's Independent Small Telephone Companies*, Application 22-09-003, at 22 (Sept. 16, 2024), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M540/K719/540719032.PDF.

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 is expected to continue to fluctuate, such as stock prices, dividend yields, betas,[23] 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 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.

[23] 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.

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 KAWC'S COST OF EQUITY?

My comparable proxy group, shown on Table 5 and referred to as the Bulkley Proxy Group, consists of the following 11 publicly traded water and natural gas covered by Value Line. Ms. Bulkley's proxy group contains the same 11 companies. As discussed earlier in my testimony, I also calculated KAWC's cost of equity using a water-only proxy group, in response to the Commission's concern about including gas utilities in a proxy group for a water utility.

TABLE 5: BULKLEY PROXY GROUP COMPOSITION

	Company Name	Ticker
1	AMER. STATES WATER	AWR
2	CALIFORNIA WATER	CWT
3	MIDDLESEX WATER	MSEX
4	ATMOS ENERGY CORP.	ATO
5	CHESAPEAKE UTIL.	CPK
6	NI SOURCE INC.	NI
7	N.W. NATURAL	NWN
8	ONE GAS, INC.	OGS
9	SPIRE INC.	SR
10	SOUTHWEST GAS	SWX
11	H2O AMERICA	HTO

I chose this proxy group because I believe it contains companies that are relatively comparable in risk to KAWC. However, model results based on this proxy group should be viewed as a conservative estimate of KAWC's cost of equity because these companies have some unregulated natural gas operations which are riskier than water distribution.

In a regulated environment, KAWC 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 cost of equity is likely higher than KAWC's cost of equity.

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 9.59% and 9.66% when using a sustainable growth rate, and between 6.78% and 7.30% when using an option-implied growth rate.[24] The results of my non-constant growth DCF method indicate a cost of equity of between 7.91% and 7.99% for the Bulkley Proxy Group.[25]

[24] Aaron L. Rothschild, Exh. ALR-3 at 1 (Discounted Cash Flow).
[25] Exhibit ALR-3, page 3–4.

Q. WHAT IS THE DISCOUNTED CASH FLOW METHOD?

A. The DCF method is an approach to determine the cost of equity. 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 the 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.

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 cost of equity 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:[26]

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= b x r + s x v;
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:

k=D/P + (b x r + s x v)

The cost of equity 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.

[26] Myron J. Gordon, *Cost of Capital to a Public Utility*, at 32–33 (MSU Pub. Util. Studies 1974).

The basic difference between the use of an analyst's earnings per share growth rate in the constant growth DCF formula and using the "b x r" (b (the earnings retention rate) times 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.[27]

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 + (b x r + s x v)" 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.

[27] Eugene F. Brigham & Michael C. Ehrhardt, *Financial Management: Theory & Practice* (15th Ed. 2017) (discussing the constant growth model and the mathematical relationship between the retention ratio and return on equity to determine sustainable growth).

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 is to annualize the current quarterly dividend and increase that amount by one-half of the expected annual growth 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.[28]

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

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. This computation incorporated these other inputs as well, including the earned return on equity consistent with analysts' consensus earnings growth rate expectations and actual earned returns on equity, as detailed in Rothschild, Exhibit ALR-3.[29] For a stable industry such as utility companies, investors will typically look at actual earned returns on equity

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[28] 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^{0.25} - 1 = 0.00985, or 0.985% 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.

[29] Rothschild, Exh. ALR-3 at 1 (Discounted Cash Flow).

as one meaningful input into what can be expected for future earned returns on book equity.[30]

Since the stock prices for the comparative companies are currently 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. Much like a rental property whose market value doubles, causing the percentage return on that new market price to drop even if the rent and original book value remain constant, an increasing utility stock price mathematically drives down the expected return on the market price relative to the expected return on book equity. This return on book equity expectation used in the DCF method to compute growth must *not* be confused with the cost of equity. If the market price is low relative to book value, the cost of equity 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 cost of equity.

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 from 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 Rothschild, Exhibit ALR-10, 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 is issued at a premium to book value. The results of that computation are shown on line 4 of Rothschild, Exhibit ALR-3, page 1.

[30] *Id.*

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 (June 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 June 30, 2026 is 9.59%. As shown in Rothschild, Exhibit ALR-3, page 1, the DCF result based on the stock price as of June 30, 2026 is 9.66%. Rothschild, Exhibit ALR-3, page 1, shows more of the specifics of how I implemented the constant growth form of the DCF model for the Bulkley 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 Rothschild, 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 Bulkley Proxy Group between 2026 and 2029-31 is 9.77%. The same footnote also shows that the future expected return on equity derived from the Zacks[31] consensus forecast is 9.38%, and that the actual returns on equity earned by the Bulkley Proxy Group on average were 8.35% in 2023, 9.04% in 2024, and 8.89% in 2025. Based on the combination of the forecasted return on equity

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

derived from the Zacks consensus, the recent historical actual earned returns, and Value Line's forecast, I made the DCF growth computation using a 9.30%[32] value of "r".

Q. WHAT COST OF EQUITY 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 cost of equity range of between 9.59% and 9.66% for the Bulkley Proxy Group.[33] 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 cost of equity 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 (five years) will remain indefinitely.

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[32] I used 9.30% in consideration of historical returns, Zacks's projections, and Value Line projected returns for the Bulkley Proxy Group.

[33] Rothschild, Exh. ALR-3 at 1 (Discounted Cash Flow).

Non-Constant Growth Form of the DCF Model

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 Rothschild, 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).[34] This multi-stage DCF model produced an average indicated cost of equity of 7.91% based on the year-end stock price, and 7.99% based on average prices for the year ending June 30, 2026 for the Bulkley Proxy Group as shown on Rothschild, 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 7.91% and 7.99%.[35]

D. Capital Asset Pricing Model

Q. PLEASE DESCRIBE THE CAPM.

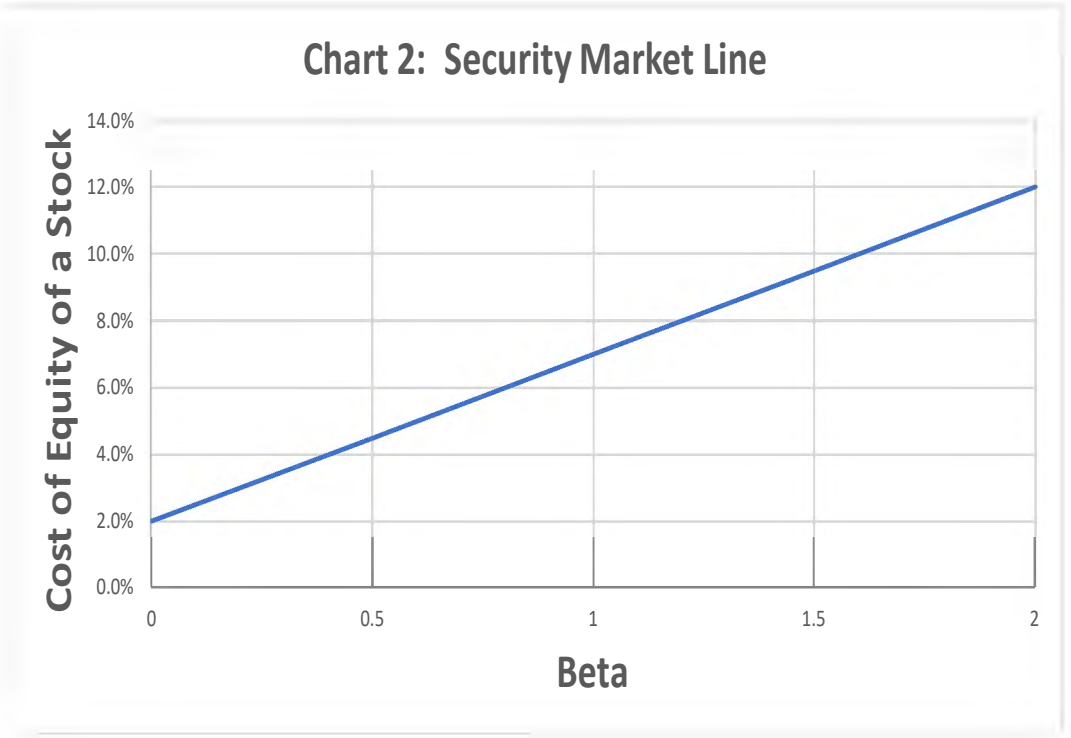
A. CAPM stands for "Capital Asset Pricing Model." The CAPM relates return to risk; specifically, it relates the expected return on an investment in a security to the risk of investing in that security. The riskier the investment, the greater the expected return (i.e., the cost of equity) investors require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

[34] 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.
[35] Rothschild, Exh. ALR-3 at 3–4 (Discounted Cash Flow).

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 greater than one tends to be more volatile than the market. For example, a stock with a beta of 1.5 will, on average, be 50% more volatile than the market. If the market rises by 1%, the price of a stock with a beta of 1.5 is expected to rise by 1.5%, and if the market falls by 1%, the stock price is expected to decrease by 1.5%. The price of a stock with a beta less than one 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 with 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, 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 49 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."[36] 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 June 30, 2026 and weighted averages over the 3 months ending on that date for these two yields.

As outlined in Rothschild, Exhibit ALR-4, page 2, my spot and weighted average short-term risk-free rates are 3.87% and 3.76%, respectively. My spot and weighted average long-term risk-free rates are 4.91% and 4.95%, 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 is their 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-

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

TERM INTEREST RATE (E.G., YIELD ON 30-YEAR TREASURY BOND) AND/OR BASED ON INTEREST RATE FORECASTS INSTEAD OF MARKET YIELDS.

A. As discussed in my testimony, a CAPM analysis that uses a risk-free rate based only on long-term interest rates may overstate the cost of equity 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 six-month, two-year, and five-year periods.

Most published betas are based exclusively on historical return data. For example, *Value Line* publishes a five-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[37] 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.

The market prices of put options and call options provide information regarding the probability distribution of future stock prices expected by investors. Using established techniques—specifically, applying the exact calculation methodologies the Chicago Board of Options Exchange (CBOE) uses for its VIX and SKEW indices, combined with peer-reviewed formulas for option-implied beta—I am able to use price data for the stock options of the Bulkley Proxy Group companies and the S&P 500 Index to determine investors' return expectations, including the relationship (covariance) between the return

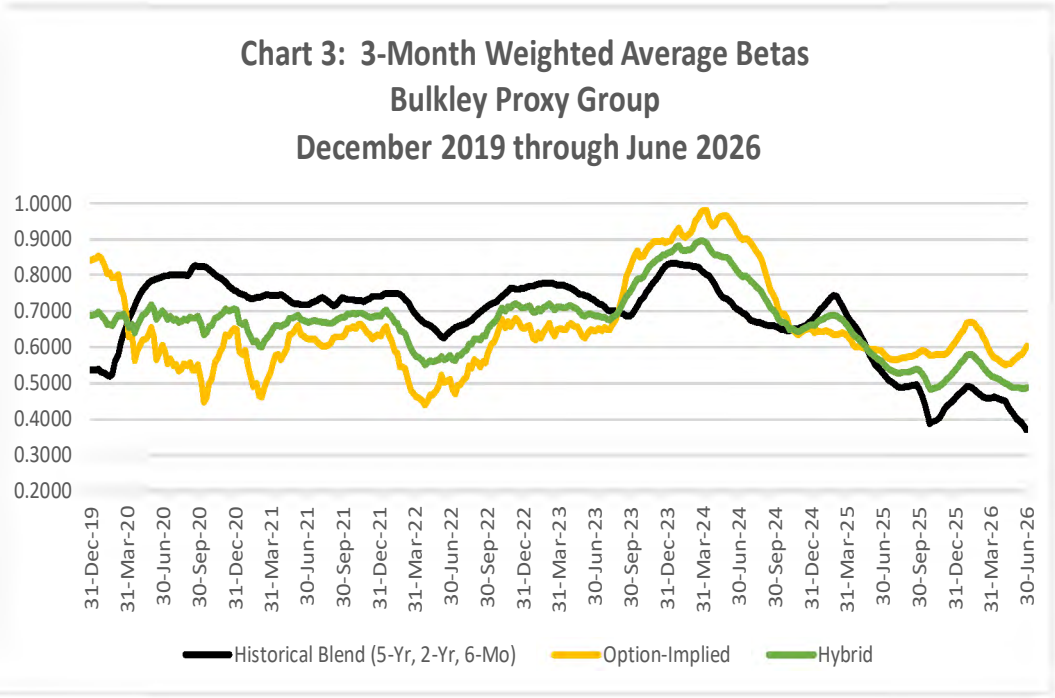
[37] $8,163 profit from exercising call option ($31,798 from selling at $317.98 market price - $23,000 cost to purchase at $230) - $635 ($6.35 X 100) option purchase price. Note: Each call option is the right to purchase 100 shares.

expectations for individual Bulkley Proxy Group companies and those for the overall market (S&P 500). This covariance between the expected returns for the Bulkley Proxy Group and for the S&P 500 indicates what investors expect betas will be in the future. I refer to betas based on option price calculations as "option-implied betas."

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.[38] Because the cost of equity is fundamentally a forward-looking, market-based concept, incorporating these option-implied expectations yields CAPM results that are much closer to KAWC's true market-based cost of equity. Consequently, it ensures that any ROE recommendation based on this method accurately reflects the real-time requirements of the broader market rather than relying solely on backward-looking data.

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



As shown in Figure 3 above, stock option prices indicate that investors likely expect lower betas for the Bulkley Proxy Group in the future.

Rothschild, Exhibit ALR-4, page 3 contains the last three months of data used in creating Figure 3 above, 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 SIX MONTHS, TWO YEARS, AND FIVE YEARS FOR YOUR HISTORICAL BETA CALCULATIONS, AS OPPOSED TO RELYING EXCLUSIVELY ON THE FIVE-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 the Bulkley Proxy Group and those of the S&P 500 Index has changed in the last two years or six months. Using a five-year period exclusively tends to make recent changes in the correlation more difficult to identify because of the weight of five years of data.

Q. WOULD YOU AGREE THAT CHANGES IN MARKET DYNAMICS WILL HAVE A LARGER EFFECT ON SIX-MONTH HISTORICAL BETAS THAN THEY WILL ON TWO-YEAR OR FIVE-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 SIX-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 five 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 six 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* six-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 six-month, two-year, and five-year historical betas.

Q. DO YOU THINK IT IS A GOOD IDEA TO RELY ON SIX-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 six-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 SIX-MONTH HISTORICAL BETAS, CAN THEY STILL BE CONSIDERED STATISTICALLY SIGNIFICANT? HOW MANY DATA POINT PAIRS ARE USED IN THE CALCULATION OF YOUR SIX-MONTH HISTORICAL BETA COEFFICIENTS?

A. A six-month historical beta based on weekly returns, calculated weekly, incorporates 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 by 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 six-month historical betas, instead of relying on 25 return pairs, my 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[39] and skewness[40] following exactly the same methodology used by the Chicago Board of Options Exchange (CBOE)

[39] Michael Mollet & John White, *Cboe Interest Rate Swap Volatility Index (SRVIX) White Paper*, CBOE Applied Academics (2018), 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 three years.
[40] *The CBOE SKEW Index White Paper*, CBOE (2010), 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 three years.

