STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

In the Matter of the Petition of Public Service Electric and Gas Company for Approval of an Increase in Electric and Gas Rate And for Changes in the Tariffs for Electric and Gas Service, B.P.U.N.J. No. 17 Electric and B.P.U.N.J. No. 17 Gas, and for Changes in Depreciation Rates, Pursuant to N.J.S.A. 48:2-18, N.J.S.A. 48:2-21 and N.J.S.A. 48:2-21.1, and for Other Appropriate Relief

BPU Docket Nos. _____

DIRECT TESTIMONY
OF
ANN E. BULKLEY
Submitted on Behalf
of
PUBLIC SERVICE ELECTRIC AND GAS COMPANY

December 29, 2023

P-5

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DIRECT TESTIMONY
OF
ANN E. BULKLEY
PRINCIPAL, THE BRATTLE GROUP

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Ann E. Bulkley. My business address is One Beacon Street, Suite 2600, Boston, Massachusetts 02108. I am employed by The Brattle Group ("Brattle") as a Principal.

Q. On whose behalf are you submitting this Prepared Direct Testimony?

A. I am submitting this testimony before the New Jersey Board of Public Utilities ("BPU" or the "Board") on behalf of Public Service Electric and Gas Company ("Public Service" or "the Company"), a wholly-owned subsidiary of Public Service Enterprise Group, Inc. ("PSEG").

Q. Please describe your education and experience.

A. I hold a Bachelor's degree in Economics and Finance from Simmons College and a Master's degree in Economics from Boston University, with more than 25 years of experience consulting to the energy industry. I have advised numerous energy and utility clients on a wide range of financial and economic issues with primary concentrations in valuation and utility rate matters. Many of these assignments have included the determination of the cost of capital for valuation and ratemaking purposes. I have included my resume and a summary of testimony that I have filed in other proceedings as Schedule AEB-1.

Q. Please describe the purpose of your testimony.

A. The purpose of my Direct Testimony is to present evidence and provide a recommendation regarding the appropriate return on equity ("ROE") for the Company and to assess the reasonableness of its proposed capital structure for ratemaking purposes.

Q. Are you sponsoring any schedules in support of your Direct Testimony?

A. Yes. My analysis and recommendations are supported by the data presented in Schedule AEB-2 through Schedule AEB-13, which were prepared by me or under my direction.

Q. Please provide a brief overview of the analyses that led to your ROE recommendation.

A. I estimated the Company's Cost of Equity ("COE") by applying several traditional COE estimation methodologies to a proxy group of comparable utilities, including Discounted Cash Flow ("DCF"), Capital Asset Pricing Model ("CAPM"), Empirical CAPM ("ECAPM"), and Bond Yield Risk Premium ("BYRP" or "Risk Premium") analysis. My recommendation also takes into consideration: (1) the Company's actual and anticipated capital expenditure requirements, and (2) the Company's regulatory risk as compared with the proxy group. Finally, I considered the Company's capital structure as compared with the capital structures of the proxy companies.[1] While I did not make any specific adjustments to the ROE recommendation for any of these factors individually, I did take them into consideration in aggregate when determining where the Company's ROE falls within the range of analytical results.

[1] The selection and purpose of developing a group of comparable companies will be discussed in detail in Section V of my Direct Testimony.

Q. How is the remainder of your Direct Testimony organized?

A. Section II provides a summary of my analyses and conclusions. Section III reviews the regulatory guidelines pertinent to the development of the cost of capital. Section IV discusses current and projected capital market conditions and the effect of those conditions on the cost of equity. Section V explains the selection of a proxy group of combination electric and natural gas distribution utilities. Section VI describes the analyses and analytical basis for the recommendation of an appropriate ROE for Public Service. Section VII provides a discussion of specific regulatory, business and financial risks that directly affect the ROE to be authorized for the Company in this case. Section VIII addresses the Company's capital structure as compared with the capital structures of the utility operating company subsidiaries of the proxy group companies. Section IX presents my conclusions and recommendations.

II. SUMMARY OF ANALYSIS AND CONCLUSIONS

Q. Please summarize the key factors considered in your analyses and upon which you base your recommended ROE.

A. The key factors that I considered in my cost of equity analyses and recommended ROE for the Company in this proceeding are:

- The United States Supreme Court's *Hope* and *Bluefield* decisions[2] established the standards for determining a fair and reasonable authorized ROE for public utilities, including consistency of the allowed return with the returns of other businesses having similar risk, adequacy of the return to provide access to capital and support credit quality, and the requirement that the result lead to just and reasonable rates.
- The effect of current and projected capital market conditions on ROE estimation models and on investors' return requirements.
- The results of several analytical approaches that provide estimates of the Company's cost of equity. Because the Company's required COE should be a forward-looking estimate, these analyses rely on forward-looking inputs and assumptions (e.g., projected analyst growth rates in the DCF model, forecasted risk-free rate and market risk premium in the CAPM analysis)

[2] *Hope*, 320 U.S. 591 (1944); *Bluefield*, 262 U.S. 679 (1923).

- The Company's regulatory, business, financial and regulatory risks relative to the proxy group of comparable companies, and the implications of those risks in determining an appropriate ROE for the Company over the period during which rates will be in effect.

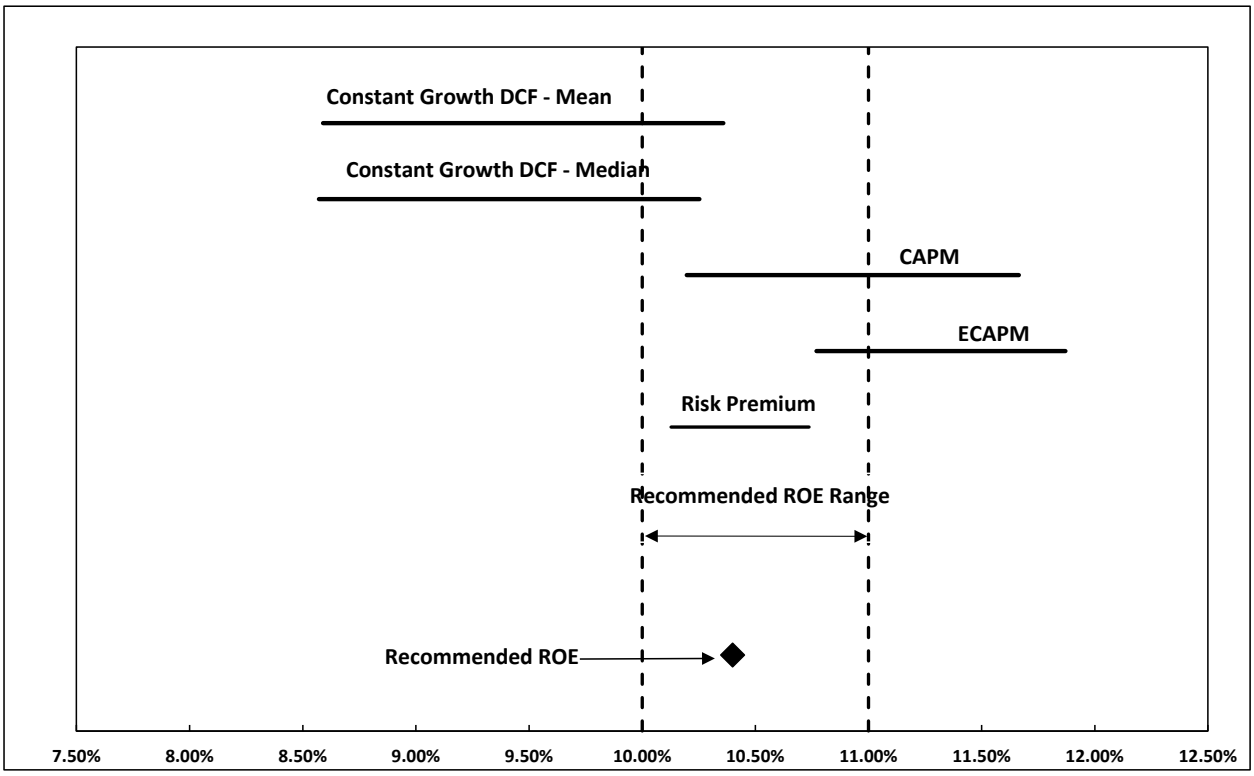
Q. Please explain how you considered those factors.

A. I relied on the range of results produced by the Constant Growth DCF model, the CAPM and ECAPM, and a Risk Premium analysis. As shown in Figure 1, these COE estimation models produce a wide range of results. My conclusion as to the appropriate ROE for Public Service within that range of results is based on the Company's business and financial risk relative to the proxy group and my assessment of market conditions. Although the companies in my proxy group are generally comparable to Public Service, each company is unique, and no two companies have the exact same business and financial risk profiles. Accordingly, I considered the Company's business, financial and regulatory risk in aggregate relative to that of the proxy group companies when determining where the Company's ROE should fall within the reasonable range of analytical results to appropriately account for any residual differences in risk.

Q. Please summarize the results of the COE estimation models that you considered to establish the range of the COE for Public Service.

A. Figure 1 summarizes the range of results produced by the Constant Growth DCF, CAPM, ECAPM, and Bond Yield Risk Premium analyses.

Figure 1: Summary of Cost of Equity Analytical Results



As shown in Figure 1 (and in Schedule AEB-2), the range of results produced by the COE estimation models is wide. While it is common to consider multiple models to estimate the cost of equity, it is particularly important when the range of results varies considerably across methodologies.

Q. Are prospective capital market conditions expected to affect the results of the cost of equity for Public Service during the period in which the rates established in this proceeding will be in effect?

A. Yes. Capital market conditions are expected to affect the results of the cost of equity estimation models. Specifically:

- Inflation is expected to persist over the near-term, which increases the operating risk of the utility during the period in which rates will be in effect.
- Long-term interest rates have increased substantially in the past year and are expected to remain relatively high at least over the next year in response to inflation.
- Over the past year, utilities have underperformed the broader market. For example, between January 1, 2023 and November 6, 2023, the S&P 500 Utilities Index

declined by 12.48 percent. During the same period, the S&P 500 Index increased by 13.71 percent. It is reasonable to expect this relationship to continue, as interest rates remain high or increase and investors have the option to invest in lower risk investments at similar returns offered on utility equity.

- Since utility dividend yields are less attractive than the risk-free rates of government bonds, and interest rates are expected to remain near current levels over the next year, it is likely that utility share prices will continue to decline.
- Similarly, equity analysts have noted the increased risk for the utility sector as a result of rising interest rates and expect the sector to underperform over the near-term.
- A decline in utility stock prices will increase the dividend yields and thus, all else equal, the cost of equity estimates produced by the DCF model.
- Consequently, the results of the DCF model, which relies on current utility share prices, is likely to understate the cost of equity during the period that the Company's rates will be in effect.
- Furthermore, expected market conditions warrant consideration of forward-looking cost of equity estimation models such as the CAPM and ECAPM, which, rely on interest rates as a direct input into the models and thus may better reflect the market conditions expected during the period that the Company's rates will be in effect.
- Rating agencies have cited increased risk in the utility sector due to increased interest rates, inflation and elevated capital expenditures.

It is appropriate to consider all of these factors when estimating a reasonable range of the investor-required cost of equity and the recommended ROE for Public Service.

Q. What is your conclusion regarding the appropriate authorized ROE for Public Service in this proceeding?

A. Based on the analytical results presented in Figure 1, my assessment of current and anticipated capital market conditions, and the Company's business, financial and regulatory risk relative to proxy group companies, I conclude that a ROE in the range of 10.00 percent to 11.00 percent is reasonable. Considering underlying market conditions and the business, financial and regulatory risk factors facing Public Service, including the Company's significant capital expenditures, the Company's requested ROE of 10.40 percent is conservative.

Q. Please summarize your analysis of the appropriate ratemaking capital structure for the Company.

A. Based on the analysis presented in Section VIII of my testimony, I conclude that Public Service's proposed 55.50 percent common equity ratio is reasonable. To determine if the Company's requested capital structure was reasonable, I reviewed the capital structures of the utility subsidiaries of the proxy companies. As shown in Schedule AEB-13, the results of that analysis demonstrate that the eight quarter (i.e., Q3/2021 Q2/2023) average equity ratios for the utility operating companies of the proxy group range from 47.21 percent to 66.21 percent. Comparing the recommended equity ratio to the proxy group demonstrates that the Company's requested equity ratio is well within the range of equity ratios for the utility operating subsidiaries of the proxy group companies.

III. REGULATORY GUIDELINES

Q. Please describe the guiding principles to be used in establishing the cost of equity for a regulated utility.

A. The United States Supreme Court's precedent-setting *Hope and Bluefield* cases established the standards for determining the fairness or reasonableness of a utility's allowed ROE. Among the standards established by the Court in those cases are: (1) consistency with other businesses having similar or comparable risks; (2) adequacy of the return to support credit quality and access to capital; and (3) the principle that the result reached, as opposed to the methodology employed, is the controlling factor in arriving at just and reasonable rates.[3]

[3] *Hope*, 320 U.S. 591 (1944); *Bluefield*, 262 U.S. 679 (1923).

Q. Has the Board provided similar guidance in establishing the appropriate return on common equity?

A. Yes. Section 48:2-21.25 of the 2022 New Jersey Revised Statutes states that a "Base rate case" is defined as a means of "determining the level of revenues necessary to afford the public utility an opportunity to earn a fair and reasonable rate of return on prudently incurred capital investment in the public utility's rate base."[4] Furthermore, in its decision in Docket No. ER12111052 for Jersey Central Power and Light Company ("JCP&L"), the Board noted the following:

> it is incumbent upon this Board to define a fair rate of return for JCP&L commensurate with risks faced by similar companies, sufficient to attract capital and maintain the financial integrity of the enterprise. As the New Jersey Supreme Court has recognized, a privately owned public utility is a complex mechanism that exists to serve a public need but to do so it must have investor appeal. It must be allowed a reasonable return on its investment so that it may have borrowing power at normal business rates to finance its day-to-day operations. See Daaleman v. Elizabethtown Gas Co., 77 N.J. 267, 272 (1978).[5]

Q. Why is it important for a utility to be allowed the opportunity to earn an ROE that is adequate to attract capital at reasonable terms?

A. An ROE that is adequate to attract capital at reasonable terms enables the Company to continue to provide safe, reliable electric and natural gas service while maintaining its financial integrity. That return should be commensurate with returns expected elsewhere in the market for investments of equivalent risk. If it is not, debt and equity investors will seek alternative investment opportunities for which the expected return reflects the perceived risks, thereby inhibiting the Company's ability to attract capital at reasonable cost.

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[4] 2022 New Jersey Revised Statutes, Section 48:2-21.25.

[5] BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Agenda Date March 12, 2015, at 71.

Q. Is a utility's ability to attract capital also affected by the ROEs that are authorized for other utilities?

A. Yes. Utilities compete directly for capital with other investments of similar risk, which include other natural gas and electric utilities. Therefore, the ROE awarded to a utility sends an important signal to investors regarding whether there is regulatory support for financial integrity, dividends, growth, and fair compensation for business and financial risk. The cost of capital represents an opportunity cost to investors. If higher returns are available for other investments of comparable risk, investors have an incentive to direct their capital to those investments. Thus, an authorized ROE that is not in line with authorized ROEs for other natural gas and electric utilities, on a risk adjusted basis, can inhibit the utility's ability to attract capital for investment in New Jersey.

Q. Is the regulatory framework and the authorized ROE and equity ratio important to the financial community?

A. Yes. The regulatory framework is one of the most important factors in debt and equity investors' assessments of risk. Specifically regarding debt investors, credit rating agencies consider the authorized ROE and equity ratio for regulated utilities to be very important for two reasons: (1) they help determine the cash flows and credit metrics of the regulated utility; and (2) they provide an indication of the degree of regulatory support for credit quality in the jurisdiction. To the extent that the authorized returns in a jurisdiction are lower than the returns that have been authorized more broadly, credit rating agencies will consider this in the overall risk assessment of the regulatory jurisdiction in which the company operates. Not only do credit ratings affect the overall cost of borrowing, they also act as a signal to equity investors about the risk of investing in the equity of a company.

Q. Are you aware of any utilities that have experienced either a credit rating downgrade or negative market response related to the financial effects of a rate case decision?

A. Yes. ALLETE, Inc.[6], CenterPoint Energy Houston Electric[7], and Pinnacle West Capital Corporation ("PNW")[8] each received credit rating downgrades following a rate case decision for reasons that included a below average authorized ROE. In the case of PNW, the market had a strong negative response to the rate case decision for its operating subsidiary, Arizona Public Service Company ("APS"), which included an 8.70 percent ROE determination.[9]

Q. What is the standard for setting the ROE in any jurisdiction?

A. The stand-alone ratemaking principle is the foundation of jurisdictional ratemaking. This principle requires that the rates that are charged in any operating jurisdiction be for the costs incurred in that jurisdiction. The stand-alone ratemaking principle ensures that customers in each jurisdiction only pay for the costs of the service provided in that jurisdiction, which is not influenced by the business operations in other operating companies. In order to maintain this principle, the COE analysis is performed for an individual operating company as a stand-alone entity. As such, I have evaluated the investor-required return for Public Service's electric and natural gas operations.

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6 Moody's Investors Service, "Credit Opinion: ALLETE, Inc. Update following downgrade," at 3 (April 3, 2019).

7 FitchRatings, "Fitch Downgrades CenterPoint Energy Houston Electric to BBB+; Affirms CNP; Outlooks Negative," February 19, 2020.

8 S&P Capital IQ Pro; FitchRatings, "Fitch Downgrades Pinnacle West Capital & Arizona Public Service to 'BBB+'; Outlooks Remain Negative," October 12, 2021; and Moody's Investors Service, "Rating Actions: Moody's downgrades Pinnacle West to Baa1 and Arizona Public Service to A3; outlook negative," (Nov. 17, 2021).

9 S&P Global Market Intelligence, "Pinnacle West shares tumble after regulators slash returns in rate case," October 7, 2021.

Q. What are your conclusions regarding regulatory guidelines?

A. The ratemaking process is premised on the principle that, in order for investors and companies to commit the capital needed to provide safe and reliable utility services, a utility must have a reasonable opportunity to recover the return of, and the market-required return on, its invested capital. Accordingly, the Board's order in this proceeding should establish rates that provide the Company with a reasonable opportunity to earn a ROE that is: (1) adequate to attract capital at reasonable terms; (2) sufficient to ensure its financial integrity; and (3) commensurate with returns on investments in enterprises with similar risk. It is important for the ROE authorized in this proceeding to take into consideration current and projected capital market conditions, as well as investors' expectations and requirements for both risks and returns. Because utility operations are capital-intensive, regulatory decisions should enable the utility to attract capital at reasonable terms under a variety of economic and financial market conditions. Providing the opportunity to earn a market-based cost of capital supports the financial integrity of the Company, which is in the interest of both customers and shareholders.

IV. CAPITAL MARKET CONDITIONS

Q. Why is it important to analyze capital market conditions?

A. The COE estimation models rely on market data that are either specific to the proxy group, in the case of the DCF model, or to the expectations of market risk, in the case of the CAPM. The results of the COE estimation models can be affected by prevailing market conditions at the time the analysis is performed. While the ROE that is established in a rate proceeding is intended to be forward-looking, the analyst uses current and projected market data, specifically stock prices, dividends, growth rates and interest rates, in the COE estimation models to estimate the required return for the subject company.

As a result, it is important to consider the effect of these conditions on the COE estimation models when determining the appropriate range and recommended ROE for a future period. If investors do not expect current market conditions to be sustained in the future, it is possible that the COE estimation models will not provide an accurate estimate of investors' required return during that rate period. Therefore, it is very important to consider projected market data to estimate the return for that forward-looking period.

Q. What factors are affecting the cost of equity for regulated utilities in the current and prospective capital markets?

A. The COE for regulated utility companies is being affected by several factors in the current and prospective capital markets, including: 1) relatively high inflation, 2) changes in monetary policy, and 3) increased interest rates that are expected to remain relatively high over the next few years. These factors affect the assumptions used in the COE estimation models. In this section, I discuss each of these factors and how they affect the models used to estimate the cost of equity for regulated utilities.

Q. What effect do current and prospective market conditions have on the COE for Public Service?

A. As is discussed in more detail in the remainder of this section, the combination of persistently high inflation, and the Federal Reserve's changes in monetary policy, contribute to an expectation of increased market risk and an increase in the cost of the investor-required return. It is essential that these factors be considered in setting a forward-looking ROE. Inflation has recently been at some of the highest levels seen in approximately 40 years, and while inflation has declined from these recent peaks, it remains relatively high. Interest rates, which have increased from the pandemic lows seen in 2020 are expected to remain elevated over the near term in direct response to the Federal Reserve's monetary policy. There is a strong historical inverse correlation

between interest rates (i.e., yields on long-term government bonds) and the share prices of utility stocks (i.e., as utility share prices decline, utility dividend yields increase). Since the yields on long-term government bonds currently exceed the dividend yields of utilities, and historically long-term government bond yields have been lower than the dividend yields of utilities, it is reasonable to expect that utility investors' cost of equity is increasing. Because the cost of equity in this proceeding is being estimated for the future period that the Company's rates will be in effect, and because the cost of equity is expected to increase over the near term for utilities, cost of equity estimates based in whole or in part on historical or current market conditions, as opposed to projected market conditions, will understate the cost of equity required by investors during the future period that the Company's rates determined in this proceeding will be in effect.

A. Inflationary Expectations in Current and Project Capital Market Conditions

Q. Has inflation increased significantly over the past year?

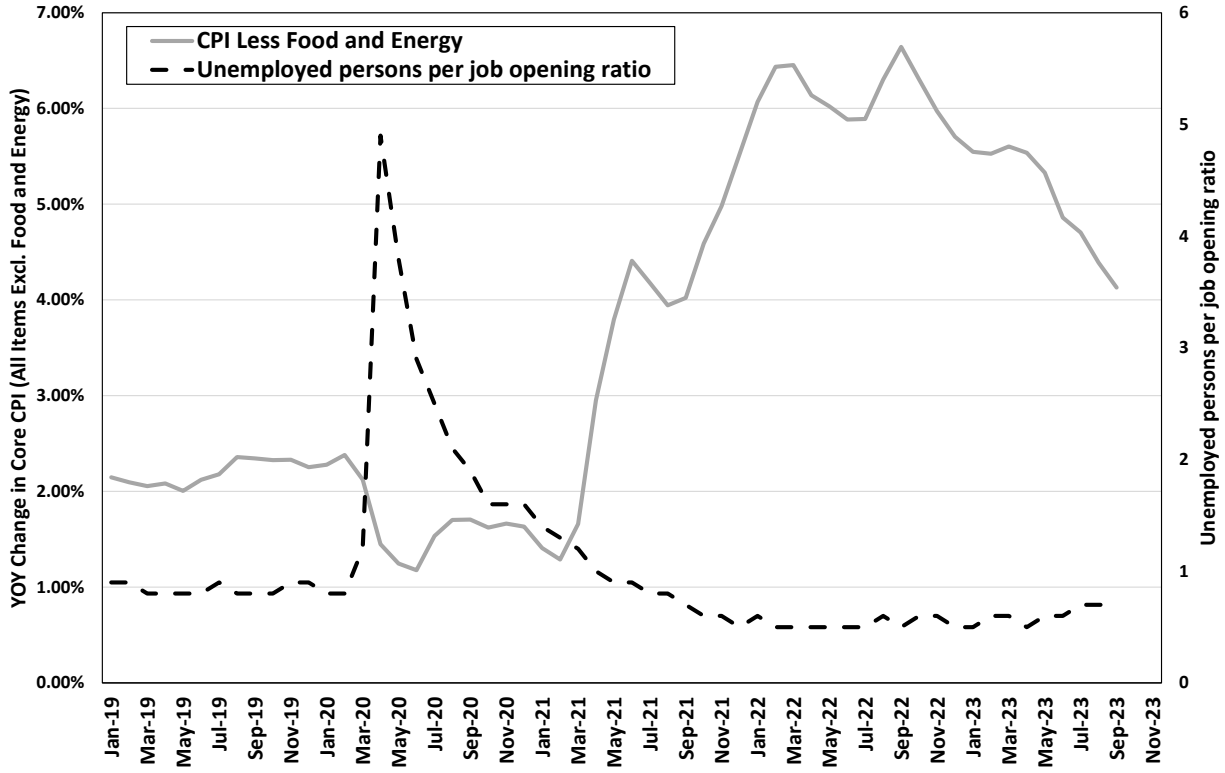
A. Yes. As shown in Figure 2, core inflation increased steadily beginning in early 2021, rising from 1.41 percent in January 2021 to a high of 6.64 percent in September 2022, which was the largest 12-month increase since 1982.[10] Since that time, while core inflation has declined in response to the Federal Reserve's monetary policy, core inflation continues to remain significantly above the Federal Reserve's target level of 2.0 percent.

