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August 22, 2024

BY E-FILING

Mr. Adam Teitzman, Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: **Docket No. 20240099-EI - Petition for rate increase by Florida Public Utilities Company**

Dear Mr. Teitzman:

Attached, for electronic filing, on behalf of Florida Public Utilities Company, please find the Testimony and Exhibits of Nick Crowley.

Thank you for your assistance with this filing. As always, please don't hesitate to let me know if you have any questions whatsoever.

(Document 6 of 18)

Sincerely,

Beth Keating
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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

Docket No. 20240099-EI: Petition for rate increase by Florida Public Utilities Company-Electric Division

PREFILED DIRECT TESTIMONY OF

Nicholas A. Crowley

Date of Filing: August 22, 2024

Focus of Testimony: Cost of Capital Study

Exhibits:	Exhibit NAC-1	Resume
	Exhibits NAC-2-36	Cost of Capital Results

Pre-filed Direct Testimony
Of
Nicholas A. Crowley

1. Introduction

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

A. My name is Nicholas Allen Crowley. I am a Vice President at Christensen Associates Energy Consulting, LLC ("CA Energy Consulting"). My business address is 800 University Bay Drive, Madison, Wisconsin, 53705.

Q. On whose behalf are you submitting this testimony?

A. I am submitting this pre-filed direct testimony before the Florida Public Service Commission on behalf of Florida Public Utilities Company.

Q. Please describe your education and experience.

A. I have a Bachelor of Science in economics and a Master of Science in economics from the University of Wisconsin-Madison. I began working at Christensen Associates Energy Consulting in 2016. Prior to joining this consulting group, I was an Economist in the Department of Pipeline Regulation at the Federal Energy Regulatory Commission ("FERC"), where I assisted with energy industry benchmarking, the incentive regulation of oil pipelines,[1] and the review and evaluation of natural gas pipeline rate cases. In these regulatory roles, I worked extensively with utility energy data and financial accounting data used for the development of cost of capital studies, among other

1 Five-Year Review of the Oil Pipeline Index. Issued: December 17, 2015. 153 FERC ¶ 61,312.

analytics related to utility rate filings. My curriculum vitae is contained within Appendix I as Exhibit NAC-1.

Q. Have you previously testified before the Florida Public Service Commission or other state regulatory commission?

A. I have not testified before the Florida Public Service Commission ("Florida PSC") prior to this engagement. However, I have testified on behalf of utilities in both the United States and Canada. Most recently, I testified regarding cost of capital on behalf of Alpena Power Company in Michigan.[2] I have also testified in Massachusetts and Alberta, Canada.[3,4,5] I have authored reports on electric and gas utility cost of capital that were filed in the Caribbean and in the state of Wisconsin.[6] In addition to cost of capital testimony, my work includes incentive regulation framework evaluations, cost-of-service analysis, marginal costs studies, and rate design. My reports have been filed before regulatory authorities in the United Sates and Canada.[7]

[2] Direct Testimony of Nicholas A. Crowley, Case No. U-21488, December 11, 2023.
[3] Direct Testimony of Nicholas A. Crowley, D.P.U. 23-80 and D.P.U. 23-81, August 17, 2023.
[4] Direct Testimony of Mark E. Meitzen, Ph.D., and Nicholas A. Crowley, D.P.U. 20-120, November 13, 2020; and Rebuttal Testimony of Mark E. Meitzen, Ph.D., and Nicholas A. Crowley, D.P.U. 20-120, April 23, 2021.
[5] Determination of the Third-Generation X Factor for the AUC Price Cap Plan, Mark E. Meitzen, Ph.D. and Nicholas A. Crowley, MS, January 20, 2023.
[6] For Grand Bahama Power Company, in 2018 and again in 2021. Also, for St. Croix Gas Company, located in western Wisconsin, in 2019.
[7] For example, *Methodology and Cost Estimates for Generation and Transmission Services, 2021-2029,* Prepared for Newfoundland and Labrador Hydro, November 15, 2018.

Q. How will you refer to the Company?

A. When referring to the Florida Public Utilities Company Electric Division, I will refer to it as "FPUC" or "the Company." When referring to Chesapeake Utilities Corporation, the parent company, I will refer to it as "CUC" or the "Corporation."

Q. Please provide an outline for this testimony.

A. Following this introduction, my testimony is organized in sections, as follows:

2. Purpose and Overview of Testimony
3. Fundamentals of Cost of Capital
4. Monetary Policy, Interest Rates, and Macroeconomic Performance
5. Cost of Debt Analysis
6. Cost of Equity Estimation Methods
7. Cost of Equity Results
8. Capital Structure Analysis
9. The Weighted Average Cost of Capital
10. Summary and Conclusions

2. Purpose and Overview of Testimony

Q. What is the purpose of your pre-filed direct testimony?

A. The purpose of my direct testimony is to present evidence and provide a recommendation regarding the cost of capital faced by Florida Public Utilities Company ("FPUC," or "the Company"). The cost of capital study described in this testimony consists of an assessment of the Company's projected capital structure and carrying cost on outstanding long- and short-term debt, as well as my recommendations with respect to the required return on equity. I discuss the Company's recent financial history and financial projections through test year 2025 including, in particular, the weighted average cost rate of long-term debt which, reflects Chesapeake Utilities Corporation's

recent acquisition of Florida City Gas and ongoing need for incremental debt issues in order to underwrite FPUC's rate base.

Q. Have you prepared exhibits which support your testimony?

A. Yes. I am sponsoring Exhibits NAC-1 through NAC-36, which are appended to this testimony and can be found in Appendix II.

Q. Please describe the Florida Public Utility Company's operations.

A. FPUC, a wholly-owned subsidiary of Chesapeake, operates 3,154 miles of natural gas distribution mains across 25 counties in Florida, serving approximately 96,000 customers. Additionally, FPUC owns and operates electric utility assets in five counties in northeast and northwest Florida, distributing electricity to approximately 33,000 customers.

Q. Briefly, what are the analyses you have conducted and what factors have you considered that support your recommended ROE for FPUC in this proceeding?

A. This testimony reports the results of an evaluation of FPUC's cost of debt, as well as a recommendation for the company's allowed rate of return on equity (or "recommended ROE"). The cost of debt analysis consists of a review of FPUC's short-term and long-term debt issuances and cost rates. The recommended ROE is obtained by applying cost of capital methods to Moderate-Sized Electric Utilities and Natural Gas Distribution Utilities. These results were compared with small Non-Utility Companies with moderate risk profiles. The sample entities provide a broad base of equity market experience of utilities and comparable low-risk non-utilities operating on the North American continent. This overall cost of equity estimate is obtained by applying four cost of equity

methods including capital asset pricing model ("CAPM"), discounted cash flow ("DCF"), risk premia, and an assessment of realized market returns.

Q. Please summarize your recommendation with respect to the overall rate of return for the Company.

A. I recommend that the Florida Public Service Commission authorize the Company the opportunity to earn a rate of return on equity with a mid-point of 11.30 percent. The Company's projected 13-month average capital structure for 2025 consists of 37.91 percent long-term debt at an attenuated embedded debt cost rate of 4.51 percent. Chesapeake's actual embedded cost of long-term debt is 5.21 percent, but the Company has requested recovery of a reduced cost rate to lessen the requested overall rate of return. The Company's capital structure also consists of 4.83 percent short term debt at a cost rate of 5.81 percent, and 42.82 percent common equity at my recommended ROE of 11.30 percent. The regulatory capital structure also contains customer deposits at a cost rate of 2.2 percent, as well as deferred taxes and regulatory tax liabilities at zero cost. The weighted average cost of capital ("WACC") using these values is 6.89 percent. A summary table is shown below.

Table 1: Weighted Average Cost of Capital Results for FPUC (2025)

EXHIBIT NAC-1

FLORIDA PUBLIC UTILITIES COMPANY

OVERALL RATE OF RETURN REQUIREMENTS

WEIGHTED AVERAGE COST OF CAPITAL: REGULATORY CAPITAL STRUCTURE
13-MONTH AVERAGE, TEST YEAR 2025

Capital Component	Outstanding Balances	Capitalization Share	Cost Rate	Weighted Average Cost Rate
Long-Term Debt	$56,888,413	37.91%	4.51%	1.71%
Short-Term Debt	$7,255,028	4.83%	5.81%	0.28%
Preferred Stock	$0	0.00%	0.00%	0.00%
Common Equity	$64,253,557	42.82%	11.30%	4.84%
Customer Deposits	$4,001,097	2.67%	2.20%	0.06%
Deferred Taxes	$13,206,708	8.80%	0.00%	0.00%
Regulatory Tax Liability	$4,448,275	2.96%	0.00%	0.00%
ITC at WACC	$0	0.00%	7.98%	0.00%
Total	$150,053,078	100.00%		6.89%

WEIGHTED AVERAGE COST OF CAPITAL: CONVENTIONAL CAPITAL STRUCTURE
STATED ON A CONSOLIDATED BASIS
13-MONTH AVERAGE, TEST YEAR 2025

Capital Component	Outstanding Balances	Capitalization Share	Cost Rate	Weighted Average Cost Rate
Long Term Debt	$1,331,883,955	44.31%	4.51%	2.00%
Short-Term Debt	$169,856,296	5.65%	5.81%	0.33%
Preferred Stock	$0	0.00%	0.00%	0.00%
Common Equity	$1,504,318,384	50.04%	11.30%	5.65%
Total	$3,006,058,635	100.00%		7.98%

Q. Please provide a summary of the results of your cost of equity analysis.

A. Table 2, below, provides a summary of the results of the cost of equity analysis.

Table 2: Summary of Recommended Return on Equity (2025)

COST OF EQUITY ESTIMATES, U.S. EQUITY MARKET-LISTED ENTITIES			
	Estimates		
METHODOLOGY	Low	High	Average
Discounted Cash Flow			
Mid-Sized Electric Utilities	9.37%	9.77%	9.57%
Gas Distribution Utilities	9.55%	12.08%	10.81%
Capital Asset Pricing Model			
Mid-Sized Electric Utilities	10.39%	11.61%	11.18%
Gas Distribution Utilities	10.14%	11.31%	10.72%
Low Risk Non-Utility Companies	10.10%	11.63%	11.29%
Risk Premia Model			
Mid-Sized Electric Utilities			10.52%
Gas Distribution Utilities			9.90%
Low Risk Non-Utility Companies			11.39%
Realized Market Returns, Rolling 10-Yrs			
For 2013-2023			
Mid-Sized Electric Utilities			11.52%
Gas Distribution Utilities			13.21%
Low Risk Non-Utility Companies			9.89%
Recommended Return on Equity	10.43%	12.21%	**11.30%**

3. Fundamentals of Cost of Capital

3.1 Definitions

Q. Please define what is meant by "cost of capital."

A. The cost of capital is the underlying rate used by investors to discount and value the expected benefit flows obtained from holdings of financial assets and is also referred to as the discount rate. The cost of capital is the compensation required by investors for postponing consumption, for expected inflation, and for exposure to capital risks of various dimensions, where such risks are, on the one hand, general to macroeconomies and financial markets but also specific to the underlying investment vehicles used to underwrite capital.

Q. What are the elements of a firm's capital structure?

A. A firm's capitalization consists of a mix of debt and equity. Corporate debt can take the form of lines of credit and notes with banks and commercial lenders, mortgages, and debenture bonds. Equity (or, common equity) of private entities, such as electric utilities like FPUC, refers to the net accumulated value of contributed capital by equity investors. At a general level, equity is in the form of common and preferred stock, and includes the accrual of retained earnings, where investors, through the purchase of stock, assumes a share in the ownership of a corporate entity. In some cases, debt instruments can participate in equity returns and may also have rights of conversion to common stock.

Q. What is a firm's weighted average cost of capital ("WACC")?

A. The overall cost of capital, often referred to as the WACC and expressed in percentage terms, incorporates the pool of financing vehicles used by the utility to underwrite and

fund the capital that it employs in the provision of services to the public. The WACC is the composite weighted cost of the financing vehicles including short-term debt, long-term debt such as mortgage bonds, preferred stock, and common stock. These financing vehicles constitute the financial contracts between lender and equity investors, and the firm including government entities and private companies.

Q. What does the term "long-term debt" mean in the context of utility capital?

A. Long-term debt includes mortgage bonds, debentures, and long-term notes. The interest on the principal amount of a bond, or the coupon rate on the share of preferred stock, defines the level of compensation. Often, the interest rate is a predefined annual rate that remains fixed over the term of the debt instrument. However, long-term debt instruments may incorporate other provisions that provide for more complete contracting by managing uncertainty through risk sharing between the debt holders (lenders) and issuers (borrowers). These provisions can include adjustments to the rate of interest to reflect contemporary market conditions and rates of inflation, call provisions, participation in the earnings of the firm, conversion rights, and voting rights in the management of the firm.

Q. What is meant by "short-term debt"?

A. Short-term debt includes credit lines or promissory notes with commercial banks. Commercial terms may clarify that interest is to be paid monthly on the outstanding daily balance in the case of lines of credit, or quarterly in the case of a promissory note. The rate of interest applied to the outstanding balance can be tied to the interest rate on obligations of some widely known financial market vehicle—say, the Secured Overnight

Funding Rate ("SOFR"), or the Federal Funds rate, or the prime rate of commercial banks—which also varies daily or monthly.

Q. What is common equity, and how does it differ from debt instruments?

A. Common stock property rights are somewhat different from other financial obligations because, as owners of the firm, the returns to shareholders are residual, following the compensation to other resources employed by the firm including debt obligations and preferred stock. Common equity is essentially compensated last, and bears the burden of much of the business, regulatory, and financial risks of investor-held entities. For this reason, common equity is typically more costly than other forms of financial instruments.

Q. How are debt and equity securities exchanged between investors?

A. As with many other markets, capital markets have primary and secondary dimensions. Primary markets are the institutions and processes that facilitate the initial sale of the financial obligations of the firm to investors, whereas secondary markets are structured market processes that provide the means by which investors can purchase and sell existing rights including shares of stock and debt obligations, as well as an array of financial options to hedge, and to speculate on, financial risks. In general, equity markets are more liquid than fixed income markets, meaning that sales and purchases of equities can be made more quickly than specific bond securities.

Q. What determines a firm's cost of capital?

A. The cost of capital is determined by several factors including the demand for capital, the supply of savings across macroeconomies, expectations of inflation by capital market participants, and, for specific investments, perceptions of risks harbored by investors. The demand for capital is determined by expectations of future levels of economic activity, while expected inflation is driven largely by monetary policy over the relevant timeframe. Perceptions of risk, in turn, cover many dimensions of uncertainty including future performance of individual investments and macroeconomies, and policy of governing authorities regarding fiscal expenditures. To investors (savers) who hold financial assets, expected benefits are in the form of future cash flows including interest payments, dividend payments, market appreciation, and return of principal. When investors supply funds to entities such as utilities and public entities (e.g., government bonds), not only are they postponing consumption by foregoing value otherwise obtained from alternative expenditures, they are also exposing funds to the potential devaluation from ongoing inflation as well as to various uncertainties and risk attending future cash flows. Investors are willing to incur these risk factors only if they are adequately compensated. In brief, the cost of capital—the discount rate stated in nominal terms—increases with rising demand for capital, with expectations of higher rates of inflation, and with heightened perceptions of risk. As a practical matter, risk is arguably the key contributing factor for the estimation of the cost of capital.

Q. What risks drive a firm's cost of capital and how do these risks interact with the required return on investment?

A. In addition to macroeconomic risks that affect all firms in the market, including a nation's institutional stability, public policy, and climate issues, a firm's risk profile also consists of idiosyncratic factors associated with specific capital resources, such as sector risks, supply chain issues, management capabilities, and technological change. Expectations of future financial conditions of the specific company also constitute idiosyncratic risks. In debt markets, investors will re-price downward the bonds of a private company should the current financial condition or perceived risk level of the company suddenly decline. The decrease in the company's current condition, reflected as reduced interest coverage, then causes the expectation of the future condition of the company also to decline.[8] Similarly, expectations of deteriorating earnings growth diminish investor demand for the firm's common equity shares at a given price. The decline in prices reflects a requirement by investors for a higher rate of return.

Q. What are the institutions that participate in capital markets?

A. Market participants, including lenders and holders of common and preferred stock, supply capital as investors, while borrowers, including public and private entities and common stock-issuing companies, constitute the demand side of capital markets. Commercial banks, credit unions, finance companies, capital exchanges, private equity funds, and investment banks serve as intermediaries that provide the institutional means

8 Bond prices and discount rates, in the form of the interest rates or bond yields (and yield to maturity), move in opposite directions; bond yields increase as bond prices decline, and decrease as bond prices rise.

that facilitate the interaction and linkage of the supply and demand sides of capital markets, focused on financing. These functions essentially include lending, borrowing, and the issuance of equity vehicles. Banks and credit unions borrow (and store) financial assets that in turn are invested in the form of debt and, to a lesser extent, equity.

Q. Why must the cost of capital be estimated rather than observed directly?

A. While the market prices of other inputs including labor, materials, and energy can be easily verified, the cost of capital—essentially, the price of capital—is not easily discerned, thus requiring estimation through the cautious application of analytical methods. The cost of capital reflects expectations of future risks and returns, which consistently change and cannot be directly observed. However, the cost of capital is generally positive even in the absence of inflation and risks, as savers require compensation for foregoing the right to use the funds saved for current consumption of goods and services. This is a reflection of the time value of money.

3.2 Legal and Institutional Foundations for Return on Equity

Q. What are the legal and institutional foundations for a utility's allowed return on equity?

A. Statutory and legal guidelines for the regulation of a utility's *fair rate of return* in North America are delineated in key decisions by authorities in Canada and the United States. The statutory principles of rate of return for public utilities rest substantially with two decisions of the Supreme Court of the United States. In the *Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia* case (262 U.S. 679, 1923), the U.S. Supreme Court set forth its view on fair rate of return, as follows:

> "...A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally."

For capital committed by public utilities, a second landmark decision of the U.S. Supreme Court echoed the "Bluefield" decision and expanded upon the fair return standard for capital committed to public utilities. This second decision is the *Federal Power Commission v. Hope Natural Gas Company* case (320 U.S. 391, 1944); a relevant passage of the decision, referred to as *Hope*, is as follows:

> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock[...] By that standard the return to the equity owner should be commensurate with return on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and attract capital.

These longstanding decisions provide a more-or-less universally accepted framework for determining the fair rate of return on capital committed by investors to public service.[9] In

9 In the Permian Basin Area Rate Cases (390 U.S., 747, 1968), the U.S. Supreme Court stressed that:

> "the court must determine whether the order may reasonably be expected to maintain financial integrity, attract necessary capital, and fairly compensate investors for the risks they have assumed, and yet provide appropriate protection to the relevant public interests, both existing and foreseeable. The court's responsibility is not to supplant the Commission's balance of these interests with one more nearly to its liking, but instead to assure itself that the Commission has given reasoned consideration

these decisions, the U.S. Supreme Court codified, in clear and well understood terminology, benchmarks for setting fair and equitable prices for utility services, including electricity, while also providing a fair rate of return on the capital provided by investors. Though reaching back many years, these decisions are relevant and thus often cited within utility regulation. To this day, they serve as the cornerstone for the determination of rate of return and remain relevant for setting cost-based utility rates. The immediate challenge for regulators, regulated utilities, and interested parties to rate setting proceedings is to operationalize these principles in contemporary regulatory processes.