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 of all eligible options." Finally, I calculate the option implied betas using the following formula developed by Christoffersen, Chang, Jacobs and Vainberg (2011):[41]

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[41] Bo-Young Chang, Peter Christoffersen, Kris Jacobs & Gregory Vainberg, *Option-Implied Measures of Equity Risk*, *Review of Finance,* at 385–428 (Vol. 16, Iss. 2, April 2012), 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 SIX-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,"[42] 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 two or three years into the future. As evidenced by the exhaustive option data in my workpapers, the maximum expiration period for the options of the companies in the Bulkley Proxy Group is approximately eight months. None of the 11 companies ever trade options with expiration periods of more than eight months. New options are issued roughly every three

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

months for all of these companies, so the maximum expiration period on any given trading day is somewhere between five and eight months. For consistency across companies in the Bulkley Proxy Group and across dates within the three-month period on which my analysis is focused (April through June 2026), I chose to use six 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 six months, I use the maximum expiration period as an approximation for the target six-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 six-month horizon, it does not mean that a six-month option-implied beta is of no relevance or cannot be used. That would be tantamount to saying you cannot use a one-year Value Line Earnings Per Share estimate, or that the minimum relevant forecast is two or three years. In fact, for purposes of option-implied betas, it would be difficult to say if a time horizon of one year, for instance, is necessarily always better than a time horizon of six months. An option-implied forward-looking beta, even with a time horizon of less than six 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 six-month option-implied betas in a cost of capital calculation looking years into the future is that the authors of the paper[43] on which I based my option-implied betas concluded that their predictive powers are not limited to six months into the future. In fact, they conclude that six-month option-implied

[43] *Id.*

betas have stronger predictive power than six-month, one-year, or five-year historical betas when attempting to forecast betas one or two 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 may not reflect current investor expectations. For instance, extensive research by McKinsey & Company has demonstrated that equity analysts have been persistently overoptimistic for decades and are typically slow to revise their forecasts to reflect new economic conditions. In contrast, actual capital markets representing the true expectations of investors with capital at risk, are "notably less giddy in their predictions" than the analysts forecasting their growth.[44] 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

[44] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity analysts: Still too bullish*, McKinsey & Co. (Apr. 1, 2010), https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/equity-analysts-still-too-bullish.

skewness,[45] as described in detail in the Beta section on page 42. 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 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 Rothschild, Exhibit ALR-4, pages 4 – 6. In line with my Spot and Weighted Average CAPM approaches, I use both spot values as of June 30, 2026 and weighted averages over the three 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 four 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 4.95% and 3.76%, respectively. The market risk premia I use in my Spot CAPM analysis with short- and long-term risk-free rates are 4.35% and 3.31%, respectively.

[45] As used in the calculation of their widely-used VIX (or Volatility Index) and SKEW Index, 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. Briefly, skewness measures the asymmetry of the market's return expectations, specifically indicating whether investors perceive a greater probability of extreme downside losses compared to outsized gains. 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[46], 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 on page 49 show the results of my Weighted Average CAPM and Spot CAPM Analyses, respectively.

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

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

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	3.76%	3.76%	4.95%	4.95%
Beta	0.37	0.60	0.37	0.60
Risk Premium	4.95%	4.95%	3.76%	3.76%
CAPM	5.61%	6.75%	6.35%	7.22%

Source: Exhibit ALR-4, page 1

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

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	3.87%	3.87%	4.91%	4.91%
Beta	0.33	0.66	0.33	0.66
Risk Premium	4.35%	4.35%	3.31%	3.31%
CAPM	5.32%	6.74%	6.01%	7.09%

Source: Exhibit ALR-4, page 5

As shown in Rothschild, Exhibit ALR-12, the results of my CAPM analysis applied to the Bulkley 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 8.91% 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 early to mid-2025.

As detailed earlier in my testimony, my primary ROE recommendation of 8.07% for KAWC is derived directly from applying the DCF and CAPM methodologies to a proxy group of comparable regulated utility companies. Specifically, the Constant and Non-Constant Growth DCF models, alongside eight variations of the CAPM, produced an initial range of 5.32% to 9.66%. Applying my recommended percentile band to my cost of equity

model results produces a cost of equity band of 7.95% to 9.11%. While this proxy group analysis forms the basis for my 8.07% recommendation, the following section evaluates the cost of equity for the overall market. This broader market analysis is not used to calculate KAWC's specific rate, rather it provides essential economic context and serves as a benchmark for reasonableness, reinforcing the fundamental financial principle that a regulated monopoly like KAWC carries inherently lower risk, and therefore requires a lower return, than the competitive companies comprising the broader market.

VI. MARKET COST OF EQUITY (S&P 500 CONTEXT)

Q. HOW DOES YOUR COST OF EQUITY CALCULATION FOR THE OVERALL MARKET RELATE TO YOUR 8.07% ROE RECOMMENDATION?

A. My cost of equity for the overall market serves as context for the appropriate ROE for KAWC. To ensure a clear distinction throughout this section, I will refer to the cost of equity for the overall market (represented by the S&P 500) as the "market cost of equity." My 8.07% recommendation 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 cost of equity for the S&P 500 to be between 7.46% and 9.34%, with a midpoint of 8.40%. I provide this analysis to offer direct insight into what current capital markets are indicating regarding the cost of equity for the market as a whole. It is critical to emphasize that this market cost of equity should not be interpreted as the cost of equity applicable to KAWC or any utility company. Rather,

it establishes the essential economic context proving that my 8.07% utility-specific recommendation appropriately reflects KAWC's lower risk profile.

Q. HOW DID YOU CALCULATE MARKET COST OF EQUITY?

A. I calculated the cost of equity 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 cost of equity because their market prices reflect the probability distribution of future stock prices, allowing for the derivation of investors' expectations. Please see Rothschild, Exhibit ALR-14 for a discussion of how I calculated the option-implied growth rates.

Q. WHAT OPTION-IMPLIED GROWTH RATES DID YOU CALCULATE?

A. I calculated investors' growth expectations over three different investment time horizons—one year, three years, and five years—based on stock option prices. Because stock options are traded with various expiration dates, they allow us to analyze the term structure of the cost of equity. This concept recognizes that the return investors require can vary depending on the time horizon of the investment.

The resulting option-implied growth rates can be summarized as follows:

- 1-Year Horizon: 7.66% to 8.15%
- 3-Year Horizon: 7.71% to 7.72%
- 5-Year Horizon: 6.40% to 6.77%

To move from the "term structure" of growth to the term structure of the cost of equity, I added the dividend yield of the S&P 500, which was approximately 1.1% for the

three-month period upon which the analysis was based. This results in the cost of equity for the overall market.

Q. WHAT ARE THE RESULTS OF YOUR DCF COST OF EQUITY ANALYSIS?

A. The results of these DCF models applied to the S&P 500 range between 7.46% and 9.34%. 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 measured, and the date of analysis, which in this case comprises the market conditions averaged over the three-month period April through June 2026.

Q. PLEASE EXPLAIN HOW THE COST OF EQUITY RESULTS VARY ACROSS THESE DIMENSIONS.

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

The resulting option-implied cost of equity can be summarized as follows:

- 1-Year Horizon: 8.72% to 9.34%
- 3-Year Horizon: 8.78% to 8.90%
- 5-Year Horizon: 7.46% to 7.96%

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 COST OF EQUITY BEYOND THE FIVE-YEAR TIME FRAME?

A. It is not possible to calculate an option-implied cost of equity beyond the five-year horizon because a consistent market for such options does not exist. Publicly traded index options

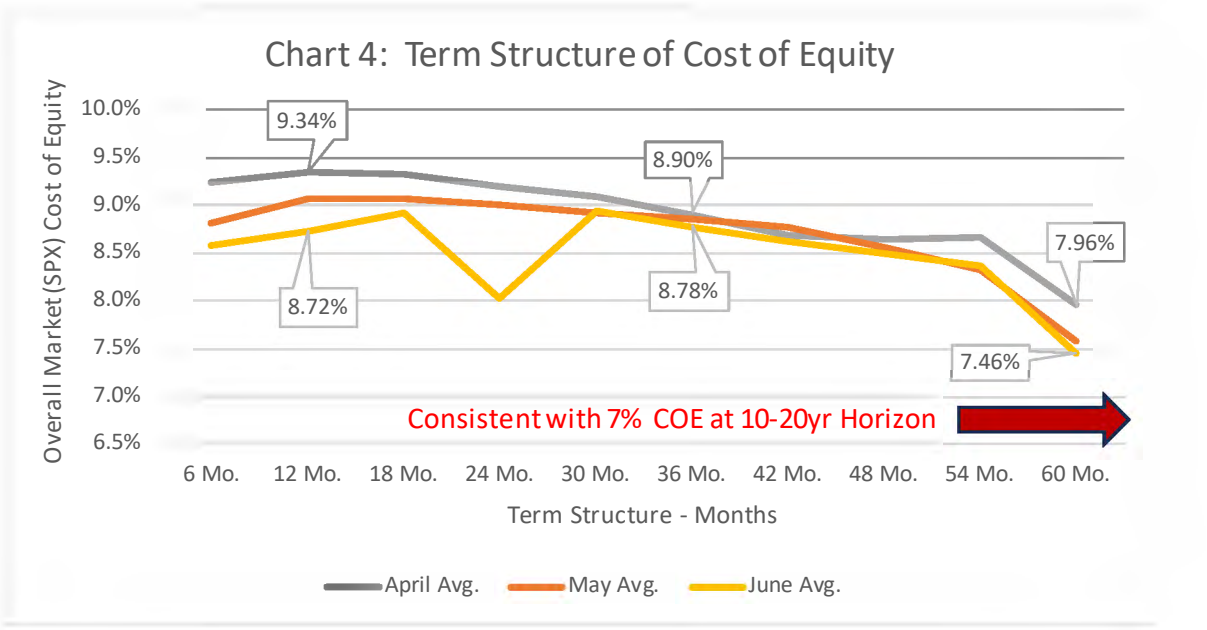
occasionally trade out to six years for a brief period, but are only available consistently out to about five years.

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 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 Figure 4 below, as the timeline is extended out to five years, the cost of equity indicated by my stock option analysis is consistent with the longer-term forecasts of major financial institutions. Specifically, even the highest cost of equity results in Chart 4 decline from 8.72% to 9.34% at the one-year horizon to 7.46% to 7.96% at the five-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 9. 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.



While this market-wide cost of equity analysis does not serve as my specific ROE recommendation for KAWC, it provides essential context for the broader financial landscape. The fundamental premise of utility regulation is that a monopoly provider—insulated by captive customers and ratepayer-funded cost-recovery mechanisms—is inherently less risky than the competitive, diversified companies that make up the S&P 500. Therefore, the cost of equity for a regulated utility like KAWC must necessarily fall below the return required by the broader market. Figure 4 above demonstrates that near-term market expectations for the S&P 500 center around a midpoint of 8.40%, stretching up to as high as 9.34%, before trending toward 7% over longer horizons. My primary recommendation of 8.07% properly reflects KAWC's reduced risk profile by falling firmly below this market benchmark. Conversely, a request of 10.75% defies this foundational financial principle by demanding a return far above what investors require for the riskier, competitive market.

VII. CAPITAL STRUCTURE AND COST OF DEBT

Q. IS KAWC'S REQUESTED CAPITAL STRUCTURE OF 52.29% COMMON EQUITY AND 46.97% DEBT APPROPRIATE?

A. No. KAWC's requested capital structure is not appropriate for setting rates in this proceeding since it has a significantly higher common equity ratio (52.29%) than the consolidated capital structure used at the holding company level for American Water Works Company, Inc. (46.0%).[47]

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

A. A capital structure containing 51.17% common equity, 48.09% long-term debt, 0.45% short-term debt, and 0.28% preferred equity. This recommendation is conservative and arguably on the high end of what can be justified based on the common equity ratios (46.0%) at the holding company level. Absent evidence from KAWC supporting a specific need for an atypically expensive capital structure, utilizing a ratio that aligns more closely with market benchmarks is consistent with setting rates that balance the needs of the utility and its investors with those of the ratepayers.

Authorizing a regulatory capital structure for KAWC with a common equity ratio higher than American Water Works Company, Inc without justification is not reasonable because it will result in excessive rates. A regulated utility company is obligated to use capital that results in the lowest possible cost of capital, and KAWC's requested structure does not fulfill this obligation.

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[47] American Water Works Company, Inc. Value Line Company Report, April 3, 2026.

Q. WHAT COST OF DEBT DO YOU RECOMMEND?

A. I recommend KAWC adopt a cost of debt of 4.84%.

VIII. EVALUATION OF KAWC'S RATE OF RETURN TESTIMONY

Q. PLEASE SUMMARIZE THE TESTIMONY OF MS. BULKLEY.

A. Ms. Bulkley supports an authorized ROE of 10.75% for KAWC based on a recommended range of 10.25% to 11.25%, and supports KAWC's proposed capital structure containing 52.29% common equity.[48]

Ms. Bulkley arrived at her 10.75% recommendation based on the results of her:

- Constant Growth Discounted Cash Flow (DCF) Model,
- Capital Asset Pricing Model (CAPM), and
- Empirical Capital Asset Pricing Model (ECAPM).

She characterizes her 10.75% recommendation as "reasonable and appropriate."[49]

Ms. Bulkley discusses company-specific regulatory and business risk (compared to the companies in her proxy group). Notably, however, she does not make any specific adjustments to her ROE recommendation based on any of these factors and states, "[a]lthough I do not make specific adjustments to my ROE recommendation for these factors, I consider them in the aggregate when determining where my recommended ROE falls within the range of the analytical results."[50]

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[48] Ms. Bulkley's Direct Testimony at 5:3-9.
[49] *Id*. at 5:9.
[50] *Id.* at 2:16-18.

Ms. Bulkley also discusses KAWC's capital structure, comparing it to her proxy group, but does not propose any explicit changes to the Company's proposed 52.29% equity ratio, and states that it, "is well within the range, and moderately below the mean, established by the capital structures of the utility operating subsidiaries of the proxy companies"[51] of 52.26%.[52] Her testimony emphasizes that no single model should be relied upon exclusively to determine the ROE and that a blended approach is necessary to reflect market conditions and investor expectations.[53]

TABLE 8: MS. BULKLEY'S COST OF EQUITY RESULTS

METHOD	Model Results
Constant Growth DCF - Earnings Growh	10.19% - 12.12%
CAPM	10.20% - 11.16%
ECAPM	11.42% - 11.65%
Ms. Bulkley's Cost of Equity Model Results	**10.19% - 12.12%**

[1] Ms. Bulkley's Direct Testimony, Page 51, Figure 11

Q. IS MS. BULKLEY'S RECOMMENDED 10.75% ROE MARKET-BASED?

A. No. Ms. Bulkley states that the cost of equity is a "market-based concept,"[54] that it "must be estimated based on observable market data,"[55] 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."[56] But when applying her approaches, there are key places where she fundamentally fails to use market data.

[51] *Id.* at 51:5-7.
[52] *Id.* at 47:6.
[53] *Id.* at 26:17-23 and 27:1–8.
[54] *Id*. at 18:4.
[55] *Id*. at 25:13-14.
[56] *Id.* at 9:13-15.

For example, the market risk premium portion of her CAPM is based on analyst EPS growth rate forecasts that are as high as 175.50%.[57] To calculate her 12.99% expected market return, she relies heavily on the subjective growth forecasts of a single advisory service; and while they provide a respected opinion, the opinion of a single firm is not a "market."[58]

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 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 a single analyst firm to establish a 12.99% market return, Ms. Bulkley has anchored her

[57] *Id*. at Exhibit AEB-6.
[58] It is not clear whether Ms. Bulkley uses Bloomberg or Value Line here. On Exhibit AEB-6 column [10] is labeled "Bloomberg Long-Term Growth Est."; however the citation for Column [10] is to "Value Line, as of February 28. 2026.

recommendation on a small financial island, completely 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 KAWC'S COST OF EQUITY?

A. No. Ms. Bulkley's 10.75% ROE recommendation is significantly higher than KAWC's market-based cost of equity. If her recommendation is used to set rates, consumers will be significantly overcharged. Ms. Bulkley's 10.75% ROE recommendation is excessive 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" that "must be estimated based on observable market data," 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.

Additionally, each of her cost of equity 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.