Finally, as shown in Figure 2, I also considered the ratio of unemployed persons per job opening, which is currently 0.7 and has been consistently below 1.0 since 2021, despite the Federal Reserve's accelerated policy normalization. This metric indicates sustained strength in the labor

[10] Figure 2 presents the year-over-year ("YOY") change in core inflation, as measured by the Consumer Price Index ("CPI") excluding food and energy prices as published by the Bureau of Labor Statistics. I considered core inflation because it is the preferred inflation indicator of the Federal Reserve for determining the direction of monetary policy. Core inflation is preferred by the Federal Reserve because it removes the effect of food and energy prices, which can be highly volatile.

market. Given the Federal Reserve's dual mandate of maximum employment and price stability, the continued increased levels of core inflation coupled with the strength in the labor market has resulted in the Federal Reserve's sustained focus on the priority of reducing inflation.

Figure 2: Core Inflation and Unemployed Persons-to-Job Openings, January 2019 to September 2023[11]



Q. What are the expectations for inflation over the near-term?

A. Despite the declines from 40-year highs, the Federal Reserve has indicated that it expects inflation will remain above its target level over at least the next year and that monetary policy will remain restrictive in order to reduce inflation. For example, Federal Reserve Chair Powell observed at the Federal Open Market Committee (FOMC) meeting in September 2023 that while

[11] Source: Bureau of Labor Statistics.

inflation is down from its recent highs, it remains significantly above the Federal Reserve's long-term target:

> Inflation remains well above our longer-run goal of 2 percent. Based on the Consumer Price Index, or CPI, and other data, we estimate that total (Personal Consumption Expenditures) PCE prices rose 3.4 percent over the 12 months ending in August; and that, excluding the volatile food and energy categories, core PCE prices rose 3.9 percent. Inflation has moderated somewhat since the middle of last year, and longer-term inflation expectations appear to remain well anchored, as reflected in a broad range of surveys of households, businesses, and forecasters, as well as measures from financial markets. Nevertheless, the process of getting inflation sustainably down to 2 percent has a long way to go. The median projection in the SEP for total PCE inflation is 3.3 percent this year, falls to 2.5 percent next year, and reaches 2 percent in 2026.[12]

After the September 2023 and the November 2023 meetings, Chair Powell kept open the possibility of additional rate increases, considering even December this year, or thereafter if it is appropriate to do so. Further, at the September 2023 meeting, he noted that interest rates would likely remain positive for some time:

> First of all, interest rates – real interest rates are, are positive now. They're meaningfully positive, and that's a good thing. We need policy to be restrictive so that we can get inflation down to target. Okay. And we need - we're going to need that to remain to be the case for some time. So I think, you know – remember that the – of course, the SEP [Summary of Economic Projections] is not a plan that is negotiated or discussed, really, as a plan. It's accumulation, really, and what you see are the medians. It's accumulation of individual forecasts from 19 people, and then what you're seeing are the medians. So I wouldn't want to, you know, bestow upon it the idea that, that it's really a plan. But what it reflects, though, is that economic activity's been stronger than we expected – stronger than I think everyone expected. And, so what you're – what you're seeing is, this is what people believe, as of now, will be appropriate to achieve what we're looking to achieve, which is progress toward our – toward our inflation goal, as you see in the SEP.[13]

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[12] Federal Reserve, Transcript of Chair Powell's Press Conference, September 20, 2023, p 2; https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20230920.pdf

[13] *Id.*, at 6.

Similarly, he noted the following at the November 2023 meeting:

> The fact is the committee is not thinking about rate cuts right now at all. We're not talking about rate cuts. We're still very focused on the first question, which is 'have we achieved a stance of monetary policy that's sufficiently restrictive to bring inflation down to 2% over time, sustainably?' That is the question we're focusing on.[14]

B. The Use of Monetary Policy to Address Inflation

Q. What policy actions has the Federal Reserve enacted to respond to increased inflation?

A. The dramatic increase in inflation has prompted the Federal Reserve to pursue an aggressive normalization of monetary policy, removing the accommodative policy programs used to mitigate the economic effects of COVID-19. Beginning in March 2022 and through May 3, 2023, the Federal Reserve increased the target federal funds rate through a series of increases from a range of 0.00 – 0.50 percent to a range of 5.00 percent to 5.25 percent.[15] Further, as noted above, while the Federal Reserve acknowledges that inflation has declined from its peak, it still is well above the Federal Reserve's target of 2 percent. Therefore, the Federal Reserve anticipates the continued need to maintain the federal funds rate at a restrictive level in order to achieve its goal of 2 percent inflation over the long-run.

C. The Effect of Inflation and Monetary Policy on Interest Rates and the Investor-Required Return

Q. Have the yields on long-term government bonds increased in response to inflation and the Federal Reserve's normalization of monetary policy?

A. Yes. As the Federal Reserve has substantially increased the federal funds rate and decreased its holdings of Treasury bonds and mortgage-backed securities in response to increased levels of

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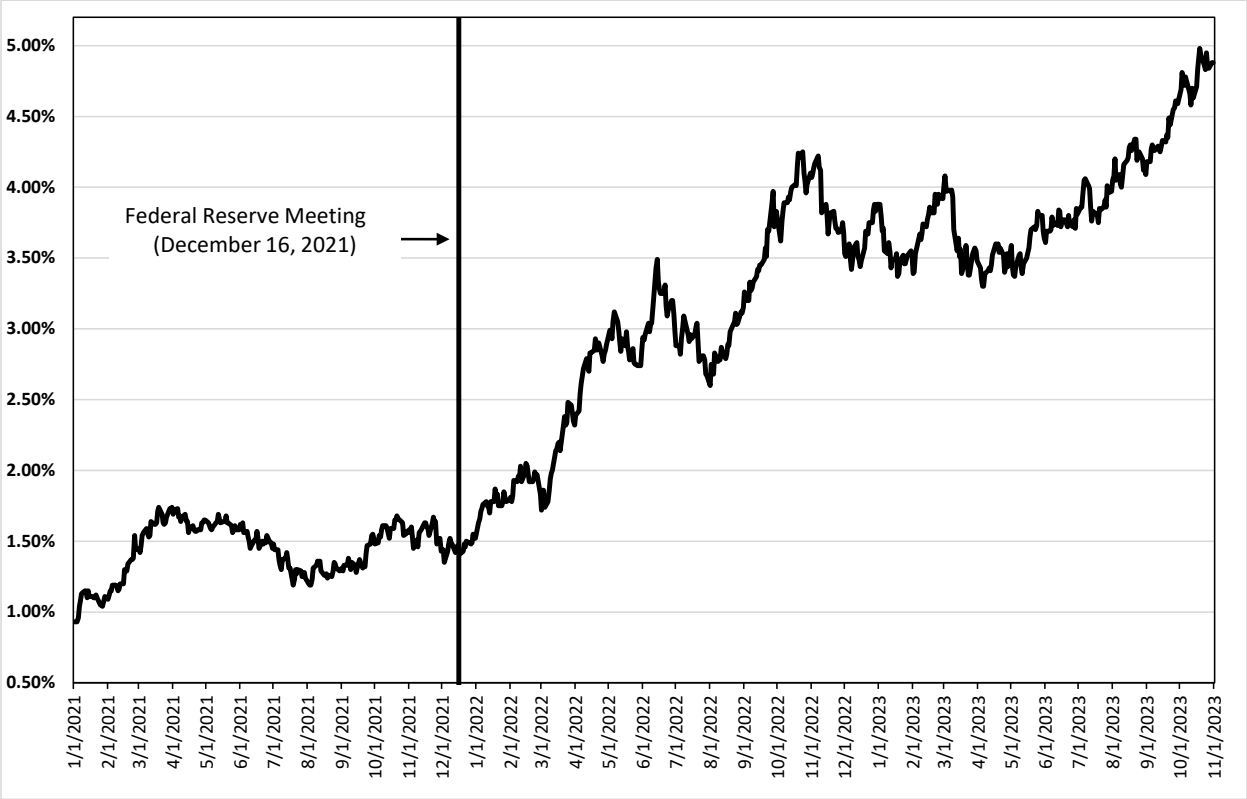
[14] CNBC "Full recap: Fed leaves rates unchanged, Powell discusses December decision", November 1, 2023.

[15] Federal Reserve, Press Releases, March 16, 2022, May 4, 2022, June 15, 2022, September 22, 2022, November 2, 2022, February 1, 2023, March 22, 2023 and May 3, 2023.

inflation that have persisted for longer than originally projected, longer term interest rates have also increased. As shown in Figure 3, since the Federal Reserve's December 2021 meeting, the yield on 10-year Treasury bonds has more than tripled, increasing from 1.47 percent on December 15, 2021, to 4.88 percent at the end of October 2023.

Figure 3: 10-Year Treasury Bond Yield—Janaury 2021– October 2023[16]



Q. What have equity analysts said about long-term government bond yields?

A. Leading equity analysts have noted that they expect the yields on long-term government bonds to remain elevated. For example, in the most recent Big Money poll released by *Barron's* in October 2023, which surveys money managers regarding the outlook for the next twelve months, two-thirds of the money managers surveyed expect the yield on the 10-year Treasury bond

[16] S&P Capital IQ Pro.

to be at least 4.50 percent in October 2024.[17] Similarly, according to the most recent *Blue Chip Financial Forecasts* report, the consensus estimate of the average yields on the 10-year and 30-year Treasury bonds are approximately 3.90 percent and 4.20 percent, respectively, through the first quarter of 2025.[18] Therefore, investors expect interest rates to remain elevated for at least the next 18 months. As a result, it is reasonable to expect that if government bond yields remain elevated, the COE will be increasing above the levels experienced in the 2020 and 2021 lower interest rate environment.

Q. How have interest rates and inflation changed since the Company's last rate case?

A. As shown in Figure 4, when the Board approved the settlement agreement and authorized an ROE of 9.60 percent in the Company's 2018 rate proceeding, interest rates (as measured by the 30-year Treasury bond yield) were 3.29 percent at the time of the Board decision, and core inflation was 2.13 percent. However, since the Company's last rate proceeding, long-term interest rates have increased approximately 155 basis points and inflation has increased approximately 200 basis points.

Figure 4: Change in Market Conditions Since Company's Last Rate Case

Docket	Decision Date	Federal Funds Rate	30-Day Average of 30-Year Treasury Bond Yield	Core Inflation Rate	Authorized ROE
ER18010029 & GR18010030	10/29/2018	2.20%	3.29%	2.13%	9.60%
Current	10/31/2023	5.33%	4.84%	4.13%	

[17] Jasinski, Nicholas, Big Money Pros Are Split on the Outlook for Stocks. But They Are Fans of Bonds", October 27, 2023. https://www.barrons.com/articles/big-money-poll-stock-market-bonds-economy-outlook-375aebae?mod=hp_MAG

[18] *Blue Chip Financial Forecasts*, Vol. 42, No. 11, November 1, 2023, p. 2.

D. Expected Performance of Utility Stocks and the Investor-Required Return on Utility Investments

Q. Are utility share prices correlated to changes in the yields on long-term government bonds?

A. Yes. Interest rates and utility share prices are inversely correlated which means, for example, that an increase in interest rates will result in a decline in the share prices of utilities. For example, Goldman Sachs and Deutsche Bank examined the sensitivity of share prices of different industries to changes in interest rates over the past five years. Both Goldman Sachs and Deutsche Bank found that utilities had one of the strongest negative relationships with bond yields (i.e., increases in bond yields resulted in the decline of utility share prices).[19]

Q. How do equity analysts expect the utilities sector to perform in an increasing interest rate environment?

A. Equity analysts project that utilities will underperform the broader market given high inflation and the recent increases in interest rates. For example, Fidelity Investments classifies the utility sector as underweight[20] and Bank of America recently noted that they are "not so constructive on [u]tilities" given that the dividend yields for utilities are below both the yields available on long- and short-term treasury bonds.[21] Moreover, as referenced above, the professional investors surveyed by *Barron's* in its most recent Big Money poll selected the utility sector as one of the four equity sectors that they liked the least over the next twelve months, indicating they are projecting that utilities will underperform the broader market in 2024.[22]

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[19] Lee, Justina. "Wall Street Is Rethinking the Treasury Threat to Big Tech Stocks." Bloomberg.com, 11 Mar. 2021, www.bloomberg.com/news/articles/2021-03-11/wall-street-is-rethinking-the-treasury-threat-to-big-tech-stocks.

[20] Fidelity Investments. "Fourth Quarter 2023 Investment Research Update." October 19, 2023.

[21] Dumoulin-Smith, Julien, *et. al*. "US Electric Utilities & IPPs: As the leaves fall, preparing for Autumn utility outlook. Macro still has potholes." BofA Securities, September 6, 2023.

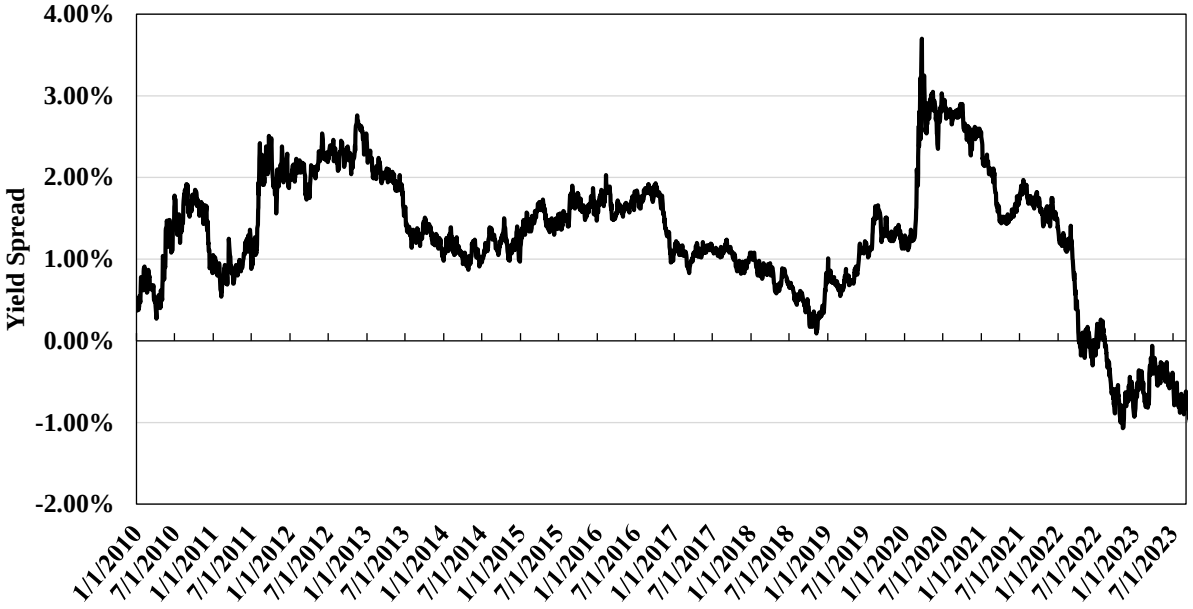
[22] Jasinski, Nicholas, Big Money Pros Are Split on the Outlook for Stocks. But They Are Fans of Bonds", October 27, 2023. https://www.barrons.com/articles/big-money-poll-stock-market-bonds-economy-outlook-375aebae?mod=hp_MAG

Q. Why do equity analysts expect the utility sector to underperform over the near-term?

A. While interest rates have increased substantially over the past year, the valuations of utilities have remained elevated and have not fully reflected the effect of the recent increase in interest rates. To illustrate this point, I examined the difference between the dividend yields of utility stocks and the yields on long-term government bonds from January 2010 through October 2023 ("yield spread"). I selected the dividend yield on the S&P Utilities Index as the measure of the dividend yields for the utility sector and the yield on the 10-year Treasury bond as the estimate of the yield on long-term government bonds.

As shown in Figure 5, the recent significant increase in long-term government bonds yields has resulted in the yield on long-term government bonds exceeding the dividend yields of utilities. The yield spread as of October 31, 2023 was negative 1.26 percent, meaning that the yield on the 10-year Treasury bond exceeds the dividend yield for the S&P Utilities Index. However, the long-term average yield spread from 2010 to 2023 is 1.25 percent. Therefore, the current yield spread is well below the long-term average. Because of the fact that the yield spread is currently well below the long-term average, and the expectation that interest rates will remain relatively high through at least the next year, it is reasonable to conclude that the utility sector will most likely underperform over the near-term. This is because investors that purchased utility stocks as an alternative to the lower yields on long-term government bonds would otherwise be inclined to rotate back into government bonds, particularly as the yields on long-term government bonds remain elevated, thus resulting in a decrease in the share prices of utilities.

Figure 5: Spread between the S&P Utilities Index Dividend Yield and the 10-year Treasury Bond Yield, January 2010 – October 2023[23]



Q. Do you have any further context as to how unlikely it is to have a negative yield spread of this magnitude?

A. Yes. For further context as to how unlikely it is to have a yield spread of negative 1.26 percent, I calculated the z-score for the current yield spread, which measures the number of standard deviations from the mean. The current yield spread of negative 1.26 percent has a z-score of -2.95, indicating that a yield spread of negative 1.26 percent is over 2 standard deviations from the mean of 1.25 percent.[24] In other words, 95 percent of the daily yield spread observations from 2010 through October 2023 fall between -0.45 percent and 2.95 percent, with the current yield spread of negative 1.26 percent being outside of that range. Thus, the current yield spread is an outlier, which is why equity analysts do not expect this current level to hold.

[23] S&P Capital IQ Pro and Bloomberg Professional.

[24] The z-score is calculated as: (yield spread at October 31, 2023 minus average yield spread 2010 through October 2023)/standard deviation of yield spread from 2010 through October 2023. This equals: (-1.26 minus 1.25)/0.0085.

Q. Have regulatory commissions acknowledged that the DCF model might understate the COE given the current capital market conditions of high inflation and increasing interest rates?

A. Yes. For example, in its May 2022 decision in establishing the cost of equity for Aqua Pennsylvania, Inc., the Pennsylvania Public Utility Commission ("PPUC") specifically concluded that the current capital market conditions of high inflation and increasing interest rates has resulted in the DCF model understating the utility cost of equity, and that weight should be placed on risk premium models, such as the CAPM, in the determination of the ROE:

> To help control rising inflation, the Federal Open Market Committee has signaled that it is ending its policies designed to maintain low interest rates. Aqua Exc. at 9. Because the DCF model does not directly account for interest rates, consequently, it is slow to respond to interest rate changes. However, I&E's CAPM model uses forecasted yields on ten-year Treasury bonds, and accordingly, its methodology captures forward looking changes in interest rates.
>
> Therefore, our methodology for determining Aqua's ROE shall utilize both I&E's DCF and CAPM methodologies. As noted above, the Commission recognizes the importance of informed judgment and information provided by other ROE models. In the 2012 PPL Order, the Commission considered PPL's CAPM and RP methods, tempered by informed judgment, instead of DCF-only results. We conclude that methodologies other than the DCF can be used as a check upon the reasonableness of the DCF derived ROE calculation. Historically, we have relied primarily upon the DCF methodology in arriving at ROE determinations and have utilized the results of the CAPM as a check upon the reasonableness of the DCF derived equity return. As such, where evidence based on other methods suggests that the DCF-only results may understate the utility's ROE, we will consider those other methods, to some degree, in determining the appropriate range of reasonableness for our equity return determination. In light of the above, we shall determine an appropriate ROE for Aqua using informed judgement based on I&E's DCF and CAPM methodologies.[25]

[25] Penn. Pub. Util. Comm'n et.al. v, Aqua Penn. Wastewater Inc., Pennsylvania Public Utility Commission, Docket Nos. R-2021-3027385 and R-2021-3027386, Opinion and Order, May 12, 2022, pp. 154–155.

Similarly, the Massachusetts Department of Public Utilities ("MDPU") in a recent rate case for NSTAR Electric Company concluded that given the recent increase in interest rates there was "greater certainty" the results of the DCF model were understating the cost of equity for NSTAR Electric Company.[26]

E. Conclusion

Q. What are your conclusions regarding the effect of current market conditions on the cost of equity for the Company?

A. Investors expect long-term interest rates to remain relatively high through at least 2024, in response to continued elevated levels of inflation and the Federal Reserve's normalization of monetary policy. Because the share prices of utilities are inversely correlated to interest rates, and government bond yields are already substantially greater than utility stock dividend yields, the share prices of utilities will likely decline, which is the reason a number of equity analysts have classified the sector as either underperform or underweight. The expected underperformance of utilities means that DCF models using recent historical data likely underestimate investors' required return over the period that rates will be in effect. Therefore, this expected change in market conditions supports consideration of the higher end of the range of cost of equity results produced by the DCF models. Moreover, prospective market conditions warrant consideration of forward-looking cost of equity estimation models such as the CAPM and ECAPM, which better reflect expected market conditions.

[26] The Commonwealth of Massachusetts Department of Public Utilities, D.P.U. 22-22, Petition of NSTAR Electric Company, doing business as Eversource Energy, pursuant to G.L. c. 164, § 94 and 220 CMR 5.00, for Approval of a General Increase in Base Distribution Rates for Electric Service and a Performance Based Ratemaking Plan, November 30, 2022, p. 385-386.

V. PROXY GROUP SELECTION

Q. Please provide a brief profile of Public Service.

A. Public Service is a wholly-owned subsidiary of PSEG that provides electric transmission and distribution services to approximately 2.3 million retail customers and gas distribution service to approximately 1.9 million retail customers in New Jersey, including the six largest cities.[27] For the year ended December 31, 2022, Public Service had revenue of $7.9 billion.[28] Public Service's current long-term issuer ratings are: (1) S&P A- (Outlook: Stable); and (2) Moody's Investor's Service A3 (Outlook: Stable).[29]

Q. Why have you used a group of proxy companies to estimate the cost of equity for the Company?

A. In this proceeding, I focus on estimating the cost of equity for Public Service, a rate-regulated subsidiary of PSEG. Because the cost of equity is a market-based concept and because Public Service's operations do not make up the entirety of a publicly traded entity, it is necessary to establish a group of companies that is both publicly traded and comparable to the Company in certain fundamental business and financial respects to serve as its "proxy" in the ROE estimation process.

Even if Public Service was a publicly traded entity, it is possible that transitory events could bias its market value over a given period. A significant benefit of using a proxy group is that it moderates the effects of unusual events that may be associated with any one company. The proxy companies used in my analyses all possess a set of operating and risk characteristics that are

[27] Source: Public Service Enterprise Group, Inc., 2022 SEC Form 10-K, at 3.