3.3 Financial Market Efficiency, Capital Valuation, and Utility Cost of Capital

Q. How do market expectations affect a firm's cost of capital?

A. Expected market returns inform investors' required rate of return. Under the assumption of efficient markets, competition inherent to U.S. and selected worldwide financial markets implies that the prices of common shares (share prices) and bonds reside at levels that reflect the opportunity cost of capital. As an example, assume that the perceived risks attending the expected returns to common shareholders of Firm A are equivalent to those of Firm B and other firms. If the share prices of Firm A imply an expected market return of 10 percent, while the prices of Firm B and other firms of comparable risks suggest (allow) market returns of 13 percent, the market price of Firm A will fall to a level that provides a basis for market returns of just 13 percent,

to each of the pertinent factors."

prospectively. A price that allows for a 10 percent prospective market return is insufficient in the presence of opportunities for a market return of 13 percent on alternative investments of comparable risk. Essentially, the 13 percent market rate of return on investment alternatives constitutes the opportunity cost of capital. In short, equivalent and comparable risks translate directly into comparable market rates of return, as expected. This is the cost of capital of common shareholders in the firm.

Q. How is the cost of capital expressed in financial markets?

A. Whereas the cost of skilled labor, materials and supplies, and inputs (including fuel) employed in the provision of utility services are expressed in money terms, the cost of capital is expressed as an interest rate, typically shown as an annual percentage of investment. This means that the costs of the capital resources employed by FPUC, including generation equipment, power delivery systems such as transformers and lines, meters, trucks and vehicles, computer systems, software, office facilities and buildings, inventory and stores, and land—essentially, the rate base of FPUC—are reflected as annual carrying charges. The cost of capital for FPUC is referred to as the required rate of return (percent) on the capital resources committed by investors to FPUC, where capital is valued at either original cost or fair value.[10]

[10] For the determination of setting retail utility prices in the U.S. and elsewhere, the regulatory convention is to value the capital of public utilities at original cost. Other measures of capital value including fair value and trended original cost have been applied, particularly during eras of high rates of inflation and under circumstances where original cost measures cause distortions in the relevant costs and prices of complementary or substitute inputs.

3.4 Regulation, Demand for Capital, and Capital Attraction

Q. In general, why do utilities require resources from capital markets?

A. The cost of capital concept may also be interpreted from the perspective of internal investments and the demand for resources. Regulated utilities accommodate, by law, the ongoing and steadily rising demand for services, which involves the expanding employment of resources, capital in particular. Senior managers of firms, as agents for the ownership or controlling interest of the entity such as shareholders or a local municipality, are responsible for ensuring that the expected internal returns on incremental capital committed by the firm are equivalent to the cost of capital to the firm—i.e., investors' rate of return requirements. The adequacy of the internal returns on incremental investment by electric utilities to fund capital at full opportunity costs, however. This is highly dependent upon the soundness of the regulatory governance structure to ensure that the utility has the opportunity to obtain sufficient revenues, which in turn provide adequate returns on incremental investment in new facilities.

Q. What are the consequences of a mismatch in a utility's cost of capital and its allowed rate of return?

A. Public utilities such as FPUC utilize and employ substantial levels of capital resource inputs to provide utility services. In general, the flow of revenues less the costs of non-capital inputs to the firm, such as operating expenses, provides a level of dollar returns to capital, in the form of operating income. If the level of income matches expectations, investors realize returns equivalent to the overall cost of capital. When the rate of return, set by regulators, leads to inadequate returns to capital or to the expectation that returns

to capital are likely to be insufficient, utility managers are understandably reluctant to make investments in infrastructure. Indeed, when the expansion of capital resources occurs under a regulatory requirement including the obligation to serve, the absence of adequate returns may be interpreted to implicitly constitute the confiscation of the capital. Under these regulatory conditions, the utility is forced to provide services that involve new investment, even though adequate returns are not obtainable. The result can be a failure of capital attraction by the utility, and the confiscation of capital of investors—a direct result of the inherent efficiency of competitive capital markets.

Q. Please explain further what is meant by a "confiscation of capital" of investors.

A. If the utility's allowed rate of return is below its cost of capital, equity share prices can be significantly bid down, giving rise to a sharp decline in the market capitalization of the firm. The result is a wealth transfer from shareholders, as investors, to retail consumers. In short, the capital of investors can be confiscated as a consequence of compromised regulatory outcomes. Further, the regulatory governance structure, particularly where the utility has binding service requirements and constraints, causes a breach of fairness criteria and leads to a failure of the utility to satisfy capital attraction standards where capital can be raised at fair and equitable terms. Essentially, higher costs of debt interest charges result from the reduced credit standing in view of the lower levels of interest coverage.

Q. How do capital costs differ for utilities, relative to other industries?

A. A utility and its managers can find themselves, as a result of service requirements, forced to invest in real physical assets that are uneconomic from the perspective of the

firm and its constituent investors, should the return on ongoing investments fall short of the cost of capital. Given that the cost of capital is the minimum rate of return that must be earned on physical assets to justify their acquisition, the regulator must be mindful of the allowed rate of return levels and implement regulatory procedures that provide the utility with an acceptable opportunity to realize returns, on the margin, that satisfy the cost of capital—i.e., a rate of return equivalent to that realized on investments of comparable risks. In the context of a binding regulatory constraint, and other regulatory requirements such as obligations to serve, it is sufficient, but also necessary for the required rate of return on incremental investment to adequately satisfy the opportunity cost of funds. For this reason, the regulator should set the allowed rate of return equal to the cost of capital so that the utility may satisfy its capital needs and service customers at fair prices.

Q. Why is it important for the regulator to set the utility's cost of capital using empirical measurements, rather than "rules of thumb"?

A. Investments and capital expansion are undertaken by utilities without inappropriate and unfair wealth transfers between consumers and shareholders if, and only if, the allowed rate of return is set at levels which are equal to the cost of capital. Whereas setting allowed returns below the cost of capital constitutes a wealth transfer from investors to utility customers, if the allowed rate of return is *greater* than the cost of capital, investors' opportunity costs are more than achieved. Any excess earnings over and above those required to service debt capital accrue to equity holders, resulting in a rise in share prices. In such a scenario, a wealth transfer occurs from electricity consumers to

shareholders. Therefore, setting the allowed rate of return equal to the cost of capital is the only policy that ensures commitment of necessary investments to satisfy utility service requirements while also providing fair and equitable returns to investors.

4. Monetary Policy, Interest Rates, and Macroeconomic Performance

Q. How does the United States Federal Reserve Bank's monetary policy influence cost of capital in the market?

A. Monetary policy has major influence on the cost of capital through the cost rates for various categories of financial assets and in the form of risks associated with financial assets, as incurred by the holders of those assets. Monetary policy is carried out through several channels and, as exercised by the United States Federal Reserve System, has a marked impact on interest rates worldwide.

Q. Please provide a brief history of recent monetary policy.

A. Modern monetary history includes three broad policy changes including the abrupt U.S. abandonment of the gold standard in 1971, and the institution of money supply targeting beginning in late-1979. Abandonment of the gold standard facilitated floating exchange rates across major economies. Money supply targeting, exercised through open market operations, are responsible for significant reductions in price inflation across the western economies during the 1980s and, subsequently, in many emerging markets during the time between the late 1990s and approximately 2005. In addition, nations unconstrained by the limits of gold reserves had leeway to address the presence of substantially reduced liquidity across western economies brought on by the global financial crisis

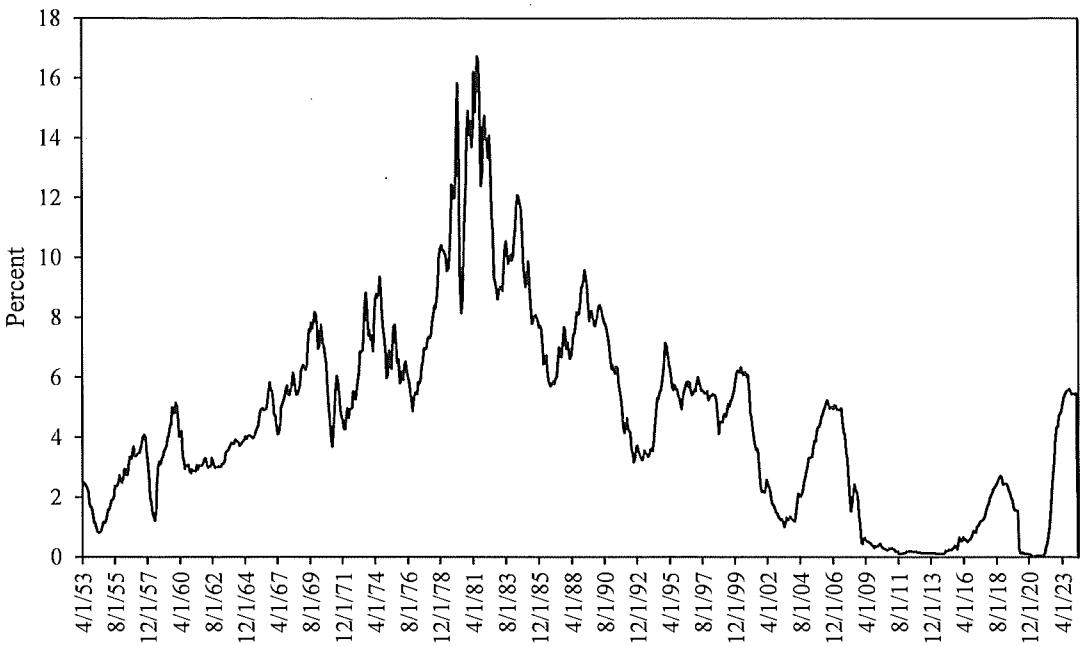
through the implementation of quantitative easing monetary policy between 2008 and 2015. This resulted in the vast expansion of money supply aggregates.

Q. How have yields on short-term U.S. Treasury debt changed over time?

A. Shown in Figure 1 are yields on short-term U.S. Treasury debt since 1950. As displayed in the figure, short-term interest rates—proxied by yields on 90-day U.S. Treasury Bills[11]—reached slightly above 16 percent during the second half of 1981. As a consequence of the exceptionally high financing costs, aggregate demand and overall price inflation was substantially reduced, as expectations of future price inflation were anchored downward by the early 1990s. Often referred to as the great moderation, the period of money supply targeting and discretionary control of interest rates prevailed as the central monetary policy through late-2007, manifested in rising interest rates as real economic activity accelerated, and decreasing interest rates as economic activity slowed.

11 Interest rates on short-term debt are highly correlated such that yields on short U.S. T-Bills serves as a proxy for other short-term investments including (until recently), LIBOR and short-duration commercial paper.

Figure 1: Yields on Treasury Bills of 90-Day Duration (1953-2023)

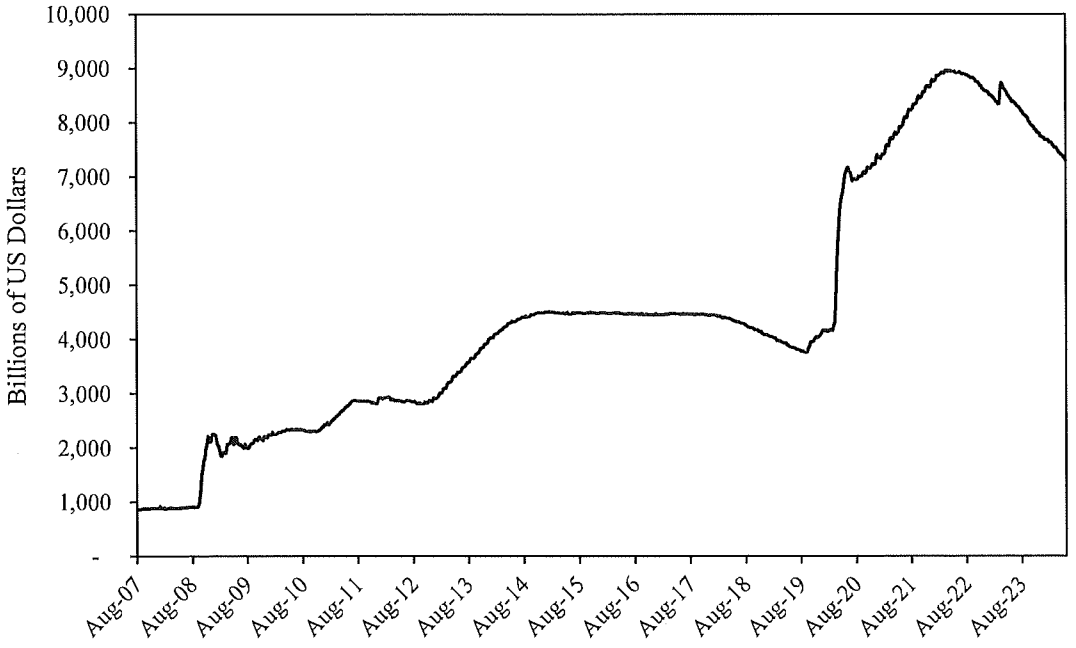


The deep recession of 2008-2009 ushered in abrupt policy changes, including a sudden sharp drop in short-term interest rates to near zero in early-2008. Evidence suggests that, all else equal, low real interest rates can contribute significantly to increased economic activity, at least under normal conditions. Under recessions and other conditions of economic and social stresses, economic agents hold comparatively high balances of cash and cash equivalents as precautionary savings,[12] essentially acting as insurance to manage uncertainty and risk. To the extent that comparatively low interest rates precipitate higher rates of aggregate demand including household consumption (services, non-durable and durable goods) and business investment, the level of overall economic activity can rise, without major increases in overall price inflation.

12 Reference James Tobin, *Liquidity Preference and Behavior Toward Risk*, Cowles Foundation and Review of Economics and Statistics, 1958.

The Federal Reserve's policy to reduce interest rates in 2008 was supplemented with quantitative easing, a vast expansion of money supply in the form of cash equivalents. Quantitative easing was exercised through open market operations whereby the U.S. Federal Reserve purchased sizable quantities of financial assets, concentrated in mid-term U.S. Treasury securities. Such expansion of quantity aggregates, first implemented on a large scale by the U.S. Federal Reserve beginning in 2011, was instrumental in returning western economies to near full employment, following the depths of the world recession, 2007-2009/10. The Federal Reserve's balance sheet holdings from 2007 through 2023 are provided in Figure 2.

Figure 2: Balance Sheet Assets of the U.S. Federal Reserve (2007-2023)



Viewed with respect to the long-term post war history, 2009 ushered in an era of anomalous conditions: attenuated economic growth with a sizable gap between real potential economic output, coupled with fairly high levels of household stress and

uncertainty. Under these conditions, economic agents are willing to hold large precautionary balances (cash and equivalents). U.S. personal savings rates—percent of household disposable income—increased approximately 2-4 percent during the late-1990s to 2007, increased again to 7 percent between 2010 and 2019, spiked during the pandemic, and then fell following distribution of the Covid-19 vaccines. Under these conditions, sizable increases in monetary aggregates are absorbed as additional precautionary savings balances. Not until expenditures by households and private business sectors return to normal does economic activity return to near the level of potential output. Where precautionary balances are unusually high, the return of confidence in macroeconomic performance can translate into a much higher level of aggregate demand. In turn, price inflation can rise significantly, particularly in the absence of a corresponding increase in aggregate supply.

In the first year of the Covid-19 pandemic, the federal government deployed widespread resources in the form of the Paycheck Protection Program and direct payments to U.S. citizens. At the same time, the Federal Reserve lowered interest rates to zero and began a new round of quantitative easing in an effort to avoid a financial panic. Shortly thereafter, global conflict arose in the form of Russia's invasion of Ukraine, which shocked grain and energy markets not just in Europe, but around the world. These developments contributed to the inflation of 2022 and 2023, which peaked in June 2022 at an annual rate of 9.1 percent, as measured by the BLS Consumer Price Index. While certain inflation drivers declined in the first half of 2024, the global political landscape remains highly uncertain, with the ongoing wars in Ukraine and in the Middle East.

Beginning in the late-1980s and early-1990s, Federal Reserve monetary policy was centered on setting interest rates at levels that translated into ongoing price inflation of 2.0 percent. Essentially, the Federal Reserve would set short-term interest rates, executed through open market operations, at levels which maintained overall price inflation near this 2.0 percent level. However, recent experience has somewhat altered the forward-looking perspective of inflation, leading to higher interest rates and great concern with regard to international energy markets. As stated by Federal Reserve Chairman Powell during the Federal Reserve's annual 2023 conference:[13]

> It is the Fed's job to bring inflation down to our 2 percent goal, and we will do so. We have tightened policy significantly over the past year. Although inflation has moved down from its peak—a welcome development—it remains too high [...] Since last year's symposium, the two-year real yield is up about 250 basis points, and longer-term real yields are higher as well—by nearly 150 basis points. Beyond changes in interest rates, bank lending standards have tightened, and loan growth has slowed sharply [...] At upcoming meetings, we will assess our progress based on the totality of the data and the evolving outlook and risks. Based on this assessment, we will proceed carefully as we decide whether to tighten further or, instead, to hold the policy rate constant and await further data.

Chairman Powell's signal that inflation is the predominant concern of the Federal Reserve indicates that the federal funds rate is unlikely to be reduced substantially in the near term.

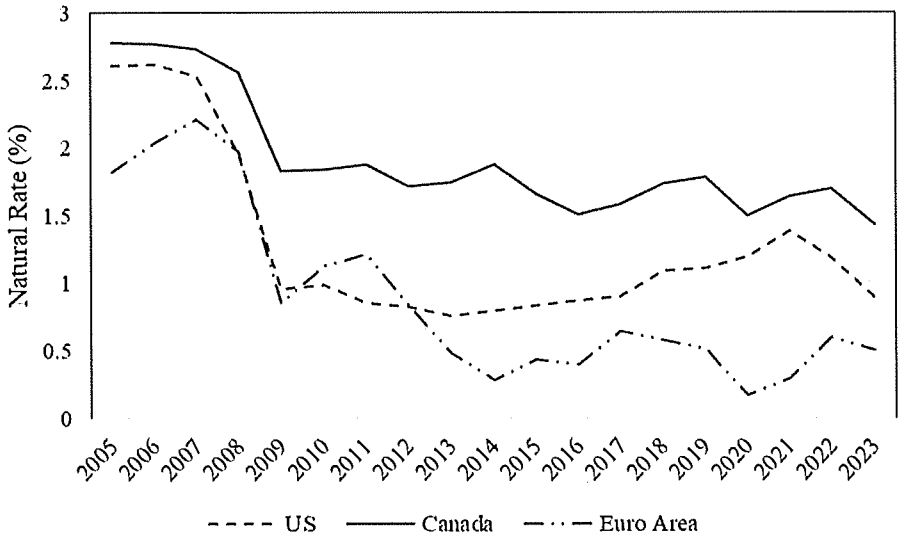
To combat the rise of inflation, Fed Chair Jerome Powell and the Federal Reserve began hiking interest rates in March 2022. Over the following 16 months, the Fed raised rates

[13] Chairman Jerome Powell, *Inflation: Progress and the Path Ahead*, delivered at the Structural Shifts in the Global Economy, policy symposium sponsored by the Federal reserve Bank of Kansas City, August 25, 2023.