A. Ms. Bulkley's DCF Method

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

A. As noted above, one of the cost of equity models Ms. Bulkley used to derive her 10.75% ROE recommendation was a variation of the Constant Growth Discounted Cash Flow (DCF) model. Her 10.26% to 12.12% results (mean 30-, 90-, and 180-day average stock prices across her minimum, average, and maximum growth rate scenarios)[59] were based on market data—stock prices, dividend yields and analyst growth rate projections—from her proxy group, which is the same proxy group I utilized in my cost of equity analysis.[60] Her model is based on the mathematical formula:

$$k = \frac{D(1+g)}{P_0} + \text{g}$$

Where:

k: required return;
P_0: current $stock\ price$;
D: current $dividend$;
g: expected $growth\ rate$.[61]

Key Inputs and Assumptions: Ms. Bulkley used average stock prices over the following three different trading periods: 30-day, 90-day, and 180-day. she explained that this approach helps balance capturing recent market conditions while avoiding potential distortions from short-term fluctuations.[62]

[59] Ms. Bulkley's Direct Testimony at 31:5.
[60] When using median 30-, 90-, and 180-day average stock prices, Ms. Bulkley gets a range of 10.19% to 11.63% across her minimum, average, and maximum growth rate scenarios.
[61] Ms. Bulkley's Direct Testimony at 28:1-12.
[62] *Id.* at 29:1–9.

Dividend Yield Adjustments: She calculated the unadjusted dividend yield using each company's annualized dividend per share as of February 28, 2026, divided by the average stock price. To account for expected dividend growth, she applied one-half of the expected annual dividend growth rate to adjust the yield upward.

Growth Rate Estimation: Ms. Bulkley used consensus analyst five-year EPS growth estimates from three sources:

- Zacks Investment Research (Zacks),
- S&P Capital IQ, and
- Value Line.[63]

Her rationale for using EPS growth was that dividend growth is ultimately dependent on earnings growth, making EPS forecasts a more reliable proxy for long-term dividend growth.

Calculation of Mean and Median Results: Ms. Bulkley computed mean and median DCF results across her proxy group using different growth rate assumptions:

- Mean High: The highest EPS growth rate estimate was combined with the expected dividend yield for each of the proxy groups.
- Mean Low: The lowest EPS growth rate estimate was used.
- Overall Mean: The average EPS growth rate from all sources was applied.

DCF Model Results: The results of Ms. Bulkley's Constant Growth DCF model are presented in Figure 7 on page 31 of her testimony, showing a range of average cost of equity estimates (across 30-, 90-, and 180-day average stock prices) of 10.26% to 12.12%, with median results that that range between 10.19% and 11.63%. These results provided a range of DCF estimates that contributed to her overall ROE recommendation of 10.75%.

[63] *Id*. at 30:12-15.

Q. DOES MS. BULKLEY PROPERLY APPLY THE SIMPLIFIED OR CONSTANT GROWTH DCF METHOD?

A. No. Ms. Bulkley explains that the constant growth DCF is based on the assumption that the average growth rate for earnings and dividends is constant, the dividend payout ratio is stable, there is a constant price-to-earnings multiple, and the discount rate is greater than expected growth rate.[64]

However, her DCF method contradicts her own description of how the constant growth model should be implemented. Her growth estimate relies on analyst five-year EPS growth forecasts.[65] The 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. Major financial institutions like J.P. Morgan Chase have used the sustainable growth DCF model, as I do. The approach outlined by J.P. Morgan in its long-term capital market assumptions takes a more comprehensive view, integrating multiple interrelated financial factors to build expected returns. Their methodology is designed to "tie together complex interrelationships" and ensure consistency between expected earnings, future book value, and sustainable growth rates.[66]

In contrast to Ms. Bulkley's overly simplistic DCF approach, J.P. Morgan's framework breaks equity returns into fundamental drivers, including:

1. aggregate revenue growth,

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[64] *Id*. at 28:13-18.
[65] *Id.* at 29:19-23 and 30:1-11.
[66] J.P. Asset Mgmt., 2026 Long-Term Capital Market Assumptions - Time-Tested Projections to Build Stronger Portfolios, 62–63 (23rd Annual Ed.). https://am.jpmorgan.com/content/dam/jpm-am-aem/global/en/insights/ltcma-2026-us-matrix_usd.pdf

2. earnings growth as a function of margins,
3. earnings per share (EPS) growth after accounting for dilution,
4. valuation impacts on price return, and
5. dividends as a component of total return.

This approach ensures that factors such as retained earnings, share dilution, and payout ratios remain aligned with expected book equity growth—a consideration absent in Ms. Bulkley's Expected Earnings model. As J.P. Morgan explains, these interrelationships must be considered to develop reliable estimates of future returns, whereas a simplistic reliance on analyst EPS growth forecasts (as in Ms. Bulkley's method) overlooks these complexities.[67]

Ms. Bulkley's approach may overstate or misrepresent the true cost of equity by failing to account for the broader structural dynamics that drive long-term investor return expectations. Please see Rothschild, Exhibit ALR-10 for explanation of why a future-oriented "B X R" method, which is nearly identical to the method used by J.P. Morgan, is superior to Ms. Bulkley's DCF method.

B. Ms. Bulkley's 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

[67] *Id.*

the non-diversifiable or 'systematic' risk of that security."[68] 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.[69]

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 (4.79%), (2) projected 30-year Treasury yield for Q2 2026 through Q2 2027 (4.76%), and (3) projected yield 30-year Treasury bonds between 2027-2031 (4.60%).[70]

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.[71]

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 Bulkley, Exhibit AEB-8,

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[68] Ms. Bulkley's Direct Testimony at 31:9-13.
[69] *Id*. at 31:14 and 32:1-6.
[70] *Id.* at 32:18-21 and 33:1-2.
[71] *Id.* at 33:4-9.

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 1.27% and a weighted long-term analyst growth rate of 11.65%, producing an estimated required market return of 12.99% as of February 28, 2026[72] Measured against her three risk-free rates, this produces market risk premiums of 8.20% to 8.39%.[73]

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%

[72] *Id.* at 33:14-18.
[73] *Id.* at 33:17-18.

of SVB's held-to-maturity securities having maturities greater than 10 years.[74] 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.[75] This contributed to SVB's downfall, demonstrating that 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 3.87% and 3.76%, respectively. My spot and weighted average long-term risk-free rates are 4.91% and 4.95%, respectively. These four rates average 4.37%. The risk-free rate component of Ms. Bulkley's CAPM analysis range between 4.60% and 4.79%.[76]

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, KAWC'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

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[74] *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%).

[75] 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.

[76] Ms. Bulkley's Direct Testimony at 32:19-21 and 33:1-2.

capital market conditions. Therefore, her CAPM methodology should not be used to set rates in future Kentucky 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. For the proxy group, Her *Value Line* betas average 0.78 and her long-term average – the mean of the annual Value Line betas from 2013 to 2025 – is 0.75.[77] Over the past three months, my forward-looking option-implied betas have had a weighted average of 0.60.[78] and my six-month and two-year historical betas for the Bulkley Proxy Group have had a weighted average of 0.235 and 0.432, respectively, over the past three months.[79]

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 8.20% and 8.39% are excessive and lead to an inflated CAPM result.[80] As explained in the CAPM section starting on page 32, I determined that investors are demanding a significantly lower equity risk premium of between 3.31% and 4.95%.[81]

This conclusion is supported by prominent valuation authorities who arrive at figures substantially lower than Ms. Bulkley's. For example, Professor Aswath Damodaran

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[77] *Id.* at Exhibit AEB-4 and Exhibit AEB-5.
[78] Rothschild, Exhibit ALR-4, page 3 (Capital Asset Pricing Model).
[79] Exhibit ALR-4, page 3.
[80] Ms. Bulkley's Direct Testimony at Exhibit AEB-4.
[81] *Id*. at 5; Rothschild, Exhibit ALR-4, page 1 (Capital Asset Pricing Model).

from NYU (who finds an equity risk premium (trailing 12-month, adjusted payout) of 4.18% as of July 1, 2026),[82] and further supports the argument that Ms. Bulkley equity risk premium estimation is excessively high.

Additionally, based on calculations by P. Brett Hammond[83] and Martin L. Leibowitz,[84] which were based on a literature survey and estimates from participants in the Equity Risk Premium Forum, they found the most frequent estimate of the 10-year equity risk premium to be 4%.

The authors of *Revisiting the Equity Risk Premium* noted, "[d]espite radically different market environments, it is striking that the estimates in all three forums were so similar. They tended to be in the 3% to 5% range, and notably, in comparison to historical returns, none of them included estimates above 7% or below zero."[85] The three forums were in 2001, 2011, and 2021.[86] Ms. Bulkley's 8.20% to 8.39% market risk premium exceeds the entire 3% to 5% 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

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[82] Aswath Damodaran, PhD., *Damodaram Online*, Stern School of Bus., NYU, https://pages.stern.nyu.edu/~adamodar/ (last visited July 30, 2026).

[83] 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.

[84] 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.

[85] 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://rpc.cfainstitute.org/sites/default/files/-/media/documents/article/rf-brief/Revisiting-the-Equity-Risk-Premium.pdf..

[86] *Id.*

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 COST OF EQUITY 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 8.20% to 8.39% based on an expected market return on the S&P 500 of 12.99%.[87] 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 Weighted Average CAPM analysis with short- and long-term risk-free rates are 4.95% and 3.76%, respectively.[88] The market risk premia I use in my Spot CAPM analysis with short- and long-term risk-free rates are 4.35% and 3.31%, respectively.[89]

C. Ms. Bulkley's 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."[90] She implements the

[87] Ms. Bulkley's Direct Testimony at Exhibit AEB-6.
[88] Rothschild, Exhibit ALR-4, page 1 (Capital Asset Pricing Model).
[89] Exhibit ALR-*4,* page 5.
[90] Ms. Bulkley's Direct Testimony at 35:10-12.

formula $k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f)$, which applies a 25.00% weight to the market risk premium without any effect from the beta coefficient, and scales only the remaining 75.00% by beta.[91] 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."[92]

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

A. The Commission should view Ms. Bulkley's use of the ECAPM with significant skepticism. 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% of the full market risk premium to every company regardless of its risk, and scales only the remaining 75% 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 0.70 and 0.85[93]—this adjustment can only raise the indicated cost of equity relative to the standard CAPM. The effect is visible in her own results: every ECAPM figure exceeds its CAPM counterpart, with mean results of 11.46% to 11.65% and individual company results as high as 12.07%.[94]

- **Double-Counting an Existing Adjustment:** Ms. Bulkley's ECAPM compounds an adjustment that is already embedded in her inputs. The Value

[91] *Id.* at 34:11-12.
[92] *Id.* at 34:10-11.
[93] Ms. Bulkley's Exhibit AEB-4 and Exhibit AEB-5.
[94] Ms. Bulkley's Exhibit AEB-4.

Line betas she uses are published on an adjusted basis—pushed upward toward 1.0 before publication.[95] Her own equation concedes as much: she defines the beta input to her ECAPM as the "Adjusted Beta coefficient of an individual security,"[96] and describes the model as applying its weighting to "the product of the adjusted beta coefficient and the market risk premium."[97] Applying the ECAPM's 75/25 weighting on top of betas that 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.[98]

- **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.[99]
- **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

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[95] 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

[96] Ms. Bulkley's Direct Testimony at 35:7.

[97] *Id.* at 34:11-12.

[98] *Id.* at 35:12.

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

the model he champions consistently produces higher authorized returns for utilities.

- **Ms. Bulkley's 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 11.46% to 11.65% , 387 and 165 basis points *higher* than the 7.59% to 10.00% cost of equity that current market data indicate for the competitive S&P 500 as a whole. There is no credible evidence that 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.

D. Business and Regulatory Risks

Q. HOW DOES MS. BULKLEY INCORPORATE BUSINESS AND REGULATORY RISK INTO HER ROE RECOMMENDATION?

A. Ms. Bulkley argues that KAWC faces greater-than-average business and regulatory risk relative to her proxy group, resting on two claims: that the Company's capital expenditure program is unusually large and exposes it to under-recovery risk and credit-metric pressure, and that Kentucky's regulatory framework provides less timely cost recovery than the jurisdictions of many proxy companies, evidenced by the Company's history of under-earning its authorized ROE. She makes no quantified adjustment for either. Instead, she

uses both to justify placing her recommendation at 10.75% within her range of 10.25 to 11.25%, stating that she considers these factors "in the aggregate when determining where my recommended ROE falls within the range of the analytical results."[100]

Q. PLEASE RESPOND TO MS. BULKLEY'S CAPITAL EXPENDITURE ARGUMENTS.

A. In general, a capital spending program is an opportunity for KAWC to increase its rate base and therefore its earnings. In a recent presentation to investors, KAWC's parent American Water Works Company, Inc., explained that, "investments drive continued growth in rate base"[101] and explain that rate base growth is a major driver of earnings. With the market-to-book ratios of water utility companies significantly higher than one, every dollar that is invested in rate base has a market value that is significantly higher than the value it is investing. For example, if KAWC increases its rate base by $100 million it would increase its market value to about $200 million because the market-to-book ratio of water utility companies is about 2 to 1 as of June 30, 2026.[102] I am not convinced that such a business opportunity should in any way, make the Commission consider increasing KAWC's authorized ROE in this proceeding.

Ms. Bulkley's own exhibit also shows that KAWC's capital intensity is unremarkable. Exhibit AEB-7 places KAWC at 67.27% of net utility plant against a proxy-group median of 60.45 percent, a difference of under seven percentage points, and well

[100] Ms. Bulkley's Direct Testimony, page 2, lines 17-18.
[101] American Water, 2026 Second Quarter Earnings, Conference Call, July 30, 2026, page 14.
[102] Exhibit ALR-8, page 1.

within her own group, which includes Chesapeake Utilities at 85.92% and Atmos Energy at 92.33%.

As to the SIP, Ms. Bulkley's testimony largely answers itself. She acknowledges that 75.00% of the operating utilities of the companies in the proxy group have some form of infrastructure replacement recovery mechanism, and states that if approved, the SIP, "would not reduce the Company's risk vis-à-vis that of the proxy group." [103] By her own assessment, approval of the SIP would leave KAWC no riskier than the proxy group on this dimension, and there would be no basis for a risk premium. I address separately, in Section IX, why the reduced risk of rider recovery warrants a mechanism-specific return 10 basis points below the base-rate ROE for investment recovered through the SIP.

Furthermore, rejecting the SIP does not inherently entitle KAWC to a premium ROE either. Even without the SIP, KAWC is adequately protected against regulatory lag through standard ratemaking tools, such as its use of a fully forecasted test year, a robust protection that applies to only 56.82% of the companies in her proxy group.[104] Therefore, denying the SIP does not catapult KAWC into an above-average risk tier.

Q. PLEASE RESPOND TO MS. BULKLEY'S ARGUMENT THAT THE COMPANY'S HISTORY OF EARNING LESS THAN ITS AUTHORIZED ROE SUPPORTS A HIGHER RETURN.

A. No, it does not. Authorized ROEs are not measures of investor-required returns; they are accounting returns applied to book equity and established by regulatory decision, not determined by capital market participants. A utility's earned return is likewise an

[103] Ms. Bulkley's Direct Testimony, page 39, lines 16-17.
[104] Ms. Bulkley's Direct Testimony, page 43, lines 11-17.

accounting return on book equity. Comparing one accounting measure against another is relevant to assessing historical performance, but it tells the Commission nothing about the forward-looking return investors require on the price they pay for utility stock, which is what the cost of equity actually measures.

Furthermore, authorizing a higher ROE simply because a utility has historically underearned risks rewarding the company for poor management. The regulatory framework provides a utility with the opportunity to earn its authorized return, not a guarantee. If a utility fails to earn its authorized ROE due to inefficient operations or a failure to control costs, raising the ROE in response creates a perverse incentive. It essentially tells the utility that financial underperformance will be subsidized by ratepayers through higher authorized returns.

Q. WHAT IS YOUR OVERALL CONCLUSION REGARDING MS. BULKLEY'S ASSERTION THAT KAWC'S BUSINESS AND REGULATORY RISKS JUSTIFY AN UPWARD ADJUSTMENT TO ITS AUTHORIZED ROE?