[28] Source: Public Service Enterprise Group, Inc., 2022 SEC Form 10-K, at 66.

[29] Source: S&P Capital IQ Pro and Moody's Investor's Service (accessed November 7, 2023).

substantially comparable to the Company's, and thus provide a reasonable basis to derive and estimate the appropriate ROE for the Company.

Q. How did you select the companies included in your proxy group?

A. I began with the group of 36 publicly traded companies that Value Line classifies as Electric Utilities and applied the following screening criteria to select a group of risk-comparable companies that:

- pay consistent quarterly cash dividends that have not been reduced in the last three years, since companies that do not meet this criteria cannot be analyzed using the constant growth DCF model;
- have investment grade long-term issuer ratings from both S&P and Moody's;
- are covered by more than one utility industry analyst;
- have positive long-term earnings growth forecasts from at least two equity analysts;
- derive at least 70 percent of the company's total operating income from regulated operations;
- derive at least 10 percent of the company's total regulated operating income from gas distribution operations; and
- were not party to a merger or transformative transaction during the analytical period considered.

Q. What is the composition of your proxy group?

A. The screening criteria discussed above resulted in a proxy group consisting of the companies shown in Figure 6 below.

Figure 6: Proxy Group

Company	Ticker
Ameren Corporation	AEE
Avista Corporation	AVA
Black Hills Corporation	BKH
CenterPoint Energy, Inc.	CNP
CMS Energy Corporation	CMS
Consolidated Edison, Inc.	ED
Eversource Energy	ES
MGE Energy, Inc.	MGEE
NorthWestern Corporation	NWE
Sempra Energy	SRE
Southern Company	SO
Wisconsin Energy Corporation	WEC
Xcel Energy Inc.	XEL

Q. Do your screening criteria result in a proxy group that is risk comparable to Public Service?

A. Yes, they do. The overall purpose of developing a set of screening criteria is to select a proxy group of companies that align with the financial and operational characteristics of Public Service and that investors would view as comparable to the Company. I developed the screens and thresholds for each screen based on judgment with the intention of balancing the need to maintain a proxy group that is of sufficient size with establishing a proxy group of companies that are comparable in business and financial risk to Public Service. The Company operates as a combination electric and gas utility and is viewed by investors as a combination company. The Company raises capital as a combination company, and does not issue separate debt or equity for electric and gas operations. Thus, a proxy group consisting combination electric and gas utilities is most risk comparable to Public Service and resulted in the group of 13 companies shown in Figure 6.

VI. COST OF EQUITY ESTIMATION

Q. Please briefly discuss the ROE in the context of the regulated rate of return ("ROR").

A. The ROE is the cost rate applied to the equity capital in the ROR. The ROR for a regulated utility is the weighted average cost of capital, in which the costs of the individual sources of capital are weighted by their respective proportion (i.e. book values) in the utility's capital structure. While the costs of debt and preferred stock can be directly observed, the COE is market-based and, therefore, must be estimated based on observable market data.

Q. How is the required COE determined?

A. The required COE is estimated by using analytical techniques that rely on market-based data to quantify investor expectations regarding equity returns, adjusted for certain incremental costs and risks. Informed judgment is then applied to determine where the company's COE falls within the range of results produced by multiple analytical techniques. The key consideration in determining the COE is to ensure that the methodologies employed reasonably reflect investors' views of the financial markets in general, as well as the subject company (in the context of the proxy group), in particular.

Q. What methods did you use to establish your recommended ROE in this proceeding?

A. I considered the results of the Constant Growth DCF model, the CAPM, the ECAPM, and a Bond Yield Plus Risk Premium analysis. As discussed in more detail below, a reasonable ROE estimate appropriately considers alternative methodologies and the reasonableness of their individual and collective results.

Q. Why is it important to use more than one analytical approach?

A. Because the COE is not directly observable, it must be estimated based on both quantitative and qualitative information. When faced with the task of estimating the COE, analysts and investors are inclined to gather and evaluate as much relevant data as reasonably can be analyzed. Several models have been developed to estimate the COE, and I use multiple approaches to estimate the COE. As a practical matter, however, all the models available for estimating the COE are subject to limiting assumptions or other methodological constraints. Consequently, many well-regarded finance texts recommend using multiple approaches when estimating the COE. For example, Copeland, Koller, and Murrin[30] suggest using the CAPM and Arbitrage Pricing Theory model, while Brigham and Gapenski[31] recommend the CAPM, DCF, and Bond Yield Plus Risk Premium approaches**.**

Q. Do current market conditions increase the importance of using more than one analytical approach?

A. Yes. As discussed previously, interest rates have increased substantially over the past year and are expected to remain elevated over at least the next year from the lows seen during the COVID-19 pandemic. While the share prices of utilities have declined, the negative yield spread noted above is an indication that the share prices have not declined sufficiently to account for the recent rise in interest rates. As a result, equity analysts expect the utility sector to continue to underperform over the next year. Given the expected underperformance, it is reasonable to conclude that the DCF model is likely understating the forward-looking cost of equity because the

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[30] Tom Copeland, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd Ed. (New York: McKinsey & Company, Inc., 2000), at 214.

[31] Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed. (Orlando: Dryden Press, 1994), at 341.

model relies on historical share prices. The CAPM, ECAPM, and Bond Yield Plus Risk Premium analyses offer some balance through the use of interest rates as a direct input into the models and therefore may better reflect the market conditions expected when the Company's rates are in effect. These recent changes in market conditions highlight the benefit of using multiple models since each model relies on different assumptions, certain of which may better reflect current and projected market conditions at different times. Therefore, it is important to use multiple analytical approaches to ensure that the cost of equity results reflect market conditions that are expected during the period that the Company's rates will be in effect.

Q. Has the Board made similar findings regarding the reliance on multiple models?

A. Yes. It is my understanding that in its order in Docket No. ER12111052 for Jersey Central Power and Light Company, the Board noted that rate of return experts use a number of models including the DCF, CAPM, Risk Premium and Comparable Earnings to estimate the return required by investors. Specifically, the Board noted:

> In determining the cost of equity capital for a regulated utility, rate of return experts typically use a variety of financial models to simulate the returns assertedly required by investors. These include Discounted Cash Flow (DCF) models, Risk Premium models, Capital Asset Pricing Models (CAPM), Comparable Earnings models and variations thereof. However, it is widely acknowledged that these economic models constitute estimates, which, although probative, are not necessarily precise. The imprecision in the estimates provided by these models is more pronounced as a result of the current economic environment still recovering from the Great Recession, characterized by some as the worst economy since the Great Depression.[32]

In the order, the Board accepted an ROE of 9.75 percent for JCP&L which was supported by the ALJ and ultimately recommended by Staff based on a review of each of

[32] BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Order Adopting Initial Decision with Modifications and Clarifications, March 18, 2015, at 71.

the model results presented by the witnesses in the case and recently authorized ROEs in other jurisdictions.[33] In supporting the recommendation of Staff, the ALJ concluded that the results of each model are affected by multiple factors including current market conditions. Specifically, the ALJ concluded that:

> [e]ach method has multiple factors, and the parties have offered numerous criticisms of the choices made by opposing expert witnesses. A key consideration concerns the time period used by the experts in selecting a dividend yield under the DCF model or the risk-free rate under the CAPM method due to the fact that interest rates have been at historic lows in recent years. For example, with the CAPM method, Ms. Ahern used interest rates on thirty-year Treasury bonds going as far back as 1926 producing an average of 5.32 percent, which led to a risk free rate of 4.17 percent. As Mr. Kahal points out, rates on thirty-year Treasury bonds have been closer to 3.00 percent in recent years. In contrast, Mr. Kahal based the dividend yield under his DCF analysis on results from the six months ending April 2013. Development of the dividend yield from data during a period of historically low interest rates may produce a result which is lower than will prevail when the new rates are in effect. Mr. O'Donnell's analysis in this respect is similar to that of Mr. Kahal.[34]

Thus, the Board, an ALJ, and Board Staff have all recognized the importance of considering the results of each model presented in the rate case because market conditions can have an effect on the results produced by each of the ROE estimation models.

A. CAPM Analysis

Q. Please briefly describe the CAPM.

A. The CAPM is a risk premium approach that estimates the COE for a given security as a function of a risk-free return plus a risk premium to compensate investors for the non-diversifiable, systematic risk of that security. Systematic risk is the risk inherent in the entire market or market

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[33] *Id.*, at 10.

[34] BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Initial Decision, January 8, 2015, at 27.

segment—which cannot be diversified away using a portfolio of assets. Unsystematic risk is the risk of a specific company that can, theoretically, be mitigated through portfolio diversification.

The CAPM is defined by four components, each of which must theoretically be a forward-looking estimate:

$$K_e = r_f + \beta(r_m - r_f) \quad [1]$$

Where:

K_e = the required market COE;

β = Beta coefficient of an individual security;

r_f = the risk-free rate of return; and

r_m = the required return on the market.

In this specification, the term $(r_m - r_f)$ represents the market risk premium. According to the theory underlying the CAPM, because unsystematic risk can be diversified away, investors should only be concerned with systematic or non-diversifiable risk. Systematic risk is measured by Beta. Beta is a measure of the volatility of a security as compared to the market as a whole. Beta is defined as:

$$\beta = \frac{Covariance(r_e, r_m)}{Variance(r_m)} \quad [2]$$

The variance of the market return (i.e., Variance (r_m)) is a measure of the uncertainty of the general market, and the covariance between the return on a specific security and the general market (i.e., Covariance (r_e, r_m)) reflects the extent to which the return on that security will respond to a given change in the general market return. Thus, Beta represents the risk of the security relative to the general market.

Q. What risk-free rate did you use in your CAPM analysis?

A. I relied on three sources for my estimate of the risk-free rate: (1) the current 30-day average yield on 30-year U.S. Treasury bonds, which is 4.84 percent;[35] (2) the average projected 30-year U.S. Treasury bond yield for the first quarter of 2024 through the first quarter of 2025, which is 4.44 percent;[36] and (3) the average projected 30-year U.S. Treasury bond yield for 2025 through 2029, which is 3.80 percent.[37]

Q. What Beta coefficients did you use in your CAPM analysis?

A. As shown Schedule AEB-5, I used the Beta coefficients for the proxy group companies as reported by Bloomberg and Value Line. The Beta coefficients reported by Bloomberg were calculated using ten years of weekly returns relative to the S&P 500 Index. Value Line's calculation is based on five years of weekly returns relative to the New York Stock Exchange Composite Index.

As shown in Schedule AEB-5, I also considered an additional CAPM analysis that relies on the long-term average utility Beta coefficient for the companies in my proxy group. As shown in Schedule AEB-6, the long-term average utility Beta coefficient was calculated as an average of the Value Line Beta coefficients for the companies in my proxy group from 2013 through 2022.

Q. How did you estimate the market risk premium in the CAPM?

A. I estimated the Market Risk Premium ("MRP") as the difference between the implied expected equity market return and the risk-free rate. As shown in Schedule AEB-7, the expected market return is calculated using the constant growth DCF model discussed below as applied to

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[35] Bloomberg Professional as of October 31, 2023.

[36] Blue Chip Financial Forecasts, Vol. 42, No. 11, at 2 (November 1, 2023).

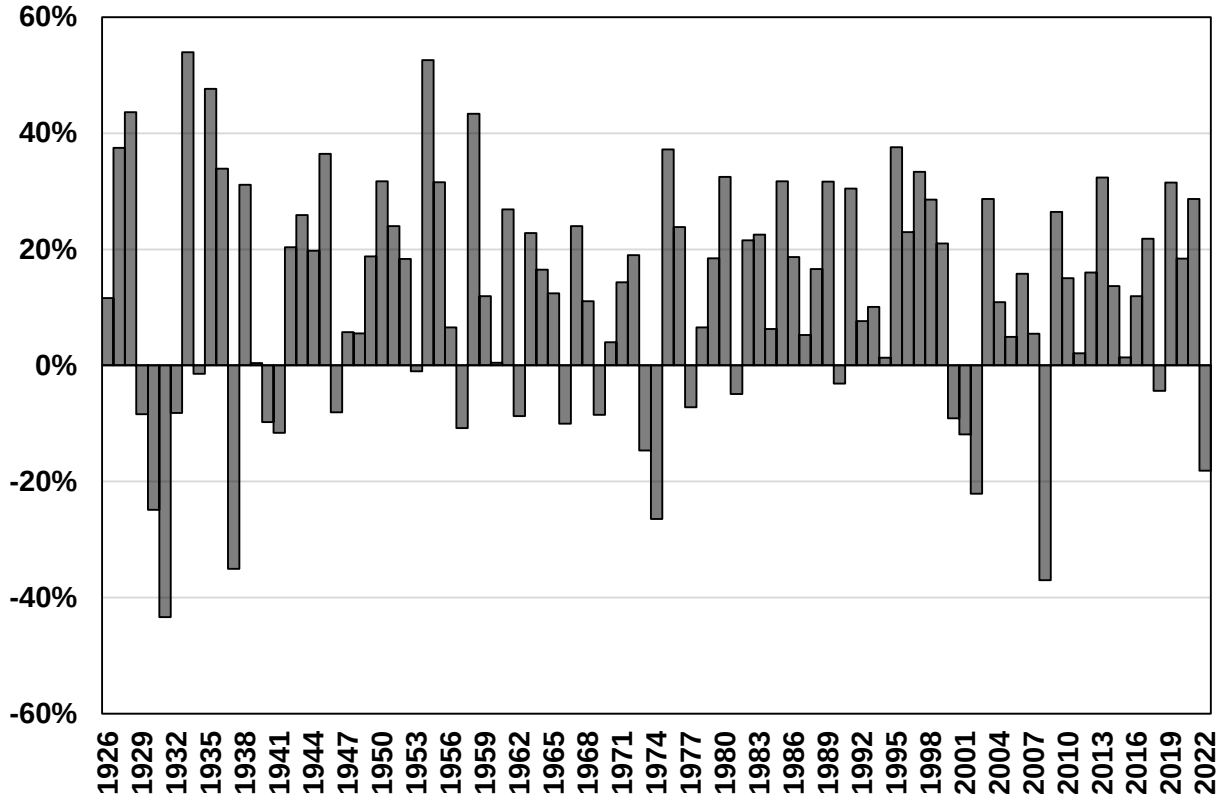
[37] Blue Chip Financial Forecasts, Vol. 41, No. 6, at 14 (June 1, 2023).

the companies in the S&P 500 Index. Based on an estimated market capitalization-weighted dividend yield of 1.88 percent and a weighted long-term growth rate of 10.51 percent, the estimated required market return for the S&P 500 Index as of October 31, 2023 is 12.49 percent.

Q. How does the current expected market return of 12.49 percent compare to observed historical market returns?

A. Given the range of annual equity returns that have been observed over the past century (shown in Figure 7), a current expected return of 12.49 percent is not unreasonable. In 50 out of the past 97 years (or roughly 52 percent of observations), the realized equity return was at least 12.49 percent or greater**.**

Figure 7: Realized U.S. equity market returns (1926-2022) [38]



[38] Depicts total annual returns on large company stocks, as reported in the 2022 *Kroll* SBBI Yearbook**.**

Q. Did you consider another form of the CAPM in your analysis?

A. Yes. I have also considered the results of an ECAPM or alternatively referred to as the Zero-Beta CAPM[39] in estimating the COE for Public Service. The ECAPM calculates the product of the adjusted Beta coefficient and the market risk premium and applies a weight of 75.00 percent to that result. The model then applies a 25.00 percent weight to the market risk premium, without any effect from the Beta coefficient. The results of the two calculations are summed, along with the risk-free rate, to produce the ECAPM result, as noted in Equation [3] below:

$$k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f) \qquad [3]$$

Where:

k_e = the required market COE;

β = Adjusted Beta coefficient of an individual security;

rf = the risk-free rate of return; and

r_m = the required return on the market as a whole.

In essence, the Empirical form of the CAPM addresses the tendency of the "traditional" CAPM to underestimate the cost of equity for companies with low Beta coefficients such as regulated utilities. In that regard, the ECAPM is not redundant to the use of adjusted Betas; rather, it recognizes the results of academic research indicating that the risk-return relationship is different (in essence, flatter) than estimated by the CAPM, and that the CAPM underestimates the "alpha," or the constant return term.[40]

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[39] *See* Roger A. Morin, New Regulatory Finance at 189, Public Utilities Reports, Inc. (2006).

[40] *Id.*, at 191.

As with the CAPM, my application of the ECAPM uses the forward-looking market risk premium estimates, the three yields on 30-year Treasury securities noted earlier as the risk-free rate, and the Bloomberg, Value Line, and long-term average Beta coefficients.

Q. What are the results of your CAPM analyses?

A. As shown in Figure 8 (see also Schedule AEB-5), my traditional CAPM analysis produces a range of returns from 10.20 percent to 11.66 percent. The ECAPM analysis results range from 10.77 percent to 11.87 percent.

Figure 8: CAPM and ECAPM Results

	Current Risk-Free Rate (4.84%)	Q1 2024 – Q1 2025 Projected Risk-Free Rate (4.44%)	2025-2029 Projected Risk-Free Rate (3.80%)
		CAPM	
Value Line Beta	11.66%	11.62%	11.55%
Bloomberg Beta	10.84%	10.75%	10.61%
Long-term Avg. Beta	10.47%	10.37%	10.20%
		ECAPM	
Value Line Beta	11.87%	11.84%	11.79%
Bloomberg Beta	11.25%	11.18%	11.08%
Long-term Avg. Beta	10.98%	10.90%	10.77%

B. Constant Growth DCF Model

Q. Please describe the DCF approach.

A. The DCF approach is based on the theory that a stock's current price represents the present value of all expected future cash flows. In its most general form, the DCF model is expressed as follows:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_\infty}{(1+k)^\infty} \qquad [4]$$

Where P_0 represents the current stock price, $D_1 \ldots D\infty$ are all expected future dividends, and k is the discount rate, or required ROE. Equation [4] is a standard present value calculation that can be simplified and rearranged into the following form:

$$k = \frac{D_0(1+g)}{P_0} + g \qquad [5]$$

Equation [5] is often referred to as the Constant Growth DCF model in which the first term is the expected dividend yield and the second term is the expected long-term growth rate.

Q. What assumptions are required for the Constant Growth DCF model?

A. The Constant Growth DCF model requires the following four assumptions: (1) a constant growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-earnings ("P/E") ratio; and (4) a discount rate greater than the expected growth rate. To the extent that any of these assumptions are violated, considered judgment and/or specific adjustments should be applied to the results.

Q. What market data did you use to calculate the dividend yield in your Constant Growth DCF model?

A. The dividend yield in my Constant Growth DCF model is based on the proxy companies' current annualized dividend and average closing stock prices over the 30-, 90-, and 180-trading days ended October 31, 2023.

Q. Why did you use 30-, 90-, and 180-day averaging periods?

A. I use an average of recent trading days to calculate the term P_0 in the DCF model to reflect current market data while also ensuring that the result of the model is not skewed by anomalous events that may affect stock prices on any given trading day.

Q. Did you make any adjustments to the dividend yield to account for periodic growth in dividends?

A. Yes, I did. Because utility companies tend to increase their quarterly dividends at different times throughout the year, it is reasonable to assume that dividend increases will be evenly distributed over calendar quarters. Given that assumption, it is reasonable to apply one-half of the expected annual dividend growth rate for purposes of calculating the expected dividend yield component of the DCF model. This adjustment ensures that the expected first-year dividend yield is, on average, representative of the coming twelve-month period, and does not overstate the aggregated dividends to be paid during that time.

Q. Why is it important to select appropriate measures of long-term growth in applying the DCF model?

A. In its Constant Growth form, the DCF model (*i.e.*, Equation [2]) assumes a single growth estimate in perpetuity. To reduce the long-term growth rate to a single measure, one must assume that the payout ratio remains constant and that earnings per share, dividends per share and book value per share all grow at the same constant rate. Over the long run, however, dividend growth can only be sustained by earnings growth. Therefore, it is important to incorporate a variety of sources of long-term earnings growth rates into the Constant Growth DCF model.

Q. Which sources of long-term earnings growth rates did you use?

A. My Constant Growth DCF model incorporates three commonly referenced sources of long-term earnings growth rates: (1) Zacks Investment Research; (2) Yahoo! Finance; and (3) Value Line Investment Survey.

Q. How did you calculate the range of results for the Constant Growth DCF Models?

A. I calculated the low result for my DCF model using the minimum growth rate (*i.e.*, the lowest of the Value Line, Yahoo! Finance, and Zacks earnings growth rates) for each of the proxy group companies. Thus, the low result reflects the minimum DCF result for the proxy group. I used a similar approach to calculate the high results, using the highest growth rate for each proxy group company. The mean results were calculated using the average growth rate from all three sources for each proxy group company.

Q. What were the results of your Constant Growth DCF analyses?

A. Figure 9 (see also Schedule AEB-2 and 4) summarizes the results of my DCF analyses. As shown in Figure 9, the median and mean DCF results range from 9.32 percent to 9.84 percent, and the median high and mean high results are in the range of 10.05 percent to 10.55 percent. While I also summarize the low DCF results, given the expected underperformance of utility stocks and thus the likelihood that the DCF model is understating the COE, I do not believe it is appropriate to consider the low DCF results at this time.

Figure 9: Constant Growth Discounted Cash Flow Results

Constant Growth DCF - Mean			
	Min Growth Rate	**Mean Growth Rate**	**Max Growth Rate**
30-Day Average	8.78%	9.69%	10.55%
90-Day Average	8.57%	9.47%	10.34%
180-Day Average	8.42%	9.32%	10.19%
Constant Growth DCF - Median			
	Min Growth Rate	**Mean Growth Rate**	**Max Growth Rate**
30-Day Average	8.87%	9.84%	10.44%
90-Day Average	8.53%	9.60%	10.27%
180-Day Average	8.31%	9.48%	10.05%

Q. What are your conclusions about the results of the DCF models?

A. As discussed previously, one primary assumption of the Constant Growth DCF model is a constant P/E ratio. That assumption is heavily influenced by the market price of utility stocks. Since utility stocks are expected to underperform the broader market over the near-term as interest rates increase, it is important to consider the results of the DCF models with caution. This means that the results of the current DCF models are below where they would otherwise be under more normal market conditions. Therefore, while I have given weight to the results of the Constant Growth DCF model, my recommendation also gives weight to the results of other COE estimation models.

C. Bond Yield Plus Risk Premium Analysis

Q. Please describe the Bond Yield Plus Risk Premium approach.

A. In general terms, this approach is based on the fundamental principle that equity investors bear the residual risk associated with equity ownership and therefore require a premium over the return they would have earned as a bondholder. That is, because returns to equity holders have greater risk than returns to bondholders, equity investors must be compensated to bear that risk. Risk premium approaches, therefore, estimate the COE as the sum of the equity risk premium and the yield on a particular class of bonds. In my analysis, I used actual authorized returns for electric utilities as the historical measure of the COE to determine the risk premium.