11 times, to a range of 5.25 percent to 5.50 percent. The current interest rate environment consists of the highest rates in the past 22 years. This rapid increase in rates has strong implications for equity cost of capital, as very low risk bonds now provide a relatively high return by historical standards.

Chairman Powell has stated that the neutral rate of interest may be rising,[14] where the neutral rate is defined as the rate of interest which prevails at a non-inflationary full employment level of aggregate output. As mentioned, estimates clearly suggest the neutral rate has declined significant in the most recent years, as shown in Figure 3, below. However, estimates of this rate have notched up in recent months.

Figure 3: Trends in the Natural Rate of Interest
U.S., Western Europe, and the U.K.[15]



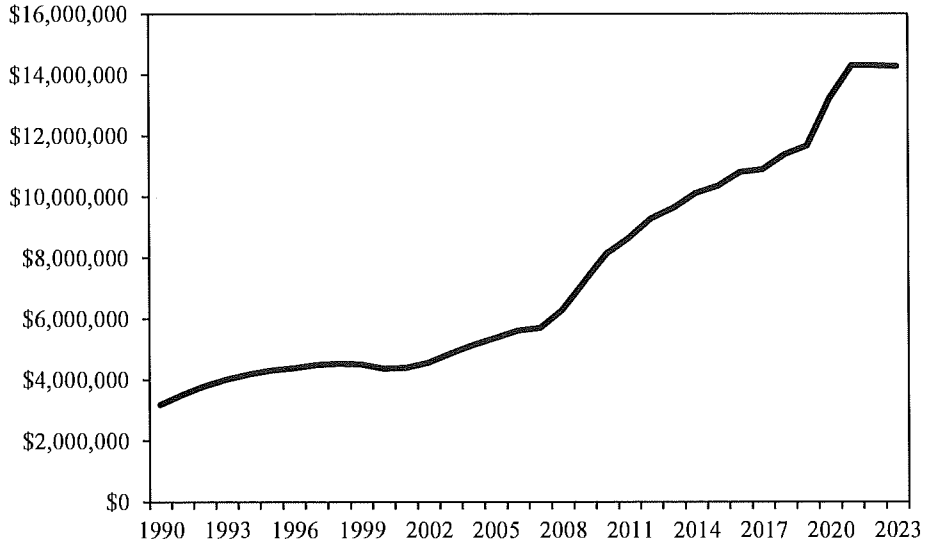
[14] https://www.brookings.edu/articles/the-hutchins-center-explains-the-neutral-rate-of-interest/
[15] Holston, Laubach, and Williams. 2023. "Measuring the Natural Rate of Interest after COVID-19," Federal Reserve Bank of New York Staff Reports, no. 1063, June.

Q. How does fiscal policy influence capital markets?

A. Fiscal policy also affects private investment positions, not just within the United States but internationally. Increased deficit spending in the United States, along with natural fluctuations in funding needs relative to tax revenue, requires the Treasury department to issue debt securities in the form of Treasury bills and bonds. These debt issuances are considered to be among the most secure bonds available in the global marketplace, providing a near risk-free security for investors. As a result, large issuances of U.S. debt securities, particularly when issued at higher rates, can result in "crowding out" of other investment instruments.[16] Competition with Treasury securities can create challenges for private sector firms to attract capital. In addition, demand for capital by the U.S. Treasury has been met with somewhat muted enthusiasm in recent auctions.[17] Figure 4 depicts the growth of U.S. public debt, in 1990 dollars, showing that the real value of U.S. debt has grown nearly five-fold in the past three decades. In nominal terms, the U.S. Congressional Budget Office projects U.S. *deficit* levels will reach $$1.6 trillion in 2024 and increase up to $2.6 trillion by 2034.[18] Although the myriad consequences of this escalation of debt is difficult to predict, economic principles clearly herald an increase in real interest rates, leading to a challenging environment for private investment.

[16] *Macroeconomics*, Gregory Mankiw, Seventh Edition, 2009, p. 69.
[17] https://www.bloomberg.com/news/articles/2024-05-28/treasuries-steady-before-debt-auction-rush-and-inflation-data
[18] https://www.cbo.gov/publication/59710

Figure 4: Real Value of U.S. Public Debt (in 1990 Dollars)



Heightened government spending by the U.S. and western economies is expected to continue. A component of increased spending arises from recent policy initiatives by the U.S. and Western Europe proposing to embark on a major structural overhaul including large scale investment focused on:

- climate change mitigation, particularly as it relates to electric utility operations;
- improved efficiency in transportation sectors;
- further development of human capital within the labor force;
- advanced information technologies; and,
- much improved access to information systems in less developed regions.

Q. Could you please summarize how monetary and fiscal policy affect utility cost of capital?

A. Consideration of the factors discussed above portend substantial demand for capital, elevated risk-free interest rates, relative to recent history, and a sustained rate of inflation above 2.0 percent in the coming years.[19] Taken as a whole, the above considerations suggest that, on balance, interest rates and the risk-adjusted cost of capital during the 2024-2026 years likely understate aggregate demand and related conditions that are likely to prevail over near-term future years; namely:

- comparatively low natural rate of interest, as viewed with respect to recent decades;
- monetary policy that faces continued inflationary pressures, making it difficult to bring average inflation to 2.0 percent; and,
- considerable demand for capital, particularly in light of contemporary long-term demand for renewable resources; infrastructure; and challenges containing the secular rise in the primary deficits across developed western economies.

[19] The relevant three factors can be summarized as *very high levels of precaution balances of cash and equivalents*; *major expansion of fiscal expenditures in the U.S. and Western Europe to fund investment in public goods*; and *Flexible Inflation Targeting*.

5. Cost of Debt Analysis

5.1 Long-Term Debt Issuances

Q. Please define the term "long-term debt."

A. Generally speaking, long-term debt refers to the outstanding debt obligations with a duration beyond one year. At one time, the long-term debt of the U.S. corporate sector including public utilities consisted largely of corporate bonds held directly by investors, and long-term loans with commercial banks. Over the past two decades, however, an array of non-bank intermediaries including finance companies, broker/dealers, insurance companies, pension funds, ETFs, mutual funds, private investment pools, and asset-backed securities supplement these conventional sources and, these days, provide much of the long-term debt used by corporate organizations and private companies, both in the U.S. and abroad.

Q. What is the benefit of issuing long-term debt to fund long-term investments?

A. Lending by intermediaries constitutes private placement, in lieu of new debt issues sold broadly within primary security markets. Like other utilities, Chesapeake and operating utilities including Florida Public Utilities Company are taking advantage of the larger range of borrowing opportunities to underwrite its investment in long-term physical assets. The advantages are twofold. First, underwriting costs including legal fees, and charges for security registration are dramatically reduced. Second, execution time is significantly reduced, allowing parties to the transaction—e.g., an insurance company and a public utility—to better facilitate new debt issues within the larger schedule of other primary market offerings. Third, provisions of new issues, such as secured

collateral, and the schedule for paying down the principal can be more easily tailored to the needs of the parties, particularly borrowing entities such as utilities.

Q. What are the costs associated with issuing and holding long-term debt?

A. The carrying charge rate for long-term debt is determined on a weighted average basis across the outstanding balance of individual issues, measured on a 13-month basis. For each issue, the charge rate (or interest rate) includes coupon interest charges on the outstanding principle plus the amortization of the issuance costs incurred at the time of origination. The total charges are adjusted for requisition costs and the maintenance of fees on shelf agreements.

Q. What are the existing long-term debt obligations of FPUC?

A. For test year 2025, FPUC's long-term debt consists of the 22 outstanding issues of promissory notes of Chesapeake, with durations ranging from two to twenty years. In accordance with internal financial policy, Chesapeake has put in place fairly long-duration notes during recent years, as both nominal and real interest rates were remarkably low, when viewed with respect to the longer-term history of U.S. financial markets. For example, during the years late-2013 through early-2022, Chesapeake originated eleven new promissory note issues, raising a total of $600 million at face interest rates from as low as 2.49 percent to a high 3.98 percent, with times to maturity between 15-20 years. For reference, the yield on outstanding issues included within Moody's Baa Bond index range from 3.16 percent to 5.46 percent for this period, averaging 4.39 percent. Notes at interest rate levels have specific retirements schedules.

The outstanding principal on long-term debt issued in late-2023 is reduced by nearly 80 percent, as only a modest share of the late-November issues are attributable to FPUC's electric operations.

Q. What is the context of FPUC's debt cost rates?

A. As a consequence of the rapid tightening of monetary policy, short- and long-term interest rates rose dramatically worldwide beginning in the spring of 2022. As a result, most of Chesapeake's long-term debt issues originating in late-November 2023, used predominantly to finance its acquisition of Florida City Gas, have relatively short terms to maturity—seven years or less. Chesapeake—and financial markets, generally speaking—anticipates that over years 2026—2030, both short- and long-term interest rates will decline from recent high levels. Chesapeake will then be in the position of largely supplanting the comparatively high-cost issues of late-November 2023 with lower cost long-term debt. Moreover, in fairness to its retail electricity customers, only a modest share (21 percent) of the comparatively high-cost rate promissory notes of late-November 2023 are used to determine the overall cost rate for long-term debt attributable to FPUC's electric operations.

Q. Why is FPUC's requested cost of long-term debt lower than Chesapeake's consolidated cost of long-term debt?

A. FPUC requests recovery of an attenuated cost of long-term debt relative to Chesapeake's actual embedded cost of long-term debt. The Company has removed from the long-term debt interest rate calculation a portion of long-term debt costs associated with Chesapeake's purchase of Florida City Gas Company ("Florida City Gas"). With a

portion of these proceeds used to finance the acquisition during a period of elevated interest rates and considering the overall operational benefits across the entire enterprise the Company is requesting the inclusion of approximately 21 percent of these senior notes to determine the overall long-term interest rate for purposes of this rate case filing. By removing a portion of these costs from the cost rate requested for recovery, FPUC has reduced its requested long-term debt cost recovery, and, consequently, the Company's overall requested WACC rate.

Q. Please provide FPUC's long term debt cost rates for the historical, current, and test period years.

A. FPUC's long-term debt cost rates for the three reporting years, historical (2023), current (2024), and test period (2025) are presented in Table 3. These cost rates are based on FPUC's supplemental schedules, which have adjusted the actual Chesapeake cost of debt downward. As discussed above, FPUC has requested recovery of an attenuated cost of long-term debt to reflect only a portion of the debt costs associated with the purchase of Florida City Gas. The actual cost of debt incurred by Chesapeake is, in fact, higher than the cost rates in this table.

Table 3: FPUC's Requested Long-Term Debt Cost Recovery Rates (2025)

Long-Term Debt Cost Rates	
Historical Year (2023)	3.64%
Current Year (2024)	4.12%
Projected Test Year (2025)	4.51%

5.2 Short-Term Debt Issuances

Q. What is the definition of "short-term debt?"

A. Short-term debt refers to outstanding debt with less than one-year maturity. Short-term debt can include short-term loans and revolving credit facilities with commercial banks and non-bank financial intermediaries, as well as commercial paper, and possibly short-term repurchase agreements.

Q. How is short-term debt employed?

A. Short-term debt is integral to financial operations, both day-to-day cash management and near-term financial planning. Driven by the variation the revenues and cash outlays, outstanding balances of short-term debt can vary considerably. In the case of electric and gas utilities, flows of revenues are highly sensitive to short-term variation in energy demand, in turn determined by weather. Near-term cash underwrite near-term resource inputs including wages and salaries, operating expenses including invoices for outside services, and the immediate cash requirements of ongoing construction, can vary considerably by day, month, and season. Short-term debt can also be used to bridge long-term external financial events including the issuance of common stock and long-term debt.

Q. What is the condition of FPUC's short-term debt liabilities?

A. The short-term debt of Chesapeake consists of a multi-tranche lending facility with a borrowing limit of $250 million for the first-tier tranche (364 day). The second-tier tranche (5-year) borrowing limit is $200 million, providing a total of $450 million in short-term revolving credit for general use. In addition, the facility has accordion

features, providing an additional $150 million borrowing capacity. In summary, Chesapeake has $600 million of short-term and medium-term debt capacity under current arrangements in place with major lending institutions.

Q. What are the terms of FPUC's short-term debt?

A. The commercial terms of Chesapeake's short-term debt include use-of-facility and non-use commitment fees. The use-of-facility interest charges on "draw down" amounts are based on the Secured Overnight Financing Rate ("SOFR"), as published daily by the Federal Reserve Bank of New York. The first-tier tranche interest charges equal the daily SOFR interest rate plus 90 basis points, whereas charges for draw-down amounts on the second-tier tranche is set according to the daily SOFR interest rate plus 110 basis points. Commitment fees on unused capacity is equal to 10 basis points, for both first- and second-tier tranches.

Q. How do the terms of FPUC's short-term debt align with current conditions in debt markets?

A. At this writing, the contemporary outlook calls for the FOMC policy rate of 5.25-5.50% to, most likely, reduce the policy rate by just a single step of 25 basis point through the end of 2024. This Federal Reserve policy outlook underlies Chesapeake's expectations and is reflected in the short-term debt cost rate for test year 2025. Stated on a 13-month weighted average basis, the charge rate for Chesapeake's short-term debt was 5.35% for 2023, rising to 6.42% for the current year 2024, and is expected to decline to 5.81% for test year 2025.

6. Cost of Equity Estimation Methods

Q. What is the basis for FPUC's cost of equity estimations?

A. The cost of common equity is based upon the observed market experience of the common equity shares of samples of companies traded on U.S. financial markets. It is useful to reiterate three essential points that were mentioned above. First, the cost of equity of the firm—opportunities costs incurred by investors in the firm—is a function of perceptions of risk, the demand for and supply of capital, and expectations of inflation. Second, the cost of common equity of the firm is equal to the opportunity cost of capital incurred by common shareholders of the firm contemporaneously, though the experience of long-term history guides the assessment of opportunity costs. Third, the cost of equity of the firm is equal to the expected market rate of return on alternative investments of comparable risks available to shareholders—i.e., the opportunity cost of capital—within a contemporary timeframe.

Q. How does the cost of equity recommendation methodology differ from the approach used to determine the cost of debt?

A. In the case of debt, both the market price and future expected cash flow returns to capital, in the form of dividend payments, are observable by inspection. Thus, the net expected yield to maturity, which reflects the opportunity cost of capital to holders of debt, can be determined directly. This is the market rate of return, ex ante. For purposes of determining the overall utility rate of return, the cost rate of long-term debt is that which is set at the time of issuance in primary financial markets.

In contrast, expectations of investors about the prospective cash flows and market returns on common equity cannot be observed. Cost of equity must be discerned through the proper and careful application of well-established financial frameworks. Also, the allowed equity rate of return is typically set according to the current and expected cost of capital, though much of the equity investment was committed in many years past. That is, the cost of equity may change over time as market conditions change, even though the original equity contribution has been in place for some time.

Q. What are the cost of equity estimation models used in this study?

A. In order to develop our recommendation for the rate of return on equity for FPUC, I apply four cost of capital methods. These estimation procedures include variants of the constant growth Discounted Cash Flow model (DCF), and the Capital Asset Pricing Model (CAPM). These classical approaches are commonly recognized within modern finance theory and are readily utilized for purposes of capital valuation. The results of these two formal models of the cost of capital are augmented by an assessment of Risk Premia analysis and Realized Market Returns for utility and non-utility companies of comparable risks.

Q. Please describe the Discounted Cash Flow ("DCF") model in further detail.

A. The constant growth Discounted Cash Flow model was originally developed by Myron Gordon in 1957 and was broadly applied during the following decades. In its classic, one-stage form, the derived DCF model defines the cost of capital as the sum of the adjusted dividend yield, and expectations of future growth in cash flows to investors,

including dividends and future appreciation in share prices. The classic DCF model is as follows:

$$K_{e,j} = \frac{D_{0,j}\left(1 + E(g_j)\right)}{P_{0,j}} + E(g_j)$$

with,

$K_{e,j}$ = cost of equity capital for asset j

$D_{0,j}$ = current dividends per common share for asset j

$E(g_j)$ = expected growth in future cash flow returns to investors in asset j

$P_{0,j}$ = current price per common share for asset j

The one-stage form of the DCF approach is elegant and intuitively tractable. As shown above, the model includes two terms, a mathematical result derived from the general form of discounted present value, as applied to a series of benefits over time characterized by uniform growth. A cursory review of historical returns on equities suggests that differences in the observed internal returns to capital, as well as expectations of future returns as expressed by security analysts, contribute to realized market appreciation as well as to the total returns to capital. It is plausible that the expected path of future returns harbored by investors may assume a pattern of non-constant growth.

Q. Please explain the Capital Asset Pricing Model ("CAPM").

A. The Capital Asset Price Model (CAPM) was developed by William Sharpe (1961) and John Lintner (1964). CAPM was derived from mean-variation analysis and, in particular, portfolio selection developed by H. Markowitz (1952). The derived CAPM shows how

the valuation of a financial asset (price) is based upon two components: risk-free returns and an adjusted risk-based return. Surrogates for risk-free returns can be observed directly in capital markets, including market returns on short- and intermediate-term debt. As a general rule, the cost rates and market returns on government debt obligations serve as appropriate surrogates.

The adjusted risk-based return is based upon three factors: 1) the covariation of the returns of the asset and that of markets for risky assets, 2) the statistical variance of returns of the market for risky assets, and 3) the difference between expected overall returns on risky assets, and risk-free returns. The third parameter is referred to as the excess return and is equal to the difference between the overall returns to risky assets for equity markets as a whole and the risk-free return rate. The CAPM is shown below:

$$K_{e,j} = r_{free} + \beta_j * (r_{market} - r_{free})$$

with,

$K_{e,j}$ = cost of equity capital for risky asset j, stated in percentage terms

r_{free} = risk-free rate of return

β_j = asset beta; the ratio of the covariation between risky asset j and the market as a whole and the variance of market returns

r_m = expected rate of return on equity markets, as a whole

Q. What are the assumptions supporting the DCF and CAPM approaches to estimating the cost of equity?

A. The determination of the cost of equity capital faces two overarching assumptions, as follows:

- both approaches are forward looking and thus the results are highly dependent upon useful estimates of investor expectations about future market performance.
- the underlying assumptions for DCF and CAPM include, among other things, an efficient market and rational behavior of investors such that all opportunities for above- and below-normal returns to capital are exhausted on an expected value basis. In short, capital markets value financial assets at the implied opportunity costs of capital, given investor perceptions of risk.