A. My conclusion is that Ms. Bulkley has not justified a premium ROE based on business or regulatory risks. Her arguments mischaracterize utility growth opportunities as a potential risk factor. As discussed above, KAWC's capital expenditure levels are within the range exhibited by the companies in her own proxy group,[105] and standard ratemaking protections, specifically the fully forecasted test year, already provide robust protection against regulatory lag.[106] Furthermore, relying on historical underearning to inflate the cost

[105] Ms. Bulkley's Exhibit AEB-7 places KAWC at 67.27% of net utility plant against a proxy group median of 60.45%, within a group that includes Chesapeake Utilities at 85.92% and Atmos Energy at 92.33%.
[106] Ms. Bulkley's Direct Testimony, page 43, lines 11–17. See Section IX. below.

of capital conflates backward-looking accounting results with forward-looking market expectations. Ultimately, neither the approval nor the denial of the SIP places KAWC's overall risk profile above that of the proxy group, and no upward adjustment to its authorized ROE is warranted in either case. If the Commission approves the SIP, the appropriate response is not a change to KAWC's overall ROE but the mechanism-specific differential I recommend in Section IX: a return 10 basis points below the base-rate ROE, applied to the narrower body of investment recovered through the rider.

IX. KAWC'S PROPOSED SYSTEM IMPROVEMENT PROGRAM ("SIP")

Q. IF THE COMMISSION WERE TO APPROVE KAWC'S PROPOSED SYSTEM IMPROVEMENT PROGRAM ("SIP"), WOULD IT IMPACT YOUR ROE RECOMMENDATION?

A. Yes. I recommend that, if the Commission approves KAWC's proposed SIP, it apply to investments recovered through the SIP an ROE 10 basis points below the ROE authorized for base rates. If the Commission adopts my recommended ROE of 8.07%, the ROE applicable to investments recovered through the SIP would be 7.97%.

Q. PLEASE CLARIFY THE SCOPE OF THAT RECOMMENDATION.

A. My recommendation is a mechanism-specific return, not an adjustment to KAWC's overall authorized ROE. Under my recommendation, investment recovered through base rates would earn 8.07%, and the more narrowly defined body of investment recovered through the SIP would earn 7.97%. That is the form in which this Commission has consistently

applied the rider differential, and it reflects the fact that the differential responds to the risk characteristics of a particular recovery mechanism rather than to the risk characteristics of the utility as a whole.

Two consequences follow. First, the recommendation is operative only if the SIP is approved. If the Commission denies the SIP, there is no rider to which a differential could attach and no adjustment is necessary or appropriate. Second, a reduced return on rider-recovered investment is not a penalty imposed on KAWC; it is the return appropriate to a category of investment that carries less risk than base rate recovery. Denying the SIP would leave KAWC recovering its capital investment in the ordinary manner, through base rates, which is the recovery method that cost of equity models are designed to measure.

Q. ON WHAT BASIS DO YOU RECOMMEND A 10 BASIS POINT DIFFERENTIAL?

A. The recommendation applies this Commission's long-standing practice of establishing lower ROEs for riders with true-up mechanisms.[107] For example, in Case No. 2024-00276

[107]See Case No. 2020-00060, *Electronic Application of Kentucky Utilities Company for Approval of Its 2020 Compliance Plan for Recovery by Environmental Surcharge* (Ky. PSC Sept. 29, 2020), Order, page 20; Case No. 2020-00061, *Electronic Application of Louisville Gas and Electric Company for Approval of an Amended Environmental Compliance Plan and a Revised Environmental Surcharge* (Ky. PSC Sept. 29, 2020), Order, page 20; Case No. 2020-00174, *Electronic Application of Kentucky Power Company for (1) A General Adjustment of Its Rates for Electric Service; (2) Approval of Tariffs and Riders; (3) Approval of Accounting Practices to Establish Regulatory Assets and Liabilities; (4) Approval of a Certificate of Public Convenience and Necessity; and (5) All Other Required Approvals and Relief* (Ky. PSC Jan. 13, 2021), Order, page 67; Case No. 2020-00349 (Ky. PSC June 30, 2021), Order, pages 21–23; Case No. 2020-00350 (Ky. PSC June 30, 2021), Order, pages 23–25; Case No. 2021-00214, *Electronic Application of Atmos Energy Corporation for an Adjustment of Rates* (Ky. PSC May 19, 2022), Order, page 48; Case No. 2021-00185, *Electronic Application of Delta Natural Gas Company, Inc. for an Adjustment of Its Rates and a Certificate of Public Convenience and Necessity* (Ky. PSC Jan. 3, 2022), Order, page 15; Case No. 2021-00190, *Electronic Application of Duke Energy Kentucky, Inc. for: 1) An Adjustment of the Natural Gas Rates; 2) Approval of New Tariffs, and 3) All Other Required Approvals, Waivers, and Relief* (Ky. PSC Dec. 28, 2021), Order, page 15; Case No. 2022-00372, *Electronic Application of Duke Energy Kentucky, Inc. for (1) An Adjustment of Electric Rates; (2) Approval of New Tariffs; (3) Approval of Accounting Practices to Establish Regulatory Assets and Liabilities; and (4) All Other Required Approvals and Relief* (Ky. PSC Oct. 12, 2023), Order, pages 41–42; Case No. 2024-00346, *Electronic Application of Delta Natural Gas Company, Inc. for an Adjustment of Gas Rates* (Ky. PSC July 1, 2025), Order, page 17; Case No. 2024-00276, *Electronic Application of Atmos Energy Corporation for an Adjustment of Rates; Approval of Tariff Revisions; and Other General Relief* (Ky. PSC Aug. 11, 2025), Order, page 38.

involving Atmos Energy Corporation, the Commission applied a 10 basis point reduction for capital riders and explained that the "ROE for capital riders is adjusted downwards because, '[w]ith a rider, since a return is guaranteed and the time line of recovery is known and ordinarily not meaningfully delayed, the required return is less than the ROE associated with a rate case as the risk involved is decreased and most lag associated with recovery is eliminated.'"[108]

In Case No. 2024-00328, involving Columbia Gas of Kentucky's ("Columbia Gas") Safety Modification and Replacement Program ("SMRP"), the Commission stated the following:

> Since 2020, the Commission has consistently established a lower ROE for riders with true-up mechanisms, finding that recovery through limited purpose riders is less risky than base rates. Additionally, Columbia Kentucky's argument that more capital spending being recovered through the SMRP results in higher risk ignores the true-up provision of the SMRP. Recovery through the SMRP is practically guaranteed through the true-up mechanism, making the SMRP less risky than base rate recovery. . . . The Commission finds that the ROE for the SMRP should be 9.65 percent, a 10 basis point reduction from the ROE approved for base rates. (citations omitted).[109]

Q. DID KAWC PREVIOUSLY OPERATE A CAPITAL RECOVERY RIDER?

A. Yes. KAWC previously operated the Qualified Infrastructure Program ("QIP") rider, which the Commission terminated effective December 31, 2025 in KAWC's last general rate case.[110] In terminating the QIP, the Commission stated that KAWC, "may file a request

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[108]Case No. 2024-00276, *Electronic Application of Atmos Energy Corporation for an Adjustment of Rates; Approval of Tariff Revisions; and Other General Relief* (Ky. PSC Aug. 11, 2025), Order, page 38.
[109] Case No. 2024-00328, *Electronic Application of Columbia Gas of Kentucky, Inc. for Its Annual Safety Modification and Replacement Program Filing* (Ky. PSC July 24, 2025), Order, pages 5–6.
[110] Case No. 2025-00122, *Electronic Application of Kentucky-American Water Company for an Adjustment of Rates* (Ky. PSC Dec. 16, 2025), final Order at 45 and Ordering Paragraph 4.

for a new rider mechanism at some point in the future for the intended purpose and use."[111] The QIP had previously carried KAWC's full base-rate ROE, which was out of step with how the Commission treated pipeline replacement program ROEs. Thus, the Attorney General sought a 10 basis point reduction on the QIP in the last case in order to comply with Commission precedent, but the Commission terminated the rider and therefore the ROE issue became moot.[112] The question is therefore squarely presented again in this proceeding.

Q. DOES THE PROPOSED SIP CONTAIN A TRUE-UP MECHANISM?

A. Yes, and it is the feature that drives my recommendation. Company witness Jeffrey Newcomb describes an annual Balancing Adjustment that would true up the forecasted costs of capital, depreciation, and taxes associated with qualified infrastructure investments in the concluded SIP Period to actual costs, compare the resulting trued-up revenue requirement to the actual SIP revenues billed to customers during that period, and then set a rate that credits back to customers any over-recovery or collects any under-recovery.[113]

The reconciliation therefore runs on both sides of the ledger. KAWC would not bear the risk that its forecast of qualified investment proves inaccurate, and it would not bear the risk that billed revenues differ from those assumed in setting the surcharge. Both variances would be transferred to ratepayers through the Balancing Adjustment. That is the same reconciliation feature the Commission identified in the Columbia Gas SMRP when

[111] Id. at 45.
[112] Case No. 2025-00122, *Electronic Application of Kentucky-American Water Company for an Adjustment of Rates*, page 62.
[113] Mr. Newcomb's Direct Testimony, page 20, lines 4-22 and page 21, lines 1-2.

it found rider recovery practically guaranteed, and therefore less risky than base rate recovery.

Q. HAS KAWC ACKNOWLEDGED THAT THE SIP WOULD REDUCE ITS RISK?

A. Yes. Mr. Newcomb testifies that the SIP supports timely investment, "by lowering the recovery risks of proactive investments in aging infrastructure by providing steady recovery of investments through annual SIP filings," describes the mechanism as providing "predictable recovery," [114] and states that it reduces regulatory lag by more closely aligning the timing of in-service dates with the rates customers pay.[115] Reduced recovery risk is the mechanism's stated design objective, not an incidental consequence of it. Those are precisely the two conditions the Commission identified in the aforementioned Atmos Order as justifying a downward adjustment: a return that is effectively guaranteed, and a recovery timeline that is known and not meaningfully delayed.

Q. ON PAGES 39 TO 40 OF HER DIRECT TESTIMONY MS. BULKLEY STATES THAT ABSENT APPROVAL OF THE SIP, KAWC WOULD HAVE GREATER RISK FROM A CAPITAL EXPENDITURE STANDPOINT THAN THE PROXY GROUP COMPANIES. SHOULD THE COMMISSION INCREASE KAWC'S AUTHORIZED ROE IF IT DENIES THE SIP?

A. No. Base rate recovery is the ordinary condition that cost of equity models are constructed to measure, not an aggravating circumstance warranting an increment above the model results. Beyond that, the Commission has twice found KAWC's arguments regarding its

[114] Id. page 11, lines 7-11.
[115] Id.

capital expenditure program, environmental risk, and regulatory risk unpersuasive, because KAWC controls the amount and timing of its capital expenditure program and many other factors are mitigated through the use of a forecasted test year, which lowers regulatory lag and allows for a timelier recovery of capital investments.[116]

Further, in terminating the QIP in December 2025 the Commission acknowledged that under normal circumstances the termination of such a program would potentially be cause for consideration in determining a fair ROE, but found that any change in KAWC's risk profile would likely be immaterial, and authorized a 9.70% ROE without an increment for the termination.[117] It is important to note, that Ms. Bulkley does not quantify the increase of ROE she suggests would be warranted if the Commission were to deny the Company's proposed SIP.

Q. IF THE COMMISSION ADOPTS YOUR RECOMMENDATION, AND APPROVES THE COMPANY'S PROPOSED SIP, HOW SHOULD IT BE IMPLEMENTED IN THE PROPOSED SIP TARIFF?

A. The proposed tariff calculates the SIP pre-tax return by applying, "the debt and equity components of the total after-tax rate of return as authorized in the most recent water GRC" to the SIP rate base.[118] As drafted and proposed by the Company, the SIP would therefore import KAWC's base-rate authorized ROE into the rider without any adjustment for the reduced risk of rider recovery. If the Commission approves the SIP, I recommend that it

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[116] Case No. 2025-00122, *Electronic Application of Kentucky-American Water Company for an Adjustment of Rates* (Ky. PSC Dec. 16, 2025), Order at 64; Case No. 2023-00191, *Electronic Application of Kentucky-American Water Company for an Adjustment of Rates, a Certificate of Public Convenience and Necessity for Installation of Advanced Metering Infrastructure, Approval of Regulatory and Accounting Treatments, and Tariff Revisions* (Ky. PSC May 3, 2024), Order at 38–39.
[117] Case No. 2025-00122 (Ky. PSC Dec. 16, 2025), Order at 64.
[118] Mr. Newcomb's Direct Testimony, page 21, lines 12-13.

modify the pre-tax return component of the SIP tariff so that the equity component reflects the authorized ROE less 10 basis points. Under my recommended ROE, that rate would be 7.97%.

X. CONCLUSION

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS IN THIS CASE.

A. The Commission should reject Ms. Bulkley's recommended ROE of 10.75% because it significantly exceeds KAWC's actual cost of equity as indicated by current market data. Instead, I recommend that the Commission set KAWC's rates based on the following:

- An overall cost of capital of 6.50% (6.43% - 7.03%);
- ROE of 8.07% (7.95% - 9.11%);
- A capital structure containing 51.17% common equity, 48.09% long-term debt, 0.45% short-term debt, and 0.28% preferred equity; and
- A long-term debt cost rate of 4.84%.

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

Finally, if the Commission approves KAWC's proposed System Improvement Program, I recommend that investments recovered through that mechanism be assigned an ROE 10 basis points below the ROE authorized for base rates, 7.97% under my

recommendation, and that the pre-tax return component of the SIP tariff be modified accordingly.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

APPENDIX A. RATE OF RETURN DEFINITIONS

Cost of Equity (COE): My cost of equity recommendation is my opinion of the return investors require to provide equity capital to KAWC 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, KAWC's cost of equity 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.[119]

And:

> [S]ufficient to . . . support its credit and . . . raise the money necessary for the proper discharge of its public duties.[120]

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%.

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, I would say it has a capital structure containing 50% equity and 50% debt. My capital structure recommendation is based on my review of KAWC's justification for its requested regulatory capital structure, the capital structure ratios of other

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

electric and gas utility companies, and the capital structure of KAWC's parent, American Water Works Company, Inc.. 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 KAWC's requested capital structure would not overcharge consumers by including a higher common equity ratio than is appropriate.[121]

Cost of Equity vs. Authorized ROE: The cost of equity is the market-based return investors expect to earn on the market value of any given stock. In other words, the cost of equity is the return investors expect to earn on the market price of equity. As it applies to this proceeding, it is the return on proxies for what investors would require to provide equity capital to KAWC. The appropriate authorized ROE is based on the Commission's determination of the cost of equity at the time of the proceeding, after reviewing the evidentiary record, which incorporates investor expectations. Once the Commission issues an authorized ROE, the market-based cost of equity will continue to fluctuate as capital markets inevitably continue to change. The authorized ROE is based on a snapshot of the cost of equity, which is constantly changing.

KAWC's authorized ROE should not be set based on authorized ROEs in other proceedings. Authorized ROEs set in past proceedings are not the right benchmark for KAWC's cost of equity. They are accounting returns applied to book value, not measures

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

of the return investors currently require on the market value of equity. A real estate analogy makes the point (Note: I discuss this same analogy in Appendix E regarding market-to-book ratios): if an investor buys a property for $100,000 and earns $6,000 per year in rent, that's a 6% return on book. If the property's market value later rises to $200,000 with rent unchanged, the return on market value falls to about 3.0%. Rent does not automatically rise to preserve a 6% book return; it is set by the market. The same is true for utility stocks. With market-to-book ratios well above 1.0 today, the market-based cost of equity is necessarily lower than authorized book returns.

In his 1970 book The Economics of Regulation: Principles and Institutions, regulatory economist Alfred Kahn wrote on why the cost of equity is lower than authorized returns when market-to-book ratios are significantly above one, saying:26F

> [T]he sharp appreciation in the prices of public utility stocks, to one and half and then two times their book value during this period, reflected ... a growing recognition that the companies in question were in fact being permitted to earn considerably more than their cost of capital. ... The source of the discrepancy between market and book value has been that commissions have been allowing r's [returns on equity] in excess of k [market cost of equity]; if instead they had set r equal to k, or proceeded at some point to do so ... the discrepancy between market and book value ... would have disappeared, or would never have arisen.[122]

Consistency with Regulatory Principles: Regarding claims that an ROE below recent authorizations is inconsistent with regulatory principles and risks impairing access to capital, I address this issue in virtually every case, and I anticipate Ms. Bulkley will make the same argument in her rebuttal testimony here. The flaw is equating my recommendations with regulatory precedent rather than investor requirements. Hope and

[122] Alfred Kahn, *The Economics of Regulation: Principles and Institutions*, Mass. Inst. Tech. at 48 (fn. 69), 50 (1970).