Q. Are there other considerations that should be addressed in conducting this analysis?

A. Yes, there are. It is important to recognize both academic literature and market evidence indicating that the equity risk premium (as used in this approach) is inversely related to the level of interest rates. That is, as interest rates increase, the equity risk premium decreases, and vice versa. Consequently, it is important to develop an analysis that: (1) reflects the inverse relationship between interest rates and the equity risk premium; and (2) relies on recent and expected market conditions. Such an analysis can be developed based on a regression of the risk premium as a function of U.S. Treasury bond yields. If we let authorized ROEs for electric utilities serve as the measure of required equity returns and define the yield on the long-term U.S. Treasury bond as the

relevant measure of interest rates, the risk premium simply would be the difference between those two points.[41]

Q. Is the Bond Yield Plus Risk Premium analysis relevant to investors?

A. Yes, it is. Investors are aware of ROE awards in other jurisdictions, and they consider those awards as a benchmark for a reasonable level of equity returns for utilities of comparable risk operating in other jurisdictions. Because my Bond Yield Plus Risk Premium analysis is based on authorized ROEs for utility companies relative to corresponding Treasury yields, it provides relevant information to assess the return expectations of investors in the current interest rate environment.

Q. What did your Bond Yield Plus Risk Premium analysis reveal?

A. As shown in Figure 10 below, from 1980 through October 2023, there was a strong negative relationship between risk premia and interest rates. To estimate that relationship, I conducted a regression analysis using the following equation:

$$RP = a + b(T) \quad [6]$$

Where:

RP = Risk Premium (difference between allowed ROEs and the yield on 30-year U.S. Treasury bonds)

a = intercept term

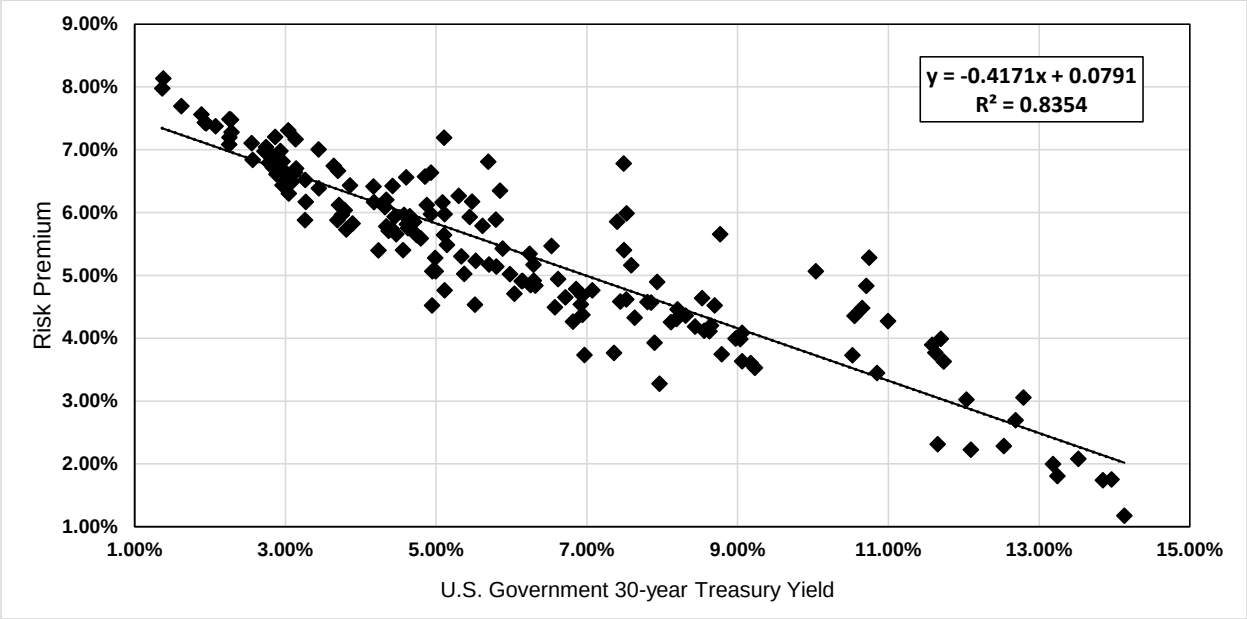
b = slope term

[41] *See* S. Keith Berry, Interest Rate Risk and Utility Risk Premia during 1982-93, Managerial and Decision Economics, Vol. 19, No. 2 (March, 1998), in which the author used a methodology similar to the regression approach described below, including using allowed ROEs as the relevant data source, and came to similar conclusions regarding the inverse relationship between risk premia and interest rates. *See also* Robert S. Harris, Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return at 66, Financial Management (Spring 1986).

T = 30-year U.S. Treasury bond yield

Data regarding allowed ROEs were derived from all of electric utility rate cases from 1980 through October 2023 as reported by Regulatory Research Associates ("RRA").[42] This equation's coefficients were statistically significant at the 99.00 percent level.

Figure 10: Risk Premium Results



As shown in Schedule AEB-8, based on the current 30-day average of the 30-year U.S. Treasury bond yield (i.e., 4.84 percent), the risk premium would be 5.89 percent, resulting in an estimated ROE of 10.74 percent. Based on the near-term (Q1 2024 – Q1 2025) projections of the 30-year U.S. Treasury bond yield (i.e., 4.44 percent), the risk premium would be 6.06 percent, resulting in an estimated ROE of 10.50 percent. Based on longer-term (2025 – 2029) projections of the 30-year U.S. Treasury bond yield (i.e., 3.80 percent), the risk premium would be 6.33 percent, resulting in an estimated ROE of 10.13 percent.

[42] This analysis began with a total of 2,379 cases and was screened to eliminate limited issue rider cases, transmission-only cases, and cases that were silent with respect to the authorized ROE. After applying those screening criteria, the analysis was based on data for 1,747 cases.

Q. How did the results of the Bond Yield Risk Premium inform your recommended ROE for the Company?

A. I have considered the results of the Bond Yield Risk Premium analysis in setting my recommended ROE for Public Service. As noted above, investors consider the ROE award of a company when assessing the risk of that company as compared to utilities of comparable risk operating in other jurisdictions.

VII. REGULATORY AND BUSINESS RISKS

Q. Taken alone, do the results from the COE estimation models for the proxy group provide an appropriate estimate of the COE for the Company?

A. No. These analyses provide only a range of the appropriate estimate of the Company's cost of equity. There are several additional factors that must be taken into consideration when determining where the Company's cost of equity falls within the range of results. These factors, which are discussed below, should be considered with respect to their overall effect on the Company's risk profile.

A. Management Performance Recognition

Q. Why is management performance important to consider in determining the ROE of a company?

A. Regulatory commission decisions can influence the overall operations of the utilities that are under its regulation. In rate proceedings, the regulatory commissions review all costs to determine the reasonableness of the overall operating cost of the Company for the benefits of customers. In addition to the actual costs incurred, it is important that the regulatory commission consider the overall management performance and service quality that is derived from those costs. Regulation that is constructive and supportive of management's ability to achieve low costs and high overall service quality plays an important role in utility regulation and the continued success of top performing companies.

Q. Has Public Service conducted any analysis of its management performance as compared with a benchmark group?

A. Yes. The Direct Testimony of Public Service witness Mr. Adams describes in detail the performance benchmarking analysis that was undertaken and summarizes the results for Public Service as compared with national, regional, as well as a New Jersey specific regional benchmarking group and the proxy group that I relied on in setting the ROE. Mr. Adams benchmarks Public Service's performance on the basis of electric and natural gas distribution operating and administrative costs as well as reliability and customer satisfaction.

Q. Please summarize the results of that analysis.

A. Mr. Adams's analysis demonstrates that that Public Service's electric and gas operating costs are significantly lower than the peer group. In addition, Public Service's reliability and customer satisfaction ratings are consistently higher than the peer group.[43] The combination of these metrics indicates a well-managed company that is focused on controlling costs and providing high levels of reliability and customer satisfaction.

Q. Is the Company required to maintain a minimum level of reliability for its electric distribution system?

A. Yes. As discussed in the Panel Testimony of Public Service Witnesses Mr. Schmid and Mr. Fonseca, the Board sets annual reliability performance level targets for the electric utilities in New Jersey based on the average reliability level for an individual utility over the last five years. Given that Public Service's reliability ratings have been consistently higher than other electric utilities in New Jersey, Public Service's required reliability targets are also higher than the other electric utilities in New Jersey. As a result, absent the Commission's consideration of the Company's

[43] Reliability metrics measure the number and duration of interruptions. Therefore, lower metrics in these areas, as discussed by Mr. Adams, reflect stronger performance.

management performance in determining the authorized ROE in this proceeding, the Company would be held to higher reliability standard than its peers; however, the Company's ROE has historically been set at a level comparable to peers which are subject to lower reliability targets. It is therefore important that the Commission consider the Company's excellent management performance which has resulted in lower costs and higher reliability relative to its peers in determining the authorized ROE for Public Service.

Q. How does the benchmarking analysis affect your view of the authorized ROE for Public Service?

A. Based on the results of the benchmarking analysis, Public Service's electric and gas distribution customers have benefitted significantly from the Company's efficiency and cost containment efforts. In addition, while providing service at a lower cost than the peer group, Public Service's reliability metrics are stronger than the peer group average. Finally, the Company's customer service is strong and continually improving over the analytical period relied on by Mr. Adams. In my view, the benchmarking analysis demonstrates that Public Service's management performance has provided its customers with significantly lower cost and more reliable service than other similar electric and gas utilities and therefore supports an ROE that is above the mean of the proxy group results. Continued demonstrated management excellence that provides tangible benefits to customers such as lower overall costs and higher reliability metrics should be considered by the Board and supported through constructive regulation.

B. Capital Expenditures

Q. Please summarize the capital expenditure requirements for Public Service's electric and natural gas distribution operations.

A. The Company's current projections for 2023 through 2027 include approximately $17 billion in capital investments for the period.[44] Based on the Company's net utility plant of approximately $32.83 billion plus the Energy Efficiency regulatory asset of $0.4 billion as of December 31, 2022,[45] the projected capital expenditures are approximately 51.15 percent of Public Service's net utility investment balance as of December 31, 2022.

Q. How is the Company's risk profile affected by its substantial capital expenditures requirements?

A. As with any utility faced with substantial capital expenditure requirements, the Company's risk profile may be adversely affected in two significant and related ways: (1) the heightened level of investment increases the risk of under-recovery or delayed recovery of the invested capital; and (2) an inadequate return would put downward pressure on key credit metrics.

Q. Do credit rating agencies recognize the risks associated with elevated levels of capital expenditures?

A. Yes, they do. From a credit perspective, the additional pressure on cash flows associated with high levels of capital expenditures exerts corresponding pressure on credit metrics and, therefore, credit ratings. To that point, S&P explains the importance of regulatory support for large capital projects:

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[44] PSEG December 2023 Investor Update, approximate mid-point of PSE&G capital spending range 2023-2027 $16.0-$18.5B.

[45] From the PSEG 2022 10K. Net utility plant is from the PSE&G Consolidated Balance Sheet, page 68, Net Property, Plant and Equipment (December 31, 2022 balance is $32,830 million); the Energy Efficiency regulatory asset is from the Financial Statement Note 7, page 88 (Green Program Recovery Charges (GPRC), December 31, 2022 non-current asset balance is $447 million).

> When applicable, a jurisdiction's willingness to support large capital projects with cash during construction is an important aspect of our analysis. This is especially true when the project represents a major addition to rate base and entails long lead times and technological risks that make it susceptible to construction delays. Broad support for all capital spending is the most credit-sustaining. Support for only specific types of capital spending, such as specific environmental projects or system integrity plans, is less so, but still favorable for creditors. Allowance of a cash return on construction work-in-progress or similar ratemaking methods historically were extraordinary measures for use in unusual circumstances, but when construction costs are rising, cash flow support could be crucial to maintain credit quality through the spending program. Even more favorable are those jurisdictions that present an opportunity for a higher return on capital projects as an incentive to investors.[46]

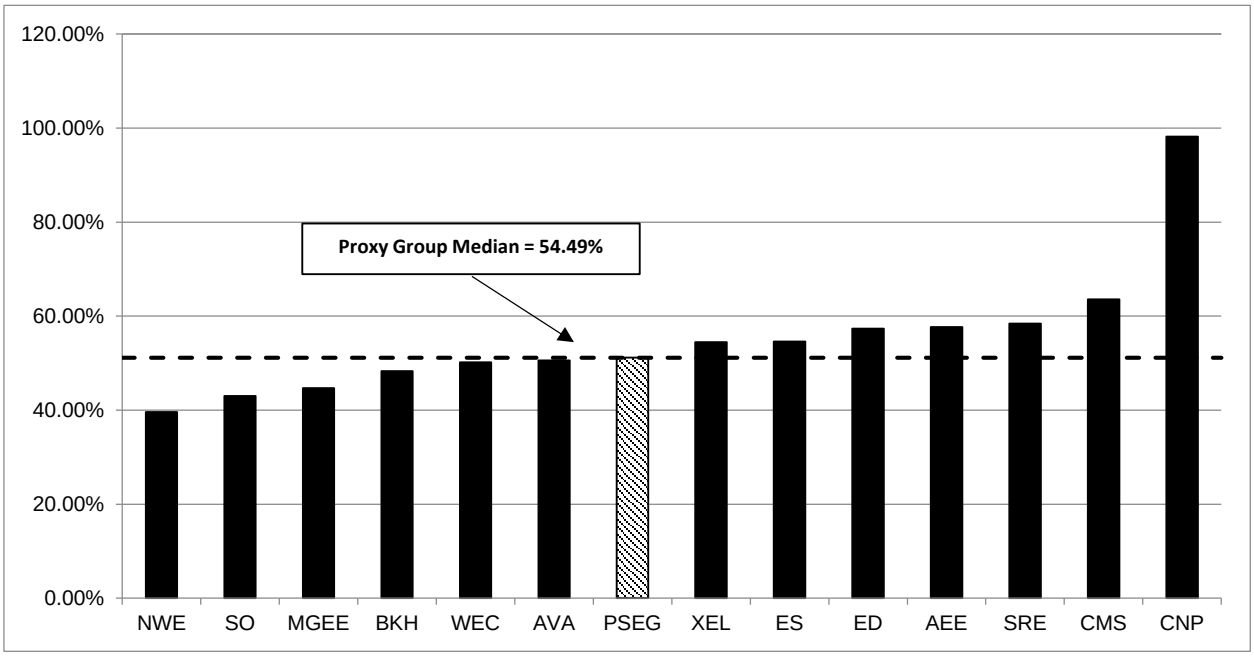
Therefore, to the extent that Public Service's rates do not permit the opportunity to earn an appropriate return and recover its capital investments on a regular and timely basis, the Company will face increased recovery risk and thus increased pressure on its credit metrics.

Q. How do Public Service's capital expenditure requirements compare to those of the proxy group companies?

A. As shown in Schedule AEB-9, I calculated the ratio of expected capital expenditures to net utility plant for the Company and each of the companies in the proxy group by dividing each company's projected capital expenditures for the period from 2024-2028 by its total net utility plant as of December 31, 2022. As shown in Schedule AEB-9 (see also Figure 11 below), the Company's ratio of capital expenditures as a percentage of net utility plant is 56.15 percent, which is similar to the median for the proxy group companies of 54.49 percent.

[46] S&P Global Ratings, "Assessing U.S. Investor-Owned Utility Regulatory Environments," August 10, 2016, at 7.

Figure 11: Comparison of Capital Expenditures



Q. Does Public Service have a capital tracking mechanism to recover the costs associated with its capital expenditures plan between rate cases?

A. Partially. N.J.A.C. 14:3-2A, Infrastructure Investment Program ("IIP"), allows for a utility to obtain Board approval for the accelerated recovery of qualifying capital investments between rate cases. Public Service has periodic rate adjustments, on a lag, for a portion of its investments of specific Board-approved programs, for a portion of the Company's electric and natural gas operations. This allows Public Service to recover a portion of certain investments in the construction, installation and rehabilitation of certain non-revenue producing utility plant and facilities that meet safety, reliability or resiliency standards. For example, through the IIP, Public Service recovers a portion of the capital costs associated with the Company's Energy Strong II program, Infrastructure Advancement Program, and Gas System Modernization II Program ("GSMP"), albeit on a lag. In addition, the Company is able to recover capital costs associated with its Clean Energy Future – Energy Efficiency, other Energy Efficiency, and several solar

programs through the Green Programs Recovery Charge, which is available to both Public Service's electric and gas operations.

Q. Does the existence of these ratemaking mechanisms reduce the Company's level of risk vis a vis the companies in the proxy group?

A. No. A significant portion of the Company's future spending will require a base rate case filing for recovery. Further, the presence of these mechanisms is certainly a positive aspect of New Jersey regulation, but they have become quite commonplace in utility regulation. In fact, as shown in Schedule AEB-10 approximately 63 percent of the companies in the proxy group have implemented infrastructure replacement recovery mechanisms. In addition, approximately 48 percent of the proxy group companies set rates based on forecasted test years. Consequently the presence of the IIP mechanism and Green Programs charge, while positive regulatory mechanisms, do not reduce the Company's risk vis-à-vis that of the proxy group.

Q. What are your conclusions regarding the effect of Public Service's capital spending program on its risk profile and cost of capital?

A. The Company's capital expenditure requirements as a percentage of net utility plant are significant and will continue over the next few years. Additionally, similar to a number of the operating subsidiaries of the proxy group, Public Service does have capital tracking mechanisms to recover some of the Company's projected capital expenditures.

C. Regulatory Risk

Q. How does the regulatory environment affect investors' risk assessments?

A. The ratemaking process is premised on the principle that, for investors and companies to commit the capital needed to provide safe and reliable utility service, the subject utility must have the opportunity to recover the return of, and the market-required return on, invested capital. Regulatory authorities recognize that because utility operations are capital intensive, regulatory

decisions should enable the utility to attract capital at reasonable terms; doing so balances the long-term interests of investors and customers. To achieve this balance, the Company must be able to finance its operations assuming a reasonable opportunity to earn an appropriate return on invested capital to maintain an acceptable financial profile. In that respect, the regulatory environment is one of the most important factors considered in both debt and equity investors' risk assessments.

From the perspective of debt investors, the authorized return should enable the Company to generate the cash flow needed to meet its near-term financial obligations, make the capital investments needed to maintain and expand its systems, and maintain the necessary levels of liquidity to fund unexpected events. This financial liquidity must be derived not only from internally generated funds, but also by efficient access to capital markets. Moreover, because fixed income investors have many investment alternatives, even within a given market sector, the Company's financial profile must be adequate on a relative basis to ensure its ability to attract capital under a variety of economic and financial market conditions.

Equity investors, on the other hand, require that the authorized return be adequate to provide a risk-comparable return on the equity portion of the Company's capital investments. Because equity investors are the residual claimants on the Company's cash flows (which is to say that the equity return is subordinate to interest payments), they are particularly concerned with the strength of regulatory support and its effect on future cash flows.

Q. How do credit rating agencies consider regulatory risk in establishing a company's credit rating?

A. Both S&P and Moody's consider the overall regulatory framework in establishing credit ratings. Moody's establishes credit ratings based on four key factors: (1) regulatory framework; (2) the ability to recover costs and earn returns; (3) diversification; and (4) financial strength,

liquidity, and key financial metrics. Of these criteria, regulatory framework, and the ability to recover costs and earn returns are each given a broad rating factor of 25.00 percent. Therefore, Moody's assigns regulatory risk a 50.00 percent weighting in the overall assessment of business and financial risk for regulated utilities.[47]

S&P also identifies the regulatory framework as an important factor in credit ratings for regulated utilities, stating: "One significant aspect of regulatory risk that influences credit quality is the regulatory environment in the jurisdictions in which a utility operates."[48] S&P identifies four specific factors that it uses to assess the credit implications of the regulatory jurisdictions of investor-owned regulated utilities: (1) regulatory stability; (2) tariff-setting procedures and design; (3) financial stability; and (4) regulatory independence and insulation.[49]

Q. How does the regulatory environment in which a utility operates affect its access to and cost of capital?

A. The regulatory environment can significantly affect both the access to, and cost of capital in several ways. First, the proportion and cost of debt capital available to utility companies are influenced by the rating agencies' assessment of the regulatory environment. As noted by Moody's, "[f]or rate regulated utilities, which typically operate as a monopoly, the regulatory environment and how the utility adapts to that environment are the most important credit considerations."[50] Moody's further highlighted the relevance of a stable and predictable regulatory environment to a utility's credit quality, noting: "[b]roadly speaking, the Regulatory Framework is the foundation for how all the decisions that affect utilities are made (including the setting of

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47 Moody's Investors Service, Rating Methodology: Regulated Electric and Gas Utilities, June 23, 2017, at 4.

48 Standard & Poor's Global Ratings. Ratings Direct. "Assessing U.S. Investor-Owned Utility Regulatory Environments." August 10, 2016, at 2.

49 *Id*.

50 Moody's Investors Service, Rating Methodology: Regulated Electric and Gas Utilities, June 23, 2017, at 6.

rates), as well as the predictability and consistency of decision-making provided by that foundation."[51]

Q. Have you conducted any analysis of the risk associated with the regulatory framework in New Jersey relative to the jurisdictions in which the utility operating subsidiaries of the companies in your proxy group operate?

A. Yes. I have evaluated the regulatory framework in New Jersey on three factors that are important in terms of providing a regulated utility a reasonable opportunity to earn its authorized ROE: (1) test year convention (i.e., forecast vs. historical); (2) use of rate design or other mechanisms that mitigate volumetric risk and stabilize revenue; and (3) prevalence of capital cost recovery between rate cases. The results of this regulatory risk assessment are shown in Schedule AEB-10 and are summarized as follows:

Test Year Convention: The Company uses partially forecast test year, which will be fully historical by the time a rate decision is issued in the current proceeding. However, approximately 44.30 percent of the utility operating subsidiaries of the companies in the proxy group use a fully forecasted test year, which will not be historical by the time of the rate decision.

Revenue Stabilization / Volumetric Risk: The Company does have partial protection against volumetric risk in New Jersey for its electric and natural gas operations. Public Service has a Conservation Incentive Program ("CIP") surcharge which allows for the recovery of lost sales revenue from the reduction in usage associated with energy efficiency programs and the recovery/refund of other deviations in sales due to, for example, variations in weather. As shown in Schedule AEB-10, approximately 57.0 percent of the operating companies held by the proxy group have some form of revenue stabilization either through straight fixed variable rate design, a formula rate plan, or other mechanisms.

[51] *Id*.

Capital Cost Recovery: As discussed above, the Company has capital tracking mechanisms (i.e., IIP mechanism and Green Programs charge) to recover a portion of capital investment costs between rate cases. This is consistent with the proxy group where 63.3 percent of the operating companies held by the proxy group have some form of capital cost recovery mechanism in place.

Q. Have you developed any additional analyses to evaluate the regulatory environment in New Jersey as compared to the jurisdictions in which the companies in your proxy group operate?

A. Yes. I have conducted two additional analyses to compare the regulatory framework of New Jersey to the jurisdictions in which the utility operating subsidiaries of the proxy group operate. Specifically, I considered two different rankings: (1) the Regulatory Research Associates ("RRA") ranking of regulatory jurisdictions, which is presented in Schedule AEB-11; and (2) S&P's ranking of the credit supportiveness of regulatory jurisdictions, which is presented in Schedule AEB-12.

Q. Please explain how RRA evaluates the regulatory environment in each jurisdiction.

A. RRA evaluates the regulatory environment from an investor perspective, considering the relative regulatory risk associated with ownership of securities issued by the companies that are regulated in each jurisdiction. RRA considers several factors that affect the regulatory process including gubernatorial, legislative and court activity, rate case decisions and other regulatory decisions, and information obtained through contact with commissioners, staff, company and government outreach.

Q. Please explain how you used the RRA Rankings to compare the regulatory jurisdictions of the utility operating subsidiaries of the proxy group companies relative to the Company?