Q. What is the "Risk Premia" approach to estimating the cost of equity?

A. The underlying concept of the risk premia approach is that differences in perceptions of risks among financial assets such as equities and debt are revealed in differences between the historical market returns. The historical differences between equity and debt returns, referred to as risk premia, serve as a surrogate for the compensation for risk over future timeframes. When combined prospectively with the expected cost of short-term debt, risk premia provide a useful benchmark to gauge the underlying cost of equity capital. The immediate application of the Risk Premium approach is codified as follows:

$$K_{e,j} = r_{free}^{st} + rp_{int-st} + rp_{m-nit} + rp_{y-m}^{CAPM} + rp_{free}^{size}$$

with,

$K_{e,j}$ = cost of equity capital for risky asset j, stated in real terms

r^{st}_{free} = risk-free rate of return, for a short-term asset

rp_{int-st} = risk premium for intermediate-term asset relative to a short-term asset

rp_{m-int} = risk premium for equity market m relative to an intermediate-term asset

$rp^{CAPM}{}_{y-m}$ = risk premium for industry y with respect to equity market m, where y refers to the relevant industry sample[20]

Q. What are the potential drawbacks or pitfalls of the Risk Premia approach?

A. Application of the Risk Premia approach contains two potential pitfalls:

- The opportunity cost of common equity capital, stated in nominal terms, is sensitive to the demand for and supply of capital; and,
- Risk premia among debt and equity instruments are also sensitive to expected inflation. Thus, risk premium analysis must account for expected inflation in the future. That is, the underlying rate of inflation and conditions of the historical period over which risk premia are estimated must match those of the expected conditions of the relevant period over which the common equity recommendation is being applied, and over which retail electricity prices are being set.

20 Cost of capital can be highly specific to industry, and it thus appropriate to incorporate this factor to account for industry-specific risks, generally speaking. However, the selection process incorporated within the immediate analysis implicitly normalizes for industry specific risks by concentrating on a sample of electric and gas utilities. Hence, the factor for industry specific risks is zero.

Q. Please describe how "Realized Market Returns" are used in the return on equity recommendation.

A. Measurements of Realized Market Returns and risk metrics are increasingly used as a basis to assess plausible returns in the future. As discussed, efficient markets suggest that all financial assets are priced at levels such that the expected future returns of individual assets are equivalent to the underlying opportunity cost. Thus, if historical returns guide expectations of future returns, historical returns provide a useful benchmark and, within reasonable bounds, reflect the opportunity cost of capital. In this respect, the Realized Market Returns methodology can be viewed as a market-based approach of Comparable Earnings, and thus fully satisfies the Bluefield and Hope criteria. More specifically, realized market return for a period is defined as:

$$R_{j,t-(t-1)} = (P_{j,t} + D_{j,t-(t-1)} - P_{j,t-1})/P_{j,t-1}$$

with,

$R_{j,t-t-1}$ = market return realized within the interval t – t-1, for financial asset j

$D_{j,t-t-1}$ = dividends paid during the interval t – t-1, for financial asset j

$P_{j,t,t-1}$ = market value of financial asset j, at t and t-1

The successfully application of this fourth approach is identification and measurement of historical returns in a manner that reasonably reflects expectations of investors with respect to the contemporary outlook.

Q. Why are realized market returns useful for supporting a cost of equity recommendation?

A. Observed historical returns and future expected returns of financial assets are ordered according to risks. This ordering is a natural and inevitable result of competitive financial markets: because risk is costly, higher costs must be offset by higher returns. While it is not based upon an explicit model, the analysis of the risk among classes of risky assets provides a means to infer the underlying opportunity cost of capital.

7. Cost of Equity Results

6.1 Data and Proxy Group Selection

Q. What is the general approach to your cost of equity analysis?

A. The cost of capital estimates draw on the universe of private companies listed with U.S. capital markets, including the NASDAQ Stock Market ("NASDAQ") and New York Stock Exchange ("NYSE"), as a starting point from which to select comparable risk peer groups of utilities and non-utility companies. Once selected, the cost of common equity is estimated for the peer group sample companies. A distinguishing factor of comparability is market size. As discussed above, empirical evidence convincingly demonstrates that the cost of capital rises as the relative capitalization of firms declines, other factors held constant.

Q. What are the sources of data for the cost of equity study?

A. The cost of equity study utilizes data from several information sources including Morningstar, Kroll, Value Line, UBS Financial Services, the Center for Research in Securities Prices ("CRSP"), Yahoo Finance, Trading Economics, and Zacks Financial

Services. For the selected entities, an array of financial data, business descriptions and classifications, excerpts from financial statements, historical price experience, and various diagnostic statistics of interest are reported by these data sources. Specifically, common equity shares of the comparable risk entities are traded on the NASDAQ and NYSE exchanges. NASDAQ and NYSE listings constitute large shares of worldwide equity markets, along with commensurate levels of transaction liquidity. Movements and performance of the indexes for the North American markets often parallel movements of share prices reflected within other world indexes, though differences are observed as a result of currency exchange rate movements, unanticipated random social and physical events within regions, and significant changes in expectations of economic performance across various regions worldwide.

Q. Please describe the selection process for the utility proxy group.

A. To obtain cost of equity estimates for FPUC, it is necessary to look to a group of publicly traded companies ("Utility Proxy Group") for comparable estimates that can be utilized to determine the Cost of Equity for the Company. The cost of capital methods used herein coupled with evidence from international cost of capital studies suggest that, particularly for contemporary capital markets with high levels of international capital flows, selection according to observable market and financial risk metrics are the predominant selection criterion. Line of business appears to have only a modest level of relevance to cost of capital once market and financial criteria are satisfied. Thus, it is appropriate, for determining the allowed return on equity, to draw samples from a broad range of business fields once comparable risk criteria are satisfied. The cost of capital

study utilizes two common-business- line samples (electric and gas), adhering to standard regulatory practices. In addition, cost of equity estimates were developed for a separate sample of low-risk non-utility entities for comparison purposes.

From the U.S. market portfolio, I developed two utility company samples and a sample of moderately-sized, comparable risk non-utility companies. The first sample, Moderate-Sized Electric Utilities (Sample 1), is limited to retail electricity service providers that have modest yet significant levels of market participation and, as a matter of business line, parallel FPUC. The second utility sample is referred to as the Gas Distribution Utilities (Sample 2), and is composed of retail natural gas service providers in the U.S. Our studies demonstrate that, as a practical matter, the level of capital risks and thus the opportunity cost of capital is comparable for the two samples. For purposes of comparing the equity rate of return requirements of FPUC, the study compares the gas and electric utility results with a third U.S. sample, referred to as Comparable Risk Non-Utility Companies (Sample 3).

Q. What is the universe of firms used to select the utility proxy group?

A. To determine Sample 1, the study begins with a review of the sector including 75 electric utility and electric energy companies. From this initial selection, 15 electric utility companies are selected for potential use in cost estimation. Some of these 15 companies are also engaged in non-electric retail business lines including natural gas services, and such activities provide moderate contributions to the total return on capital. It is virtually impossible these days to assemble a sizable set of electric companies that

are exclusively retail electric utilities—sometimes referred to as a pure play. However, Sample 1 electric utilities comprise entities where electric power supply and delivery is the dominant share of business activity. Non-utility activities should not matter in a measurable way, providing that such activities are of modest scale; indeed, endeavors to diversify risk over alternative business lines may reduce variation in earnings in internal cash flow though not necessarily variation in market returns. Variation in overall investment risk, and thus the cost of capital may not increase, at least measurably. Sample 1 electric utilities range from less than $1.0 billion (Unitil) to over $12.1 billion (Evergy) in total capitalization for year-end 2023, with similar differences in operating revenues and total net plant.

Q. What criteria was used to select the proxy group from the universe of publicly traded electric utilities?

A. I have followed a set of criteria that selects a group of companies that reflect the FPUC's operations, while allowing for an assessment of risk through the use of market data. As such, I have selected my proxy group based on the following criteria:

- Equity Participation in total capital;
- Consistent quarterly dividends;
- Market capitalization below $30 billion;
- Positive long term earnings growth forecasts from at least two sources;
- Investment grade issuer ratings from S&P and Moodys;

- *CAPM Beta* which, as discussed above, is the ratio of the covariation of the market returns of a specific stock of a company and the market as a whole, and the statistical variance of the returns of the market; and,
- *Variation in Market Returns measured as the* coefficient of variation in monthly market prices. To a lesser extent, abrupt changes and suspension of dividends has impact on realized returns.

These criteria above resulted in the following Utility Proxy Group of 15 companies. While moderate in size by U.S. standards, the Sample 1 electric utilities reflect a comparatively broad size range.

Q. What was the criteria used to determine the proxy group for gas utilities?

A. The selection process for the U.S. Gas Distribution Utilities (Sample 2) is similar to methodology used to determine Sample 1 (Moderate-Sized Electric Utilities): a sample is first drawn on the bases of market liquidity and business line. The initial set of natural gas utilities and energy companies includes 18 entities. From this initial draw,[21] six gas distributors were retained for the analysis. The gas distribution utilities range in size from approximately $1.66 billion (Northwest Natural Holding Company) to well over $15.0 billion (Atmos Energy Corporation). For 2023, the natural gas utilities have similar unadjusted CAPM betas (0.76) as the selected electric utilities (0.83) and

[21] The U.S. natural gas industry includes many regional and national distributors of liquid propane and specialty industrial gas products and services, such as Penn Octane Corporation, Suburban Propane Partners, and Continental Fuels Inc.

somewhat lower variation in market returns (0.116) compared to the electricity utility sample (0.159).

Q. How were the comparable non-utility companies selected?

A. The comparable risk non-utility companies (Sample 3) were drawn from across non-utility economic sectors excluding financial services, providing that market capitalization was less than $2 billion and average market beta was less than unity. These criteria netted some 75 entities. The study methodology preferred for entities of Sample 3 to finance their respective balance sheets with some level debt, though several entities within Sample 3 are financed exclusively with equity. The selection screen required equity participation, CAPM beta information, variation in market returns, and variation in earnings per share—e.g., internal business and financial risk—obtained 14 entities which together constitute the comparable risk non-utilities.

6.2 Capital Asset Pricing Model Results

Q. What are the basic principles of the CAPM approach to estimating the cost of equity?

A. The CAPM model involves three inputs including estimates of the risk-free cost of capital, expectations of future returns to equity markets as a whole, and CAPM beta, the ratio of the covariance of share prices/market to the variance of overall market returns. Consistent with theory and conventional practice, it is appropriate to match up the risk-free rate of interest with the duration of investment undergoing capital valuation. The physical facilities of FPUC, like that of all electric utilities, are unusually long-lived compared to capital assets in other industries. Accordingly, for the cost of capital study,

the risk-free rate is set equal to the forward-looking dividend yields on 30-year U.S. Treasury Securities (constant maturity). Specifically, the risk-free rate is equal to the average monthly yield on 30-year U.S. Treasury securities (constant maturity) for two timeframes including 2013-2023 and 2021-2023, observed in monthly frequency. Estimates of future returns for equity markets (i.e., overall market return) are based on historical realized returns for U.S. markets, measured in real terms. Once estimated, the observed real rate of return for equity markets is adjusted upwards for expected inflation of 2.46 percent.[22] Real rates of return are calculated as the arithmetic average of annual returns over two timeframes, 1970 through 2023, and 1990 through 2023. These results are then adjusted to account for current expectations of inflation.

Q. From what source are the CAPM betas used in this analysis obtained?

A. The CAPM betas for the selected electric utilities, gas distributors and comparable risk non-utility companies are culled from Morningstar and Yahoo Finance. Morningstar estimates CAPM betas in monthly frequency over five years. Estimated betas are then adjusted for central tendency based on the methodology pioneered by Marshall Blume. For this study, CAPM estimates of the cost of equity use the average of the estimated betas over the five years 2019-2023.

Q. Please provide the results of your CAPM analysis.

A. CAPM estimates of the cost of equity can be found in Table 4, below.

[22] The cost of equity study takes note of contemporary expectations of inflation of the investment community, as measured by the difference in the long-term yields between constant maturity and Treasury Inflation protection security, of 2.46 percent.

Table 4: CAPM Results

Sample 1: Moderate-Sized Electric Utilities	Cost of Equity Capital, Unadjusted	Risk-Free Rate	Market Beta, Adjusted	Expected Market Return
Low	10.39%	3.39%	0.97	10.63%
High	11.61%	4.31%	1.00	11.62%
Weighted Average	11.18%	3.85%	1.01	11.13%
Sample 2: Natural Gas Distribution Utilities	**Cost of Equity Capital, Unadjusted**	**Risk-Free Rate**	**Market Beta, Adjusted**	**Expected Market Return**
Low	10.14%	3.39%	0.93	10.63%
High	11.31%	4.31%	0.96	11.62%
Weighted Average	10.72%	3.85%	0.94	11.13%
Sample 3: Small Non-Utilites	**Cost of Equity Capital, Unadjusted**	**Risk-Free Rate**	**Market Beta, Adjusted**	**Expected Market Return**
Low	10.10%	3.39%	0.93	10.63%
High	11.63%	4.31%	1.00	11.62%
Weighted Average	11.29%	3.85%	1.02	11.13%

6.3 Discounted Cash Flow Results

Q. Over what time period is the DCF methodology applied in this study?

A. The *Discounted Cash Flow* methodology is applied to the moderate-sized electric utilities (Sample 1) and gas distribution utilities (Sample 2). DCF cost estimates are based on investor expectations reflected in the market prices of the two samples during May of each year, 2021-2023. That is, under the assumption of efficient markets, the study anticipates that investors "price in" relevant information including perceptions of risks and expectations for future market performance. This multiple sample approach covering three contemporary years is carried out for each of the selected electric utilities and gas distributors which together constitute Samples 1 and 2. For each year's draw of prices, investors have available multiple years of historical financial data including the

earnings, internal cash flow, and dividend experience up through and including December of the previous year. The discounted cash flow analysis, as applied in the current study, is the classic constant growth expectations methodology, where expectations are based on historical experience.[23]

Q. What are the results of the discounted cash flow analysis for electric utilities?

A. The derived form of the discounted cash flow model consists of the dividend yield for the forward year plus estimates of the expectations for near- and long-term change (growth) in cash flows, with both terms expressed as percent values. Results of the discounted cash flow analysis, as applied to the moderate-sized electric utilities (Sample 1) and gas distribution utilities (Sample 2) are shown in Table 5, below. As shown, the unadjusted DCF estimates for the Moderate-Sized Electric Utilities (Sample 1) range from 8.45 percent to 10.79 percent.

23 Because of inherent challenges associated with gauging the long-term path of cash flows, the methodology underlying the current study does not generally apply multi-stage DCF procedures, for assessment of capital investment within small sovereign regions.

Table 5: Electric Utility DCF Results (2021-2023)

2021	Dividend Yield	Expected Growth in Cash Flows	Unadjusted Cost Rate
Low	2.98%	5.15%	8.45%
High	3.66%	7.39%	10.73%
Weighted Average	3.36%	6.33%	9.69%
2022			
	Dividend Yield	**Expected Growth in Cash Flows**	**Unadjusted Cost Rate**
Low	3.12%	5.39%	8.93%
High	3.94%	7.26%	10.79%
Weighted Average	3.42%	6.35%	9.77%
2023			
	Dividend Yield	**Expected Growth in Cash Flows**	**Unadjusted Cost Rate**
Low	3.10%	5.28%	8.51%
High	3.93%	6.80%	10.60%
Weighted Average	3.53%	5.84%	9.37%

Q. Please provide the results of the DCF analysis of gas utilities.

A. The risk profiles of the natural gas distribution utilities (Sample 2) closely parallel the profiles of the moderate-sized electric utilities. Accordingly, the cost of equity estimates of the two samples are similar in the case of the gas distributors. Unadjusted DCF cost estimates range from 8.48 percent to 13.75 percent and on a weighted average basis, 9.55 percent to 12.08 percent. Presented below are the discounted cash flow estimate for the gas distribution utilities (Sample 2).

Table 6: Gas Utility DCF Results (2021-2023)

2021	Dividend Yield	Expected Growth in Cash Flows	Unadjusted Cost Rate
Low	2.40%	7.64%	10.29%
High	3.13%	10.86%	13.75%
Weighted Average	2.78%	9.30%	12.08%
2022	**Dividend Yield**	**Expected Growth in Cash Flows**	**Unadjusted Cost Rate**
Low	2.42%	7.63%	10.27%
High	3.09%	10.45%	13.32%
Weighted Average	2.77%	9.19%	11.96%
2023	**Dividend Yield**	**Expected Growth in Cash Flows**	**Unadjusted Cost Rate**
Low	2.85%	4.95%	8.48%
High	3.81%	6.78%	9.91%
Weighted Average	3.09%	6.45%	9.55%

6.4 Risk Premia Analysis Results

Q. What is basis for conducting a risk premia analysis to assess the cost of utility capital?

A. The risk premia analysis is based on the conceptual foundation that risks implicit in financial assets including common equity are differentiated according to risks, across various asset classes. Because investors are generally risk adverse, competitive capital markets ensure that the returns are positively correlated with perceptions of risks and risky asset are ordered according to risk differences among asset classes. The starting point for risk premium analysis is a baseline real cost of capital for risk free assets. Differences in realized returns among financial assets provide the means to estimate the

cost of capital for financial assets of interest: energy utilities situated in the United States.

Q. What is the methodological approach of the risk premia analysis?

A. The risk premia analysis includes the baseline cost of capital for short-term risk free assets, differential return on intermediate term U.S. Treasury securities and short-term risk free assets, the differential return on long-term U.S. Treasury securities and intermediate term securities (U.S. Treasury), and the differential return on U.S. equity markets with reference to long-term U.S. Treasury securities, and adjustment for risk differences between energy utilities and the overall returns on equity market as a whole.

Q. Please provide the results from the risk premia analysis.

A. Table 7, below, shows the risk premia analysis for the electric, gas, and non-utility samples. As shown, the risk premia analysis cost of equity analysis obtains highly similar results for the three sample groups of electric utilities, gas distribution utilities, and small moderate-risk non-utilities. The risk premia cost of equity estimates align with, and thus tend to reinforce, the cost of equity estimates obtained through the other cost of capital tools including CAPM, DCF, and realized market returns.