Bluefield require that the return be "commensurate with returns on investments in other enterprises having corresponding risks"—that is, consistent with market-based investor expectations today. They do not require regulators to match or exceed prior authorizations in other states.

Authorized ROEs are backward-looking and become embedded in rates until the next case; they do not adjust dynamically with market conditions. Basing current decisions on averages of past authorizations creates a circular process that can drift out of alignment with actual investor expectations. By contrast, my recommendations are grounded in current capital market data—interest rates, inflation expectations, equity risk premiums, and forward-looking betas. That is the proper way to satisfy *Hope* and *Bluefield*.

Appropriate Rate of Return: 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.[123]

[123] WACC = Cost of Debt X Debt Ratio + Cost of Equity X Common Equity Ratio + Cost of Preferred Equity X Preferred Equity Ratio.

APPENDIX B. 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.[124]

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.

[124] 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).[125] using the following formula:[126]

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

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 (April through June 2026).
4. Value Line always uses a 5-year period for the return regression,[127] whereas I calculate historical betas for periods of 6 months, 2 years, and 5 years.

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

[126] 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."

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

[127] 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[128] 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

[128] 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[129] 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.[130] As explained in more detail in the text regarding how to use the table of critical values,[131] any beta coefficient above this level, and certainly above the 0.235 3-month average for the recent 6-month betas for my Bulkley Proxy Group, by definition are considered statistically significant. The threshold for

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

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

[131] 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.[132]

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

[132] 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.[133]

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 an average value of 7.00% as of June 30, 2026 and a value of 7.62% 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.

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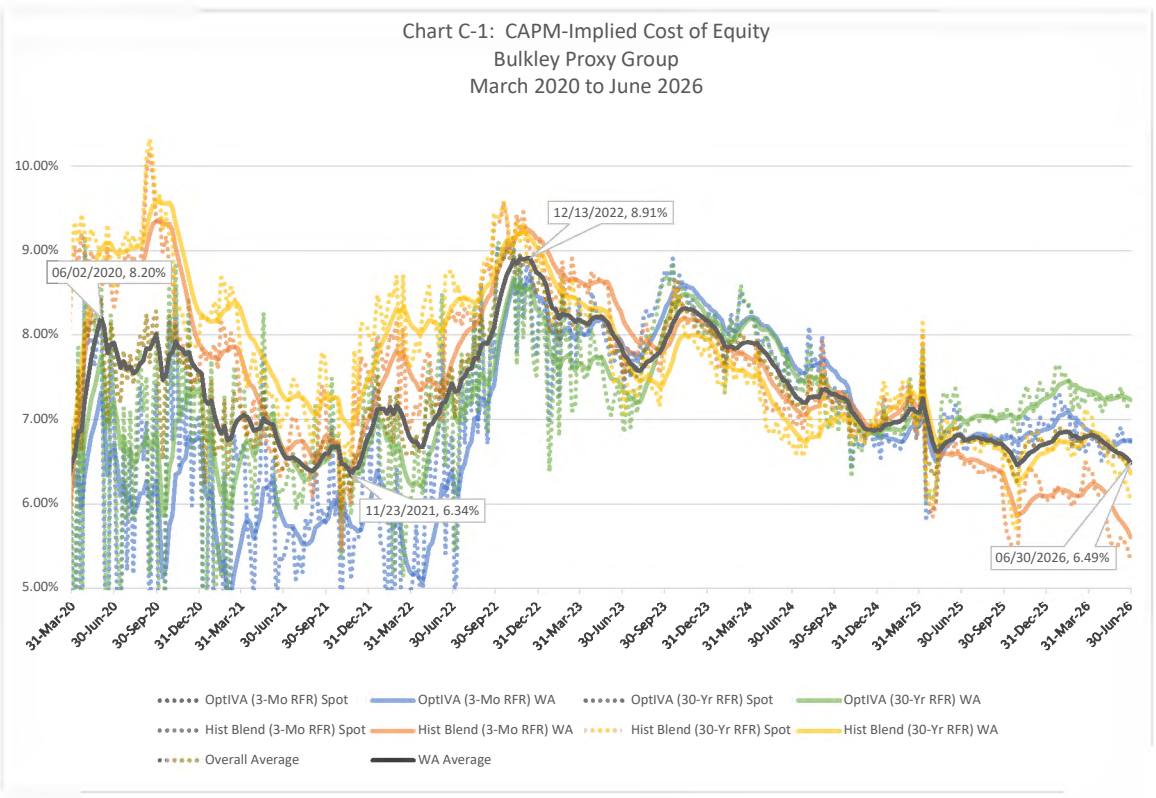
[133] *Id. at 17.*

The cumulative probabilities referred to in this case are directly comparable to the cumulative probabilities I have used or referred to in his 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 C. CAPM-IMPLIED COST OF EQUITY FOR BULKLEY 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 D. 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 April 2026 and June 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:

1. 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.

2. Calculate Option-Implied Volatility: Using the CBOE methodology, I calculate the expected magnitude of future stock price movements (risk).

3. 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).

4. 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.

5. 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 E. MARKET-TO-BOOK RATIOS AND THE MARKET-BASED COE

The Relationship Between Market Returns and Book Returns: A market-to-book ratio significantly above one indicates that the COE for gas utility companies is lower than the expected return on book equity. Calculating the COE (investors' equity return expectations) is more complicated than calculating the return on a rental property, but the same concept applies regarding the relationship between market returns and book returns.

If an investor purchases an apartment for $100,000 and expects to receive $500 per month ($500 × 12 = $6,000 per year) in rent, they will expect an annual return of 6% ($6,000 / $100,000) on their investment. When the investor purchases the apartment, they would record the book value as $100,000 and the market value as $100,000, unless they determined that the purchase price was higher or lower than the market value. If the value of the apartment increases to $200,000, for example, the market-to-book ratio would increase to 2.0, and therefore, their return on book value would remain at about 6% while their return on the market value of the apartment would decrease to about 3.0%.

In this rental property example, an increasing market value results in a lower expected return on market (3.0%) compared to the expected return on book (6%) if the rent price remains constant. Rent prices do not increase to maintain an expected 6% return on book value; they are set by what the rental market reasonably can bear.

The same is true of utility stocks. An ROE is not established based on constant return on book (accounting) returns; it is set based on what investors in the market expect that market to return. In the case of a utility stock, an increasing market value results in a lower return on market for the same expected return on book. As this rental property

example demonstrates, there is nothing inconsistent about investors expecting a lower return on the market price of an investment than on the book value of an investment. In fact, with market-to-book ratios of gas utility companies significantly above one, it would be surprising if investors expected a return on market equal, or anywhere close, to the return on book.

APPENDIX F. 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, 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.
- Develop credit-risk stress testing frameworks to evaluate alternative regulatory outcomes, parent-company financing, and the resulting impacts on utility credit metrics.
- 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 G. 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

- 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

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

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
Kentucky-American Water Company

	Ratios		Cost Rate		Weighted Cost Rate
					[D]
Long-Term Debt	48.09%	[A]	4.84%	[B]	2.33%
Short-Term Debt	0.45%	[B]	3.32%	[B]	0.02%
Preferred Equity	0.28%	[B]	8.50%	[B]	0.02%
Common Equity	51.17%	[A]	8.07%	[C]	4.13%
	100.00%				**6.50%**

RECOMMENDED RANGES

	Low		High
Proxy Group Cost of Equity Range	7.95%		9.11%
Proxy Group Cost of Equity		8.07%	
Based on RFC Capital Structure Recommendation			
Capital Structure Risk Adjustment [E]		0.00%	
Adjusted Recommended Cost of Equity Range	**7.95%**		**9.11%**
Company Specific Cost of Equity Recommendation		**8.07%**	
Cost of Capital Range	6.43%		7.03%
Based on Ms. Bulkley's Capital Structure Recommendation			
Capital Structure Risk Adjustment [F]		-0.04%	
Adjusted Recommended Cost of Equity Range	**7.90%**		**9.07%**
Company Specific Cost of Equity Recommendation		**8.03%**	
Cost of Capital Range	6.45%		7.06%
Comprehensive Cost of Capital Range			
Cost of Debt Range	4.84%		3.64%
Common Equity Ratio Range	51.17%		48.06%
Comprehensive Cost of Capital Range	6.43%		6.28%

Sources:
[A] Recommendation based on Proxy Group capital structures
[B] Mr. Watkins' Direct Testimony, Page 32, Table 3.
[C] Company Specific Cost of Equity Recommendation based on RFC Capital Structure Recommendation
[D] Ratios times Cost Rate
[E] Not applicable because of recommended Capital Structure within Proxy Group range.
[F] Based on estimate of 0.04% change in Cost of Equity for each 1% difference in Common Equity Ratio compared to the Proxy Group (Exhibit ALR-1 vs. Exhibit ALR-5, page 4).

COST OF EQUITY SUMMARY

Bulkley Proxy Group (11 Companies)

		Low	High	Percentile			
				50.0% (Median)	80.0%	85.0%	90.0%
DCF		**6.78%**	**9.66%**				
Constant Growth - Sustainable Growth	[A]	9.59%	9.66%				
Constant Growth - Option-Implied Growth	[B]	6.78%	7.30%				
Non-Constant Growth	[C]	7.91%	7.99%				
CAPM		**5.32%**	**7.22%**				
3-Mo. Weighted Average (Apr. to Jun. 2026)							
3-Month Treasury Bill Risk-Free Rate	[D]	5.61%	6.75%				
30-Year Treasury Bond Risk-Free Rate	[D]	6.35%	7.22%				
Spot (Jun. 30, 2026)							
3-Month Treasury Bill Risk-Free Rate	[E]	5.32%	6.74%				
30-Year Treasury Bond Risk-Free Rate	[E]	6.01%	7.09%				
Proxy Group Cost of Equity				6.93% Median of Overall Range of Results	**7.95%**	**8.07% COE Recommendation**	**9.11%**
					<---- 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
Bulkley Proxy Group (11 Companies)

			Based on Average Market Price For Year Ending 6/30/2026	Based On Market Price As Of 6/30/2026
1	Dividend Yield On Market Price	[A]	3.04%	2.97%
2	Retention Rate:			
	a) Market-to-Book Ratio	[A]	1.81	1.81
	b) Dividend Yield on Book	[B]	5.50%	5.38%
	c) Expected Return on Equity	[C]	9.30%	9.30%
	d) Retention Rate	[D]	40.87%	42.18%
3	Reinvestment Growth	[E]	3.80%	3.92%
4	New Financing Growth	[F]	2.65%	2.67%
5	Total Estimate of Investor Anticipated Growth	[G]	6.45%	6.59%
6	Increment to Dividend Yield for Growth to Next Year	[H]	0.10%	0.10%
7	**Indicated Cost of Equity**	**[I]**	**9.59%**	**9.66%**

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	**10.00%**	**9.77%**	Exhibit ALR-5, page 2
Return on Equity to Achieve Zacks Growth	9.22%	9.38%	Exhibit ALR-5, page 3
Average Historical Growth	8.40%	8.76%	
Earned Return on Equity in 2025	8.44%	8.89%	Exhibit ALR-5, page 2
Earned Return on Equity in 2024	9.01%	9.04%	Exhibit ALR-5, page 2
Earned Return on Equity in 2023	7.75%	8.35%	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 = 3.29% 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
Bulkley Proxy Group (11 Companies)

			Based On Weighted Averages As Of 6/30/2026	Based On Spot Market Values As Of 6/30/2026
1	Dividend Yield On Market Price	[A]	3.04%	2.97%
2	Total Estimate of Investor Anticipated Growth	[B]	3.67%	4.27%
3	Increment to Dividend Yield for Growth to Next Year	[C]	0.06%	0.06%
4	**Indicated Cost of Equity**	**[D]**	**6.78%**	**7.30%**

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)
Bulkley 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	6/30/26	6/30/30	6/30/2026	6/30/2030	2026	2027	2028	2029	2030	IRR / DCF
		[A]	[A]	[B]	[B]	[A]	[B]	[C]	[C]	[D]	[E]	[F]	[F]	[F]	[F]	[F]	[G]
AMER. STATES WATER	AWR	$2.10	$2.28	$2.46	$2.65	$2.85	7.72%	$27.46	$32.92	$82.63	$99.07	($81.58)	$2.28	$2.46	$2.65	$100.49	7.52%
CALIFORNIA WATER	CWT	$1.34	$1.38	$1.43	$1.49	$1.55	3.95%	$29.95	$38.30	$48.65	$62.22	($47.98)	$1.38	$1.43	$1.49	$62.99	9.16%
MIDDLESEX WATER	MSEX	$1.46	$1.52	$1.56	$1.61	$1.65	2.77%	$27.26	$28.83	$56.16	$59.39	($55.43)	$1.52	$1.56	$1.61	$60.21	4.18%
H2O AMERICA	HTO	$1.75	$1.82	$1.86	$1.91	$1.95	2.33%	$40.38	$52.99	$60.77	$79.75	($59.90)	$1.82	$1.86	$1.91	$80.73	9.94%
ATMOS ENERGY CORP.	ATO	$4.00	$4.24	$4.49	$4.76	$5.05	6.00%	$86.69	$107.57	$172.27	$213.77	($170.27)	$4.24	$4.49	$4.76	$216.30	8.05%
CHESAPEAKE UTIL.	CPK	$2.84	$3.04	$3.23	$3.43	$3.65	6.29%	$70.97	$85.11	$122.48	$146.88	($121.06)	$3.04	$3.23	$3.43	$148.70	7.19%
NI SOURCE INC.	NI	$1.20	$1.28	$1.36	$1.44	$1.52	5.90%	$20.70	$32.70	$47.23	$74.61	($46.63)	$1.28	$1.36	$1.44	$75.37	14.71%
N.W. NATURAL	NWN	$1.97	$1.98	$1.99	$1.99	$2.00	0.34%	$35.87	$38.99	$48.58	$52.80	($47.59)	$1.98	$1.99	$1.99	$53.80	6.19%
ONE GAS, INC.	OGS	$2.72	$2.76	$2.82	$2.89	$2.95	2.24%	$55.74	$58.30	$77.07	$80.61	($75.71)	$2.76	$2.82	$2.89	$82.09	4.82%
SOUTHWEST GAS	SWX	$2.55	$2.55	$2.64	$2.74	$2.84	3.66%	$56.52	$66.67	$88.68	$104.60	($87.41)	$2.55	$2.64	$2.74	$106.02	7.13%
SPIRE INC.	SR	$3.30	$3.46	$3.63	$3.81	$4.00	4.95%	$54.43	$62.66	$78.09	$89.91	($76.44)	$3.46	$3.63	$3.81	$91.91	8.17%
Maximum		$4.00	$4.24	$4.49	$4.76	$5.05	7.72%	$86.69	$107.57	$172.27	$213.77	($46.63)	$4.24	$4.49	$4.76	$216.30	14.71%
Minimum		$1.20	$1.28	$1.36	$1.44	$1.52	0.34%	$20.70	$28.83	$47.23	$52.80	($170.27)	$1.28	$1.36	$1.44	$53.80	4.18%
Median		$2.10	$2.28	$2.46	$2.65	$2.84	3.95%	$40.38	$52.99	$77.07	$80.61	($75.71)	$2.28	$2.46	$2.65	$82.09	7.52%
Average		$2.29	$2.39	$2.50	$2.61	$2.73	4.19%	$46.00	$55.00	$80.24	$96.69	($79.09)	$2.39	$2.50	$2.61	$98.06	**7.91%**