A. RRA assigns a ranking for each regulatory jurisdiction between "Above Average/1" to "Below Average/3," with nine total rankings between these categories. I applied a similar numeric ranking system to the RRA rankings with "Above Average/1" assigned the highest ranking ("1") and "Below Average/3" assigned the lowest ranking ("9"). As shown on Schedule AEB-11, the Company's jurisdictional ranking is "7" or "Below Average/1", which is below the proxy group's average numeric ranking of "4.75" from RRA, which is between "Average/1" and "Average/2."

Q. What information does RRA provide about how it determined a Below Average/1 rating for New Jersey regulation?

A. RRA states that from an investor perspective, the regulatory environment in New Jersey is restrictive and regulatory issues are highly politicized. Further, RRA notes that recently authorized ROEs are below prevailing industry averages and the use of a historical test year results and the inability to include construction work in progress in rate base impede the ability for companies to earn their authorized return. Additionally, RRA noted that New Jersey had a legislatively mandated moratorium on termination of service for non-payment of service during the pandemic that extended through March 15, 2022.[52] The deferrals resulting from this moratorium have not yet been resolved. RRA estimated the magnitude of the deferrals statewide at $710 million through the end of December 2020, however the legislatively mandated moratorium extended through March 15, 2022. The extensive lag and uncertainty of the recovery of these costs represents a significant risk factor from an investor perspective.

[52] Subsequent to RRA's report, the BPU extended the moratorium through March 15, 2023 for residential customers.

Q. How did you conduct your analysis of the S&P credit supportiveness?

A. For credit supportiveness, S&P classifies each regulatory jurisdiction into five categories that range from "Credit Supportive" to "Most Credit Supportive." My analysis of the credit supportiveness of the regulatory jurisdictions in which the proxy companies operate relative to the Company's regulatory jurisdiction is similar to the analysis of the RRA overall regulatory ranking just discussed. Specifically, I assign a numerical ranking to each of S&P's categories, from Most Credit Supportive ("1") to Credit Supportive ("5"). As shown in Schedule AEB-12, the proxy group average ranking is 2.58, which would be classified between "Very Credit Supportive" and "Highly Credit Supportive," while Public Service's rank is lower at "More Credit Supportive" ("4"), which suggests that investors perceive regulation for the Company as below average relative to the proxy group.

Q. What is your conclusion regarding the regulatory framework in New Jersey as compared with the jurisdictions in which the proxy group companies operate?

A. The regulatory framework in which a regulated utility provides service is one of the most important considerations for debt and equity investors. Based on my analysis, I conclude that the regulatory risk for Public Service is higher than for the proxy group, which reflects that the New Jersey regulatory framework has somewhat greater risk than the jurisdictions in which the utility operating subsidiaries of the proxy group companies provide service. This conclusion is reflective of the proxy group generally having more timely cost recovery than the Company and the Company having an S&P credit supportive ranking and RRA ranking that is below the average for the proxy group.

VIII. CAPITAL STRUCTURE AND PROPOSED INTEREST COST RECONCILIATION DEFERRAL

A. Capital Structure

Q. Is the capital structure of a company an important consideration in the determination of the appropriate ROE?

A. Yes, it is. The equity ratio is the primary indicator of financial risk for a regulated utility such as Public Service. Assuming other factors equal, a higher debt ratio increases the risk to equity investors. For debt holders, higher debt ratios result in a greater portion of the available cash flow being required to meet debt service, thereby increasing the risk associated with the payments on debt. The result of increased risk is a higher interest rate. The incremental risk of a higher debt ratio is more significant for common equity shareholders, whose claim on the cash flow of the Company is secondary to debt holders. Therefore, the greater the debt service requirement, the less cash flow is available for common equity holders. To the extent the equity ratio is reduced, it is necessary to increase the authorized ROE to compensate investors for the greater financial risk associated with a lower equity ratio.

Q. What is Public Service's proposed capital structure?

A. As discussed in the Direct Testimony of Company Witness Mr. McFadden, the Company is proposing to establish a capital structure consisting of 55.50 percent common equity, 44.29 percent long-term debt, and 0.21 percent customer deposits.

Q. Did you conduct any analysis to determine if this requested equity ratio was reasonable?

A. Yes. I reviewed the Company's proposed capital structure relative to the actual capital structures of the utility operating subsidiaries of the companies in the proxy group. Since the ROE is set based on the return that is derived from the risk-comparable proxy group, it is reasonable to

look to the average capital structure for the proxy groups to benchmark the equity ratios for the Company.

Q. Please discuss your analysis of the capital structures of the proxy group companies.

A. Specifically, I calculated the average proportion of common equity, long-term debt, and preferred equity for the most recent two years (i.e., eight quarters) for each of the companies in the proxy group at the operating subsidiary level. Schedule AEB-13 summarizes the actual capital structures of the operating subsidiaries. As shown, the two-year average equity ratios for the operating subsidiaries of the proxy group range from 47.21 percent to 66.21 percent. Public Service's proposed equity ratio of 55.5 percent is within the range established by the capital structures of the utility operating subsidiaries of the proxy group.

Q. Are there other factors to be considered in setting the Company's capital structure?

A. Yes, there are other factors that should be considered in setting the Company's capital structure, namely the challenges that the credit rating agencies have highlighted as placing pressure on the credit metrics for utilities.

For example, while Moody's recently revised its outlook for the utility sector from "negative" to "stable", Moody's continues to note that high interest rates and increased capital spending will place pressure on credit metrics. Thus, Moody's highlights constructive regulatory outcomes that promote timely cost recovery as a key factor in supporting utility credit quality.[53]

Fitch Ratings ("Fitch") also highlights similar factors identified by Moody's as challenging utilities' outlook for 2023, stating that the sector faces mounting cost pressures due to "elevated

[53] Moody's Investors Service, Outlook. "Outlook turns stable on low prices and credit-supportive regulation." September 7, 2023.

commodity prices, inflationary headwinds and rising interest costs," and that some offset in managing these headwinds include "higher authorized ROEs and the use of tools such as securitization of under-recovered fuel balances."[54]

Likewise, while S&P also recently revised its outlook for the industry from negative to stable, S&P continues to see significant risks over the near-term for the industry as a result of inflation and increased levels of capital spending. Specifically, S&P noted:

> Despite the improvement in economic data, we expect inflation, rising interest rates, higher capital spending, and the strategic decision by many companies to operate with only minimal financial cushion from their downgrade thresholds to continue to pressure the industry's credit quality. Throughout 2022 and so far in 2023, the Federal Reserve has consistently raised interest rates to reduce the pace of inflation. While these actions appear to have had a positive effect on slowing inflation, there's still been a modest weakening in the industry's financial measures because of inflation and rising interest rates. An environment of continuously rising costs tends to weaken the industry's financial measures because of the timing difference between when the higher costs are incurred and when they are ultimately recovered from ratepayers.[55]

The credit ratings agencies' continued concerns over the negative effects of inflation and increased capital expenditures underscore the importance of maintaining adequate cash flow metrics for the industry as a whole, and Public Service in particular in the context of this proceeding.

Q. Why is this important in the consideration of the Company's capital structure?

A. The amount of debt in the capital structure decreases the financial flexibility of the company due to the fixed payment requirements of the debt service obligations. Therefore, in order to

[54] Fitch Ratings. "North American Utilities, Power & Gas Outlook 2023." December 7, 2022, at 1-2.

[55] S&P Global Ratings. "The Outlook for North American Regulated Utilities Turns Stable," May 18, 2023, at 8.

maintain or improve cash flow metrics, the credit rating agencies have historically supported increasing the equity ratio, which reduces fixed payments and improves cash flow coverage ratios.

Q. What is your conclusion with regard to the Company's proposed capital structure?

A. Considering the actual capital structures of the proxy group operating companies, I believe that Public Service's proposed common equity ratio of 55.5 percent is reasonable. The proposed equity ratio is well within the range established by the capital structures of the utility operating subsidiaries of the proxy companies.

B. Interest Cost Reconciliation Deferral Mechanism

Q. Please explain the Company's proposed interest cost reconciliation deferral mechanism.

A. As discussed in the Direct Testimony of Public Service witness Mr. McFadden, the Company will need to refinance existing debt after the end of the test year; however, given that current interest rates *(i.e.,* 30-day average yield on the Moody's A-rated utility bond as of October 31,2023 was 6.20 percent)[56] exceed Public Service's embedded cost of long-term debt of 3.96 percent, the Company's interest expense will likely exceed that which can be recovered in rates during the first year that rates will go into effect. Therefore, the Company is proposing a new interest cost reconciliation deferral mechanism to defer the difference between the actual embedded cost of debt and the rate approved by the Board in this proceeding. The deferral mechanisms will only account for changes in the Company's embedded cost of debt associated with refinancing existing debt and will not reflect changes in the cost of debt associated with new issuances. The proposed deferral mechanism would be fully symmetric. Therefore, the deferral

[56] Source: Bloomberg Professional.

mechanism would ensure the Company recovers no more or less than its allowed interest expense and can be reevaluated in a future base rate case.

Q. Why is an interest cost reconciliation deferral mechanism appropriate?

A. There has been significant volatility in long-term interest rates over the past few years. For example, the 30-year Treasury yield reached a low of 0.99 percent in March 2020, but has since significantly increased as a result of the change in market conditions discussed in Section IV of my Direct Testimony. As noted above, the 30-day average yield on the 30-year Treasury bond as of October 31, 2023 was 4.84 percent, a more than four-fold increased from March 2020. The volatility in interest rates increases the likelihood that the Company's actual embedded cost of debt during the period that rates will be in effect will be either lower or higher than the embedded cost of debt approved by the Board in this proceeding. Further, the Company does not have any control over interest rates, which are set by the market and influenced by the monetary policy of the Federal Reserve. The deferral mechanism would ensure that customers only pay the actual cost of debt. Therefore, under this mechanism neither customers nor the Company is disadvantaged by changes in the market rate on the debt that is refinanced.

IX. CONCLUSIONS AND RECOMMENDATION

Q. What is your conclusion regarding a fair ROE for the Company?

A. Based on the various quantitative analyses summarized in Figure 12 and the qualitative analyses presented in my Direct Testimony, a reasonable range of ROE results for Public Service is from 10.00 percent to 11.00 percent. Within that range, I believe that the Company's requested ROE of 10.40 percent is conservative considering the Company's excellent management performance, current conditions in capital markets including the high interest rates, and elevated

inflationary pressures, both of which increase the cost of capital as well as the relative business and financial risk of Public Service as compared to the proxy group.

Figure 12: Summary of Results

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.78%	9.69%	10.55%
90-Day Average	8.57%	9.47%	10.34%
180-Day Average	8.42%	9.32%	10.19%
	Median Low	Median	Median High
30-Day Average	8.87%	9.84%	10.44%
90-Day Average	8.53%	9.60%	10.27%
180-Day Average	8.31%	9.48%	10.05%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.66%	11.62%	11.55%
Bloomberg Beta	10.84%	10.75%	10.61%
Long-term Avg. Beta	10.47%	10.37%	10.20%
ECAPM			
Value Line Beta	11.87%	11.84%	11.79%
Bloomberg Beta	11.25%	11.18%	11.08%
Long-term Avg. Beta	10.98%	10.90%	10.77%
Bond Yield Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	10.74%	10.50%	10.13%

Q. What is your conclusion regarding Public Service's proposed capital structure?

A. My conclusion is that Public Service's proposed rate-making capital structure consisting of 55.50 percent common equity, 44.29 percent long-term debt, and customer deposits of 0.21 percent is reasonable as compared to the proxy group companies and should be used for setting rates in this case.

Q. Does this conclude your Direct Testimony?

A. Yes, it does.

Ann E. Bulkley

PRINCIPAL

Boston 508.981.0866 Ann.Bulkley@brattle.com

With more than 25 years of experience in the energy industry, Ms. Bulkley specializes in regulatory economics for the electric and natural gas sectors, including rate of return, cost of equity, and capital structure issues.

Ms. Bulkley has extensive state and federal regulatory experience, and she has provided expert testimony on the cost of capital in nearly 100 regulatory proceedings before 32 state regulatory commissions and the Federal Energy Regulatory Commission (FERC).

In addition to her regulatory experience, Ms. Bulkley has provided valuation and appraisal services for a variety of purposes, including the sale or acquisition of utility assets, regulated ratemaking, ad valorem tax disputes, and other litigation purposes. In addition, she has experience in the areas of contract and business unit valuation, strategic alliances, market restructuring, and regulatory and litigation support.

Ms. Bulkley is a Certified General Appraiser licensed in the Commonwealth of Massachusetts and the State of New Hampshire.

Prior to joining Brattle, Ms. Bulkley was a Senior Vice President at an economic consultancy and held senior positions at several other consulting firms.

AREAS OF EXPERTISE

- Regulatory Economics, Finance & Rates
- Regulatory Investigations & Enforcement
- Tax Controversy & Transfer Pricing
- Electricity Litigation & Regulatory Disputes
- M&A Litigation

EDUCATION

- **Boston University**
  MA in Economics
- **Simmons College**
  BA in Economics and Finance

PROFESSIONAL EXPERIENCE

- **The Brattle Group (2022–Present)**
  Principal
- **Concentric Energy Advisors, Inc. (2002–2021)**
  Senior Vice President
  Vice President
  Assistant Vice President
  Project Manager
- **Navigant Consulting, Inc. (1997–2002)**
  Project Manager
- **Reed Consulting Group (1995-1997)**
  Consultant- Project Manager
- **Cahners Publishing Company (1995)**
  Economist

SELECTED CONSULTING EXPERIENCE & EXPERT TESTIMONY

REGULATORY ANALYSIS AND RATEMAKING

Have provided a range of advisory services relating to regulatory policy analysis and many aspects of utility ratemaking, with specific services including:

- Cost of capital and return on equity testimony, cost of service and rate design analysis and testimony, development of ratemaking strategies
- Development of merchant function exit strategies

- Analysis and program development to address residual energy supply and/or provider of last resort obligations
- Stranded costs assessment and recovery
  Performance-based ratemaking analysis and design
- Many aspects of traditional utility ratemaking (e.g., rate design, rate base valuation)

COST OF CAPITAL

Have provided expert testimony on the cost of capital and capital structure in nearly 100 regulatory proceedings before state and federal regulatory commissions in the United States.

RATEMAKING

Have assisted several clients with analysis to support investor-owned and municipal utility clients in the preparation of rate cases. Sample engagements include:

- Assisted several investor-owned and municipal clients on cost allocation and rate design issues including the development of expert testimony supporting recommended rate alternatives.
- Worked with Canadian regulatory staff to establish filing requirements for a rate review of a newly regulated electric utility. Along with analyzing and evaluating rate application, attended hearings and conducted investigation of rate application for regulatory staff. And prepared, supported, and defended recommendations for revenue requirements and rates for the company. Additionally, developed rates for gas utility for transportation program and ancillary services.

VALUATION

Have provided valuation services to utility clients, unregulated generators, and private equity clients for a variety of purposes, including ratemaking, fair value, ad valorem tax, litigation and damages, and acquisition. Appraisal practices are consistent with the national standards established by the Uniform Standards of Professional Appraisal Practice.

Representative projects/clients have included:

- Prepared appraisals of electric utility transmission and distribution assets for ad valorem tax purposes.
- Prepared appraisals of several hydroelectric generating facilities for ad valorem tax purposes.
- Conducted appraisals of fossil fuel generating facilities for ad valorem tax purposes.
- Conducted appraisals of generating assets for the purposes of unwinding sale-leaseback agreements.
- For a confidential utility client, prepared valuation of fossil and nuclear generation assets for financing purposes for regulated utility client.

- Prepared a valuation of a portfolio of generation assets for a large energy utility to be used for strategic planning purposes. Valuation approach included an income approach, a real options analysis, and a risk analysis.
- Assisted clients in the restructuring of NUG contracts through the valuation of the underlying assets. Performed analysis to determine the option value of a plant in a competitively priced electricity market following the settlement of the NUG contract.
- Prepared market valuations of several purchase power contracts for large electric utilities in the sale of purchase power contracts. Assignment included an assessment of the regional power market, analysis of the underlying purchase power contracts, and a traditional discounted cash flow valuation approach, as well as a risk analysis. Analyzed bids from potential acquirers using income and risk analysis approached. Prepared an assessment of the credit issues and value at risk for the selling utility.
- Prepared appraisal of a portfolio of generating facilities for a large electric utility to be used for financing purposes.
- Prepared fair value rate base analyses for Northern Indiana Public Service Company for several electric rate proceedings. Valuation approaches used in this project included income, cost, and comparable sales approaches.
- Prepared an appraisal of a fleet of fossil generating assets for a large electric utility to establish the value of assets transferred from utility property.
- Conducted due diligence on an electric transmission and distribution system as part of a buy-side due diligence team.
- Provided analytical support for and prepared appraisal reports of generation assets to be used in ad valorem tax disputes.
- Provided analytical support and prepared testimony regarding the valuation of electric distribution system assets in five communities in a condemnation proceeding.
- Prepared feasibility reports analyzing the expected net benefits resulting from municipal ownership of investor-owned utility operations.
- Prepared independent analyses of proposal for the proposed government condemnation of the investor-owned utilities in Maine and the formation of a public power district.
- Valued purchase power agreements in the transfer of assets to a deregulated electric market.

STRATEGIC AND FINANCIAL ADVISORY SERVICES

Have assisted several clients across North America with analytically-based strategic planning, due diligence, and financial advisory services.

Representative projects include:

- Preparation of feasibility studies for bond issuances for municipal and district steam clients.
- Assisted in the development of a generation strategy for an electric utility. Analyzed various NERC regions to identify potential market entry points. Evaluated potential competitors and alliance partners. Assisted in the development of gas and electric price forecasts. Developed a framework for the implementation of a risk management program.
- Assisted clients in identifying potential joint venture opportunities and alliance partners. Contacted interviewed and evaluated potential alliance candidates based on company-established criteria for several LDCs and marketing companies. Worked with several LDCs and unregulated marketing companies to establish alliances to enter into the retail energy market. Prepared testimony in support of several merger cases and participated in the regulatory process to obtain approval for these mergers.
- Assisted clients in several buy-side due diligence efforts, providing regulatory insight and developing valuation recommendations for acquisitions of both electric and gas properties.

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arizona Corporation Commission				
UNS Electric	11/22	UNS Electric	Docket No. E-04204A-15-0251	Return on Equity
Tucson Electric Power Company	6/22	Tucson Electric Power Company	Docket No. G-01933A-22-0107	Return on Equity
Southwest Gas Corporation	12/21	Southwest Gas Corporation	Docket No. G-01551A-21-0368	Return on Equity
Arizona Public Service Company	10/19	Arizona Public Service Company	Docket No. E-01345A-19-0236	Return on Equity
Tucson Electric Power Company	04/19	Tucson Electric Power Company	Docket No. E-01933A-19-0028	Return on Equity
Tucson Electric Power Company	11/15	Tucson Electric Power Company	Docket No. E-01933A-15-0322	Return on Equity
UNS Electric	05/15	UNS Electric	Docket No. E-04204A-15-0142	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
UNS Electric	12/12	UNS Electric	Docket No. E-04204A-12-0504	Return on Equity
Arkansas Public Service Commission				
Oklahoma Gas and Electric Co	10/21	Oklahoma Gas and Electric Co	Docket No. D-18-046-FR	Return on Equity
Arkansas Oklahoma Gas Corporation	10/13	Arkansas Oklahoma Gas Corporation	Docket No. 13-078-U	Return on Equity
California Public Utilities Commission				
PacifiCorp, d/b/a Pacific Power	5/22	PacifiCorp, d/b/a Pacific Power	Docket No. A-22-05-006	Return on Equity
San Jose Water Company	05/21	San Jose Water Company	A2105004	Return on Equity
Colorado Public Utilities Commission				
Public Service Company of Colorado	11/22	Public Service Company of Colorado	Docket No. 22AL-0530E	Return on Equity
Public Service Company of Colorado	01/22	Public Service Company of Colorado	Docket No. 22AL-0046G	Return on Equity
Public Service Company of Colorado	07/21	Public Service Company of Colorado	21AL-0317E	Return on Equity
Public Service Company of Colorado	02/20	Public Service Company of Colorado	20AL-0049G	Return on Equity
Public Service Company of Colorado	05/19	Public Service Company of Colorado	19AL-0268E	Return on Equity
Public Service Company of Colorado	01/19	Public Service Company of Colorado	19AL-0063ST	Return on Equity
Atmos Energy Corporation	05/15	Atmos Energy Corporation	Docket No. 15AL-0299G	Return on Equity
Atmos Energy Corporation	04/14	Atmos Energy Corporation	Docket No. 14AL-0300G	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Atmos Energy Corporation	05/13	Atmos Energy Corporation	Docket No. 13AL-0496G	Return on Equity
Connecticut Public Utilities Regulatory Authority				
United Illuminating	09/22	United Illuminating	Docket No. 22-08-08	Return on Equity
United Illuminating	05/21	United Illuminating	Docket No. 17-12-03RE11	Return on Equity
Connecticut Water Company	01/21	Connecticut Water Company	Docket No. 20-12-30	Return on Equity
Connecticut Natural Gas Corporation	06/18	Connecticut Natural Gas Corporation	Docket No. 18-05-16	Return on Equity
Yankee Gas Services Co. d/b/a Eversource Energy	06/18	Yankee Gas Services Co. d/b/a Eversource Energy	Docket No. 18-05-10	Return on Equity
The Southern Connecticut Gas Company	06/17	The Southern Connecticut Gas Company	Docket No. 17-05-42	Return on Equity
The United Illuminating Company	07/16	The United Illuminating Company	Docket No. 16-06-04	Return on Equity
Federal Energy Regulatory Commission				
Sea Robin Pipeline	12/22	Sea Robin Pipeline	Docket No. RP22-___	Return on Equity
Northern Natural Gas Company	07/22	Northern Natural Gas Company	Docket No. RP22-___	Return on Equity
Transwestern Pipeline Company, LLC	07/22	Transwestern Pipeline Company, LLC	Docket No. RP22-___	Return on Equity
Florida Gas Transmission	02/21	Florida Gas Transmission	Docket No. RP21-441	Return on Equity
TransCanyon	01/21	TransCanyon	Docket No. ER21-1065	Return on Equity
Duke Energy	12/20	Duke Energy	Docket No. EL21-9-000	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Wisconsin Electric Power Company	08/20	Wisconsin Electric Power Company	Docket No. EL20-57-000	Return on Equity
Panhandle Eastern Pipe Line Company, LP	10/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-78-000 RP19-78-001	Return on Equity
Panhandle Eastern Pipe Line Company, LP	08/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-1523	Return on Equity
Sea Robin Pipeline Company LLC	11/18	Sea Robin Pipeline Company LLC	Docket# RP19-352-000	Return on Equity
Tallgrass Interstate Gas Transmission	10/15	Tallgrass Interstate Gas Transmission	RP16-137	Return on Equity
Idaho Public Utilities Commission				
Intermountain Gas Co	12/22	Intermountain Gas Co	C-INT-G-22-07	Return on Equity
PacifiCorp d/b/a Rocky Mountain Power	05/21	PacifiCorp d/b/a Rocky Mountain Power	Case No. PAC-E-21-07	Return on Equity
Illinois Commerce Commission				
Peoples Gas Light & Coke Company	01/23	Peoples Gas Light & Coke Company	D-23-0069	Return on Equity
North Shore Gas Company	01/23	North Shore Gas Company	D-23-0068	Return on Equity
Illinois American Water	02/22	Illinois American Water	Docket No. 22-0210	Return on Equity
North Shore Gas Company	02/21	North Shore Gas Company	No. 20-0810	Return on Equity
Indiana Utility Regulatory Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Indiana American Water Company	03/23	Indiana and Michigan American Water Company	IURC Cause No. 45870	Return on Equity
Indiana Michigan Power Co.	07/21	Indiana Michigan Power Co.	IURC Cause No. 45576	Return on Equity
Indiana Gas Company Inc.	12/20	Indiana Gas Company Inc.	IURC Cause No. 45468	Return on Equity
Southern Indiana Gas and Electric Company	10/20	Southern Indiana Gas and Electric Company	IURC Cause No. 45447	Return on Equity
Indiana and Michigan American Water Company	09/18	Indiana and Michigan American Water Company	IURC Cause No. 45142	Return on Equity
Indianapolis Power and Light Company	12/17	Indianapolis Power and Light Company	Cause No. 45029	Fair Value
Northern Indiana Public Service Company	09/17	Northern Indiana Public Service Company	Cause No. 44988	Fair Value
Indianapolis Power and Light Company	12/16	Indianapolis Power and Light Company	Cause No.44893	Fair Value
Northern Indiana Public Service Company	10/15	Northern Indiana Public Service Company	Cause No. 44688	Fair Value
Indianapolis Power and Light Company	09/15	Indianapolis Power and Light Company	Cause No. 44576 Cause No. 44602	Fair Value
Kokomo Gas and Fuel Company	09/10	Kokomo Gas and Fuel Company	Cause No. 43942	Fair Value
Northern Indiana Fuel and Light Company, Inc.	09/10	Northern Indiana Fuel and Light Company, Inc.	Cause No. 43943	Fair Value
Iowa Department of Commerce Utilities Board				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
MidAmerican Energy Company	06/23	MidAmerican Energy Company	Docket No. RPU-2023-___	Return on Equity
MidAmerican Energy Company	01/22	MidAmerican Energy Company	Docket No. RPU-2022-0001	Return on Equity
Iowa-American Water Company	08/20	Iowa-American Water Company	Docket No. RPU-2020-0001	Return on Equity
Kansas Corporation Commission				
Evergy Kansas	04/23	Evergy Kansas	**Docket No. 23-_____-_____-RTS**	Return on Equity
Atmos Energy Corporation	08/15	Atmos Energy Corporation	Docket No. 16-ATMG-079-RTS	Return on Equity
Kentucky Public Service Commission				
Kentucky American Water Company	06/23	Kentucky American Water Company	Docket No. 2023-____	Return on Equity
Kentucky American Water Company	11/18	Kentucky American Water Company	Docket No. 2018-00358	Return on Equity
Maine Public Utilities Commission				
Central Maine Power	08/22	Central Maine Power	Docket No. 2022-00152	Return on Equity
Central Maine Power	10/18	Central Maine Power	Docket No. 2018-194	Return on Equity
Maryland Public Service Commission				
Maryland American Water Company	06/18	Maryland American Water Company	Case No. 9487	Return on Equity
Massachusetts Appellate Tax Board				
Hopkinton LNG Corporation	03/20	Hopkinton LNG Corporation	Docket No.	Valuation of LNG Facility