Table 7: Risk Premia Analysis Results

	Equity Returns		Real Returns on US Treasury Debt		
	L-Cap	S-Cap	LT US Debt	InT US Debt	T-Bills
2014	11.39%	1.66%	24.62%	3.77%	0.02%
2015	-0.73%	-12.02%	-0.67%	1.89%	0.02%
2016	9.54%	22.04%	1.38%	1.29%	0.20%
2017	19.42%	16.96%	6.36%	1.25%	0.79%
2018	-6.24%	-17.04%	-0.54%	1.53%	1.80%
2019	28.88%	19.52%	12.09%	6.29%	2.14%
2020	16.26%	0.18%	15.19%	7.38%	0.45%
2021	26.89%	34.98%	-5.08%	-2.53%	0.04%
2022	-19.44%	-5.67%	-26.73%	-9.72%	1.43%
2023	24.23%	5.36%	3.16%	4.59%	4.97%
Average	11.02%	6.60%	2.98%	1.57%	1.19%

	Overall Financial Markets	**Utility Sector Return Requirements**		
		Electricity	Natural Gas	Low-Risk Non-Utilities
Approximate Baseline Real Return, Risk Free	1.53%	1.53%	1.53%	1.53%
Expected Inflation	2.46%	3.98%	3.98%	3.98%
Differential Cost of Capital for Asset Classes				
Intermediate Term U.S. Treasury Securities	0.05%	4.03%	4.03%	4.03%
Long-Term U.S. Treasury Securities	1.40%	5.43%	5.43%	5.43%
Risk Premia for Equity Market Asset Class	5.83%	11.27%	11.27%	11.27%
Total Return, Equity Capital	11.27%	10.52%	9.90%	11.39%

6.5 Realized Market Returns Analysis

Q. Why have you included a realized market returns analysis in your cost of capital study?

A. Realized Market Returns are wholly consistent with fair rate of return statutes and are not burdened with the circularity arguments associated with the use of realized book returns as the basis for the cost of equity capital. Otherwise referred to as historical returns or comparable earnings, realized returns serve as plausible estimates of the cost of equity, providing that the returns reflect competitive financial market experience with adequate liquidity, and second, are measured over an appropriate timeframe. For this cost of equity study, realized returns are reported for the three samples including electric utilities, gas distribution companies, and comparable risk non-utilities. The total market returns include dividends.

Q. What have been the realized market returns for each sample group over recent years?

A. Historical realized returns for the three samples are estimated for overlapping ten-year timeframes ending 2020-2023, as shown below. Historical market returns are summarized in the following table.

Table 8: Realized Market Returns, 2013-2023[24]

Market Returns: Year Ending 10-Year Averages	2020	2021	2022	2023
Moderate Sized Electric Utilities				
Average Across the Sample	11.57%	12.22%	11.52%	9.65%
	2013-2023 Average Unadjusted			**11.52%**
Natural Gas Utilities				
Average Across the Sample	13.71%	12.81%	12.88%	8.95%
	2013-2023 Average Unadjusted			**13.21%**
Small Non-Utility Companies (5-year avg)				
Average Across the Sample	11.70%	18.49%	-21.60%	17.43%
	2013-2023 Average Unadjusted			**9.89%**

8. Capital Structure Analysis

Q. How does the capital structure of the Company factor into the determination of the appropriate Return on Equity?

A. All else equal, a higher debt ratio increases investor risk. For this reason, companies with high debt levels face a higher required return on equity by investors relative to comparable firms with lower debt ratios. Under such circumstances, an upward adjustment to the estimated cost of equity is required, assuming the firm has a higher proportion of debt than the sample of utilities used to undertake the cost of equity analysis. In the case of FPUC, an adjustment is not required, as FPUC's capital structure is balanced and similar to the sample.

24 The averages for each of the three samples are weighted by market capitalization of the members of each respective sample.

Q. Have you provided exhibits related to FPUC's proposed capital structure?

A. Yes. Exhibits NAC-2 through NAC-9 set forth the capital structure on an overall consolidated and regulatory basis for test year 2025 and for historical and current periods, 2023 and 2024 respectively. In keeping with regulatory standards set by the Florida Public Service Commission (FPSC), the regulatory capital structure (and the conventional capital structure also) for each period is stated on a 13-month average basis.

Q. What is the capital structure of Chesapeake Utilities Corporation?

A. The consolidated capital structure of Chesapeake Utilities Corporation over recent years reveals remarkably consistent year-over-year balance across debt and equity components as revealed in Table 9, below.

Table 9: Debt-to-Equity Ratio, Chesapeake Utilities Corporation[25]

Year	Debt/Equity Balance
2021	1.01
2022	0.95
2023	1.10
2024	1.06
2025	0.96

*Year end capital structure

As shown, the debt-to-equity ratio for the consolidated year-end capital structure holds within the range of 0.95 to 1.10 over years 2021 through 2025, even as the total invested capital has increased by over twofold, reflecting the acquisition of Florida City Gas. The narrow range of debt/equity variation over these years reflects sound financial

[25] Table data based on the Company's Minimum Filing Requirement Sheet D-2.

management carried out in accordance with defined policy, contributing to the realization of consistent interest coverage. The end result is financial flexibility, enabling the Company to finance new issues of long-term promissory notes and put in place short-term debt lending facilities on favorable terms, lowering the carrying charges on FPUC's rate base as paid by retail customers.

Q. What is FPUC's regulatory capital structure?

A. FPUC's regulatory capital structure reflects similar levels of stability within the debt and equity components. Across other capital items, for example, accumulated deferred income taxes and regulatory tax liability attributable to FPUC's electric operations, FPUC has experienced some variability over years 2023 to 2025. In the case of deferred income taxes, balances decline from $22 million in 2023 to $13 million in 2025. Component weights for the regulatory capital structure used to underwrite the rate base of electric operations can be found in Table 10.

Table 10: Capitalization Shares (13-month Average), Regulatory Capital Structure for FPUC's Electric Operations[26]

Capital Component	2023	2024	2025
Long-Term Debt	29.84%	34.40%	37.91%
Short-Term Debt	5.47%	6.62%	4.83%
Preferred Stock	0.00%	0.00%	0.00%
Common Equity	37.84%	37.80%	42.82%
Customer Deposits	3.37%	3.18%	2.67%
Deferred Taxes	19.30%	14.27%	8.80%
Regulatory Tax Liability	4.19%	3.72%	2.96%
ITC at Zero Cost Rate	0.00%	0.00%	0.00%
ITC at Overall Cost Rate	0.00%	0.00%	0.00%
Total	100%	100%	100%

The debt-to-equity ratios of the regulatory and consolidated capital structures are, by design, highly similar: stated on 13-month average basis, the debt-to-equity ratio of the regulatory capital structure varies between 0.93 and 1.10 for years 2023/25.

9. The Weighted Average Cost of Capital

Q. Please explain the weighted average cost of capital approach used by FPUC in this filing.

A. The weighted average cost of capital of FPUC's Northeast and Northwest divisions is based on Chesapeake Utilities Corporation's consolidated capital structure, consisting of long-term debt, short-term debt, and common equity. The outstanding balances of these conventional components of capital are scaled to the rate base used by FPUC to provide electricity services and coupled with specific elements of FPUC's balance sheet

[26] Table data from D-1a, 23 supplement; D-1a, 24 supplement; D-1a, 25 supplement.

attributable to electricity operations, including customer deposits, regulatory tax liabilities, accumulated balances of deferred income taxes and investment tax credits. The result is a regulatory capital structure, where the total of the components closely approximates the rate base of FPUC's electric operations.

Q. What is FPUC's current overall weighted average cost of capital?

A. FPUC's WACC can be expressed in terms of a regulatory capital structure and a traditional capital structure. Using the regulatory capital structure, which includes customer deposits, deferred taxes, and regulatory tax liabilities, the requested WACC recovery rate is 6.89 percent. The requested WACC rate is lower than Chesapeake's actual incurred WACC because of the Company's attenuated long-term debt cost recovery (see Section 5 of this testimony for further discussion). If FPUC requested recovery of its actual cost of long-term debt (5.21 percent), the WACC would be higher than what is shown in this table. Using a conventional capital structure, the WACC is 7.98 percent. Table 11, below, provides additional details.

Table 11: FPUC's Weighted Average Cost of Capital, Test Year 2025

EXHIBIT NAC-1

FLORIDA PUBLIC UTILITIES COMPANY

OVERALL RATE OF RETURN REQUIREMENTS

WEIGHTED AVERAGE COST OF CAPITAL: REGULATORY CAPITAL STRUCTURE
13-MONTH AVERAGE, TEST YEAR 2025

Capital Component	Outstanding Balances	Capitalization Share	Cost Rate	Weighted Average Cost Rate
Long-Term Debt	$56,888,413	37.91%	4.51%	1.71%
Short-Term Debt	$7,255,028	4.83%	5.81%	0.28%
Preferred Stock	$0	0.00%	0.00%	0.00%
Common Equity	$64,253,557	42.82%	11.30%	4.84%
Customer Deposits	$4,001,097	2.67%	2.20%	0.06%
Deferred Taxes	$13,206,708	8.80%	0.00%	0.00%
Regulatory Tax Liability	$4,448,275	2.96%	0.00%	0.00%
ITC at WACC	$0	0.00%	7.98%	0.00%
Total	$150,053,078	100.00%		6.89%

WEIGHTED AVERAGE COST OF CAPITAL: CONVENTIONAL CAPITAL STRUCTURE
STATED ON A CONSOLIDATED BASIS
13-MONTH AVERAGE, TEST YEAR 2025

Capital Component	Outstanding Balances	Capitalization Share	Cost Rate	Weighted Average Cost Rate
Long Term Debt	$1,331,883,955	44.31%	4.51%	2.00%
Short-Term Debt	$169,856,296	5.65%	5.81%	0.33%
Preferred Stock	$0	0.00%	0.00%	0.00%
Common Equity	$1,504,318,384	50.04%	11.30%	5.65%
Total	$3,006,058,635	100.00%		7.98%

10. Summary and Conclusions

Q. What is FPUC's cost of debt issuances?

A. Chesapeake's consolidated actual long-term debt rate is 5.21 percent, but the Company has requested recovery of a reduced rate. FPUC requests recovery of an attenuated long-term debt issuance cost of 4.51 percent. The Company's short-term debt issuances carry a cost of 5.81 percent.

Q. What is your recommendation for FPUC's allowable return on equity?

A. Using four methodologies across three relevant sample groups, I estimated a required return on equity of 11.30 percent, with a reasonable band of 10.43 percent to 12.21 percent based on the estimation method standard deviations. Given these results, I recommend an allowed return on equity of 11.30 percent.

Q. What is FPUC's weighted average cost of capital?

A. Given the cost of debt, the required return on equity, and FPUC's capital structure, the Company's WACC is 6.89 percent assuming the attenuated cost of long-term debt.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

Appendix 1: Exhibit NAC-1

Nick Crowley

RESUME

April 2024

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Master of Science – University of Wisconsin-Madison, 2014, Economics
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Positions Held:

Vice President, Laurits R. Christensen Associates, Inc., Jan. 1, 2024-present
Senior Economist, Laurits R. Christensen Associates, Inc., Sept. 1, 2021-Dec. 2023
Economist, Laurits R. Christensen Associates, Inc., 2019-Aug. 31, 2021
Staff Economist, Laurits R. Christensen Associates, Inc., 2016-2018
Economist, Federal Energy Regulatory Commission, 2015-2016

Professional Experience:

I am an expert witness on issues in utility regulation, with an emphasis on rate design, regulatory finance, and productivity measurement. In my time as a consultant, I have testified on behalf of major public utilities in rate proceedings, measured cost of capital and assembled corresponding reports, developed alternative rate designs, and forecasted electricity load for supply planning purposes. I have also performed extensive research for benchmarking purposes using publicly available data. My work includes marginal cost estimation and the development of marginal cost models for major electric utilities. My reports have been filed before regulatory authorities across North America. Prior to joining Christensen Associates Energy Consulting, I served as an Economist at the Federal Energy Regulatory Commission, where I assisted with energy industry benchmarking, market power studies, and the review and evaluation of natural gas pipeline rate cases. I have deep facility with Stata and Excel, in addition to other software packages used in quantitative analysis.

PUBLIC TESTIMONY

"Rebuttal Testimony," Mark E. Meitzen, Ph.D. and Nicholas A. Crowley, MS, Massachusetts D.P.U., D.P.U. 23-150, April 26, 2024.

"Direct Testimony of Nicholas A. Crowley," Nicholas A. Crowley, MS, New Hampshire Department of Energy, Docket DE 23-039, December 13, 2023.

"Direct Testimony of Nicholas A. Crowley," Nicholas A. Crowley, MS, Michigan Public Service Commission, Case No. U-21488, December 11, 2023.

"Direct Testimony of Nicholas A. Crowley," Nicholas A. Crowley, MS, Massachusetts D.P.U., D.P.U. 23-150, November 16, 2023.

"Direct Testimony of Nicholas A. Crowley," Nicholas A. Crowley, MS, Massachusetts D.P.U., D.P.U. 23-80 AND D.P.U. 23-81, August 17, 2023.

"Rebuttal Evidence," Mark E. Meitzen, Ph.D. and Nicholas A. Crowley, MS, Alberta Utilities Commission, Proceeding 27388, April 28, 2023.

"Determination of the Third-Generation X Factor for the AUC Price Cap Plan," Mark E. Meitzen, Ph.D. and Nicholas A. Crowley, MS, Alberta Utilities Commission Proceeding 27388, January 20, 2023.

"Rebuttal Testimony of Mark E. Meitzen Ph.D. and Nicholas A. Crowley, MS," Massachusetts D.P.U. 22-22, June 10, 2022.

"Direct Testimony of Mark E. Meitzen Ph.D. and Nicholas A. Crowley, MS," Massachusetts D.P.U. 22-22, January 14, 2022.

"Rebuttal Testimony of Mark E. Meitzen Ph.D. and Nicholas A. Crowley, MS," Massachusetts D.P.U. 20-120, April 23, 2021.

"Direct Testimony of Mark E. Meitzen Ph.D. and Nicholas A. Crowley, MS," Massachusetts D.P.U. 20-120, November 13, 2020.

PUBLICATIONS

"Trends and Drivers of Distribution Utility Costs in the United States: A Descriptive Analysis from 2008 to 2022. *Electricity Journal.* 37 (2024) 107397.

"2022 Load Impact Evaluation of San Diego Gas and Electric's Voluntary Residential Critical Peak Pricing (CPP) and Time-of-Use (TOU) Rates." (with Michael Ty Clark and Aidan Glaser-Schoff)

"2021 Load Impact Evaluation of San Diego Gas and Electric's Voluntary Residential Critical Peak Pricing (CPP) and Time-of-Use (TOU) Rates." (with Michael Ty Clark and Aidan Glaser-Schoff)

"Measuring the Price Impact of Price-Cap Regulation Among Canadian Electricity Distribution

Utilities." *Utilities Policy.* Vol. 72, October 2021. (with Dr. Mark Meitzen)

"2020 Load Impact Evaluation of San Diego Gas and Electric's Voluntary Residential Critical Peak Pricing (CPP) and Time-of-Use (TOU) Rates." (with Michael Ty Clark and Navya Kataria)

"2019 Load Impact Evaluation of San Diego Gas and Electric's Voluntary Residential Critical Peak Pricing (CPP) and Time-of-Use (TOU) Rates." (with Michael Ty Clark)

"2018 Load Impact Evaluation of San Diego Gas and Electric's Voluntary Residential Critical Peak Pricing (CPP) and Time-of-Use (TOU) Rates." (with Michael Ty Clark)

"2017 Load Impact Evaluation of California Statewide Base Interruptible Programs (BIP) for Non-Residential Customers: Ex-post and Ex-ante Report." (with Michael Ty Clark and Dan Hansen)

"2017 Load Impact Evaluation of San Diego Gas and Electric's Voluntary Residential Critical Peak Pricing (CPP) and Time-of-Use (TOU) Rates." (with Michael Ty Clark and Dan Hansen)

"2016 Load Impact Evaluation of Pacific Gas and Electric Company's Residential Time-Based Pricing Programs: Ex-post and Ex-ante Report for Customers with Net Energy Metering." (with Michael Ty Clark and Dan Hansen)

"2016 Load Impact Evaluation of Pacific Gas and Electric Company's Mandatory Time-of-Use Rates for Small, Medium, and Agricultural Non-residential Customers: Ex-post and Ex-ante Report." (with Michael Ty Clark and Dan Hansen)

CONFERENCE PRESENTATIONS

"Essentials of Costing: Embedded and Marginal Cost." With Bruce Chapman. Wisconsin Public Utility Institute. *Energy Utility Basics.* October 10, 2023.

"Rate Design for Revenue Adequacy and Price Efficiency." With Bruce Chapman. Edison Electric Institute. Hosted at the University of Wisconsin-Madison. July 2023.

"Marginal Costs of Electricity Services." Edison Electric Institute. Hosted at the University of Wisconsin-Madison. July 2023.

"Introduction to Performance-Based Regulation." EUCI Workshop. Virtual. May 2023.

"Introduction to Retail Electricity Regulation for FERC Staff." Federal Energy Regulatory Commission, Office of Energy Market Regulation Training Council. Virtual. February 2023.

"Marginal Costs of Electricity Services." EUCI Workshop. Virtual. February 2023.

"Rate Design for Revenue Adequacy and Price Efficiency." Wisconsin Public Utility Institute. *Energy Utility Basics.* October 4, 2022.

"Rate Innovation for Cooperatives and Public Power." EUCI Workshop. Virtual. March 2022.

"Marginal Costs of Electricity Services." EUCI Workshop. Virtual. March 2022.

"Ratemaking Under Performance-Based Regulation." EUCI Workshop. Virtual. February 2022.

"Ratemaking Under Performance-Based Regulation." EUCI Workshop. Virtual. November 2021.

"Rate Design for Revenue Adequacy and Price Efficiency." Wisconsin Public Utility Institute. *Energy Utility Basics.* October 2, 2021.

"Rate Design and the Potential Impacts of Covid-19." EUCI Workshop. Virtual. November 17, 2020.

"Ratemaking Under Performance-Based Regulation." EUCI Workshop. Atlanta, Georgia. March 9, 2020.

"Load Impact Evaluation: *Base Interruptible Program.*" DRMEC Spring Workshop, California Public Utilities Commission. April 26, 2019.

"FERC Regulatory Policy and Relevant Environmental Issues, Focusing on the United States Natural Gas Grid," 2015 Energy Hub Conference. Hosted at the University of Wisconsin-Madison.

REPORTS AND WORKING PAPERS

"BC Hydro Performance-Based Regulation Framework," For the British Columbia Hydro and Power Authority." With Dr. Daniel McLeod and Dr. Mark Meitzen. December 21, 2023.

"Long Term Avoided Costs, for assessment of Resource Options Including Conservation Programs and LED Lighting." For Florida Public Utilities Company. 2021.

"Cost of Capital Study." For Grand Bahama Power Company, Ltd. April 15, 2021.

"Cost of Capital Study." St. Croix Valley Natural Gas Company, Inc. June 20, 2019.

"Methodology and Cost Estimates for Generation and Transmission Services, 2021-2029." For Newfoundland and Labrador Hydro. November 15, 2018.