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 June 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 July 1, 2026, receiving dividends through 2030, and selling on June 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.
2 of 4 dividends assumed received in 2026 and 2 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)
Bulkley 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	6/30/26	6/30/30	2026	2027	2028	2029	2030	IRR / DCF
		[A]	[A]	[B]	[B]	[A]	[B]	[C]	[C]	[D]	[E]	[F]	[F]	[F]	[F]	[F]	[G]
AMER. STATES WATER	AWR	$2.10	$2.28	$2.46	$2.65	$2.85	7.72%	$26.45	$31.71	$76.59	$91.82	($75.54)	$2.28	$2.46	$2.65	$93.25	7.75%
CALIFORNIA WATER	CWT	$1.34	$1.38	$1.43	$1.49	$1.55	3.95%	$28.94	$37.01	$45.87	$58.66	($45.20)	$1.38	$1.43	$1.49	$59.43	9.33%
MIDDLESEX WATER	MSEX	$1.46	$1.52	$1.56	$1.61	$1.65	2.77%	$26.52	$28.04	$53.18	$56.23	($52.45)	$1.52	$1.56	$1.61	$57.05	4.34%
H2O AMERICA	HTO	$1.75	$1.82	$1.86	$1.91	$1.95	2.33%	$41.02	$53.83	$52.81	$69.30	($51.94)	$1.82	$1.86	$1.91	$70.28	10.38%
ATMOS ENERGY CORP.	ATO	$4.00	$4.24	$4.49	$4.76	$5.05	6.00%	$83.90	$104.11	$171.25	$212.50	($169.25)	$4.24	$4.49	$4.76	$215.03	8.06%
CHESAPEAKE UTIL.	CPK	$2.84	$3.04	$3.23	$3.43	$3.65	6.29%	$67.39	$80.81	$129.72	$155.55	($128.30)	$3.04	$3.23	$3.43	$157.38	7.05%
NI SOURCE INC.	NI	$1.20	$1.28	$1.36	$1.44	$1.52	5.90%	$19.91	$31.45	$43.83	$69.24	($43.23)	$1.28	$1.36	$1.44	$70.00	14.91%
N.W. NATURAL	NWN	$1.97	$1.98	$1.99	$1.99	$2.00	0.34%	$35.42	$38.50	$47.64	$51.78	($46.66)	$1.98	$1.99	$1.99	$52.78	6.28%
ONE GAS, INC.	OGS	$2.72	$2.76	$2.82	$2.89	$2.95	2.24%	$54.55	$57.05	$80.88	$84.59	($79.52)	$2.76	$2.82	$2.89	$86.07	4.64%
SOUTHWEST GAS	SWX	$2.55	$2.55	$2.64	$2.74	$2.84	3.66%	$54.18	$63.90	$83.43	$98.41	($82.16)	$2.55	$2.64	$2.74	$99.83	7.32%
SPIRE INC.	SR	$3.30	$3.46	$3.63	$3.81	$4.00	4.95%	$53.51	$61.61	$83.28	$95.88	($81.63)	$3.46	$3.63	$3.81	$97.88	7.88%
Maximum		$4.00	$4.24	$4.49	$4.76	$5.05	7.72%	$83.90	$104.11	$171.25	$212.50	($43.23)	$4.24	$4.49	$4.76	$215.03	14.91%
Minimum		$1.20	$1.28	$1.36	$1.44	$1.52	0.34%	$19.91	$28.04	$43.83	$51.78	($169.25)	$1.28	$1.36	$1.44	$52.78	4.34%
Median		$2.10	$2.28	$2.46	$2.65	$2.84	3.95%	$41.02	$53.83	$76.59	$84.59	($75.54)	$2.28	$2.46	$2.65	$86.07	7.75%
Average		$2.29	$2.39	$2.50	$2.61	$2.73	4.19%	$44.71	$53.46	$78.95	$94.91	($77.80)	$2.39	$2.50	$2.61	$96.27	**7.99%**

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 June 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 July 1, 2026, receiving dividends through 2030, and selling on June 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.
2 of 4 dividends assumed received in 2026 and 2 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
Bulkley 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]
AMER. STATES WATER	AWR	36.9	36.9	37.0	37.0	38.2	39.1	39.3	40.0	0.84%	0.95%	0.90%
CALIFORNIA WATER	CWT	50.3	53.7	55.6	57.7	59.5	59.6	60.0	60.0	4.26%	0.17%	1.97%
MIDDLESEX WATER	MSEX	17.5	17.5	17.6	17.8	17.9	18.5	18.5	18.8	0.60%	0.94%	0.79%
H2O AMERICA	HTO	28.6	30.2	30.8	32.0	33.6	36.1	42.0	35.0	4.17%	0.80%	2.29%
ATMOS ENERGY CORP.	ATO	125.9	132.4	140.9	148.5	155.3	161.6	171.0	200.0	5.38%	5.19%	5.28%
CHESAPEAKE UTIL.	CPK	17.5	17.7	17.7	22.2	22.9	23.9	24.0	26.0	7.02%	2.57%	4.52%
NI SOURCE INC.	NI	391.8	405.3	412.1	447.4	469.8	478.4	485.0	525.0	4.65%	2.25%	3.31%
N.W. NATURAL	NWN	30.6	31.1	35.5	37.6	40.2	41.6	45.0	50.0	7.08%	4.45%	5.61%
ONE GAS, INC.	OGS	53.2	53.6	55.4	56.6	59.9	62.7	64.0	75.0	3.02%	4.61%	3.90%
SOUTHWEST GAS	SWX	57.2	60.4	67.1	71.6	71.8	72.2	73.0	77.0	5.85%	1.41%	3.36%
SPIRE INC.	SR	51.6	51.7	52.5	53.2	57.7	59.0	62.0	75.0	2.83%	5.38%	4.24%
Maximum		391.8	405.3	412.1	447.4	469.8	478.4	485.0	525.0	7.08%	5.38%	5.61%
Minimum		17.5	17.5	17.6	17.8	17.9	18.5	18.5	18.8	0.60%	0.17%	0.79%
Median		50.3	51.7	52.5	53.2	57.7	59.0	60.0	60.0	4.26%	2.25%	3.36%
Average		78.3	81.0	83.8	89.2	93.3	95.7	98.5	107.4	4.15%	2.61%	3.29%
								Sustainable Growth	**[C]**			**3.29%**

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 April to June 2026

Bulkley Proxy Group

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	3.76%	3.76%	4.95%	4.95%
Beta	0.37	0.60	0.37	0.60
Risk Premium	4.95%	4.95%	3.76%	3.76%
CAPM (Weighted)	5.61%	6.75%	6.35%	7.22%

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

Spot (Jun. 30, 2026)	
3-Month Treasury Bill	3.87%
30-Year Treasury Bond	4.91%
3-Mo. Weighted Average (Apr. to Jun. 2026)	
3-Month Treasury Bill	3.76%
30-Year Treasury Bond	4.95%

Source: www.treasury.gov

CAPITAL ASSET PRICING MODEL (CAPM) - BETAS

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

Betas	03/31/2026	04/07/2026	04/14/2026	04/21/2026	04/28/2026	05/05/2026	05/12/2026	05/19/2026	05/26/2026	06/02/2026	06/09/2026	06/16/2026	06/23/2026	06/30/2026	Average	Time Avg.
Forward (6 months)	0.51	0.54	0.57	0.56	0.54	0.55	0.58	0.57	0.61	0.62	0.62	0.60	0.63	0.66	0.582	0.604
Historical (6 months)	0.38	0.41	0.39	0.36	0.36	0.35	0.24	0.21	0.22	0.19	0.21	0.21	0.20	0.17	0.279	0.235
Historical (2 yrs)	0.47	0.47	0.46	0.45	0.45	0.44	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.42	0.441	0.432
Historical (5 yrs)	0.64	0.64	0.64	0.63	0.63	0.63	0.63	0.63	0.63	0.62	0.62	0.62	0.62	0.62	0.628	0.624
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	**0.46**	**0.47**	**0.46**	**0.44**	**0.44**	**0.43**	**0.38**	**0.36**	**0.36**	**0.35**	**0.36**	**0.36**	**0.35**	**0.33**	0.397	0.372
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 (Jun 30, 2026)	Weighted (Apr - Jun 2026)
Forward	0.66	0.60
Historical Blended	0.33	0.37

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 April to June 2026

Cumulative Probability	50.00%	
S&P 500 Option-Implied Growth Rate	7.62%	
S&P 500 Dividend Yield	1.10%	
S&P 500 Market Return	8.72%	
	3-Month Treasury Bill	**30-Year Treasury Bond**
Risk-Free Rate	3.76%	4.95%
Option-Implied Market Risk Premium (Weighted)	4.95%	3.76%

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

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

Bulkley Proxy Group

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	3.87%	3.87%	4.91%	4.91%
Beta	0.33	0.66	0.33	0.66
Risk Premium	4.35%	4.35%	3.31%	3.31%
CAPM (Spot)	5.32%	6.74%	6.01%	7.09%

CAPITAL ASSET PRICING MODEL (CAPM) - MARKET RISK PREMIUM

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

Cumulative Probability	50.00%	
S&P 500 Option-Implied Growth Rate	7.16%	
S&P 500 Dividend Yield	1.06%	
S&P 500 Market Return	8.22%	
	3-Month Treasury Bill	**30-Year Treasury Bond**
Risk-Free Rate	3.87%	4.91%
Option-Implied Market Risk Premium (Spot)	4.35%	3.31%

MARKET TO BOOK RATIO AND DIVIDEND YIELD
Bulkley 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	6/30/25	6/30/26	12/31/26	6/30/26	LTM High	LTM Low	6/30/26	LTM Avg.	MRQ	Annual	6/30/26	LTM Avg.
		[A]	[A]	[A]	[A]	[B]	[B]	[A]	[C]	[C]	[C]	[D]	[D]	[A]	[E]	[F]	[F]
AMER. STATES WATER	AWR	$19.20	$20.99	$24.12	$26.76	$25.44	$27.46	$28.15	$82.63	$83.73	$69.45	3.01	2.90	$0.504	$2.016	2.44%	2.63%
CALIFORNIA WATER	CWT	$23.70	$24.72	$27.49	$28.35	$27.92	$29.95	$31.55	$48.65	$50.44	$41.29	1.62	1.59	$0.335	$1.340	2.75%	2.92%
MIDDLESEX WATER	MSEX	$22.65	$23.74	$24.89	$26.67	$25.78	$27.26	$27.85	$56.16	$62.18	$44.17	2.06	2.01	$0.360	$1.440	2.56%	2.71%
H2O AMERICA	HTO	$36.06	$38.52	$40.65	$42.66	$41.66	$40.38	$38.10	$60.77	$61.87	$43.75	1.50	1.29	$0.440	$1.760	2.90%	3.33%
ATMOS ENERGY CORP.	ATO	$66.85	$73.20	$78.31	$83.92	$81.12	$86.69	$89.45	$172.27	$192.51	$149.98	1.99	2.04	$1.000	$4.000	2.32%	2.34%
CHESAPEAKE UTIL.	CPK	$46.94	$56.04	$60.71	$66.89	$63.80	$70.97	$75.05	$122.48	$140.59	$118.84	1.73	1.92	$0.735	$2.940	2.40%	2.27%
NI SOURCE INC.	NI	$14.63	$17.40	$18.48	$19.75	$19.12	$20.70	$21.65	$47.23	$49.21	$38.45	2.28	2.20	$0.300	$1.200	2.54%	2.74%
N.W. NATURAL	NWN	$33.09	$34.12	$34.44	$35.49	$34.97	$35.87	$36.25	$48.58	$55.99	$39.29	1.35	1.35	$0.493	$1.972	4.06%	4.14%
ONE GAS, INC.	OGS	$46.69	$48.91	$51.85	$54.87	$53.36	$55.74	$56.60	$77.07	$90.78	$70.97	1.38	1.48	$0.680	$2.720	3.53%	3.36%
SOUTHWEST GAS	SWX	$45.57	$46.25	$48.82	$54.84	$51.83	$56.52	$58.20	$88.68	$94.43	$72.43	1.57	1.54	$0.645	$2.580	2.91%	3.09%
SPIRE INC.	SR	$49.08	$50.29	$51.83	$53.35	$52.59	$54.43	$55.50	$78.09	$95.31	$71.24	1.43	1.56	$0.825	$3.300	4.23%	3.96%
Maximum		$66.85	$73.20	$78.31	$83.92	$81.12	$86.69	$89.45	$172.27	$192.51	$149.98	3.01	2.90	$1.000	$4.000	4.23%	4.14%
Minimum		$14.63	$17.40	$18.48	$19.75	$19.12	$20.70	$21.65	$47.23	$49.21	$38.45	1.35	1.29	$0.300	$1.200	2.32%	2.27%
Median		$36.06	$38.52	$40.65	$42.66	$41.66	$40.38	$38.10	$77.07	$83.73	$69.45	1.62	1.59	$0.504	$2.016	2.75%	2.92%
Average		$36.77	$39.47	$41.96	$44.87	$43.42	$46.00	$47.12	$80.24	$88.82	$69.08	1.81	1.81	$0.574	$2.297	2.97%	3.04%

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 June 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
Bulkley 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]
AMER. STATES WATER	AWR	$2.11	$3.36	$3.17	$3.37	16.72%	14.05%	13.25%	13.50%
CALIFORNIA WATER	CWT	$1.77	$0.91	$3.26	$2.15	3.76%	12.49%	7.70%	7.50%
MIDDLESEX WATER	MSEX	$2.39	$1.76	$2.47	$2.36	7.59%	10.16%	9.15%	11.00%
H2O AMERICA	HTO	$2.43	$2.68	$2.87	$2.99	7.19%	7.25%	7.18%	7.50%
ATMOS ENERGY CORP.	ATO	$5.60	$6.10	$6.83	$7.46	8.71%	9.02%	9.20%	10.00%
CHESAPEAKE UTIL.	CPK	$4.97	$4.73	$5.26	$6.01	9.19%	9.01%	9.42%	10.50%
NI SOURCE INC.	NI	$1.47	$1.60	$1.75	$1.95	9.99%	9.75%	10.20%	9.00%
N.W. NATURAL	NWN	$2.54	$2.59	$2.03	$2.77	7.71%	5.92%	7.92%	8.00%
ONE GAS, INC.	OGS	$4.08	$4.14	$3.91	$4.48	8.66%	7.76%	8.40%	10.50%
SOUTHWEST GAS	SWX	($3.10)	$2.13	$2.76	$3.60	4.64%	5.81%	6.95%	9.50%
SPIRE INC.	SR	$3.95	$3.85	$4.19	$4.44	7.75%	8.21%	8.44%	10.50%
Maximum		$5.60	$6.10	$6.83	$7.46	16.72%	14.05%	13.25%	13.50%
Minimum		($3.10)	$0.91	$1.75	$1.95	3.76%	5.81%	6.95%	7.50%
Median		$2.43	$2.68	$3.17	$3.37	7.75%	9.01%	8.44%	10.00%
Average		$2.56	$3.08	$3.50	$3.78	8.35%	9.04%	8.89%	9.77%

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

Bulkley 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]
AMER. STATES WATER	AWR	$26.76	$3.37	$2.016	6.90%	$33.18	$35.07	$35.11	$37.64	$4.70	12.93%
CALIFORNIA WATER	CWT	$28.35	$2.15	$1.340	10.60%	$32.54	$33.89	$32.54	$33.89	$3.56	10.71%
MIDDLESEX WATER	MSEX	$26.67	$2.36	$1.440	NA	NA	NA	NA	NA	NA	NA
H2O AMERICA	HTO	$42.66	$2.99	$1.760	3.10%	$47.97	$49.41	$36.34	$34.92	$3.48	9.78%
ATMOS ENERGY CORP.	ATO	$83.92	$7.46	$4.000	6.80%	$100.28	$105.09	$136.11	$153.96	$10.37	7.15%
CHESAPEAKE UTIL.	CPK	$66.89	$6.01	$2.940	NA	NA	NA	NA	NA	NA	NA
NI SOURCE INC.	NI	$19.75	$1.95	$1.200	6.60%	$23.28	$24.31	$27.83	$30.39	$2.68	9.22%
N.W. NATURAL	NWN	$35.49	$2.77	$1.972	NA	NA	NA	NA	NA	NA	NA
ONE GAS, INC.	OGS	$54.87	$4.48	$2.720	6.20%	$63.07	$65.45	$78.41	$85.92	$6.05	7.37%
SOUTHWEST GAS	SWX	$54.84	$3.60	$2.580	9.90%	$60.03	$61.67	$65.26	$68.45	$5.77	8.63%
SPIRE INC.	SR	$53.35	$4.44	$3.300	11.20%	$59.34	$61.28	$77.76	$85.92	$7.55	9.22%
Maximum		$83.92	$7.46	$4.000	11.20%	$100.28	$105.09	$136.11	$153.96	$10.37	12.93%
Minimum		$19.75	$1.95	$1.200	3.10%	$23.28	$24.31	$27.83	$30.39	$2.68	7.15%
Median		$42.66	$3.37	$2.016	6.85%	$53.66	$55.34	$50.80	$53.04	$5.24	9.22%
Average		$44.87	$3.78	$2.297	7.66%	$52.46	$54.52	$61.17	$66.38	$5.52	9.38%