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
FirstLight Hydro Generating Company	06/17	FirstLight Hydro Generating Company	Docket No. F-325471 Docket No. F-325472 Docket No. F-325473 Docket No. F-325474	Valuation of Electric Generation Assets
Massachusetts Department of Public Utilities				
National Grid USA	11/20	Boston Gas Company	DPU 20-120	Return on Equity
Berkshire Gas Company	05/18	Berkshire Gas Company	DPU 18-40	Return on Equity
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
Michigan Public Service Commission				
Michigan Gas Utilities Corporation	03/23	Michigan Gas Utilities Corporation	Case No. U-21366	Return on Equity
Michigan Gas Utilities Corporation	03/21	Michigan Gas Utilities Corporation	Case No. U-20718	Return on Equity
Wisconsin Electric Power Company	12/11	Wisconsin Electric Power Company	Case No. U-16830	Return on Equity
Michigan Tax Tribunal				
New Covert Generating Co., LLC.	03/18	The Township of New Covert Michigan	MTT Docket No. 000248TT and 16-001888-TT	Valuation of Electric Generation Assets
Covert Township	07/14	New Covert Generating Co., LLC.	Docket No. 399578	Valuation of Electric Generation Assets
Minnesota Public Utilities Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Minnesota Energy Resources Corporation	11/22	Minnesota Energy Resources Corporation	Docket No. G011/GR-22-504	Return on Equity
CenterPoint Energy Resources	11/21	CenterPoint Energy Resources	D-G-008/GR-21-435	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/21	Allete, Inc. d/b/a Minnesota Power	D-E-015/GR-21-630	Return on Equity
Otter Tail Power Company	11/20	Otter Tail Power Company	E017/GR-20-719	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/19	Allete, Inc. d/b/a Minnesota Power	E015/GR-19-442	Return on Equity
CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	10/19	CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	G-008/GR-19-524	Return on Equity
Great Plains Natural Gas Co.	09/19	Great Plains Natural Gas Co.	Docket No. G004/GR-19-511	Return on Equity
Minnesota Energy Resources Corporation	10/17	Minnesota Energy Resources Corporation	Docket No. G011/GR-17-563	Return on Equity
Missouri Public Service Commission				
Ameren Missouri	08/22	Ameren Missouri	File No. ER-2022-0337	Return on Equity
Missouri American Water Company	07/22	Missouri American Water Company	Case No. WR-2022-0303 Case No. SR-2022-0304	Return on Equity
Evergy Missouri West	1/22	Evergy Missouri West	File No. ER-2022-0130	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Evergy Missouri Metro	1/22	Evergy Missouri Metro	File No. ER-2022-0129	Return on Equity
Ameren Missouri	03/21	Ameren Missouri	Docket No. ER-2021-0240 Docket No. GR-2021-0241	Return on Equity
Missouri American Water Company	06/20	Missouri American Water Company	Case No. WR-2020-0344 Case No. SR-2020-0345	Return on Equity
Missouri American Water Company	06/17	Missouri American Water Company	Case No. WR-17-0285 Case No. SR-17-0286	Return on Equity
Montana Public Service Commission				
Montana-Dakota Utilities Co.	11/22	Montana-Dakota Utilities Co.	D2022.11.099	Return on Equity
Montana-Dakota Utilities Co.	06/20	Montana-Dakota Utilities Co.	D2020.06.076	Return on Equity
Montana-Dakota Utilities Co.	09/18	Montana-Dakota Utilities Co.	D2018.9.60	Return on Equity
New Hampshire - Board of Tax and Land Appeals				
Liberty Utilities (Granite State Electric)	05/23	Liberty Utilities (Granite State Electric)	Docket No. DE 23-039	Return on Equity
Public Service Company of New Hampshire d/b/a Eversource Energy	11/19 12/19	Public Service Company of New Hampshire d/b/a Eversource Energy	Master Docket No. 28873-14-15-16-17PT	Valuation of Utility Property and Generating Assets
New Hampshire Public Utilities Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Public Service Company of New Hampshire	05/19	Public Service Company of New Hampshire	DE-19-057	Return on Equity
New Hampshire-Merrimack County Superior Court				
Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	04/18	Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	220-2012-CV-1100	Valuation of Utility Property
New Hampshire-Rockingham Superior Court				
Eversource Energy	05/18	Public Service Commission of New Hampshire	218-2016-CV-00899 218-2017-CV-00917	Valuation of Utility Property
New Jersey Board of Public Utilities				
New Jersey American Water Company, Inc.	01/22	New Jersey American Water Company, Inc.	WR22010019	Return on Equity
Public Service Electric and Gas Company	10/20	Public Service Electric and Gas Company	EO18101115	Return on Equity
New Jersey American Water Company, Inc.	12/19	New Jersey American Water Company, Inc.	WR19121516	Return on Equity
Public Service Electric and Gas Company	04/19	Public Service Electric and Gas Company	EO18060629 GO18060630	Return on Equity
Public Service Electric and Gas Company	02/18	Public Service Electric and Gas Company	GR17070776	Return on Equity
Public Service Electric and Gas Company	01/18	Public Service Electric and Gas Company	ER18010029 GR18010030	Return on Equity
New Mexico Public Regulation Commission				
Southwestern Public Service Company	07/19	Southwestern Public Service Company	19-00170-UT	Return on Equity
Southwestern Public Service Company	10/17	Southwestern Public Service Company	Case No. 17-00255-UT	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Southwestern Public Service Company	12/16	Southwestern Public Service Company	Case No. 16-00269-UT	Return on Equity
Southwestern Public Service Company	10/15	Southwestern Public Service Company	Case No. 15-00296-UT	Return on Equity
Southwestern Public Service Company	06/15	Southwestern Public Service Company	Case No. 15-00139-UT	Return on Equity
New York State Department of Public Service				
Liberty Utilities (New York Water)	5/23	Liberty Utilities (New York Water)	Case 23-____	Return on Equity
New York State Electric and Gas Company Rochester Gas and Electric	05/22	New York State Electric and Gas Company Rochester Gas and Electric	22-E-0317 22-G-0318 22-E-0319 22-G-0320	Return on Equity
Corning Natural Gas Corporation	07/21	Corning Natural Gas Corporation	Case No. 21-G-0394	Return on Equity
Central Hudson Gas and Electric Corporation	08/20	Central Hudson Gas and Electric Corporation	Electric 20-E-0428 Gas 20-G-0429	Return on Equity
Niagara Mohawk Power Corporation	07/20	National Grid USA	Case No. 20-E-0380 20-G-0381	Return on Equity
Corning Natural Gas Corporation	02/20	Corning Natural Gas Corporation	Case No. 20-G-0101	Return on Equity
New York State Electric and Gas Company Rochester Gas and Electric	05/19	New York State Electric and Gas Company Rochester Gas and Electric	19-E-0378 19-G-0379 19-E-0380 19-G-0381	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	04/19	Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	19-G-0309 19-G-0310	Return on Equity
Central Hudson Gas and Electric Corporation	07/17	Central Hudson Gas and Electric Corporation	Electric 17-E-0459 Gas 17-G-0460	Return on Equity
Niagara Mohawk Power Corporation	04/17	National Grid USA	Case No. 17-E-0238 17-G-0239	Return on Equity
Corning Natural Gas Corporation	06/16	Corning Natural Gas Corporation	Case No. 16-G-0369	Return on Equity
National Fuel Gas Company	04/16	National Fuel Gas Company	Case No. 16-G-0257	Return on Equity
KeySpan Energy Delivery	01/16	KeySpan Energy Delivery	Case No. 15-G-0058 Case No. 15-G-0059	Return on Equity
New York State Electric and Gas Company Rochester Gas and Electric	05/15	New York State Electric and Gas Company Rochester Gas and Electric	Case No. 15-E-0283 Case No. 15-G-0284 Case No. 15-E-0285 Case No. 15-G-0286	Return on Equity
North Dakota Public Service Commission				
Montana-Dakota Utilities Co.	05/22	Montana-Dakota Utilities Co.	C-PU-22-194	Return on Equity
Montana-Dakota Utilities Co.	08/20	Montana-Dakota Utilities Co.	C-PU-20-379	Return on Equity
Northern States Power Company	12/12	Northern States Power Company	C-PU-12-813	Return on Equity
Northern States Power Company	12/10	Northern States Power Company	C-PU-10-657	Return on Equity
Oklahoma Corporation Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Oklahoma Gas & Electric	12/21	Oklahoma Gas & Electric	Cause No. PUD 202100164	Return on Equity
Arkansas Oklahoma Gas Corporation	01/13	Arkansas Oklahoma Gas Corporation	Cause No. PUD 201200236	Return on Equity
Oregon Public Service Commission				
PacifiCorp d/b/a Pacific Power & Light	03/22	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-399	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	02/20	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-374	Return on Equity
Pennsylvania Public Utility Commission				
American Water Works Company Inc.	04/22	Pennsylvania-American Water Company	Docket No. R-2020-3031672 (water) Docket No. R-2020-3031673 (wastewater)	Return on Equity
American Water Works Company Inc.	04/20	Pennsylvania-American Water Company	Docket No. R-2020-3019369 (water) Docket No. R-2020-3019371 (wastewater)	Return on Equity
American Water Works Company Inc.	04/17	Pennsylvania-American Water Company	Docket No. R-2017-2595853	Return on Equity
South Dakota Public Utilities Commission				
MidAmerican Energy Company	05/22	MidAmerican Energy Company	D-NG22-005	Return on Equity
Northern States Power Company	06/14	Northern States Power Company	Docket No. EL14-058	Return on Equity
Texas Public Utility Commission				
Entergy Texas, Inc.	07/22	Entergy Texas, Inc.	D-53719	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Southwestern Public Service Commission	08/19	Southwestern Public Service Commission	Docket No. D-49831	Return on Equity
Southwestern Public Service Company	01/14	Southwestern Public Service Company	Docket No. 42004	Return on Equity
Utah Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	05/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20-035-04	Return on Equity
Virginia State Corporation Commission				
Virginia American Water Company, Inc.	11/21	Virginia American Water Company, Inc.	Docket No. PUR-2021-00255	Return on Equity
Virginia American Water Company, Inc.	11/18	Virginia American Water Company, Inc.	Docket No. PUR-2018-00175	Return on Equity
Washington Utilities Transportation Commission				
PacifiCorp d/b/a Pacific Power & Light	03/23	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-230172	Return on Equity
Cascade Natural Gas Corporation	06/20	Cascade Natural Gas Corporation	Docket No. UG-200568	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	12/19	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-191024	Return on Equity
Cascade Natural Gas Corporation	04/19	Cascade Natural Gas Corporation	Docket No. UG-190210	Return on Equity
West Virginia Public Service Commission				
West Virginia American Water Company	05/23	West Virginia American Water Company	Case No. 23-0383-W-42T	Return on Equity
West Virginia American Water Company	04/21	West Virginia American Water Company	Case No. 21-02369-W-42T	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
West Virginia American Water Company	04/18	West Virginia American Water Company	Case No. 18-0573-W-42T Case No. 18-0576-S-42T	Return on Equity
Wisconsin Public Service Commission				
Wisconsin Power and Light	05/23	Wisconsin Power and Light	Docket No. 6680-UR-124	Return on Equity
Wisconsin Electric Power Company and Wisconsin Gas LLC	04/22	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-110	Return on Equity
Wisconsin Public Service Corp.	04/22	Wisconsin Public Service Corp.	6690-UR-127	Return on Equity
Alliant Energy		Alliant Energy		Return on Equity
Wisconsin Electric Power Company and Wisconsin Gas LLC	03/19	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-109	Return on Equity
Wisconsin Public Service Corp.	03/19	Wisconsin Public Service Corp.	6690-UR-126	Return on Equity
Wyoming Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	02/23	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20000-633-ER-23	Return on Equity
PacifiCorp d/b/a Rocky Mountain Power	03/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20000-578-ER-20	Return on Equity
Montana-Dakota Utilities Co.	05/19	Montana-Dakota Utilities Co.	30013-351-GR-19	Return on Equity

CERTIFICATIONS/ACCREDITATIONS

Certified General Appraiser, licensed in the Commonwealth of Massachusetts and the State of New Hampshire

SUMMARY OF COE ANALYSES RESULTS

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.78%	9.69%	10.55%
90-Day Average	8.57%	9.47%	10.34%
180-Day Average	8.42%	9.32%	10.19%
Constant Growth Average	8.59%	9.49%	10.36%
	Median Low	Median	Median High
30-Day Average	8.87%	9.84%	10.44%
90-Day Average	8.53%	9.60%	10.27%
180-Day Average	8.31%	9.48%	10.05%
Constant Growth Average	8.57%	9.64%	10.25%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.66%	11.62%	11.55%
Bloomberg Beta	10.84%	10.75%	10.61%
Long-term Avg. Beta	10.47%	10.37%	10.20%
ECAPM			
Value Line Beta	11.87%	11.84%	11.79%
Bloomberg Beta	11.25%	11.18%	11.08%
Long-term Avg. Beta	10.98%	10.90%	10.77%
Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	10.74%	10.50%	10.13%

PROXY GROUP SCREENING DATA AND RESULTS

Company	Ticker	[1] Dividends	[2] S&P Credit Rating Between BBB- and AAA	[3] Covered by More Than 1 Analyst	[4] Positive Growth Rates from at least two sources (Value Line, Yahoo! First Call, and Zacks)	[5] % Regulated Operating Income > 70%	[6] % Regulated Gas Operating Income > 10%	[7] Announced Merger
Ameren Corporation	AEE	Yes	BBB+	Yes	Yes	100.00%	15.43%	No
Avista Corporation	AVA	Yes	BBB	Yes	Yes	100.00%	26.15%	No
Black Hills Corporation	BKH	Yes	BBB+	Yes	Yes	94.70%	50.09%	No
CenterPoint Energy, Inc.	CNP	Yes	BBB+	Yes	Yes	101.54%	45.49%	No
CMS Energy Corporation	CMS	Yes	BBB+	Yes	Yes	99.71%	34.20%	No
Consolidated Edison, Inc.	ED	Yes	A-	Yes	Yes	90.49%	27.63%	No
Eversource Energy	ES	Yes	A-	Yes	Yes	92.38%	14.65%	No
MGE Energy, Inc.	MGEE	Yes	AA-	Yes	Yes	72.55%	26.84%	No
NorthWestern Corporation	NWE	Yes	BBB	Yes	Yes	99.75%	15.51%	No
Sempra Energy	SRE	Yes	BBB+	Yes	Yes	74.47%	37.14%	No
Southern Company	SO	Yes	BBB+	Yes	Yes	94.89%	20.78%	No
Wisconsin Energy Corporation	WEC	Yes	A-	Yes	Yes	99.53%	46.01%	No
Xcel Energy Inc.	XEL	Yes	A-	Yes	Yes	100.00%	13.53%	No

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional
[3] Source: Yahoo! Finance and Zacks
[4] Source: Yahoo! Finance, Value Line Investment Survey, and Zacks
[5]-[6] Source: Form 10-K's for 2022, 2021, and 2020
[7] Source: S&P Capital IQ Pro Financial News Releases

30-DAY CONSTANT GROWTH DCF -- PSEG PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
Ameren Corporation	AEE	$2.52	$76.34	3.30%	3.41%	6.50%	6.20%	6.60%	6.43%	9.60%	9.84%	10.01%
Avista Corporation	AVA	$1.84	$32.31	5.69%	5.87%	6.00%	6.30%	6.30%	6.20%	11.86%	12.07%	12.17%
Black Hills Corporation	BKH	$2.50	$50.10	4.99%	5.08%	3.00%	5.40%	2.20%	3.53%	7.24%	8.61%	10.52%
CenterPoint Energy, Inc	CNP	$0.76	$27.31	2.78%	2.88%	6.50%	negative	7.50%	7.00%	9.37%	9.88%	10.39%
CMS Energy Corporation	CMS	$1.95	$53.82	3.62%	3.74%	6.50%	5.87%	7.50%	6.62%	9.60%	10.37%	11.26%
Consolidated Edison, Inc.	ED	$3.24	$87.47	3.70%	3.79%	6.00%	6.12%	2.00%	4.71%	5.74%	8.50%	9.94%
Eversource Energy	ES	$2.70	$56.56	4.77%	4.90%	6.50%	4.00%	5.00%	5.17%	8.87%	10.06%	11.43%
MGE Energy, Inc	MGEE	$1.71	$70.97	2.41%	2.48%	6.50%	5.40%	5.30%	5.73%	7.77%	8.21%	8.99%
NorthWestern Corporation	NWE	$2.56	$48.46	5.28%	5.39%	3.50%	4.08%	5.20%	4.26%	8.87%	9.65%	10.62%
Sempra Energy	SRE	$2.38	$69.16	3.44%	3.53%	6.50%	4.14%	5.00%	5.21%	7.65%	8.74%	10.05%
Southern Company	SO	$2.80	$66.50	4.21%	4.33%	6.50%	7.10%	4.00%	5.87%	8.29%	10.20%	11.46%
Wisconsin Energy Corporation	WEC	$3.12	$81.91	3.81%	3.92%	6.00%	5.70%	5.80%	5.83%	9.62%	9.75%	9.92%
Xcel Energy Inc.	XEL	$2.08	$58.29	3.57%	3.68%	6.00%	6.75%	6.30%	6.35%	9.68%	10.03%	10.44%
Mean				3.97%	4.08%	5.85%	5.59%	5.28%	5.61%	8.78%	9.69%	10.55%
Median				3.70%	3.79%	6.50%	5.79%	5.30%	5.83%	8.87%	9.84%	10.44%

Notes:
[1] Source: Bloomberg Professiona
[2] Source: Bloomberg Professional, equals 30-day average as of October 31, 202
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8]
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7

90-DAY CONSTANT GROWTH DCF -- PSEG PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
Ameren Corporation	AEE	$2.52	$79.74	3.16%	3.26%	6.50%	6.20%	6.60%	6.43%	9.46%	9.70%	9.86%
Avista Corporation	AVA	$1.84	$34.80	5.29%	5.45%	6.00%	6.30%	6.30%	6.20%	11.45%	11.65%	11.75%
Black Hills Corporation	BKH	$2.50	$54.84	4.56%	4.64%	3.00%	5.40%	2.20%	3.53%	6.81%	8.17%	10.08%
CenterPoint Energy, Inc	CNP	$0.76	$28.39	2.68%	2.77%	6.50%	negative	7.50%	7.00%	9.26%	9.77%	10.28%
CMS Energy Corporation	CMS	$1.95	$56.74	3.44%	3.55%	6.50%	5.87%	7.50%	6.62%	9.41%	10.17%	11.07%
Consolidated Edison, Inc.	ED	$3.24	$89.75	3.61%	3.70%	6.00%	6.12%	2.00%	4.71%	5.65%	8.40%	9.84%
Eversource Energy	ES	$2.70	$63.56	4.25%	4.36%	6.50%	4.00%	5.00%	5.17%	8.33%	9.52%	10.89%
MGE Energy, Inc	MGEE	$1.71	$74.51	2.30%	2.36%	6.50%	5.40%	5.30%	5.73%	7.66%	8.09%	8.87%
NorthWestern Corporation	NWE	$2.56	$51.80	4.94%	5.05%	3.50%	4.08%	5.20%	4.26%	8.53%	9.31%	10.27%
Sempra Energy	SRE	$2.38	$70.89	3.36%	3.44%	6.50%	4.14%	5.00%	5.21%	7.57%	8.66%	9.97%
Southern Company	SO	$2.80	$68.33	4.10%	4.22%	6.50%	7.10%	4.00%	5.87%	8.18%	10.08%	11.34%
Wisconsin Energy Corporation	WEC	$3.12	$85.32	3.66%	3.76%	6.00%	5.70%	5.80%	5.83%	9.46%	9.60%	9.77%
Xcel Energy Inc.	XEL	$2.08	$59.42	3.50%	3.61%	6.00%	6.75%	6.30%	6.35%	9.61%	9.96%	10.37%
Mean				3.76%	3.86%	5.85%	5.59%	5.28%	5.61%	8.57%	9.47%	10.34%
Median				3.61%	3.70%	6.50%	5.79%	5.30%	5.83%	8.53%	9.60%	10.27%

Notes:
[1] Source: Bloomberg Professiona
[2] Source: Bloomberg Professional, equals 90-day average as of October 31, 202
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8]
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7