"Cost of Capital Study." Grand Bahama Power Company, Ltd. October 17, 2018.

"Common Metrics Report: Performance Metrics for Regional Transmission Organizations, Independent System Operators, and Individual Utilities for the 2010-2014 Reporting Period." *Federal Energy Regulatory Commission Staff Report,* 2016.

COMPUTER/PROGRAMMING SKILLS: Deep knowledge of Excel and STATA for data analysis; experience with R, SAS, and Python for API data acquisition and manipulation.

Appendix II: Cost of Capital Exhibits

Exhibit NAC-2: Weighted Average Cost of Capital: Conventional Capital Structure Stated on a Consolidated Basis

WEIGHTED AVERAGE COST OF CAPITAL: CONVENTIONAL CAPITAL STRUCTURE STATED ON A CONSOLIDATED BASIS

13-MONTH AVERAGE, TEST YEAR 2025

Capital Component	Outstanding Balances	Capitalization Share	Cost Rate	Weighted Average Cost Rate
Long Term Debt	$1,331,883,955	44.31%	4.51%	2.00%
Short-Term Debt	$169,856,296	5.65%	5.81%	0.33%
Preferred Stock	$0	0.00%	0.00%	0.00%
Common Equity	$1,504,318,384	50.04%	11.30%	5.65%
Total	$3,006,058,635	100.00%		7.98%

Exhibit NAC-3: Conventional Capital Structure, Test Year 2025

CONVENTIONAL CAPITAL STRUCTURE: TEST YEAR 2025

Capital Component	13-Month Average Outstanding Balance, Consolidated Basis	Capitalization Shares
Long-Term Debt	$1,331,883,955	44.31%
Short-Term Debt	$169,856,296	5.65%
Preferred Stock	$0	0.00%
Common Equity	$1,504,318,384	50.04%
Total	$3,006,058,635	100.00%

Exhibit NAC-4: Conventional Capital Structure, Current Year 2024

CONVENTIONAL CAPITAL STRUCTURE: CURRENT YEAR 2024

Capital Component	13-Month Average Outstanding Balance, Consolidated Basis	13-Month Average Capitalization Shares
Long-Term Debt	$1,188,404,108	43.64%
Short-Term Debt	$228,599,377	8.39%
Preferred Stock	$0	0.00%
Common Equity	$1,306,085,133	47.96%
Total	$2,723,088,617	100.00%

Exhibit NAC-5: Conventional Capital Structure, Historical Year 2023

CONVENTIONAL CAPITAL STRUCTURE: HISTORICAL YEAR 2023

Capital Component	13-Month Average Outstanding Balance, Consolidated Basis	Capitalization Shares
Long-Term Debt	$725,924,822	40.79%
Short-Term Debt	$132,960,125	7.47%
Preferred Stock	$0	0.00%
Common Equity	$920,631,947	51.74%
Total	$1,779,516,894	100.00%

Exhibit NAC-6: Weighted Average Cost of Capital Regulatory Capital Structure

FLORIDA PUBLIC UTILITIES COMPANY

OVERALL RATE OF RETURN REQUIREMENTS

WEIGHTED AVERAGE COST OF CAPITAL: REGULATORY CAPITAL STRUCTURE
13-MONTH AVERAGE, TEST YEAR 2025

Capital Component	Outstanding Balances	Capitalization Share	Cost Rate	Weighted Average Cost Rate
Long-Term Debt	$56,888,413	37.91%	4.51%	1.71%
Short-Term Debt	$7,255,028	4.83%	5.81%	0.28%
Preferred Stock	$0	0.00%	0.00%	0.00%
Common Equity	$64,253,557	42.82%	11.30%	4.84%
Customer Deposits	$4,001,097	2.67%	2.20%	0.06%
Deferred Taxes	$13,206,708	8.80%	0.00%	0.00%
Regulatory Tax Liability	$4,448,275	2.96%	0.00%	0.00%
ITC at WACC	$0	0.00%	7.98%	0.00%
Total	$150,053,078	100.00%		6.89%

Exhibit NAC-7: Detailed Regulatory Capital Structure, Test Year 2025

REGULATORY CAPITAL STRUCTURE: TEST YEAR 2025

	13-Month Average					
Capital Component	Outstanding Balance, Consolidated Basis	Adjustments	Consolidated System Total	Rate Base Pro Rata Allocation	Jurisdictional Capital Structure	Capitalization Shares
Long-Term Debt	$1,331,883,955	$0	$1,331,883,955	4.27%	$56,888,413	37.91%
Short-Term Debt	$169,856,296	$0	$169,856,296	4.27%	$7,255,028	4.83%
Preferred Stock	$0	$0	$0	4.27%	$0	0.00%
Common Equity	$1,502,431,540	$1,886,844	$1,504,318,384	4.27%	$64,253,557	42.82%
Customer Deposits	$4,001,097	$0	$4,001,097	100.00%	$4,001,097	2.67%
Deferred Taxes	$13,206,708	$0	$13,206,708	100.00%	$13,206,708	8.80%
Regulatory Tax Liability	$4,448,275	$0	$4,448,275	100.00%	$4,448,275	2.96%
ITC at Overall Cost Rate	$0	$0	$0	100.00%	$0	0.00%
Total	$3,025,827,871	$1,886,844	$3,027,714,715		$150,053,078	100.00%

Exhibit NAC-8: Detailed Regulatory Capital Structure, Current Year 2024

REGULATORY CAPITAL STRUCTURE: CURRENT YEAR 2024

	13-Month Average					
Capital Component	Outstanding Balance, Consolidated Basis	Adjustments	Consolidated System Total	Rate Base Pro Rata Allocation	Jurisdictional Capital Structure	Capitalization Shares
Long-Term Debt	$1,188,404,108	$0	$1,188,404,108	3.62%	$43,065,436	34.40%
Short-Term Debt	$228,599,377	$0	$228,599,377	3.62%	$8,283,993	6.62%
Preferred Stock	$0	$0	$0	3.62%	$0	0.00%
Common Equity	$1,304,178,789	$1,906,344	$1,306,085,133	3.62%	$47,329,963	37.80%
Customer Deposits	$3,983,222	$0	$3,983,222	100.00%	$3,983,222	3.18%
Deferred Taxes	$17,871,253	$0	$17,871,253	100.00%	$17,871,253	14.27%
ITC at Overall Cost Rate	$4,662,221	$0	$4,662,221	100.00%	$4,662,221	3.72%
ITC at Zero Cost Rate	$0	$0	$0	100.00%	$0	0.00%
Total	$2,747,698,969	$1,906,344	$2,749,605,313		$125,196,088	100.00%

Exhibit NAC-9: Detailed Regulatory Capital Structure, Historical Year 2023

REGULATORY CAPITAL STRUCTURE: HISTORICAL YEAR 2023

	13-Month Average					
Capital Component	Outstanding Balance, Consolidated Basis	Adjustments	Consolidated System Total	Rate Base Pro Rata Allocation	Jurisdictional Capital Structure	Capitalization Shares
Long-Term Debt	$725,924,822	$0	$725,924,822	4.80%	$34,811,456	29.84%
Short-Term Debt	$132,960,125	$0	$132,960,125	4.80%	$6,376,054	5.47%
Preferred Stock	$0	$0	$0	4.80%	$0	0.00%
Common Equity	$918,729,847	$1,902,100	$920,631,947	4.80%	$44,148,563	37.84%
Customer Deposits	$3,930,084	$0	$3,930,084	100.00%	$3,930,084	3.37%
Deferred Taxes	$22,517,273	$0	$22,517,273	100.00%	$22,517,273	19.30%
Regulatory Tax Liability	$4,883,526	$0	$4,883,526	100.00%	$4,883,526	4.19%
ITC at Zero Cost Rate	$0	$0	$0	100.00%	$0	0.00%
ITC at Overall Cost Rate	$0	$0	$0		$0	0.00%
Total	$1,808,945,676	$1,902,100	$1,810,847,776		$116,666,955	100.00%

Exhibit NAC-10: CAPM Estimates of the Cost of Common Equity, U.S. Equity Markets

Sample 1: Moderate-Sized Electric Utilities				
	Cost of Equity Capital, Unadjusted	Risk-Free Rate	Market Beta, Adjusted	Expected Market Return
Low	10.39%	3.39%	0.97	10.63%
High	11.61%	4.31%	1.00	11.62%
Weighted Average	11.18%	3.85%	1.01	11.13%
Sample 2: Natural Gas Distribution Utilities				
	Cost of Equity Capital, Unadjusted	Risk-Free Rate	Market Beta, Adjusted	Expected Market Return
Low	10.14%	3.39%	0.93	10.63%
High	11.31%	4.31%	0.96	11.62%
Weighted Average	10.72%	3.85%	0.94	11.13%
Sample 3: Small Non-Utilites				
	Cost of Equity Capital, Unadjusted	Risk-Free Rate	Market Beta, Adjusted	Expected Market Return
Low	10.10%	3.39%	0.93	10.63%
High	11.63%	4.31%	1.00	11.62%
Weighted Average	11.29%	3.85%	1.02	11.13%

Exhibit NAC-11: CAPM Estimates of the Cost of Equity Capital: Moderate-Sized Electric Utilities

CAPM ESTIMATES OF THE COST OF EQUITY CAPITAL: MODERATE-SIZED ELECTRIC UTILITIES

Small Low-Risk Entities		Adjusted CAPM Beta		Unadjusted Beta	
Company	Ticker	2018-2023	2023	2018-2023	2023
ALLETE, Inc.	ALE	0.83	1.00	0.75	1.00
Alliant Energy Corporation	LNT	0.74	0.93	0.62	0.90
Black Hills	BCK	1.00	1.00	1.00	1.00
CenterPoint Energy, Inc.	CNP	1.16	1.13	1.25	1.20
Evergy, Inc.	EVRG	0.77	1.00	0.65	1.00
Hawaiian Electric Industries, Inc.	HE	0.68	1.00	0.53	1.00
IDACORP, Inc.	IDA	0.78	0.93	0.67	0.90
MGE Energy, Inc.	MGEE	0.74	0.87	0.62	0.80
Northwestern Energy Group	NEW	0.98	1.00	0.97	1.00
OGE Energy Corp.	OGE	0.92	1.07	0.88	1.10
Otter Tail Corporation	OTTR	0.82	1.00	0.73	1.00
Pinnacle West Capital Corporation	PNW	0.76	1.00	0.65	1.00
PNM Resources, Inc.	PNM	0.83	0.93	0.75	0.90
Portland General Electric Company	POR	0.76	0.93	0.64	0.90
Unitil Corporation	UTL	1.01	0.93	1.01	0.90
	Average	0.85	0.98	0.78	0.97
	Standard Deviation	0.13	0.06	0.20	0.10
	Weighted Average:	0.87	1.01	0.81	1.01

CAPM ESTIMATES

	Cost of Equity Capital, Unadjusted	Risk-Free Rate	Market Beta, Adjusted	Expected Market Return
Low	10.39%	3.39%	0.97	10.63%
High	11.61%	4.31%	1.00	11.62%
Weighted Average	11.18%	3.85%	1.01	11.13%
		U.S. Equity Market Risk Premia:		7.28%

Exhibit NAC-12: CAPM Estimates of the Cost of Equity Capital: Gas Distribution Utilities

CAPM ESTIMATES OF THE COST OF EQUITY CAPITAL: GAS DISTRIBUTION UTILITIES

Small Low-Risk Entities		Adjusted CAPM Beta		Unadjusted Beta	
Company	Ticker	2018-2023	2023	2018-2023	2023
Atmos Energy Corporation	ATO	0.74	0.93	0.62	0.90
Chesapeake Utilities Corporation	CPK	0.72	0.87	0.59	0.80
New Jersey Resources Corporation	NJR	0.85	1.00	0.78	1.00
Northwest Natural Holding Company	NWN	0.75	1.00	0.62	1.00
ONE Gas, Inc.	OGS	0.79	0.93	0.68	0.90
Southwest Gas Holdings, Inc.	SWX	0.75	0.93	0.62	0.90
	Average	0.77	0.94	0.65	0.92
	Standard Deviation	0.05	0.05	0.07	0.08
	Weighted Average:	0.77	0.94	0.65	0.92

CAPM ESTIMATES

	Cost of Equity Capital, Unadjusted	Risk-Free Rate	Market Beta, Adjusted	Expected Market Return
Low	10.14%	3.39%	0.93	10.63%
High	11.31%	4.31%	0.96	11.62%
Weighted Average	10.72%	3.85%	0.94	11.13%
		U.S. Equity Market Risk Premia:		7.28%

Exhibit NAC-13: CAPM Estimates of the Cost of Equity Capital: Moderate-Sized Utilities

CAPM ESTIMATES OF THE COST OF EQUITY CAPITAL: MODERATE-SIZED UTILITIES

Small Low-Risk Entities		Adjusted CAPM Beta		Unadjusted Beta	
Company	Ticker	2018-2023	2023	2018-2023	2023
ALLETE, Inc.	ALE	0.83	1.00	0.75	1.00
Alliant Energy Corporation	LNT	0.74	0.93	0.62	0.90
Black Hills	BCK	1.00	1.00	1.00	1.00
CenterPoint Energy, Inc.	CNP	1.16	1.13	1.25	1.20
Evergy, Inc.	EVRG	0.77	1.00	0.65	1.00
Hawaiian Electric Industries, Inc.	HE	0.68	1.00	0.53	1.00
IDACORP, Inc.	IDA	0.78	0.93	0.67	0.90
MGE Energy, Inc.	MGEE	0.74	0.87	0.62	0.80
Northwestern Energy Group	NEW	0.98	1.00	0.97	1.00
OGE Energy Corp.	OGE	0.92	1.07	0.88	1.10
Otter Tail Corporation	OTTR	0.82	1.00	0.73	1.00
Pinnacle West Capital Corporation	PNW	0.76	1.00	0.65	1.00
PNM Resources, Inc.	PNM	0.83	0.93	0.75	0.90
Portland General Electric Company	POR	0.76	0.93	0.64	0.90
Unitil Corporation	UTL	1.01	0.93	1.01	0.90
Atmos Energy Corporation	ATO	0.74	0.93	0.62	0.90
Chesapeake Utilities Corporation	CPK	0.72	0.87	0.59	0.80
New Jersey Resources Corporation	NJR	0.85	1.00	0.78	1.00
Northwest Natural Holding Company	NWN	0.75	1.00	0.62	1.00
ONE Gas, Inc.	OGS	0.79	0.93	0.68	0.90
Southwest Gas Holdings, Inc.	SWX	0.75	0.93	0.62	0.90
	Average	0.83	0.97	0.74	0.96
	Standard Deviation	0.12	0.06	0.18	0.09
	Weighted Average:	0.85	0.99	0.77	0.99

CAPM ESTIMATES

	Cost of Equity Capital, Unadjusted	Risk-Free Rate	Market Beta, Adjusted	Expected Market Return
Low	10.31%	3.39%	0.96	10.63%
High	11.53%	4.31%	0.99	11.62%
Weighted Average	11.08%	3.85%	0.99	11.13%
		U.S. Equity Market Risk Premia:		7.28%

Exhibit NAC-14: CAPM Estimates of the Cost of Equity Capital: Small-Sized Non-Utility Companies

CAPM ESTIMATES OF THE COST OF EQUITY CAPITAL: SMALL-SIZED NON-UTILITY COMPANIES

Small Low-Risk Entities		Adjusted CAPM Beta		Unadjusted Beta	
Company	Ticker	2018-2023	2023	2022-2023	2023
John Wiley & Sons, Inc.	WLY	0.93	0.93	0.90	0.90
Ingredion	INGR	0.90	0.87	0.86	0.81
Kinross Gold Corp	KGC	0.82	0.87	0.73	0.80
HNI Corporation	HNI	1.05	1.07	1.08	1.10
Kaman Corporation	KAMN	1.16	1.13	1.25	1.19
Smith & Wesson Brands, Inc.	SWBI	0.72	0.73	0.58	0.60
Entravision Communications Corporation	EVC	1.00	1.00	1.00	1.00
Luxfer Holdings PLC	LXFR	0.93	0.89	0.89	0.84
The Aaron's Company, Inc.	AAN	1.14	1.27	1.21	1.40
Natural Grocers by Vitamin Cottage, Inc.	NGVC	0.83	0.73	0.75	0.60
Adams Resources & Energy, Inc.	AE	1.02	1.13	1.04	1.20
LifeVantage Corporation	LFVN	0.98	0.93	0.98	0.90
Sonoco Products	SON	0.90	1.00	0.86	1.00
Sensient Technologies	SXT	0.93	0.93	0.90	0.90
	Average	0.95	0.96	0.93	0.95
	Standard Deviation	0.12	0.15	0.18	0.22
	Weighted Average:	0.99	1.02	0.94	0.98

CAPM ESTIMATES

	Cost of Equity Capital, Unadjusted	Risk-Free Rate	Market Beta, Adjusted	Expected Market Return
Low	10.10%	3.39%	0.93	10.63%
High	11.63%	4.31%	1.00	11.62%
Weighted Average	11.29%	3.85%	1.02	11.13%
		U.S. Equity Market Risk Premia:		7.28%

	Cost Rate, Adjusted for Issuance Costs
Low	
High	11.86%
Weighted Average	11.51%

Exhibit NAC-15: Summary of Electric Utility Discounted Cash Flow Results

2021	Dividend Yield	Expected Growth in Cash Flows	Unadjusted Cost Rate
Low	2.98%	5.15%	8.45%
High	3.66%	7.39%	10.73%
Weighted Average	3.36%	6.33%	9.69%
2022	**Dividend Yield**	**Expected Growth in Cash Flows**	**Unadjusted Cost Rate**
Low	3.12%	5.39%	8.93%
High	3.94%	7.26%	10.79%
Weighted Average	3.42%	6.35%	9.77%
2023	**Dividend Yield**	**Expected Growth in Cash Flows**	**Unadjusted Cost Rate**
Low	3.10%	5.28%	8.51%
High	3.93%	6.80%	10.60%
Weighted Average	3.53%	5.84%	9.37%

Exhibit NAC-16: Discounted Cashflow Estimates of Cost of Equity: Moderate-Sized Electric Utilities, 2023