Sources:
[A] Value Line: Most current data available at time of schedule preparation.
[B] Zacks: Data as of July 31, 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
Bulkley 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]
AMER. STATES WATER	AWR	53.9%	60.1%	47.2%	53.3%	57.0%	$ 790.9	$ 782.7	$ 8.2	$ -	$ 1,037.5	$ 1,828.4	42.8%	0.4%	0.0%	56.7%
CALIFORNIA WATER	CWT	52.7%	55.6%	57.5%	59.7%	53.5%	$ 1,604.3	$ 1,472.0	$ 132.3	$ -	$ 1,693.6	$ 3,297.9	44.6%	4.0%	0.0%	51.4%
MIDDLESEX WATER	MSEX	54.4%	57.7%	54.0%	55.7%	56.4%	$ 417.4	$ 380.7	$ 36.7	$ 2.4	$ 495.6	$ 915.4	41.6%	4.0%	0.3%	54.1%
H2O AMERICA	HTO	40.9%	42.7%	44.7%	44.5%	45.2%	$ 1,977.1	$ 1,866.8	$ 110.3	$ -	$ 1,539.8	$ 3,516.9	53.1%	3.1%	0.0%	43.8%
ATMOS ENERGY CORP.	ATO	61.6%	62.1%	62.1%	60.7%	60.2%	$ 9,629.3	$ 9,618.0	$ 11.3	$ -	$ 14,547.8	$ 24,177.1	39.8%	0.0%	0.0%	60.2%
CHESAPEAKE UTIL.	CPK	58.5%	59.0%	51.2%	52.4%	54.6%	$ 1,659.5	$ 1,325.3	$ 334.2	$ -	$ 1,593.9	$ 3,253.4	40.7%	10.3%	0.0%	49.0%
NI SOURCE INC.	NI	33.5%	35.3%	40.3%	41.8%	37.9%	$ 16,767.0	$ 15,459.0	$ 1,308.0	$ -	$ 9,434.7	$ 26,201.7	59.0%	5.0%	0.0%	36.0%
N.W. NATURAL	NWN	47.2%	48.5%	47.4%	45.2%	38.6%	$ 2,604.4	$ 2,272.4	$ 332.0	$ -	$ 1,428.6	$ 4,033.0	56.3%	8.2%	0.0%	35.4%
ONE GAS, INC.	OGS	38.9%	49.3%	56.1%	56.5%	59.3%	$ 3,381.2	$ 2,340.3	$ 1,040.9	$ -	$ 3,409.8	$ 6,791.0	34.5%	15.3%	0.0%	50.2%
SOUTHWEST GAS	SWX	41.8%	41.0%	41.8%	44.6%	53.6%	$ 3,509.0	$ 3,434.0	$ 75.0	$ -	$ 3,966.9	$ 7,475.9	45.9%	1.0%	0.0%	53.1%
SPIRE INC.	SR	43.2%	44.6%	41.3%	43.1%	46.6%	$ 7,955.1	$ 5,762.0	$ 2,193.1	$ -	$ 5,028.3	$ 12,983.4	44.4%	16.9%	0.0%	38.7%
Maximum		61.6%	62.1%	62.1%	60.7%	60.2%	$ 16,767.0	$ 15,459.0	$ 2,193.1	$ 2.4	$ 14,547.8	$ 26,201.7	59.0%	16.9%	0.3%	60.2%
Minimum		33.5%	35.3%	40.3%	41.8%	37.9%	$ 417.4	$ 380.7	$ 8.2	$ -	$ 495.6	$ 915.4	34.5%	0.0%	0.0%	35.4%
Median		47.2%	49.3%	47.4%	52.4%	53.6%	$ 2,604.4	$ 2,272.4	$ 132.3	$ -	$ 1,693.6	$ 4,033.0	44.4%	4.0%	0.0%	50.2%
Average		47.9%	50.5%	49.4%	50.7%	51.2%	$ 4,572.3	$ 4,064.8	$ 507.5	$ 0.2	$ 4,016.0	$ 8,588.5	45.7%	6.2%	0.0%	**48.1%**

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
Bulkley 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]
AMER. STATES WATER	AWR	53.9%	60.1%	47.2%	53.3%	57.0%	$ 790.9	$ 782.7		$ -	$ 1,037.5	$ 1,820.2	43.0%	0.0%	0.0%	57.0%
CALIFORNIA WATER	CWT	52.7%	55.6%	57.5%	59.7%	53.5%	$ 1,604.3	$ 1,472.0		$ -	$ 1,693.6	$ 3,165.6	46.5%	0.0%	0.0%	53.5%
MIDDLESEX WATER	MSEX	54.4%	57.7%	54.0%	55.7%	56.4%	$ 417.4	$ 380.7		$ 2.4	$ 495.6	$ 878.7	43.3%	0.0%	0.3%	56.4%
H2O AMERICA	HTO	40.9%	42.7%	44.7%	44.5%	45.2%	$ 1,977.1	$ 1,866.8		$ -	$ 1,539.8	$ 3,406.6	54.8%	0.0%	0.0%	45.2%
ATMOS ENERGY CORP.	ATO	61.6%	62.1%	62.1%	60.7%	60.2%	$ 9,629.3	$ 9,618.0		$ -	$ 14,547.8	$ 24,165.8	39.8%	0.0%	0.0%	60.2%
CHESAPEAKE UTIL.	CPK	58.5%	59.0%	51.2%	52.4%	54.6%	$ 1,659.5	$ 1,325.3		$ -	$ 1,593.9	$ 2,919.2	45.4%	0.0%	0.0%	54.6%
NI SOURCE INC.	NI	33.5%	35.3%	40.3%	41.8%	37.9%	$ 16,767.0	$ 15,459.0		$ -	$ 9,434.7	$ 24,893.7	62.1%	0.0%	0.0%	37.9%
N.W. NATURAL	NWN	47.2%	48.5%	47.4%	45.2%	38.6%	$ 2,604.4	$ 2,272.4		$ -	$ 1,428.6	$ 3,701.0	61.4%	0.0%	0.0%	38.6%
ONE GAS, INC.	OGS	38.9%	49.3%	56.1%	56.5%	59.3%	$ 3,381.2	$ 2,340.3		$ -	$ 3,409.8	$ 5,750.1	40.7%	0.0%	0.0%	59.3%
SOUTHWEST GAS	SWX	41.8%	41.0%	41.8%	44.6%	53.6%	$ 3,509.0	$ 3,434.0		$ -	$ 3,966.9	$ 7,400.9	46.4%	0.0%	0.0%	53.6%
SPIRE INC.	SR	43.2%	44.6%	41.3%	43.1%	46.6%	$ 7,955.1	$ 5,762.0		$ -	$ 5,028.3	$ 10,790.3	53.4%	0.0%	0.0%	46.6%
Maximum		61.6%	62.1%	62.1%	60.7%	60.2%	$ 16,767.0	$ 15,459.0		$ 2.4	$ 14,547.8	$ 24,893.7	62.1%	0.0%	0.3%	60.2%
Minimum		33.5%	35.3%	40.3%	41.8%	37.9%	$ 417.4	$ 380.7		$ -	$ 495.6	$ 878.7	39.8%	0.0%	0.0%	37.9%
Median		47.2%	49.3%	47.4%	52.4%	53.6%	$ 2,604.4	$ 2,272.4		$ -	$ 1,693.6	$ 3,701.0	46.4%	0.0%	0.0%	53.6%
Average		47.9%	50.5%	49.4%	50.7%	51.2%	$ 4,572.3	$ 4,064.8		$ 0.2	$ 4,016.0	$ 8,081.1	48.8%	0.0%	0.0%	**51.2%**

Sources:

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

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

OVERALL COST OF CAPITAL
Kentucky-American Water Company

	Ratios		Cost Rate		Weighted Cost Rate
					[D]
Long-Term Debt	48.26%	[A]	4.84%	[B]	2.34%
Short-Term Debt	0.45%	[B]	3.32%	[B]	0.02%
Preferred Equity	0.28%	[B]	8.50%	[B]	0.02%
Common Equity	51.00%	[A]	8.07%	[C]	4.12%
	100.00%				**6.49%**

RECOMMENDED RANGES

	Low		High
Proxy Group Cost of Equity Range	7.80%		8.51%
Proxy Group Cost of Equity		7.99%	
Based on RFC Capital Structure Recommendation			
Capital Structure Risk Adjustment [E]		0.08%	
Adjusted Recommended Cost of Equity Range	**7.88%**		**8.59%**
Company Specific Cost of Equity Recommendation		**8.07%**	
Cost of Capital Range	6.40%		6.76%
Based on Ms. Bulkley's Capital Structure Recommendation			
Capital Structure Risk Adjustment [E]		0.03%	
Adjusted Recommended Cost of Equity Range	**7.83%**		**8.54%**
Company Specific Cost of Equity Recommendation		**8.02%**	
Cost of Capital Range	6.41%		6.78%
Comprehensive Cost of Capital Range			
Cost of Debt Range	4.84%		3.64%
Common Equity Ratio Range	51.00%		51.50%
Comprehensive Cost of Capital Range	6.40%		6.20%

Sources:
[A] Recommendation based on holding company capital structure
[B] Mr. Watkins' Direct Testimony, Page 32, Table 3.
[C] Company Specific Cost of Equity Recommendation based on RFC Capital Structure Recommendation
[D] Ratios times Cost Rate
[E] Based on estimate of 0.04% change in Cost of Equity for each 1% difference in Common Equity Ratio compared to the Proxy Group (Exhibit ALR-6 vs. Exhibit ALR-10, page 4).

COST OF EQUITY SUMMARY

RFC Water Proxy Group (4 Companies)

		Low	High	Percentile			
				50.0% (Median)	80.0%	85.0%	90.0%
DCF		**6.79%**	**8.85%**				
Constant Growth - Sustainable Growth	[A]	8.75%	8.85%				
Constant Growth - Option-Implied Growth	[B]	6.79%	7.57%				
Non-Constant Growth	[C]	7.70%	7.95%				
CAPM		**5.16%**	**7.44%**				
3-Mo. Weighted Average (Apr. to Jun. 2026)							
3-Month Treasury Bill Risk-Free Rate	[D]	5.46%	7.03%				
30-Year Treasury Bond Risk-Free Rate	[D]	6.24%	7.44%				
Spot (Jun. 30, 2026)							
3-Month Treasury Bill Risk-Free Rate	[E]	5.16%	7.12%				
30-Year Treasury Bond Risk-Free Rate	[E]	5.90%	7.38%				
Proxy Group Cost of Equity				7.25% Median of Overall Range of Results	**7.80%**	**7.99% Proxy Group COE Midpoint**	**8.51%**
						<---- Recommended Range ---->	

Sources:
[A] Exhibit ALR-8, page 1
[B] Exhibit ALR-8, page 2
[C] Exhibit ALR-8, page 3 and Exhibit ALR-8, page 4
[D] Exhibit ALR-9, page 1
[E] Exhibit ALR-9, page 5

CONSTANT GROWTH DISCOUNTED CASH FLOW (DCF) - INDICATED COST OF EQUITY
RFC Water Proxy Group (4 Companies)

			Based on Average Market Price For Year Ending 6/30/2026	Based On Market Price As Of 6/30/2026
1	Dividend Yield On Market Price	[A]	2.90%	2.66%
2	Retention Rate:			
	a) Market-to-Book Ratio	[A]	1.94	2.05
	b) Dividend Yield on Book	[B]	5.63%	5.46%
	c) Expected Return on Equity	[C]	10.00%	10.00%
	d) Retention Rate	[D]	43.67%	45.40%
3	Reinvestment Growth	[E]	4.37%	4.54%
4	New Financing Growth	[F]	1.40%	1.56%
5	Total Estimate of Investor Anticipated Growth	[G]	5.77%	6.10%
6	Increment to Dividend Yield for Growth to Next Year	[H]	0.08%	0.08%
7	**Indicated Cost of Equity**	**[I]**	**8.75%**	**8.85%**

Sources:

[A] Exhibit ALR-10, 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	**9.25%**	**9.88%**	Exhibit ALR-10, page 2
Return on Equity to Achieve Zacks Growth	10.71%	11.17%	Exhibit ALR-10, page 3
Average Historical Growth	9.05%	9.71%	
Earned Return on Equity in 2025	8.43%	9.32%	Exhibit ALR-10, page 2
Earned Return on Equity in 2024	11.32%	10.99%	Exhibit ALR-10, page 2
Earned Return on Equity in 2023	7.39%	8.81%	Exhibit ALR-10, 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 = 1.49% From Exhibit ALR-8, 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 Water Proxy Group (4 Companies)

			Based On Weighted Averages As Of 6/30/2026	Based On Spot Market Values As Of 6/30/2026
1	Dividend Yield On Market Price	[A]	2.90%	2.66%
2	Total Estimate of Investor Anticipated Growth	[B]	3.83%	4.84%
3	Increment to Dividend Yield for Growth to Next Year	[C]	0.06%	0.06%
4	**Indicated Cost of Equity**	**[D]**	**6.79%**	**7.57%**

Sources:
[A] Exhibit ALR-10, 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 Water 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	6/30/26	6/30/30	6/30/2026	6/30/2030	2026	2027	2028	2029	2030	IRR / DCF
		[A]	[A]	[B]	[B]	[A]	[B]	[C]	[C]	[D]	[E]	[F]	[F]	[F]	[F]	[F]	[G]
AMER. STATES WATER	AWR	$2.10	$2.28	$2.46	$2.65	$2.85	7.72%	$27.46	$32.92	$82.63	$99.07	($81.58)	$2.28	$2.46	$2.65	$100.49	7.52%
CALIFORNIA WATER	CWT	$1.34	$1.38	$1.43	$1.49	$1.55	3.95%	$29.95	$38.30	$48.65	$62.22	($47.98)	$1.38	$1.43	$1.49	$62.99	9.16%
H2O AMERICA	HTO	$1.75	$1.82	$1.86	$1.91	$1.95	2.33%	$40.38	$52.99	$60.77	$79.75	($59.90)	$1.82	$1.86	$1.91	$80.73	9.94%
MIDDLESEX WATER	MSEX	$1.46	$1.52	$1.56	$1.61	$1.65	2.77%	$27.26	$28.83	$56.16	$59.39	($55.43)	$1.52	$1.56	$1.61	$60.21	4.18%
Maximum		$2.10	$2.28	$2.46	$2.65	$2.85	7.72%	$40.38	$52.99	$82.63	$99.07	($47.98)	$2.28	$2.46	$2.65	$100.49	9.94%
Minimum		$1.34	$1.38	$1.43	$1.49	$1.55	2.33%	$27.26	$28.83	$48.65	$59.39	($81.58)	$1.38	$1.43	$1.49	$60.21	4.18%
Median		$1.61	$1.67	$1.71	$1.76	$1.80	3.36%	$28.70	$35.61	$58.47	$70.99	($57.66)	$1.67	$1.71	$1.76	$71.86	8.34%
Average		$1.66	$1.75	$1.83	$1.91	$2.00	4.19%	$31.26	$38.26	$62.05	$75.11	($61.22)	$1.75	$1.83	$1.91	$76.11	**7.70%**

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 June 30, 2026.

[E] Stock Price projected assuming constant Market to Book Ratio (Exhibit ALR-10, page 1) and using VL projected Book Value.