180-DAY CONSTANT GROWTH DCF -- PSEG PROXY GROUP

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Value Line EPS Growth	[6] Yahoo! Finance EPS Growth	[7] Zacks EPS Growth	[8] Average Growth Rate	[9] Low ROE	[10] Mean ROE	[11] High ROE
Ameren Corporation	AEE	$2.52	$81.85	3.08%	3.18%	6.50%	6.20%	6.60%	6.43%	9.37%	9.61%	9.78%
Avista Corporation	AVA	$1.84	$37.99	4.84%	4.99%	6.00%	6.30%	6.30%	6.20%	10.99%	11.19%	11.30%
Black Hills Corporation	BKH	$2.50	$58.37	4.28%	4.36%	3.00%	5.40%	2.20%	3.53%	6.53%	7.89%	9.80%
CenterPoint Energy, Inc	CNP	$0.76	$28.64	2.65%	2.75%	6.50%	negative	7.50%	7.00%	9.24%	9.75%	10.25%
CMS Energy Corporation	CMS	$1.95	$58.15	3.35%	3.46%	6.50%	5.87%	7.50%	6.62%	9.32%	10.09%	10.98%
Consolidated Edison, Inc.	ED	$3.24	$91.57	3.54%	3.62%	6.00%	6.12%	2.00%	4.71%	5.57%	8.33%	9.77%
Eversource Energy	ES	$2.70	$68.77	3.93%	4.03%	6.50%	4.00%	5.00%	5.17%	8.00%	9.19%	10.55%
MGE Energy, Inc	MGEE	$1.71	$74.51	2.29%	2.36%	6.50%	5.40%	5.30%	5.73%	7.66%	8.09%	8.87%
NorthWestern Corporation	NWE	$2.56	$54.16	4.73%	4.83%	3.50%	4.08%	5.20%	4.26%	8.31%	9.09%	10.05%
Sempra Energy	SRE	$2.38	$72.30	3.29%	3.38%	6.50%	4.14%	5.00%	5.21%	7.50%	8.59%	9.90%
Southern Company	SO	$2.80	$68.45	4.09%	4.21%	6.50%	7.10%	4.00%	5.87%	8.17%	10.08%	11.34%
Wisconsin Energy Corporation	WEC	$3.12	$88.14	3.54%	3.64%	6.00%	5.70%	5.80%	5.83%	9.34%	9.48%	9.65%
Xcel Energy Inc.	XEL	$2.08	$62.43	3.33%	3.44%	6.00%	6.75%	6.30%	6.35%	9.43%	9.79%	10.19%
Mean				3.61%	3.71%	5.85%	5.59%	5.28%	5.61%	8.42%	9.32%	10.19%
Median				3.54%	3.62%	6.50%	5.79%	5.30%	5.83%	8.31%	9.48%	10.05%

Notes:
[1] Source: Bloomberg Professiona
[2] Source: Bloomberg Professional, equals 180-day average as of October 31, 202
[3] Equals [1] / [2
[4] Equals [3] x (1 + 0.50 x [8]
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7]
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VL BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
Ameren Corporation	AEE	4.84%	0.85	12.49%	7.64%	11.34%	11.63%
Avista Corporation	AVA	4.84%	0.90	12.49%	7.64%	11.72%	11.91%
Black Hills Corporation	BKH	4.84%	1.00	12.49%	7.64%	12.49%	12.49%
CenterPoint Energy, Inc.	CNP	4.84%	1.10	12.49%	7.64%	13.25%	13.06%
CMS Energy Corporation	CMS	4.84%	0.80	12.49%	7.64%	10.96%	11.34%
Consolidated Edison, Inc.	ED	4.84%	0.80	12.49%	7.64%	10.96%	11.34%
Eversource Energy	ES	4.84%	0.90	12.49%	7.64%	11.72%	11.91%
MGE Energy, Inc.	MGEE	4.84%	0.75	12.49%	7.64%	10.58%	11.05%
NorthWestern Corporation	NWE	4.84%	0.95	12.49%	7.64%	12.10%	12.20%
Sempra Energy	SRE	4.84%	1.00	12.49%	7.64%	12.49%	12.49%
Southern Company	SO	4.84%	0.90	12.49%	7.64%	11.72%	11.91%
Wisconsin Energy Corporation	WEC	4.84%	0.80	12.49%	7.64%	10.96%	11.34%
Xcel Energy Inc.	XEL	4.84%	0.85	12.49%	7.64%	11.34%	11.63%
Mean						11.66%	11.87%
Median						11.72%	11.91%

Notes:
[1] Source: Bloomberg Professional, as of October 31, 2023
[2] Source: Value Line
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VL BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q1 2024 - Q1 2025)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
Ameren Corporation	AEE	4.44%	0.85	12.49%	8.05%	11.28%	11.58%
Avista Corporation	AVA	4.44%	0.90	12.49%	8.05%	11.68%	11.88%
Black Hills Corporation	BKH	4.44%	1.00	12.49%	8.05%	12.49%	12.49%
CenterPoint Energy, Inc.	CNP	4.44%	1.10	12.49%	8.05%	13.29%	13.09%
CMS Energy Corporation	CMS	4.44%	0.80	12.49%	8.05%	10.88%	11.28%
Consolidated Edison, Inc.	ED	4.44%	0.80	12.49%	8.05%	10.88%	11.28%
Eversource Energy	ES	4.44%	0.90	12.49%	8.05%	11.68%	11.88%
MGE Energy, Inc.	MGEE	4.44%	0.75	12.49%	8.05%	10.48%	10.98%
NorthWestern Corporation	NWE	4.44%	0.95	12.49%	8.05%	12.08%	12.19%
Sempra Energy	SRE	4.44%	1.00	12.49%	8.05%	12.49%	12.49%
Southern Company	SO	4.44%	0.90	12.49%	8.05%	11.68%	11.88%
Wisconsin Energy Corporation	WEC	4.44%	0.80	12.49%	8.05%	10.88%	11.28%
Xcel Energy Inc.	XEL	4.44%	0.85	12.49%	8.05%	11.28%	11.58%
Mean						11.62%	11.84%
Median						11.68%	11.88%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 11, November 1, 2023, at 2
[2] Source: Value Line
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VL BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Projected 30-year U.S. Treasury bond yield (2025 - 2029)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
Ameren Corporation	AEE	3.80%	0.85	12.49%	8.69%	11.18%	11.51%
Avista Corporation	AVA	3.80%	0.90	12.49%	8.69%	11.62%	11.84%
Black Hills Corporation	BKH	3.80%	1.00	12.49%	8.69%	12.49%	12.49%
CenterPoint Energy, Inc.	CNP	3.80%	1.10	12.49%	8.69%	13.36%	13.14%
CMS Energy Corporation	CMS	3.80%	0.80	12.49%	8.69%	10.75%	11.18%
Consolidated Edison, Inc.	ED	3.80%	0.80	12.49%	8.69%	10.75%	11.18%
Eversource Energy	ES	3.80%	0.90	12.49%	8.69%	11.62%	11.84%
MGE Energy, Inc.	MGEE	3.80%	0.75	12.49%	8.69%	10.32%	10.86%
NorthWestern Corporation	NWE	3.80%	0.95	12.49%	8.69%	12.05%	12.16%
Sempra Energy	SRE	3.80%	1.00	12.49%	8.69%	12.49%	12.49%
Southern Company	SO	3.80%	0.90	12.49%	8.69%	11.62%	11.84%
Wisconsin Energy Corporation	WEC	3.80%	0.80	12.49%	8.69%	10.75%	11.18%
Xcel Energy Inc.	XEL	3.80%	0.85	12.49%	8.69%	11.18%	11.51%
Mean						11.55%	11.79%
Median						11.62%	11.84%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14
[2] Source: Value Line
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & BLOOMBERG BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Current 30-day average of 30-year U.S. Treasury bond yield	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
Ameren Corporation	AEE	4.84%	0.75	12.49%	7.64%	10.59%	11.06%
Avista Corporation	AVA	4.84%	0.75	12.49%	7.64%	10.59%	11.07%
Black Hills Corporation	BKH	4.84%	0.90	12.49%	7.64%	11.72%	11.91%
CenterPoint Energy, Inc.	CNP	4.84%	0.98	12.49%	7.64%	12.35%	12.38%
CMS Energy Corporation	CMS	4.84%	0.75	12.49%	7.64%	10.55%	11.03%
Consolidated Edison, Inc.	ED	4.84%	0.63	12.49%	7.64%	9.69%	10.39%
Eversource Energy	ES	4.84%	0.80	12.49%	7.64%	10.98%	11.36%
MGE Energy, Inc.	MGEE	4.84%	0.68	12.49%	7.64%	10.04%	10.65%
NorthWestern Corporation	NWE	4.84%	0.86	12.49%	7.64%	11.40%	11.67%
Sempra Energy	SRE	4.84%	0.84	12.49%	7.64%	11.30%	11.60%
Southern Company	SO	4.84%	0.77	12.49%	7.64%	10.75%	11.19%
Wisconsin Energy Corporation	WEC	4.84%	0.73	12.49%	7.64%	10.46%	10.97%
Xcel Energy Inc.	XEL	4.84%	0.74	12.49%	7.64%	10.48%	10.98%
Mean						10.84%	11.25%
Median						10.59%	11.07%

Notes:
[1] Source: Bloomberg Professional, as of October 31, 2023
[2] Source: Bloomberg Professional, based on 10-year weekly returns
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Near-term projected 30-year U.S. Treasury bond yield (Q1 2024 - Q1 2025)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
Ameren Corporation	AEE	4.44%	0.75	12.49%	8.05%	10.49%	10.99%
Avista Corporation	AVA	4.44%	0.75	12.49%	8.05%	10.49%	10.99%
Black Hills Corporation	BKH	4.44%	0.90	12.49%	8.05%	11.68%	11.88%
CenterPoint Energy, Inc.	CNP	4.44%	0.98	12.49%	8.05%	12.34%	12.38%
CMS Energy Corporation	CMS	4.44%	0.75	12.49%	8.05%	10.45%	10.96%
Consolidated Edison, Inc.	ED	4.44%	0.63	12.49%	8.05%	9.54%	10.28%
Eversource Energy	ES	4.44%	0.80	12.49%	8.05%	10.90%	11.30%
MGE Energy, Inc.	MGEE	4.44%	0.68	12.49%	8.05%	9.91%	10.55%
NorthWestern Corporation	NWE	4.44%	0.86	12.49%	8.05%	11.34%	11.63%
Sempra Energy	SRE	4.44%	0.84	12.49%	8.05%	11.24%	11.55%
Southern Company	SO	4.44%	0.77	12.49%	8.05%	10.66%	11.12%
Wisconsin Energy Corporation	WEC	4.44%	0.73	12.49%	8.05%	10.35%	10.89%
Xcel Energy Inc.	XEL	4.44%	0.74	12.49%	8.05%	10.37%	10.90%
Mean						10.75%	11.18%
Median						10.49%	10.99%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 11, November 1, 2023, at 2
[2] Source: Bloomberg Professional, based on 10-year weekly returns
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Projected 30-year U.S. Treasury bond yield (2025 - 2029)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
Ameren Corporation	AEE	3.80%	0.75	12.49%	8.69%	10.33%	10.87%
Avista Corporation	AVA	3.80%	0.75	12.49%	8.69%	10.33%	10.87%
Black Hills Corporation	BKH	3.80%	0.90	12.49%	8.69%	11.61%	11.83%
CenterPoint Energy, Inc.	CNP	3.80%	0.98	12.49%	8.69%	12.33%	12.37%
CMS Energy Corporation	CMS	3.80%	0.75	12.49%	8.69%	10.28%	10.83%
Consolidated Edison, Inc.	ED	3.80%	0.63	12.49%	8.69%	9.30%	10.10%
Eversource Energy	ES	3.80%	0.80	12.49%	8.69%	10.77%	11.20%
MGE Energy, Inc.	MGEE	3.80%	0.68	12.49%	8.69%	9.70%	10.40%
NorthWestern Corporation	NWE	3.80%	0.86	12.49%	8.69%	11.25%	11.56%
Sempra Energy	SRE	3.80%	0.84	12.49%	8.69%	11.14%	11.48%
Southern Company	SO	3.80%	0.77	12.49%	8.69%	10.52%	11.01%
Wisconsin Energy Corporation	WEC	3.80%	0.73	12.49%	8.69%	10.18%	10.76%
Xcel Energy Inc.	XEL	3.80%	0.74	12.49%	8.69%	10.20%	10.77%
Mean						10.61%	11.08%
Median						10.33%	10.87%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14
[2] Source: Bloomberg Professional, based on 10-year weekly returns
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Current 30-day average of 30-year U.S. Treasury bond yield	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
Ameren Corporation	AEE	4.84%	0.73	12.49%	7.64%	10.39%	10.91%
Avista Corporation	AVA	4.84%	0.79	12.49%	7.64%	10.84%	11.25%
Black Hills Corporation	BKH	4.84%	0.89	12.49%	7.64%	11.65%	11.86%
CenterPoint Energy, Inc.	CNP	4.84%	0.92	12.49%	7.64%	11.88%	12.03%
CMS Energy Corporation	CMS	4.84%	0.69	12.49%	7.64%	10.12%	10.71%
Consolidated Edison, Inc.	ED	4.84%	0.60	12.49%	7.64%	9.39%	10.17%
Eversource Energy	ES	4.84%	0.74	12.49%	7.64%	10.53%	11.02%
MGE Energy, Inc.	MGEE	4.84%	0.69	12.49%	7.64%	10.08%	10.68%
NorthWestern Corporation	NWE	4.84%	0.75	12.49%	7.64%	10.54%	11.03%
Sempra Energy	SRE	4.84%	0.83	12.49%	7.64%	11.15%	11.48%
Southern Company	SO	4.84%	0.66	12.49%	7.64%	9.85%	10.51%
Wisconsin Energy Corporation	WEC	4.84%	0.66	12.49%	7.64%	9.89%	10.54%
Xcel Energy Inc.	XEL	4.84%	0.66	12.49%	7.64%	9.85%	10.51%
Mean						10.47%	10.98%
Median						10.39%	10.91%

Notes:
[1] Source: Bloomberg Professional, as of October 31, 2023
[2] Source: LT Beta
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Near-term projected 30-year U.S. Treasury bond yield (Q1 2024 - Q1 2025)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
Ameren Corporation	AEE	4.44%	0.73	12.49%	8.05%	10.27%	10.83%
Avista Corporation	AVA	4.44%	0.79	12.49%	8.05%	10.76%	11.19%
Black Hills Corporation	BKH	4.44%	0.89	12.49%	8.05%	11.60%	11.82%
CenterPoint Energy, Inc.	CNP	4.44%	0.92	12.49%	8.05%	11.84%	12.00%
CMS Energy Corporation	CMS	4.44%	0.69	12.49%	8.05%	9.99%	10.62%
Consolidated Edison, Inc.	ED	4.44%	0.60	12.49%	8.05%	9.23%	10.04%
Eversource Energy	ES	4.44%	0.74	12.49%	8.05%	10.42%	10.94%
MGE Energy, Inc.	MGEE	4.44%	0.69	12.49%	8.05%	9.95%	10.59%
NorthWestern Corporation	NWE	4.44%	0.75	12.49%	8.05%	10.43%	10.95%
Sempra Energy	SRE	4.44%	0.83	12.49%	8.05%	11.08%	11.43%
Southern Company	SO	4.44%	0.66	12.49%	8.05%	9.71%	10.40%
Wisconsin Energy Corporation	WEC	4.44%	0.66	12.49%	8.05%	9.75%	10.43%
Xcel Energy Inc.	XEL	4.44%	0.66	12.49%	8.05%	9.71%	10.40%
Mean						10.37%	10.90%
Median						10.27%	10.83%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 11, November 1, 2023, at 2
[2] Source: LT Beta
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT BETA

$K = Rf + \beta (Rm - Rf)$
$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$

Company	Ticker	[1] Projected 30-year U.S. Treasury bond yield (2025 - 2029)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
Ameren Corporation	AEE	3.80%	0.73	12.49%	8.69%	10.10%	10.70%
Avista Corporation	AVA	3.80%	0.79	12.49%	8.69%	10.62%	11.09%
Black Hills Corporation	BKH	3.80%	0.89	12.49%	8.69%	11.53%	11.77%
CenterPoint Energy, Inc.	CNP	3.80%	0.92	12.49%	8.69%	11.79%	11.97%
CMS Energy Corporation	CMS	3.80%	0.69	12.49%	8.69%	9.79%	10.47%
Consolidated Edison, Inc.	ED	3.80%	0.60	12.49%	8.69%	8.97%	9.85%
Eversource Energy	ES	3.80%	0.74	12.49%	8.69%	10.26%	10.82%
MGE Energy, Inc.	MGEE	3.80%	0.69	12.49%	8.69%	9.75%	10.43%
NorthWestern Corporation	NWE	3.80%	0.75	12.49%	8.69%	10.27%	10.83%
Sempra Energy	SRE	3.80%	0.83	12.49%	8.69%	10.97%	11.35%
Southern Company	SO	3.80%	0.66	12.49%	8.69%	9.49%	10.24%
Wisconsin Energy Corporation	WEC	3.80%	0.66	12.49%	8.69%	9.53%	10.27%
Xcel Energy Inc.	XEL	3.80%	0.66	12.49%	8.69%	9.49%	10.24%
Mean						10.20%	10.77%
Median						10.10%	10.70%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14
[2] Source: LT Beta
[3] Source: Market Return
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

HISTORICAL BETA - 2013 - 2022

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020	12/31/2021	12/31/2022	Average
Ameren Corporation	AEE	0.80	0.75	0.75	0.65	0.70	0.55	0.55	0.85	0.80	0.85	0.73
Avista Corporation	AVA	0.75	0.80	0.80	0.70	0.75	0.65	0.60	0.95	0.95	0.90	0.79
Black Hills Corporation	BKH	0.90	0.90	0.90	0.90	0.90	0.75	0.70	1.00	1.00	0.95	0.89
CenterPoint Energy, Inc.	CNP	0.80	0.75	0.85	0.85	0.90	0.85	0.80	1.15	1.15	1.10	0.92
CMS Energy Corporation	CMS	0.70	0.70	0.75	0.65	0.65	0.55	0.50	0.80	0.80	0.80	0.69
Consolidated Edison, Inc.	ED	0.60	0.60	0.60	0.55	0.50	0.40	0.45	0.75	0.75	0.75	0.60
Eversource Energy	ES			0.75	0.70	0.65	0.60	0.55	0.90	0.90	0.90	0.74
MGE Energy, Inc.	MGEE	0.65	0.70	0.75	0.70	0.75	0.60	0.55	0.70	0.75	0.70	0.69
NorthWestern Corporation	NWE	0.70	0.70	0.70	0.70	0.70	0.55	0.60	0.95	0.95	0.90	0.75
Sempra Energy	SRE	0.75	0.75	0.80	0.80	0.80	0.75	0.70	1.00	0.95	0.95	0.83
Southern Company	SO	0.55	0.55	0.60	0.55	0.55	0.50	0.50	0.90	0.95	0.90	0.66
Wisconsin Energy Corporation	WEC	0.65	0.65	0.70	0.60	0.60	0.50	0.50	0.80	0.80	0.80	0.66
Xcel Energy Inc.	XEL	0.65	0.65	0.65	0.60	0.60	0.50	0.50	0.80	0.80	0.80	0.66
Mean		0.71	0.71	0.74	0.69	0.70	0.60	0.58	0.89	0.89	0.87	0.74

Notes:
[1] Value Line, dated December 26, 2013.
[2] Value Line, dated December 31, 2014.
[3] Value Line, dated December 30, 2015.
[4] Value Line, dated December 29, 2016.
[5] Value Line, dated December 28, 2017.
[6] Value Line, dated December 27, 2018.
[7] Value Line, dated December 26, 2019.
[8] Value Line, dated December 30, 2020.
[9] Value Line, dated December 29, 2021.
[10] Value Line, dated December 30, 2022.
[11] Average ([1] - [10])

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[1] Estimated Weighted Average Dividend Yield	1.88%
[2] Estimated Weighted Average Long-Term Growth Rate	10.51%
[3] S&P 500 Estimated Required Market Return	12.49%