DISCOUNTED CASH FLOW ESTIMATES OF COST OF EQUITY: MODERATE-SIZED ELECTRIC UTILITIES, 2023

Electric Utility	Ticker	Dividend Per Share	Effective Year Forward Dividend	Average Market Price Per Share, December '23	Adjusted Dividend Yield	Expected Growth	Single Stage DCF Estimates of Cost of Equity Capital
ALLETE, Inc.	ALE	2.71	2.82	63.22	4.46%	8.20%	12.66%
Alliant Energy Corporation	LNT	1.81	1.87	55.29	3.38%	6.29%	9.66%
Black Hills	BCK	2.50	2.60	65.37	3.97%	7.76%	11.73%
CenterPoint Energy, Inc.	CNP	0.77	0.79	30.68	2.56%	4.06%	6.62%
Evergy, Inc.	EVRG	2.48	2.57	62.47	4.11%	7.01%	11.12%
Hawaiian Electric Industries, Inc.	HE	1.08	1.11	39.10	2.84%	5.58%	8.41%
IDACORP, Inc.	IDA	3.20	3.26	111.67	2.92%	3.69%	6.61%
MGE Energy, Inc.	MGEE	1.67	1.71	77.14	2.22%	5.38%	7.60%
Northwestern Energy Group	NEW	2.56	2.64	58.94	4.47%	6.04%	10.51%
OGE Energy Corp.	OGE	1.66	1.73	37.43	4.63%	9.00%	13.63%
Otter Tail Corporation	OTTR	1.75	1.80	72.52	2.49%	6.11%	8.59%
Pinnacle West Capital Corporation	PNW	3.48	3.55	78.92	4.50%	4.10%	8.59%
PNM Resources, Inc.	PNM	1.57	1.61	48.03	3.35%	4.99%	8.34%
Portland General Electric Company	POR	1.88	1.94	50.41	3.85%	6.37%	10.21%
Unitil Corporation	UTL	1.62	1.67	55.89	2.99%	6.04%	9.02%

DCF ESTIMATES, MODERATE-SIZED ELECTRIC UTILITIES

	Adjusted Dividend Yield	Expected Growth	Unadjusted Cost Rate
Average	3.52%	6.04%	9.55%
S. D.	0.82%	1.52%	2.08%
Range			
Low	3.10%	5.28%	8.51%
High	3.93%	6.80%	10.60%
Weighted Average	3.53%	5.84%	9.37%

	Cost Rate, Adjusted for Issuance Costs
Weighted Average	9.59%

Exhibit NAC-17: Discounted Cashflow Estimates of Cost of Equity: Moderate-Sized Electric Utilities, 2022

DISCOUNTED CASH FLOW ESTIMATES OF COST OF EQUITY: MODERATE-SIZED ELECTRIC UTILITIES, 2022

Electric Utility	Ticker	Dividend Per Share	Effective Year Forward Dividend	Average Market Price Per Share, December '22	Adjusted Dividend Yield	Expected Growth	Single Stage DCF Estimates of Cost of Equity Capital
ALLETE, Inc.	ALE	2.60	2.65	58.89	4.49%	3.51%	8.00%
Alliant Energy Corporation	LNT	1.71	1.77	57.85	3.06%	6.72%	9.77%
Black Hills	BCK	2.41	2.49	72.37	3.44%	6.33%	9.76%
CenterPoint Energy, Inc.	CNP	0.70	0.72	30.22	2.39%	6.33%	8.72%
Evergy, Inc.	EVRG	2.33	2.40	67.08	3.58%	5.91%	9.49%
Hawaiian Electric Industries, Inc.	HE	1.40	1.44	40.65	3.55%	6.33%	9.88%
IDACORP, Inc.	IDA	3.04	3.16	102.39	3.08%	7.57%	10.65%
MGE Energy, Inc.	MGEE	1.59	1.63	76.77	2.12%	4.49%	6.61%
Northwestern Energy Group	NEW	2.52	2.59	55.66	4.65%	5.57%	10.22%
OGE Energy Corp.	OGE	1.64	1.70	38.48	4.42%	7.35%	11.77%
Otter Tail Corporation	OTTR	1.65	1.70	58.86	2.89%	6.33%	9.22%
Pinnacle West Capital Corporation	PNW	3.42	3.50	71.24	4.91%	4.67%	9.58%
PNM Resources, Inc.	PNM	1.41	1.49	46.06	3.24%	11.88%	15.13%
Portland General Electric Company	POR	1.79	1.84	46.64	3.95%	5.61%	9.56%
Unitil Corporation	UTL	1.56	1.61	50.17	3.21%	6.33%	9.54%

DCF ESTIMATES, MODERATE-SIZED ELECTRIC UTILITIES

	Adjusted Dividend Yield	Expected Growth	Unadjusted Cost Rate
Average	3.53%	6.33%	9.86%
S. D.	0.82%	1.87%	1.86%
Range			
Low	3.12%	5.39%	8.93%
High	3.94%	7.26%	10.79%
Weighted Average	3.42%	6.35%	9.77%

	Cost Rate, Adjusted for Issuance Costs
Weighted Average	9.99%

Exhibit NAC-18: Discounted Cashflow Estimates of Cost of Equity: Moderate-Sized Electric Utilities, 2021

DISCOUNTED CASH FLOW ESTIMATES OF COST OF EQUITY: MODERATE-SIZED ELECTRIC UTILITIES, 2021

Electric Utility	Ticker	Dividend Per Share	Effective Year Forward Dividend	Average Market Price Per Share, December '21	Adjusted Dividend Yield	Expected Growth	Single Stage DCF Estimates of Cost of Equity Capital
ALLETE, Inc.	ALE	2.52	2.56	70.69	3.63%	3.48%	7.11%
Alliant Energy Corporation	LNT	1.61	1.66	56.17	2.96%	6.67%	9.63%
Black Hills	BCK	2.29	2.36	68.99	3.42%	6.27%	9.70%
CenterPoint Energy, Inc.	CNP	0.66	0.68	24.42	2.79%	6.27%	9.06%
Evergy, Inc.	EVRG	2.18	2.24	64.06	3.50%	5.84%	9.34%
Hawaiian Electric Industries, Inc.	HE	1.36	1.40	43.20	3.25%	6.27%	9.52%
IDACORP, Inc.	IDA	2.88	3.00	102.14	2.94%	8.38%	11.32%
MGE Energy, Inc.	MGEE	1.52	1.55	75.22	2.07%	4.38%	6.45%
Northwestern Energy Group	NEW	2.48	2.52	67.82	3.72%	3.32%	7.04%
OGE Energy Corp.	OGE	1.63	1.69	33.49	5.06%	7.95%	13.01%
Otter Tail Corporation	OTTR	1.56	1.61	47.89	3.36%	6.27%	9.63%
Pinnacle West Capital Corporation	PNW	3.36	3.45	84.53	4.08%	5.09%	9.16%
PNM Resources, Inc.	PNM	1.33	1.41	49.54	2.85%	12.55%	15.40%
Portland General Electric Company	POR	1.70	1.74	50.48	3.45%	5.06%	8.51%
Unitil Corporation	UTL	1.52	1.57	57.59	2.72%	6.27%	8.99%

DCF ESTIMATES, MODERATE-SIZED ELECTRIC UTILITIES

	Adjusted Dividend Yield	Expected Growth	Unadjusted Cost Rate
Average	3.32%	6.27%	9.59%
S. D.	0.69%	2.23%	2.28%
Range			
Low	2.98%	5.15%	8.45%
High	3.66%	7.39%	10.73%
Weighted Average	3.36%	6.33%	9.69%

	Cost Rate, Adjusted for Issuance Costs
Weighted Average	9.90%

Exhibit NAC-19: Summary of Gas Utility Discounted Cash Flow Results

2021	Dividend Yield	Expected Growth in Cash Flows	Unadjusted Cost Rate
Low	2.40%	7.64%	10.29%
High	3.13%	10.86%	13.75%
Weighted Average	2.78%	9.30%	12.08%
2022	**Dividend Yield**	**Expected Growth in Cash Flows**	**Unadjusted Cost Rate**
Low	2.42%	7.63%	10.27%
High	3.09%	10.45%	13.32%
Weighted Average	2.77%	9.19%	11.96%
2023	**Dividend Yield**	**Expected Growth in Cash Flows**	**Unadjusted Cost Rate**
Low	2.76%	4.95%	8.40%
High	3.71%	6.78%	9.81%
Weighted Average	3.00%	6.45%	9.45%

Exhibit NAC-20: Discounted Cashflow Estimates of Cost of Equity: Gas Distribution Utilities, 2023

DISCOUNTED CASH FLOW ESTIMATES OF COST OF EQUITY: GAS DISTRIBUTION UTILITIES, 2023

Gas Utility	Ticker	Dividend Per Share	Effective Year Forward Dividend	Average Market Price Per Share,	Adjusted Dividend Yield	Expected Growth	Single Stage DCF Estimates of Cost of Equity Capital
Atmos Energy Corporation	ATO	2.96	3.07	114.55	2.68%	7.64%	10.32%
Chesapeake Utilities Corporation	CPK	2.31	2.39	123.50	1.94%	7.30%	9.24%
New Jersey Resources Corporation	NJR	1.59	1.65	51.67	3.18%	7.00%	10.18%
Northwest Natural Holding Company	NWN	1.94	2.00	46.85	4.27%	6.00%	10.27%
ONE Gas, Inc.	OGS	2.60	2.64	77.29	3.42%	3.25%	6.67%
Southwest Gas Holdings, Inc.	SWX	2.48	2.53	56.46	4.48%	4.00%	8.48%

DCF ESTIMATES, MODERATE-SIZED ELECTRIC UTILITIES

	Adjusted Dividend Yield	Expected Growth	Unadjusted Cost
Average	3.33%	5.86%	9.19%
S. D.	0.96%	1.83%	1.43%
Range			
Low	3.81%	4.95%	8.8%
High	2.85%	6.78%	9.6%
Weighted Average	3.09%	6.45%	9.55%

	Cost Rate, Adjusted for Issuance Costs
Weighted Average	9.74%

Exhibit NAC-21: Discounted Cashflow Estimates of Cost of Equity: Gas Distribution Utilities, 2022

DISCOUNTED CASH FLOW ESTIMATES OF COST OF EQUITY: GAS DISTRIBUTION UTILITIES, 2022

Gas Utility	Ticker	Dividend Per Share	Effective Year Forward Dividend	Average Market Price Per Share, December '22	Adjusted Dividend Yield	Expected Growth	Single Stage DCF Estimates of Cost of Equity Capital
Atmos Energy Corporation	ATO	2.72	2.85	111.76	2.55%	9.35%	11.9%
Chesapeake Utilities Corporation	CPK	1.84	1.91	122.00	1.56%	7.47%	9.0%
New Jersey Resources Corporation	NJR	1.45	1.50	42.79	3.50%	6.76%	10.3%
Northwest Natural Holding Company	NWN	1.93	2.02	47.29	2.76%	9.04%	11.8%
ONE Gas, Inc.	OGS	2.48	2.66	82.63	3.22%	14.39%	17.6%
Southwest Gas Holdings, Inc.	SWX	2.48	2.57	87.13	2.95%	7.22%	10.2%

DCF ESTIMATES, MODERATE-SIZED ELECTRIC UTILITIES

	Adjusted Dividend Yield	Expected Growth	Unadjusted Cost Rate
Average	2.76%	9.04%	11.79%
S. D.	0.67%	2.82%	3.04%
Range			
Low	2.42%	7.63%	10.27%
High	3.09%	10.45%	13.32%
Weighted Average	2.77%	9.19%	11.96%

	Cost Rate, Adjusted for Issuance Costs
Weighted Average	12.14%

Exhibit NAC-22: Discounted Cashflow Estimates of Cost of Equity: Gas Distribution Utilities, 2021

DISCOUNTED CASH FLOW ESTIMATES OF COST OF EQUITY: GAS DISTRIBUTION UTILITIES, 2021

Gas Utility	Ticker	Dividend Per Share	Effective Year Forward Dividend	Average Market Price Per Share, December '21	Adjusted Dividend Yield	Expected Growth	Single Stage DCF Estimates of Cost of Equity Capital
Atmos Energy Corporation	ATO	2.50	2.61	103.79	2.52%	9.11%	11.63%
Chesapeake Utilities Corporation	CPK	1.69	1.75	120.89	1.45%	7.12%	8.57%
New Jersey Resources Corporation	NJR	1.36	1.40	43.13	3.26%	6.61%	9.86%
Northwest Natural Holding Company	NWN	1.92	2.01	54.40	2.76%	9.25%	12.02%
ONE Gas, Inc.	OGS	2.32	2.50	80.58	3.10%	15.46%	18.57%
Southwest Gas Holdings, Inc.	SWX	2.38	2.47	70.91	3.49%	7.96%	11.45%

DCF ESTIMATES, MODERATE-SIZED ELECTRIC UTILITIES

	Adjusted Dividend Yield	Expected Growth	Unadjusted Cost Rate
Average	2.76%	9.25%	12.02%
S. D.	0.73%	3.22%	3.46%
Range			
Low	2.40%	7.64%	10.29%
High	3.13%	10.86%	13.75%
Weighted Average	2.78%	9.30%	12.08%

	Cost Rate, Adjusted for Issuance Costs
Weighted Average	12.26%

Exhibit NAC-23: Risk Premia and Equity Returns

	Equity Returns		Real Returns on US Treasury Debt		
	L-Cap	S-Cap	LT US Debt	InT US Debt	T-Bills
2014	11.39%	1.66%	24.62%	3.77%	0.02%
2015	-0.73%	-12.02%	-0.67%	1.89%	0.02%
2016	9.54%	22.04%	1.38%	1.29%	0.20%
2017	19.42%	16.96%	6.36%	1.25%	0.79%
2018	-6.24%	-17.04%	-0.54%	1.53%	1.80%
2019	28.88%	19.52%	12.09%	6.29%	2.14%
2020	16.26%	0.18%	15.19%	7.38%	0.45%
2021	26.89%	34.98%	-5.08%	-2.53%	0.04%
2022	-19.44%	-5.67%	-26.73%	-9.72%	1.43%
2023	24.23%	5.36%	3.16%	4.59%	4.97%
Average	11.02%	6.60%	2.98%	1.57%	1.19%

	Overall Financial Markets	**Utility Sector Return Requirements**		
		Electricity	Natural Gas	Low-Risk Non-Utilities
Approximate Baseline Real Return, Risk Free	1.53%	1.53%	1.53%	1.53%
Expected Inflation	2.46%	3.98%	3.98%	3.98%
Differential Cost of Capital for Asset Classes				
Intermediate Term U.S. Treasury Securities	0.05%	4.03%	4.03%	4.03%
Long-Term U.S. Treasury Securities	1.40%	5.43%	5.43%	5.43%
Risk Premia for Equity Market Asset Class	5.83%			
Total Return, Equity Capital	11.27%	**10.52%**	**9.90%**	**11.39%**

Exhibit NAC-24: Market Returns: Year Ending 10-Year Averages

Market Returns: Year Ending 10-Year Averages				
	2020	**2021**	**2022**	**2023**
Moderate Sized Electric Utilities				
Average Across the Sample	11.57%	12.22%	11.52%	9.65%
	2013-2023 Average Unadjusted			**11.52%**
Natural Gas Utilities				
Average Across the Sample	13.71%	12.81%	12.88%	8.95%
	2013-2023 Average Unadjusted			**13.21%**
Small Non-Utility Companies (5-year avg)				
Average Across the Sample	11.70%	18.49%	-21.60%	17.43%
	2013-2023 Average Unadjusted			**9.89%**

Exhibit NAC-25: Average Realized Historical Returns, Price Inflation (%)

AVERAGE REALIZED HISTORICAL RETURNS, PRICE INFLATION (%)

	U.S. Treasury Debt				Equity Markets			
	Bills	In-T Debt	L-T Debt	Corporate Debt	Large Cap	US Markets	Small Cap	Inflation
1920s	3.6750	4.2075	5.0550	5.2300	16.2877	16.7025	14.3109	-3.7000
1930s	0.5560	4.6420	5.0350	7.0370	0.0412	5.3050	23.0563	-1.9300
1940s	0.4100	1.8086	3.2988	2.7190	4.0982	10.6430	33.8058	3.8591
1950s	1.8690	1.4473	0.1557	4.2620	14.9661	19.6620	23.2687	2.2418
1960s	3.8870	3.6191	1.4578	1.8070	5.2569	9.2800	22.2346	2.5273
1970s	6.3240	7.0692	5.6675	7.1590	3.2001	7.9250	17.7967	7.4366
1980s	8.9210	12.0067	13.7249	13.8280	13.2109	17.3570	18.7589	5.1284
1990s	4.9330	7.5042	9.2285	8.8350	16.1305	18.8660	14.7386	2.9501
2000s	2.7730	6.3323	8.3127	7.7350	-0.6056	1.9320	22.1626	2.5661
2010s	0.5218	3.1055	7.1648	9.0766	11.8046	14.3320	10.1922	1.7561
1947-2023	3.3014	5.0193	5.5838	6.5388	8.1033	11.4547	19.9208	3.5463
1970-2023	4.4483	6.4458	7.7054	8.3333	8.9966	12.1753	16.7809	4.0004
1990-2023	2.3305	4.4043	6.4810	6.9583	9.5814	11.6967	15.1583	2.5294
							Expected Inflation	2.46

Sample Period Long-Term Risk Free Rate	
2013-2023	4.31
2021-2023	3.39

Sample Period Market Returns (%)

	Nominal	Inflation	Real
1947-2023	11.4547	3.5463	7.91
1970-2023	12.18	4.00	8.17
1990-2023	11.70	2.53	9.17

Expected Future Market Returns (%)

	Real Return	Inflation	Nominal
1970-2023	8.17	2.46	10.63
1990-2023	9.17	2.46	11.62

Exhibit NAC-26: Capitalization Weights for Small to Mid-Sized Electricity Distributors

Small to Mid-Sized Electricity Distributors					
Company Name	Ticker	Market Price	Shares Outstanding (000s)	Market Capitalization ($ 000s)	Capitalization Weights
ALLETE, Inc.	ALE	63.22	57,300	3,622,506	4%
Alliant Energy Corporation	LNT	55.29	253,000	13,988,370	14%
Black Hills	BKH	65.37	67,000	4,379,790	4%
CenterPoint Energy, Inc.	CNP	30.68	631,000	19,359,080	19%
Evergy, Inc.	EVRG	62.47	230,000	14,368,100	14%
Hawaiian Electric Industries, Inc.	HE	39.10	109,700	4,289,270	4%
IDACORP, Inc.	IDA	111.67	50,700	5,661,669	6%
MGE Energy, Inc.	MGEE	77.14	36,163	2,789,614	3%
Northwestern Energy Group	NWE	58.94	60,321	3,555,348	4%
OGE Energy Corp.	OGE	37.43	200,300	7,497,229	7%
Otter Tail Corporation	OTTR	72.52	41,668	3,021,763	3%
Pinnacle West Capital Corporation	PNW	78.92	113,400	8,949,528	9%
PNM Resources, Inc.	PNM	48.03	86,296	4,144,797	4%
Portland General Electric Company	POR	50.41	97,760	4,928,082	5%
Unitil Corporation	UTL	55.89	16,045	896,755	1%

Exhibit NAC-27: Capitalization Weights for Small to Mid-Sized Natural Gas Distributors

Small to Mid-Sized Natural Gas Distributors					
Company Name	Ticker	Market Price	Shares Outstanding (000s)	Market Capitalization ($ 000s)	Capitalization Weights
Atmos Energy Corporation	ATO	101.99	145,100	14,798,749	43%
Chesapeake Utilities Corporation	CPK	91.97	18,370	1,689,489	5%
New Jersey Resources Corporatic	NJR	49.56	97,028	4,808,708	14%
Northwest Natural Holding Comp	NWN	66.60	36,213	2,411,786	7%
ONE Gas, Inc.	OGS	87.57	55,600	4,868,892	14%
Southwest Gas Holdings, Inc.	SWX	82.36	70,787	5,830,017	17%