[F] Cash Flow from purchasing stock on July 1, 2026, receiving dividends through 2030, and selling on June 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.
2 of 4 dividends assumed received in 2026 and 2 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 Water 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	6/30/26	6/30/30	2026	2027	2028	2029	2030	IRR / DCF
		[A]	[A]	[B]	[B]	[A]	[B]	[C]	[C]	[D]	[E]	[F]	[F]	[F]	[F]	[F]	[G]
AMER. STATES WATER	AWR	$2.10	$2.28	$2.46	$2.65	$2.85	7.72%	$26.45	$31.71	$76.59	$91.82	($75.54)	$2.28	$2.46	$2.65	$93.25	7.75%
CALIFORNIA WATER	CWT	$1.34	$1.38	$1.43	$1.49	$1.55	3.95%	$28.94	$37.01	$45.87	$58.66	($45.20)	$1.38	$1.43	$1.49	$59.43	9.33%
H2O AMERICA	HTO	$1.75	$1.82	$1.86	$1.91	$1.95	2.33%	$41.02	$53.83	$52.81	$69.30	($51.94)	$1.82	$1.86	$1.91	$70.28	10.38%
MIDDLESEX WATER	MSEX	$1.46	$1.52	$1.56	$1.61	$1.65	2.77%	$26.52	$28.04	$53.18	$56.23	($52.45)	$1.52	$1.56	$1.61	$57.05	4.34%
Maximum		$2.10	$2.28	$2.46	$2.65	$2.85	7.72%	$41.02	$53.83	$76.59	$91.82	($45.20)	$2.28	$2.46	$2.65	$93.25	10.38%
Minimum		$1.34	$1.38	$1.43	$1.49	$1.55	2.33%	$26.45	$28.04	$45.87	$56.23	($75.54)	$1.38	$1.43	$1.49	$57.05	4.34%
Median		$1.61	$1.67	$1.71	$1.76	$1.80	3.36%	$27.73	$34.36	$52.99	$63.98	($52.19)	$1.67	$1.71	$1.76	$64.86	8.54%
Average		$1.66	$1.75	$1.83	$1.91	$2.00	4.19%	$30.73	$37.65	$57.11	$69.00	($56.28)	$1.75	$1.83	$1.91	$70.00	**7.95%**

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 June 30, 2026.
[E] Stock Price projected assuming constant Market to Book Ratio (Exhibit ALR-10, page 1) and using VL projected Book Value.
[F] Cash Flow from purchasing stock on July 1, 2026, receiving dividends through 2030, and selling on June 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.
2 of 4 dividends assumed received in 2026 and 2 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 Water 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]
AMER. STATES WATER	AWR	36.9	36.9	37.0	37.0	38.2	39.1	39.3	40.0	0.84%	0.95%	0.90%
CALIFORNIA WATER	CWT	50.3	53.7	55.6	57.7	59.5	59.6	60.0	60.0	4.26%	0.17%	1.97%
H2O AMERICA	HTO	28.6	30.2	30.8	32.0	33.6	36.1	42.0	35.0	4.17%	0.80%	2.29%
MIDDLESEX WATER	MSEX	17.5	17.5	17.6	17.8	17.9	18.5	18.5	18.8	0.60%	0.94%	0.79%
Maximum		50.3	53.7	55.6	57.7	59.5	59.6	60.0	60.0	4.26%	0.95%	2.29%
Minimum		17.5	17.5	17.6	17.8	17.9	18.5	18.5	18.8	0.60%	0.17%	0.79%
Median		32.7	33.6	33.9	34.5	35.9	37.6	40.6	37.5	2.51%	0.87%	1.44%
Average		33.3	34.6	35.3	36.1	37.3	38.3	39.9	38.4	2.47%	0.72%	1.49%
								Sustainable Growth	**[C]**			**1.49%**

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 April to June 2026
RFC Water Proxy Group

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	3.76%	3.76%	4.95%	4.95%
Beta	0.34	0.66	0.34	0.66
Risk Premium	4.95%	4.95%	3.76%	3.76%
CAPM (Weighted)	5.46%	7.03%	6.24%	7.44%

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

Spot (Jun. 30, 2026)	
3-Month Treasury Bill	3.87%
30-Year Treasury Bond	4.91%
3-Mo. Weighted Average (Apr. to Jun. 2026)	
3-Month Treasury Bill	3.76%
30-Year Treasury Bond	4.95%

Source: www.treasury.gov

CAPITAL ASSET PRICING MODEL (CAPM) - BETAS

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

Betas	03/31/2026	04/07/2026	04/14/2026	04/21/2026	04/28/2026	05/05/2026	05/12/2026	05/19/2026	05/26/2026	06/02/2026	06/09/2026	06/16/2026	06/23/2026	06/30/2026	Average	Time Avg.
Forward (6 months)	0.63	0.65	0.64	0.67	0.59	0.60	0.63	0.62	0.63	0.68	0.63	0.62	0.71	0.75	0.646	0.660
Historical (6 months)	0.39	0.42	0.36	0.36	0.35	0.32	0.20	0.18	0.18	0.19	0.22	0.21	0.20	0.15	0.266	0.221
Historical (2 yrs)	0.41	0.40	0.40	0.39	0.37	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.35	0.34	0.370	0.360
Historical (5 yrs)	0.63	0.63	0.63	0.63	0.63	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.61	0.623	0.619
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	**0.44**	**0.46**	**0.43**	**0.42**	**0.41**	**0.39**	**0.33**	**0.32**	**0.32**	**0.33**	**0.34**	**0.34**	**0.33**	**0.30**	0.369	0.342
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 (Jun 30, 2026)	Weighted (Apr - Jun 2026)
Forward	0.75	0.66
Historical Blended	0.30	0.34

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 April to June 2026

Cumulative Probability	50.00%	
S&P 500 Option-Implied Growth Rate	7.62%	
S&P 500 Dividend Yield	1.10%	
S&P 500 Market Return	8.72%	
	3-Month Treasury Bill	**30-Year Treasury Bond**
Risk-Free Rate	3.76%	4.95%
Option-Implied Market Risk Premium (Weighted)	4.95%	3.76%

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

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

RFC Water Proxy Group

	3-Month Treasury Bill		30-Year Treasury Bond	
	Historical Blended Beta	Forward Beta	Historical Blended Beta	Forward Beta
Risk-Free Rate	3.87%	3.87%	4.91%	4.91%
Beta	0.30	0.75	0.30	0.75
Risk Premium	4.35%	4.35%	3.31%	3.31%
CAPM (Spot)	5.16%	7.12%	5.90%	7.38%

CAPITAL ASSET PRICING MODEL (CAPM) - MARKET RISK PREMIUM

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

Cumulative Probability	50.00%	
S&P 500 Option-Implied Growth Rate	7.16%	
S&P 500 Dividend Yield	1.06%	
S&P 500 Market Return	8.22%	
	3-Month Treasury Bill	**30-Year Treasury Bond**
Risk-Free Rate	3.87%	4.91%
Option-Implied Market Risk Premium (Spot)	4.35%	3.31%

MARKET TO BOOK RATIO AND DIVIDEND YIELD

RFC Water 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**	**6/30/25**	**6/30/26**	**12/31/26**	**6/30/26**	**LTM High**	**LTM Low**	**6/30/26**	**LTM Avg.**	**MRQ**	**Annual**	**6/30/26**	**LTM Avg.**
		[A]	[A]	[A]	[A]	[B]	[B]	[A]	[C]	[C]	[C]	[D]	[D]	[A]	[E]	[F]	[F]
AMER. STATES WATER	AWR	$19.20	$20.99	$24.12	$26.76	$25.44	$27.46	$28.15	$82.63	$83.73	$69.45	3.01	2.90	$0.504	$2.016	2.44%	2.63%
CALIFORNIA WATER	CWT	$23.70	$24.72	$27.49	$28.35	$27.92	$29.95	$31.55	$48.65	$50.44	$41.29	1.62	1.59	$0.335	$1.340	2.75%	2.92%
H2O AMERICA	HTO	$36.06	$38.52	$40.65	$42.66	$41.66	$40.38	$38.10	$60.77	$61.87	$43.75	1.50	1.29	$0.440	$1.760	2.90%	3.33%
MIDDLESEX WATER	MSEX	$22.65	$23.74	$24.89	$26.67	$25.78	$27.26	$27.85	$56.16	$62.18	$44.17	2.06	2.01	$0.360	$1.440	2.56%	2.71%
Maximum		$36.06	$38.52	$40.65	$42.66	$41.66	$40.38	$38.10	$82.63	$83.73	$69.45	3.01	2.90	$0.504	$2.016	2.90%	3.33%
Minimum		$19.20	$20.99	$24.12	$26.67	$25.44	$27.26	$27.85	$48.65	$50.44	$41.29	1.50	1.29	$0.335	$1.340	2.44%	2.63%
Median		$23.18	$24.23	$26.19	$27.56	$26.85	$28.70	$29.85	$58.47	$62.03	$43.96	1.84	1.80	$0.400	$1.600	2.66%	2.81%
Average		$25.40	$26.99	$29.29	$31.11	$30.20	$31.26	$31.41	$62.05	$64.55	$49.67	2.05	1.94	$0.410	$1.639	2.66%	2.90%

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 June 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 Water 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]
AMER. STATES WATER	AWR	$2.11	$3.36	$3.17	$3.37	16.72%	14.05%	13.25%	13.50%
CALIFORNIA WATER	CWT	$1.77	$0.91	$3.26	$2.15	3.76%	12.49%	7.70%	7.50%
H2O AMERICA	HTO	$2.43	$2.68	$2.87	$2.99	7.19%	7.25%	7.18%	7.50%
MIDDLESEX WATER	MSEX	$2.39	$1.76	$2.47	$2.36	7.59%	10.16%	9.15%	11.00%
Maximum		$2.43	$3.36	$3.26	$3.37	16.72%	14.05%	13.25%	13.50%
Minimum		$1.77	$0.91	$2.47	$2.15	3.76%	7.25%	7.18%	7.50%
Median		$2.25	$2.22	$3.02	$2.68	7.39%	11.32%	8.43%	9.25%
Average		$2.18	$2.18	$2.94	$2.72	8.81%	10.99%	9.32%	9.88%

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-10, page 1.

RETURN ON EQUITY IMPLIED BY ZACKS GROWTH RATES

RFC Water Proxy Group

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
		Book Value	**EPS**	**Annual Dividend**	**Analyst 5 Year**	**Analyst-Implied Book Value before SV**		**Analyst-Implied 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]
AMER. STATES WATER	AWR	$26.76	$3.37	$2.016	6.90%	$33.18	$35.07	$35.11	$37.64	$4.70	12.93%
CALIFORNIA WATER	CWT	$28.35	$2.15	$1.340	10.60%	$32.54	$33.89	$32.54	$33.89	$3.56	10.71%
H2O AMERICA	HTO	$42.66	$2.99	$1.760	3.30%	$48.00	$49.45	$36.36	$34.95	$3.52	9.86%
MIDDLESEX WATER	MSEX	$26.67	$2.36	$1.440	NA	NA	NA	NA	NA	NA	NA
Maximum		$42.66	$3.37	$2.016	10.60%	$48.00	$49.45	$36.36	$37.64	$4.70	12.93%
Minimum		$26.67	$2.15	$1.340	3.30%	$32.54	$33.89	$32.54	$33.89	$3.52	9.86%
Median		$27.56	$2.68	$1.600	6.90%	$33.18	$35.07	$35.11	$34.95	$3.56	10.71%
Average		$31.11	$2.72	$1.639	6.93%	$37.91	$39.47	$34.67	$35.49	$3.93	11.17%

Sources:

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

[B] Zacks: Data as of July 16, 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 Water 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]
AMER. STATES WATER	AWR	53.9%	60.1%	47.2%	53.3%	57.0%	$ 790.9	$ 782.7	$ 8.2	$ -	$ 1,037.5	$ 1,828.4	42.8%	0.4%	0.0%	56.7%
CALIFORNIA WATER	CWT	52.7%	55.6%	57.5%	59.7%	53.5%	$ 1,604.3	$ 1,472.0	$ 132.3	$ -	$ 1,693.6	$ 3,297.9	44.6%	4.0%	0.0%	51.4%
H2O AMERICA	HTO	40.9%	42.7%	44.7%	44.5%	45.2%	$ 1,977.1	$ 1,866.8	$ 110.3	$ -	$ 1,539.8	$ 3,516.9	53.1%	3.1%	0.0%	43.8%
MIDDLESEX WATER	MSEX	54.4%	57.7%	54.0%	55.7%	56.4%	$ 417.4	$ 380.7	$ 36.7	$ 2.4	$ 495.6	$ 915.4	41.6%	4.0%	0.3%	54.1%
Maximum		54.4%	60.1%	57.5%	59.7%	57.0%	$ 1,977.1	$ 1,866.8	$ 132.3	$ 2.4	$ 1,693.6	$ 3,516.9	53.1%	4.0%	0.3%	56.7%
Minimum		40.9%	42.7%	44.7%	44.5%	45.2%	$ 417.4	$ 380.7	$ 8.2	$ -	$ 495.6	$ 915.4	41.6%	0.4%	0.0%	43.8%
Median		53.3%	56.7%	50.6%	54.5%	55.0%	$ 1,197.6	$ 1,127.4	$ 73.5	$ -	$ 1,288.7	$ 2,563.2	43.7%	3.6%	0.0%	52.7%
Average		50.5%	54.0%	50.9%	53.3%	53.0%	$ 1,197.4	$ 1,125.6	$ 71.9	$ 0.6	$ 1,191.6	$ 2,389.6	45.5%	2.9%	0.1%	**51.5%**

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 Water 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]
AMER. STATES WATER	AWR	53.9%	60.1%	47.2%	53.3%	57.0%	$ 790.9	$ 782.7		$ -	$ 1,037.5	$ 1,820.2	43.0%	0.0%	0.0%	57.0%
CALIFORNIA WATER	CWT	52.7%	55.6%	57.5%	59.7%	53.5%	$ 1,604.3	$ 1,472.0		$ -	$ 1,693.6	$ 3,165.6	46.5%	0.0%	0.0%	53.5%
H2O AMERICA	HTO	40.9%	42.7%	44.7%	44.5%	45.2%	$ 1,977.1	$ 1,866.8		$ -	$ 1,539.8	$ 3,406.6	54.8%	0.0%	0.0%	45.2%
MIDDLESEX WATER	MSEX	54.4%	57.7%	54.0%	55.7%	56.4%	$ 417.4	$ 380.7		$ 2.4	$ 495.6	$ 878.7	43.3%	0.0%	0.3%	56.4%
Maximum		54.4%	60.1%	57.5%	59.7%	57.0%	$ 1,977.1	$ 1,866.8		$ 2.4	$ 1,693.6	$ 3,406.6	54.8%	0.0%	0.3%	57.0%
Minimum		40.9%	42.7%	44.7%	44.5%	45.2%	$ 417.4	$ 380.7		$ -	$ 495.6	$ 878.7	43.0%	0.0%	0.0%	45.2%
Median		53.3%	56.7%	50.6%	54.5%	55.0%	$ 1,197.6	$ 1,127.4		$ -	$ 1,288.7	$ 2,492.9	44.9%	0.0%	0.0%	55.0%
Average		50.5%	54.0%	50.9%	53.3%	53.0%	$ 1,197.4	$ 1,125.6		$ 0.6	$ 1,191.6	$ 2,317.8	46.9%	0.0%	0.1%	**53.0%**

Sources:
[A] Value Line: Most current data available at time of schedule preparation.
[B] Percentage calculated on Total Capital excluding Short Term Debt.

AFFIDAVIT

STATE OF CONNECTICUT

COUNTY OF FAIRFIELD

AARON L. ROTHSCHILD, being duly sworn, deposes and states: that the attached is his sworn testimony and that the statements contained are true and correct to the best of his knowledge, information and belief.

Aaron L. Rothschild

Sworn to and subscribed before me on this 6th day of August 2026.

Notary Public

GERALYN M HATCHER
Notary Public, State of Connecticut
My Commission Expires Dec. 31, 2026