Exhibit NAC-28: Capitalization Weights for Small to Mid-Sized Distribution Utilities

Small to Mid-Sized Distribution Utilities					
Company Name	Ticker	Market Price	Shares Outstanding (000s)	Market Capitalization ($ 000s)	Capitalization Weights
ALLETE, Inc.	ALE	63.22	57,300	3,622,506	2.8%
Alliant Energy Corporation	LNT	55.29	253,000	13,988,370	10.7%
Black Hills	BKH	65.37	67,000	4,379,790	3.3%
CenterPoint Energy, Inc.	CNP	30.68	631,000	19,359,080	14.8%
Evergy, Inc.	EVRG	62.47	230,000	14,368,100	11.0%
Hawaiian Electric Industries, Inc.	HE	39.10	109,700	4,289,270	3.3%
IDACORP, Inc.	IDA	111.67	50,700	5,661,669	4.3%
MGE Energy, Inc.	MGEE	77.14	36,163	2,789,614	2.1%
Northwestern Energy Group	NWE	58.94	60,321	3,555,348	2.7%
OGE Energy Corp.	OGE	37.43	200,300	7,497,229	5.7%
Otter Tail Corporation	OTTR	72.52	41,668	3,021,763	2.3%
Pinnacle West Capital Corporation	PNW	78.92	113,400	8,949,528	6.8%
PNM Resources, Inc.	PNM	48.03	86,296	4,144,797	3.2%
Portland General Electric Company	POR	50.41	97,760	4,928,082	3.8%
Unitil Corporation	UTL	55.89	16,045	896,755	0.7%
Atmos Energy Corporation	ATO	101.99	119,339	12,171,385	9.3%
Chesapeake Utilities Corporation	CPK	91.97	16,404	1,508,676	1.2%
New Jersey Resources Corporation	NJR	49.56	89,999	4,460,351	3.4%
Northwest Natural Holding Company	NWN	66.60	30,472	2,029,435	1.6%
ONE Gas, Inc.	OGS	87.57	52,772	4,621,244	3.5%
Southwest Gas Holdings, Inc.	SWX	82.36	55,007	4,530,377	3.5%

Exhibit NAC-29: Market Returns: Moderate Sized Electric Utilities Year Ending 10-Year Averages

Market Returns: Moderate Sized Electric Utilities Year Ending 10-Year Averages				
	2020	**2021**	**2022**	**2023**
ALLETE, Inc.	9.02%	10.89%	9.04%	7.48%
Alliant Energy Corporation	14.57%	14.87%	13.54%	11.37%
CenterPoint Energy, Inc.	8.36%	10.30%	11.54%	9.62%
Black Hills	9.74%	11.54%	12.81%	8.32%
Evergy, Inc.	13.40%	13.35%	13.09%	10.38%
Hawaiian Electric Industries, Inc.	9.84%	10.18%	9.02%	8.07%
IDACORP, Inc.	12.81%	13.75%	13.35%	12.40%
MGE Energy, Inc.	13.10%	13.88%	12.96%	11.05%
OGE Energy Corp.	8.93%	7.50%	9.00%	5.69%
Otter Tail Corporation	12.06%	12.81%	15.43%	13.68%
Pinnacle West Capital Corporation	11.96%	11.78%	9.13%	7.68%
PNM Resources, Inc.	14.70%	16.35%	13.28%	11.23%
Portland General Electric Company	12.59%	11.55%	10.38%	8.74%
Unitil Corporation	12.74%	13.17%	11.02%	10.55%
Northwestern Energy Group	9.74%	11.44%	9.23%	8.46%
Average Across the Sample	**11.57%**	**12.22%**	**11.52%**	**9.65%**
		2020-2023 Average Unadjusted		**11.24%**

Exhibit NAC-30: Historical Market Returns for Moderate-Sized Electric Utilities, Average per Annum

HISTORICAL MARKET RETURNS FOR MODERATE-SIZED ELECTRIC UTILITIES, AVERAGE PER ANNUM

Company	2014-16	2015-17	2016-18	2017-19	2018-2020	2019-2021	2020-2022	2021-2023
ALLETE, Inc.	8.3%	14.8%	19.0%	15.7%	-1.9%	4.1%	-3.1%	10.2%
Alliant Energy Corporation	14.6%	13.8%	15.6%	12.9%	9.9%	13.0%	10.9%	9.0%
CenterPoint Energy, Inc.	0.9%	10.8%	12.4%	18.2%	-8.3%	11.3%	11.6%	27.7%
Black Hills	14.7%	9.6%	9.3%	10.6%	1.2%	11.9%	4.5%	7.2%
Evergy, Inc.	19.3%	18.1%	17.3%	7.1%	5.9%	9.7%	9.2%	7.9%
Hawaiian Electric Industries, Inc.	12.1%	17.6%	7.2%	11.8%	8.4%	11.7%	3.3%	4.4%
IDACORP, Inc.	19.2%	17.7%	19.0%	13.4%	5.0%	6.7%	4.7%	11.4%
MGE Energy, Inc.	15.6%	21.9%	16.0%	12.9%	1.8%	11.5%	7.4%	9.9%
OGE Energy Corp.	-2.5%	2.0%	4.9%	16.9%	2.3%	7.9%	4.0%	12.4%
Otter Tail Corporation	3.0%	15.6%	18.8%	24.1%	7.1%	7.2%	9.8%	22.6%
Pinnacle West Capital Corporation	11.3%	18.7%	14.1%	12.7%	0.7%	7.4%	-3.6%	7.5%
PNM Resources, Inc.	14.7%	13.4%	15.4%	15.5%	5.6%	12.8%	4.7%	11.2%
Portland General Electric Company	11.8%	14.1%	10.1%	12.8%	4.2%	10.7%	0.5%	8.3%
Unitil Corporation	13.9%	17.2%	16.5%	16.4%	4.1%	9.9%	0.0%	8.5%
Northwestern Energy Group	15.1%	11.6%	6.2%	11.0%	3.2%	13.1%	-1.4%	7.2%
Average	11.5%	14.5%	13.4%	14.1%	3.3%	9.9%	4.2%	11.0%
Weighted Average	12.9%	14.1%	14.0%	13.3%	4.2%	10.5%	5.9%	10.5%

Exhibit NAC-31: Market Returns: Natural Gas Utilities Year Ending 10-Year Averages

Market Returns: Natural Gas Utilities Year Ending 10-Year Averages				
	2020	**2021**	**2022**	**2023**
AltaGas Ltd.	16.59%	15.15%	16.39%	13.19%
Chesapeake Utilities Corporation	19.11%	18.99%	19.04%	16.37%
New Jersey Resources Corporation	10.48%	11.86%	11.82%	13.42%
Northwest Natural Holding Company	6.34%	5.55%	4.28%	4.70%
Southwest Gas Holdings, Inc.	12.36%	9.67%	11.34%	6.04%
ONE Gas, Inc.	17.37%	15.66%	14.40%	0.00%
Average Across the Sample	**13.71%**	**12.81%**	**12.88%**	**8.95%**
	2019-2023 Average Unadjusted			**12.09%**

Exhibit NAC-32: Historical Market Returns for Gas Distribution Utilities, Average per Annum

HISTORICAL MARKET RETURNS FOR GAS DISTRIBUTION UTILITIES, AVERAGE PER ANNUM

Company	2014-16	2015-17	2016-18	2017-19	2018-2020	2019-2021	2020-2022	2021-2023
Atmos Energy Corporation	22.2%	19.6%	20.0%	14.4%	10.1%	8.9%	5.6%	7.2%
Chesapeake Utilities Corporation	22.9%	23.3%	19.3%	17.3%	8.3%	20.4%	13.3%	15.7%
New Jersey Resources Corporation	20.5%	21.1%	14.2%	14.1%	-0.5%	8.4%	1.9%	20.1%
Northwest Natural Holding Company	10.7%	14.3%	13.2%	11.5%	4.5%	-0.6%	-7.6%	-5.3%
Southwest Gas Holdings, Inc.	13.2%	18.8%	14.1%	11.7%	-0.6%	2.6%	6.0%	-2.3%
ONE Gas, Inc.	31.1%	26.8%	23.4%	16.6%	7.9%	6.9%	1.1%	2.6%
Average	20.1%	20.6%	17.4%	14.3%	5.0%	7.7%	3.4%	6.3%
Weighted Average	21.2%	20.6%	18.2%	14.2%	6.0%	7.4%	3.9%	6.5%

Exhibit NAC-33: Market Returns: Small Non-Utilities Year Ending 5-Year Averages

Market Returns: Small Non-Utilities Year Ending 5-Year Averages				
	2020	2021	2022	2023
John Wiley & Sons, Inc.	-3.47%	28.41%	-27.66%	-17.32%
Ingredion	-12.66%	26.06%	3.99%	13.54%
Kinross Gold Corp	54.85%	-20.03%	-27.54%	50.86%
HNI Corporation	-4.78%	25.57%	-29.44%	51.60%
Kaman Corporation	-12.12%	-23.07%	-46.47%	10.99%
Smith & Wesson Brands, Inc.	148.95%	0.28%	-50.39%	59.91%
Entravision Communications Corporation	12.60%	151.27%	-27.73%	-11.04%
Luxfer Holdings PLC	-8.59%	20.65%	-26.36%	-31.20%
Natural Grocers by Vitamin Cottage, Inc.	39.21%	5.75%	-33.89%	79.43%
Adams Resources & Energy, Inc.	-34.23%	19.38%	43.40%	-30.27%
LifeVantage Corporation	-40.29%	-32.19%	-41.14%	62.10%
Sonoco Products	-1.25%	0.61%	7.98%	-4.81%
Sensient Technologies	13.84%	37.75%	-25.54%	-7.24%
Average Across the Sample	**11.70%**	**18.49%**	**-21.60%**	**17.43%**
	2020-2023 Average Unadjusted			**6.50%**

Exhibit NAC-34: Historical Market Returns for Small, Non-Utility Companies, Average per Annum

Non-Utility Companies	2020	2021	2022	2023	2020-2022 Avg	2020-2023 Avg	Market Cap	Proportion
John Wiley & Sons, Inc.	-3.47%	28.41%	-27.66%	-17.32%	-5.53%	-3%	1,763,411	6%
Ingredion	-12.66%	26.06%	3.99%	13.54%	14.53%	7%	7,162,980	25%
Kinross Gold Corp	54.85%	-20.03%	-27.54%	50.86%	1.10%	21%	7,405,200	26%
HNI Corporation	-4.78%	25.57%	-29.44%	51.60%	15.91%	10%	1,861,435	6%
Kaman Corporation	-12.12%	-23.07%	-46.47%	10.99%	-19.52%	-10%	678,264	2%
Smith & Wesson Brands, Inc.	148.95%	0.28%	-50.39%	59.91%	3.27%	26%	621,645	2%
Entravision Communications Corporation	12.60%	151.27%	-27.73%	-11.04%	37.50%	24%	366,547	1%
Luxfer Holdings PLC	-8.59%	20.65%	-26.36%	-31.20%	-12.30%	-8%	239,860	1%
Natural Grocers by Vitamin Cottage, Inc.	39.21%	5.75%	-33.89%	79.43%	17.10%	11%	363,920	1%
Adams Resources & Energy, Inc.	-34.23%	19.38%	43.40%	-30.27%	10.84%	0%	66,680	0%
LifeVantage Corporation	-40.29%	-32.19%	-41.14%	62.10%	-3.74%	-7%	75,342	0%
Sonoco Products	-1.25%	0.61%	7.98%	-4.81%	1.26%	4%	5,491,686	19%
Sensient Technologies	13.84%	37.75%	-25.54%	-7.24%	1.66%	8%	2,773,782	10%
							28,870,752	100%

2020-2022 Wtd Avg	2020-2023 Wtd Avg
5.19%	9.89%

Exhibit NAC-35: Long-Term Debt Cost Rate, Test Year 2025

LONG-TERM DEBT COST RATE, TEST YEAR 2025

Coupon Rate	Issue Date	Maturity Date	Life	Initial Principal Amount	13-Month Average Amount Outstanding	Unamortized Issuance Expenses	Annual Amortization of Issuance Expenses	Interest Expense	All-In Annual Carrying Charges on Long-Term	Average Unamortized Issuing Expenses and Loss on Required Debt
5.68%	6/24/2011	6/30/2026	15	$29,000,000	$4,238,462	$34,794	$473	$247,080	$247,553	$339
6.43%	5/2/2013	5/2/2028	15	$7,000,000	$2,369,231	$12,789	$409	$150,158	$150,567	$683
3.73%	12/16/2013	12/16/2028	15	$20,000,000	$7,846,154	$68,794	$2,587	$295,292	$297,879	$5,067
3.88%	5/15/2014	5/15/2029	15	$50,000,000	$21,923,077	$192,790	$8,020	$848,211	$856,231	$17,392
3.25%	4/21/2017	4/30/2032	15	$70,000,000	$48,461,538	$150,539	$10,346	$1,583,021	$1,593,367	$36,062
3.48%	5/21/2018	5/31/2038	20	$50,000,000	$50,000,000	$99,400	$6,413	$1,740,000	$1,746,413	$53,976
3.58%	11/15/2018	11/30/2038	20	$50,000,000	$50,000,000	$95,036	$6,083	$1,790,000	$1,796,083	$54,990
3.98%	8/13/2019	8/20/2039	20	$100,000,000	$100,000,000	$167,966	$10,836	$3,980,000	$3,990,836	$104,753
2.98%	12/20/2019	12/20/2034	15	$70,000,000	$69,461,538	$165,643	$15,776	$2,079,626	$2,095,402	$78,878
3.00%	7/15/2020	7/15/2035	15	$50,000,000	$50,000,000	$92,476	$8,807	$1,500,000	$1,508,807	$49,174
2.96%	8/15/2020	8/15/2035	15	$40,000,000	$40,000,000	$72,953	$6,948	$1,184,000	$1,190,948	$39,371
2.49%	12/20/2021	1/25/2037	15	$50,000,000	$50,000,000	$161,664	$15,275	$1,245,000	$1,260,275	$108,200
2.95%	3/15/2022	3/15/2042	20	$50,000,000	$50,000,000	$98,738	$4,937	$1,475,000	$1,479,937	$82,693
5.43%	3/14/2023	3/14/2038	15	$80,000,000	$80,000,000	$117,035	$11,146	$4,344,000	$4,355,146	$91,957
6.39%	11/28/2023	12/28/2026	3	$21,411,000	$21,411,000	$126,030	$40,912	$1,368,163	$1,409,075	$61,368
6.44%	11/28/2023	12/28/2027	4	$21,411,000	$21,411,000	$114,789	$28,133	$1,378,868	$1,407,001	$70,332
6.45%	11/28/2023	12/28/2028	5	$21,411,000	$21,411,000	$122,551	$24,122	$1,381,010	$1,405,132	$84,427
6.62%	11/28/2023	12/28/2030	7	$21,411,000	$21,411,000	$121,213	$17,119	$1,417,408	$1,434,528	$94,157
6.71%	11/28/2023	12/28/2033	10	$21,411,000	$21,411,000	$97,179	$9,641	$1,436,678	$1,446,319	$81,949
6.73%	11/28/2023	12/28/2038	15	$10,705,500	$10,705,500	$46,743	$3,091	$720,480	$723,571	$41,730
5.75%	1/1/2025	1/1/2035	10	$150,000,000	$138,461,538	$675,000	$67,500	$8,625,000	$8,692,500	$589,327
5.75%	10/1/2025	10/1/2035	10	$100,000,000	$23,076,923	$450,000	$11,250	$1,437,500	$1,448,750	$102,115
		Total		$1,083,760,500	$903,598,961	$3,284,121	$309,824	$40,226,495	$40,536,320	$1,848,939
		Loss on Reacquired Debt					$73,704		$73,704	$463,397
		Adjustment for Outstanding L-T Debt Shelf Agreements					$20,940		$20,940	$49,312
				Outstanding Principal	$903,598,961	$3,284,121	$404,468	$40,226,495	$40,630,964	$2,361,648
				Loss on Issuance. Reacquired Debt	$2,361,648					
				Net Outstanding Principal	$901,237,313	**Embedded Cost of Long-Term Debt**	$40,630,964	**Long-Term Debt Cost Rate**	4.51%	

Exhibit NAC-36: Short-Term Debt Cost Rate, Test Year 2025

SHORT-TERM DEBT COST RATE, TEST YEAR 2025
13-Month Weighted Average

Item	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS/ AVERAGES
OUTSTANDING BALANCE														
Balance at End of Month	$299,235,077	$160,801,058	$156,149,753	$137,613,265	$138,403,715	$147,316,603	$190,493,695	$203,477,742	$192,195,976	$214,362,391	$128,592,954	$120,235,375	$123,443,008	$170,178,509
Average Monthly Balance		$230,018,067	$158,475,405	$146,881,509	$138,008,490	$142,860,159	$168,905,149	$196,985,719	$197,836,859	$203,279,184	$171,477,673	$124,414,165	$121,839,192	$166,748,464
UNAMORTIZED S-T DEBT EXPENSES														
Balance at End of Month	$488,788	$461,026	$433,263	$405,500	$377,738	$349,975	$322,212	$294,450	$266,687	$238,924	$211,162	$183,399	$155,636	$322,212
Average Monthly Balance		$474,907	$447,144	$419,382	$391,619	$363,856	$336,094	$308,331	$280,568	$252,806	$225,043	$197,280	$169,518	$322,212
NET AVERAGE MONTHLY BALANCE		$229,543,160	$158,028,261	$146,462,127	$137,616,871	$142,496,302	$168,569,055	$196,677,388	$197,556,291	$203,026,378	$171,252,630	$124,216,885	$121,669,674	$166,426,252
S-T DEBT SERVICE COSTS														
Interest on S-T Debt		$820,847	$719,866	$701,044	$675,068	$742,797	$931,177	$1,014,911	$958,565	$1,069,002	$665,135	$604,035	$639,858	$9,542,305
Amortization of S-T Debt		$27,763	$27,763	$27,763	$27,763	$27,763	$27,763	$27,763	$27,763	$27,763	$27,763	$27,763	$27,763	$333,152
Total Monthly S-T Debt Costs		$848,610	$747,628	$728,806	$702,831	$770,560	$958,940	$1,042,674	$986,328	$1,096,764	$692,898	$631,797	$667,620	$9,875,457

SHORT-TERM DEBT COST RATI 5.81%

EFFECTIVE SHORT-TERM DEBT COST RATE: 5.93%

Docket No. 20240099-EI
Florida Public Utilities

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing filing has been served by Electronic Mail this 22nd day of August, 2024, upon the following:

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