STANDARD AND POOR'S 500 INDEX

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Bloomberg Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	324.36	90.24	29,270.43	0.11%	5.54%	0.01%	11.00%	0.01%
American Express Co	AXP	728.75	146.03	106,418.78	0.40%	1.64%	0.01%	13.94%	0.06%
Verizon Communications Inc	VZ	4,204.10	35.13	147,690.10		7.57%			
Broadcom Inc	AVGO	412.74	841.37	347,263.69	1.31%	2.19%	0.03%	12.40%	0.16%
Boeing Co/The	BA	604.98	186.82	113,021.80					
Caterpillar Inc	CAT	510.14	226.05	115,317.83	0.44%	2.30%	0.01%	20.00%	0.09%
JPMorgan Chase & Co	JPM	2,906.09	139.06	404,120.18	1.52%	3.02%	0.05%	1.00%	0.02%
Chevron Corp	CVX	1,867.25	145.73	272,113.61	1.03%	4.14%	0.04%	7.27%	0.07%
Coca-Cola Co/The	KO	4,323.41	56.49	244,229.66	0.92%	3.26%	0.03%	7.02%	0.06%
AbbVie Inc	ABBV	1,765.05	141.18	249,189.34	0.94%	4.39%	0.04%	6.50%	0.06%
Walt Disney Co/The	DIS	1,829.78	81.59	149,291.67				22.27%	
FleetCor Technologies Inc	FLT	73.96	225.17	16,652.90	0.06%			12.40%	0.01%
Extra Space Storage Inc	EXR	211.28	103.59	21,886.18	0.08%	2.36%	0.00%	0.61%	0.00%
Exxon Mobil Corp	XOM	3,962.92	105.85	419,474.87	1.58%	3.59%	0.06%	16.80%	0.27%
Phillips 66	PSX	445.29	114.07	50,794.00	0.19%	3.68%	0.01%	15.21%	0.03%
General Electric Co	GE	1,088.39	108.63	118,231.37	0.45%	0.29%	0.00%	7.00%	0.03%
HP Inc	HPQ	988.27	26.33	26,021.12	0.10%	3.99%	0.00%	0.50%	0.00%
Home Depot Inc/The	HD	1,000.07	284.69	284,708.79	1.07%	2.94%	0.03%	3.32%	0.04%
Monolithic Power Systems Inc	MPWR	47.91	441.74	21,164.21	0.08%	0.91%	0.00%	8.00%	0.01%
International Business Machines Corp	IBM	913.12	144.64	132,073.53	0.50%	4.59%	0.02%	2.77%	0.01%
Johnson & Johnson	JNJ	2,407.28	148.34	357,095.77	1.35%	3.21%	0.04%	3.86%	0.05%
Lululemon Athletica Inc	LULU	121.43	393.48	47,778.31	0.18%			16.00%	0.03%
McDonald's Corp	MCD	728.76	262.17	191,059.80	0.72%	2.55%	0.02%	9.67%	0.07%
Merck & Co Inc	MRK	2,537.52	102.70	260,603.41	0.98%	2.84%	0.03%	8.51%	0.08%
3M Co	MMM	552.32	90.95	50,233.23	0.19%	6.60%	0.01%	4.00%	0.01%
American Water Works Co Inc	AWK	194.67	117.65	22,902.81	0.09%	2.41%	0.00%	8.00%	0.01%
Bank of America Corp	BAC	7,913.73	26.34	208,447.70		3.64%			
Pfizer Inc	PFE	5,645.96	30.56	172,540.54		5.37%		50.40%	
Procter & Gamble Co/The	PG	2,356.89	150.03	353,603.61	1.33%	2.51%	0.03%	7.51%	0.10%
AT&T Inc	T	7,150.02	15.40	110,110.31	0.42%	7.21%	0.03%	2.44%	0.01%
Travelers Cos Inc/The	TRV	228.40	167.44	38,243.13	0.14%	2.39%	0.00%	15.33%	0.02%
RTX Corp	RTX	1,437.90	81.39	117,030.76	0.44%	2.90%	0.01%	8.61%	0.04%
Analog Devices Inc	ADI	498.31	157.33	78,399.74	0.30%	2.19%	0.01%	6.50%	0.02%
Walmart Inc	WMT	2,691.56	163.41	439,828.47	1.66%	1.40%	0.02%	8.00%	0.13%
Cisco Systems Inc	CSCO	4,050.54	52.13	211,154.75	0.80%	2.99%	0.02%	7.50%	0.06%
Intel Corp	INTC	4,216.00	36.50	153,884.00		1.37%		-1.82%	
General Motors Co	GM	1,369.48	28.20	38,619.36	0.15%	1.28%	0.00%	0.36%	0.00%
Microsoft Corp	MSFT	7,432.26	338.11	2,512,922.10	9.48%	0.89%	0.08%	15.72%	1.49%
Dollar General Corp	DG	219.48	119.04	26,126.42		1.98%		-2.50%	
Cigna Group/The	CI	295.98	309.20	91,517.02	0.35%	1.59%	0.01%	9.80%	0.03%
Kinder Morgan Inc	KMI	2,222.77	16.20	36,008.94	0.14%	6.98%	0.01%	2.00%	0.00%
Citigroup Inc	C	1,913.90	39.49	75,579.91		5.37%		-9.70%	
American International Group Inc	AIG	711.90	61.31	43,646.59	0.16%	2.35%	0.00%	10.00%	0.02%
Altria Group Inc	MO	1,768.65	40.17	71,046.55	0.27%	9.76%	0.03%	4.50%	0.01%
HCA Healthcare Inc	HCA	267.66	226.14	60,528.86	0.23%	1.06%	0.00%	7.56%	0.02%
International Paper Co	IP	346.02	33.73	11,671.15		5.48%		-2.00%	
Hewlett Packard Enterprise Co	HPE	1,282.87	15.38	19,730.46	0.07%	3.12%	0.00%	3.03%	0.00%
Abbott Laboratories	ABT	1,735.36	94.55	164,078.10	0.62%	2.16%	0.01%	3.27%	0.02%
Aflac Inc	AFL	594.06	78.11	46,402.18	0.18%	2.15%	0.00%	5.98%	0.01%
Air Products and Chemicals Inc	APD	222.15	282.44	62,743.76	0.24%	2.48%	0.01%	10.86%	0.03%
Royal Caribbean Cruises Ltd	RCL	256.24	84.73	21,710.79					
Hess Corp	HES	307.06	144.40	44,339.61	0.17%	1.21%	0.00%	13.00%	0.02%
Archer-Daniels-Midland Co	ADM	533.38	71.57	38,174.08		2.52%		-7.07%	
Automatic Data Processing Inc	ADP	411.70	218.22	89,841.17	0.34%	2.29%	0.01%	16.00%	0.05%
Verisk Analytics Inc	VRSK	145.03	227.36	32,973.34	0.12%	0.60%	0.00%	10.52%	0.01%
AutoZone Inc	AZO	17.63	2,477.13	43,681.71	0.16%			13.72%	0.02%
Avery Dennison Corp	AVY	80.53	174.07	14,018.03	0.05%	1.86%	0.00%	7.00%	0.00%
Enphase Energy Inc	ENPH	136.55	79.58	10,866.73				30.50%	
MSCI Inc	MSCI	79.09	471.55	37,295.36	0.14%	1.17%	0.00%	14.41%	0.02%
Ball Corp	BALL	315.06	48.15	15,170.09	0.06%	1.66%	0.00%	10.30%	0.01%
Axon Enterprise Inc	AXON	74.76	204.49	15,287.67					
Ceridian HCM Holding Inc	CDAY	155.61	64.01	9,960.79					
Carrier Global Corp	CARR	839.05	47.66	39,988.98	0.15%	1.55%	0.00%	10.80%	0.02%
Bank of New York Mellon Corp/The	BK	769.07	42.50	32,685.60	0.12%	3.95%	0.00%	10.00%	0.01%
Otis Worldwide Corp	OTIS	409.26	77.21	31,598.89	0.12%	1.76%	0.00%	9.00%	0.01%
Baxter International Inc	BAX	506.41	32.43	16,422.71	0.06%	3.58%	0.00%	0.33%	0.00%
Becton Dickinson & Co	BDX	290.11	252.78	73,333.75	0.28%	1.44%	0.00%	9.20%	0.03%
Berkshire Hathaway Inc	BRK/B	1,308.07	341.33	446,483.53					
Best Buy Co Inc	BBY	217.64	66.82	14,542.57	0.05%	5.51%	0.00%	3.21%	0.00%
Boston Scientific Corp	BSX	1,464.22	51.19	74,953.58	0.28%			12.10%	0.03%
Bristol-Myers Squibb Co	BMY	2,034.76	51.53	104,851.08	0.40%	4.42%	0.02%	2.22%	0.01%
Brown-Forman Corp	BF/B	310.14	56.16	17,417.24	0.07%	1.46%	0.00%	7.04%	0.00%
Coterra Energy Inc	CTRA	755.05	27.50	20,763.77		2.91%		23.02%	
Campbell Soup Co	CPB	297.62	40.41	12,026.91	0.05%	3.66%	0.00%	3.17%	0.00%
Hilton Worldwide Holdings Inc	HLT	256.44	151.53	38,858.35	0.15%	0.40%	0.00%	17.09%	0.03%
Carnival Corp	CCL	1,119.45	11.46	12,828.84					
Qorvo Inc	QRVO	97.91	87.42	8,559.29	0.03%			2.83%	0.00%
UDR Inc	UDR	328.93	31.81	10,463.20	0.04%	5.28%	0.00%	6.08%	0.00%
Clorox Co/The	CLX	124.00	117.70	14,594.92	0.06%	4.08%	0.00%	14.82%	0.01%
Paycom Software Inc	PAYC	60.47	244.97	14,812.60		0.61%		21.43%	

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Bloomberg Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
CMS Energy Corp	CMS	291.76	53.86	15,713.24	0.06%	3.62%	0.00%	7.33%	0.00%
Colgate-Palmolive Co	CL	823.37	75.12	61,851.70	0.23%	2.56%	0.01%	7.61%	0.02%
EPAM Systems Inc	EPAM	57.96	217.57	12,610.57	0.05%			4.70%	0.00%
Comerica Inc	CMA	131.87	39.40	5,195.80	0.02%	7.21%	0.00%	10.63%	0.00%
Conagra Brands Inc	CAG	477.97	27.01	12,909.92	0.05%	5.18%	0.00%	0.84%	0.00%
Airbnb Inc	ABNB	426.36	118.29	50,434.01	0.19%			18.84%	0.04%
Consolidated Edison Inc	ED	344.92	87.79	30,280.88	0.11%	3.69%	0.00%	4.88%	0.01%
Corning Inc	GLW	853.18	26.76	22,830.96	0.09%	4.19%	0.00%	1.57%	0.00%
Cummins Inc	CMI	141.65	216.30	30,638.25	0.12%	3.11%	0.00%	11.27%	0.01%
Caesars Entertainment Inc	CZR	215.71	39.89	8,604.71					
Danaher Corp	DHR	738.93	192.02	141,888.76		0.56%		-5.34%	
Target Corp	TGT	461.61	110.79	51,141.22		3.97%		-0.10%	
Deere & Co	DE	288.00	365.36	105,224.05	0.40%	1.48%	0.01%	16.67%	0.07%
Dominion Energy Inc	D	836.77	40.32	33,738.69		6.62%		-3.05%	
Dover Corp	DOV	139.89	129.95	18,178.71	0.07%	1.57%	0.00%	10.00%	0.01%
Alliant Energy Corp	LNT	252.72	48.79	12,330.16	0.05%	3.71%	0.00%	6.26%	0.00%
Steel Dynamics Inc	STLD	165.64	106.51	17,642.74		1.60%		-16.12%	
Duke Energy Corp	DUK	771.00	88.89	68,534.19	0.26%	4.61%	0.01%	6.06%	0.02%
Regency Centers Corp	REG	171.00	60.26	10,304.64	0.04%	4.31%	0.00%	4.98%	0.00%
Eaton Corp PLC	ETN	399.30	207.91	83,018.46	0.31%	1.65%	0.01%	15.00%	0.05%
Ecolab Inc	ECL	285.03	167.74	47,811.60	0.18%	1.26%	0.00%	15.40%	0.03%
Revvity Inc	RVTY	124.14	82.85	10,284.58		0.34%		-26.69%	
Emerson Electric Co	EMR	571.50	88.97	50,846.36	0.19%	2.34%	0.00%	16.70%	0.03%
EOG Resources Inc	EOG	582.26	126.25	73,510.45	0.28%	2.61%	0.01%	11.33%	0.03%
Aon PLC	AON	200.22	309.40	61,946.83	0.23%	0.80%	0.00%	11.58%	0.03%
Entergy Corp	ETR	211.46	95.59	20,213.08	0.08%	4.73%	0.00%	6.03%	0.00%
Equifax Inc	EFX	123.22	169.57	20,893.91	0.08%	0.92%	0.00%	12.33%	0.01%
EQT Corp	EQT	411.33	42.38	17,432.25		1.49%		22.52%	
IQVIA Holdings Inc	IQV	183.12	180.83	33,113.95	0.12%			13.12%	0.02%
Gartner Inc	IT	78.83	332.04	26,173.05	0.10%			7.22%	0.01%
FedEx Corp	FDX	251.42	240.10	60,365.94	0.23%	2.10%	0.00%	14.50%	0.03%
FMC Corp	FMC	124.73	53.20	6,635.85		4.36%		-4.00%	
Brown & Brown Inc	BRO	284.60	69.42	19,756.79	0.07%	0.75%	0.00%	11.00%	0.01%
Ford Motor Co	F	3,932.10	9.75	38,337.99		6.15%		-2.52%	
NextEra Energy Inc	NEE	2,023.71	58.30	117,982.53	0.45%	3.21%	0.01%	8.76%	0.04%
Franklin Resources Inc	BEN	498.98	22.79	11,371.71		5.27%		-9.00%	
Garmin Ltd	GRMN	191.45	102.53	19,629.57	0.07%	2.85%	0.00%	5.60%	0.00%
Freeport-McMoRan Inc	FCX	1,433.64	33.78	48,428.22		1.78%		-13.95%	
Dexcom Inc	DXCM	386.37	88.83	34,321.60				30.59%	
General Dynamics Corp	GD	272.90	241.31	65,852.78	0.25%	2.19%	0.01%	10.40%	0.03%
General Mills Inc	GIS	581.28	65.24	37,922.64	0.14%	3.62%	0.01%	8.00%	0.01%
Genuine Parts Co	GPC	140.20	128.86	18,065.79	0.07%	2.95%	0.00%	9.49%	0.01%
Atmos Energy Corp	ATO	148.46	107.66	15,983.42	0.06%	2.75%	0.00%	7.25%	0.00%
WW Grainger Inc	GWW	49.63	729.83	36,224.38		1.02%			
Halliburton Co	HAL	895.05	39.34	35,211.35		1.63%		24.14%	
L3Harris Technologies Inc	LHX	189.54	179.41	34,005.37	0.13%	2.54%	0.00%	3.50%	0.00%
Healthpeak Properties Inc	PEAK	547.07	15.55	8,507.00		7.72%			
Insulet Corp	PODD	69.82	132.57	9,256.17				39.24%	
Catalent Inc	CTLT	180.27	34.39	6,199.55					
Fortive Corp	FTV	351.43	65.28	22,941.61	0.09%	0.43%	0.00%	8.68%	0.01%
Hershey Co/The	HSY	149.89	187.35	28,080.95	0.11%	2.54%	0.00%	9.00%	0.01%
Synchrony Financial	SYF	413.80	28.05	11,607.20		3.57%			
Hormel Foods Corp	HRL	546.48	32.55	17,787.96	0.07%	3.38%	0.00%	2.39%	0.00%
Arthur J Gallagher & Co	AJG	215.90	235.49	50,842.29	0.19%	0.93%	0.00%	14.49%	0.03%
Mondelez International Inc	MDLZ	1,360.42	66.21	90,073.28	0.34%	2.57%	0.01%	7.97%	0.03%
CenterPoint Energy Inc	CNP	629.43	26.88	16,919.13	0.06%	2.98%	0.00%	8.02%	0.01%
Humana Inc	HUM	123.91	523.69	64,888.86	0.24%	0.68%	0.00%	12.32%	0.03%
Willis Towers Watson PLC	WTW	103.26	235.89	24,358.00	0.09%	1.42%	0.00%	11.19%	0.01%
Illinois Tool Works Inc	ITW	300.89	224.12	67,434.57	0.25%	2.50%	0.01%	3.91%	0.01%
CDW Corp/DE	CDW	134.05	200.40	26,863.22	0.10%	1.18%	0.00%	13.10%	0.01%
Trane Technologies PLC	TT	228.40	190.31	43,466.42	0.16%	1.58%	0.00%	11.86%	0.02%
Interpublic Group of Cos Inc/The	IPG	383.00	28.40	10,877.31	0.04%	4.37%	0.00%	5.71%	0.00%
International Flavors & Fragrances Inc	IFF	255.25	68.35	17,446.54		4.74%		-10.08%	
Generac Holdings Inc	GNRC	62.24	84.07	5,232.77	0.02%			4.50%	0.00%
NXP Semiconductors NV	NXPI	257.80	172.43	44,452.80		2.35%		20.50%	
Kellanova	K	342.35	50.47	17,278.25	0.07%	4.44%	0.00%	1.94%	0.00%
Broadridge Financial Solutions Inc	BR	117.62	170.64	20,070.85		1.88%			
Kimberly-Clark Corp	KMB	337.94	119.64	40,431.26	0.15%	3.95%	0.01%	9.64%	0.01%
Kimco Realty Corp	KIM	619.89	17.94	11,120.86	0.04%	5.35%	0.00%	3.47%	0.00%
Oracle Corp	ORCL	2,739.38	103.40	283,251.48	1.07%	1.55%	0.02%	14.45%	0.15%
Kroger Co/The	KR	719.32	45.37	32,635.37	0.12%	2.56%	0.00%	4.55%	0.01%
Lennar Corp	LEN	250.15	106.68	26,686.22	0.10%	1.41%	0.00%	1.00%	0.00%
Eli Lilly & Co	LLY	949.30	553.93	525,842.98		0.82%		23.26%	
Bath & Body Works Inc	BBWI	227.38	29.65	6,741.85	0.03%	2.70%	0.00%	11.38%	0.00%
Charter Communications Inc	CHTR	147.92	402.80	59,582.18	0.22%			13.16%	0.03%
Loews Corp	L	223.25	64.01	14,290.30		0.39%			
Lowe's Cos Inc	LOW	577.12	190.57	109,980.81		2.31%		20.59%	
Hubbell Inc	HUBB	53.63	270.10	14,485.73		1.81%			
IDEX Corp	IEX	75.63	191.41	14,475.57	0.05%	1.34%	0.00%	11.00%	0.01%
Marsh & McLennan Cos Inc	MMC	493.07	189.65	93,511.10	0.35%	1.50%	0.01%	10.85%	0.04%
Masco Corp	MAS	224.50	52.09	11,694.26	0.04%	2.19%	0.00%	4.36%	0.00%
S&P Global Inc	SPGI	318.20	349.31	111,150.44	0.42%	1.03%	0.00%	13.54%	0.06%
Medtronic PLC	MDT	1,330.53	70.56	93,882.48	0.35%	3.91%	0.01%	3.17%	0.01%
Viatris Inc	VTRS	1,199.53	8.90	10,675.83		5.39%		-2.38%	
CVS Health Corp	CVS	1,284.40	69.01	88,636.37	0.33%	3.51%	0.01%	7.13%	0.02%
DuPont de Nemours Inc	DD	459.06	72.88	33,456.37	0.13%	1.98%	0.00%	12.18%	0.02%
Micron Technology Inc	MU	1,098.03	66.87	73,425.53		0.69%		-11.00%	
Motorola Solutions Inc	MSI	167.02	278.46	46,508.39	0.18%	1.26%	0.00%	12.22%	0.02%
Cboe Global Markets Inc	CBOE	105.52	163.89	17,293.18	0.07%	1.34%	0.00%	7.62%	0.00%
Laboratory Corp of America Holdings	LH	84.90	199.73	16,957.08		1.44%		-19.90%	
Newmont Corp	NEM	794.80	37.47	29,781.16	0.11%	4.27%	0.00%	12.20%	0.01%

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NIKE Inc	NKE	1,224.01	102.77	125,791.82	0.47%	1.32%	0.01%	16.07%	0.08%
NiSource Inc	NI	413.26	25.16	10,397.50	0.04%	3.97%	0.00%	7.00%	0.00%
Norfolk Southern Corp	NSC	226.14	189.44	42,838.25	0.16%	2.85%	0.00%	0.73%	0.00%
Principal Financial Group Inc	PFG	241.72	67.68	16,359.27	0.06%	3.96%	0.00%	8.76%	0.01%
Eversource Energy	ES	349.09	53.79	18,777.34	0.07%	5.02%	0.00%	5.21%	0.00%
Northrop Grumman Corp	NOC	150.79	471.43	71,088.34	0.27%	1.59%	0.00%	2.53%	0.01%
Wells Fargo & Co	WFC	3,631.64	39.42	143,154.16	0.54%	3.55%	0.02%	13.41%	0.07%
Nucor Corp	NUE	248.72	147.79	36,758.62		1.38%		-11.10%	
Occidental Petroleum Corp	OXY	884.68	61.81	54,682.19		1.16%		-2.25%	
Omnicom Group Inc	OMC	197.93	74.91	14,827.24	0.06%	3.74%	0.00%	6.36%	0.00%
ONEOK Inc	OKE	582.47	65.20	37,977.24	0.14%	5.86%	0.01%	7.43%	0.01%
Raymond James Financial Inc	RJF	208.80	95.44	19,927.87		1.76%			
PG&E Corp	PCG	2,133.51	16.30	34,776.18	0.13%			9.63%	0.01%
Parker-Hannifin Corp	PH	128.51	368.91	47,408.62	0.18%	1.60%	0.00%	14.56%	0.03%
Rollins Inc	ROL	484.04	37.61	18,204.67	0.07%	1.60%	0.00%	14.86%	0.01%
PPL Corp	PPL	737.09	24.57	18,110.28	0.07%	3.91%	0.00%	5.20%	0.00%
ConocoPhillips	COP	1,197.49	118.80	142,261.93		0.51%		0.00%	
PulteGroup Inc	PHM	215.60	73.59	15,865.64	0.06%	0.87%	0.00%	2.04%	0.00%
Pinnacle West Capital Corp	PNW	113.31	74.18	8,405.48	0.03%	4.75%	0.00%	5.90%	0.00%
PNC Financial Services Group Inc/The	PNC	398.34	114.47	45,598.09	0.17%	5.42%	0.01%	12.87%	0.02%
PPG Industries Inc	PPG	235.80	122.77	28,949.17	0.11%	2.12%	0.00%	11.24%	0.01%
Progressive Corp/The	PGR	585.04	158.09	92,489.13		0.25%		38.38%	
Veralto Corp	VLTO	246.31	69.00	16,995.25					
Public Service Enterprise Group Inc	PEG	499.11	61.65	30,770.19	0.12%	3.70%	0.00%	6.23%	0.01%
Robert Half Inc	RHI	105.90	74.77	7,917.77	0.03%	2.57%	0.00%	1.26%	0.00%
Cooper Cos Inc/The	COO	49.52	311.75	15,439.11	0.06%	0.02%	0.00%	7.54%	0.00%
Edison International	EIX	383.29	63.06	24,170.20	0.09%	4.68%	0.00%	4.80%	0.00%
Schlumberger NV	SLB	1,423.42	55.66	79,227.61		1.80%		33.41%	
Charles Schwab Corp/The	SCHW	1,770.22	52.04	92,122.25	0.35%	1.92%	0.01%	3.60%	0.01%
Sherwin-Williams Co/The	SHW	255.97	238.21	60,973.66	0.23%	1.02%	0.00%	7.95%	0.02%
West Pharmaceutical Services Inc	WST	73.99	318.29	23,550.28	0.09%	0.25%	0.00%	5.80%	0.01%
J M Smucker Co/The	SJM	102.14	113.84	11,627.85	0.04%	3.72%	0.00%	6.09%	0.00%
Snap-on Inc	SNA	52.78	257.94	13,614.07	0.05%	2.51%	0.00%	4.85%	0.00%
AMETEK Inc	AME	230.80	140.77	32,489.58	0.12%	0.71%	0.00%	8.16%	0.01%
Southern Co/The	SO	1,091.52	67.30	73,458.96	0.28%	4.16%	0.01%	5.05%	0.01%
Truist Financial Corp	TFC	1,333.67	28.36	37,822.82	0.14%	7.33%	0.01%	16.00%	0.02%
Southwest Airlines Co	LUV	596.12	22.23	13,251.64	0.05%	3.24%	0.00%	10.15%	0.01%
W R Berkley Corp	WRB	258.04	67.42	17,397.33	0.07%	0.65%	0.00%	13.00%	0.01%
Stanley Black & Decker Inc	SWK	153.31	85.05	13,039.10	0.05%	3.81%	0.00%	9.00%	0.00%
Public Storage	PSA	175.83	238.71	41,972.14	0.16%	5.03%	0.01%	4.44%	0.01%
Arista Networks Inc	ANET	311.10	200.37	62,335.11				20.66%	
Sysco Corp	SYY	504.23	66.49	33,525.99	0.13%	3.01%	0.00%	13.00%	0.02%
Corteva Inc	CTVA	709.52	48.14	34,156.10	0.13%	1.33%	0.00%	17.67%	0.02%
Texas Instruments Inc	TXN	908.20	142.01	128,974.05	0.49%	3.66%	0.02%	10.00%	0.05%
Textron Inc	TXT	196.01	76.00	14,896.38	0.06%	0.11%	0.00%	11.73%	0.01%
Thermo Fisher Scientific Inc	TMO	385.95	444.77	171,658.98		0.31%		-5.00%	
TJX Cos Inc/The	TJX	1,144.08	88.07	100,759.21	0.38%	1.51%	0.01%	10.00%	0.04%
Globe Life Inc	GL	94.82	116.36	11,033.26		0.77%			
Johnson Controls International plc	JCI	680.32	49.02	33,349.29	0.13%	3.02%	0.00%	13.36%	0.02%
Ulta Beauty Inc	ULTA	49.23	381.31	18,771.51	0.07%			6.54%	0.00%
Union Pacific Corp	UNP	609.60	207.61	126,558.43	0.48%	2.50%	0.01%	6.50%	0.03%
Keysight Technologies Inc	KEYS	177.58	122.05	21,673.03	0.08%			2.52%	0.00%
UnitedHealth Group Inc	UNH	926.31	535.56	496,091.91	1.87%	1.40%	0.03%	12.79%	0.24%
Blackstone Inc	BX	718.44	92.35	66,348.21	0.25%	3.47%	0.01%	7.63%	0.02%
Marathon Oil Corp	MRO	605.69	27.31	16,541.31		1.61%		-10.00%	
Bio-Rad Laboratories Inc	BIO	24.06	275.28	6,622.96	0.02%			4.00%	0.00%
Ventas Inc	VTR	402.38	42.46	17,084.97	0.06%	4.24%	0.00%	7.81%	0.01%
VF Corp	VFC	388.87	14.73	5,728.03	0.02%	2.44%	0.00%	7.80%	0.00%
Vulcan Materials Co	VMC	132.87	196.49	26,108.22		0.88%		23.22%	
Weyerhaeuser Co	WY	730.00	28.69	20,943.73		2.65%			
Whirlpool Corp	WHR	54.85	104.56	5,735.43		6.69%		-2.33%	
Williams Cos Inc/The	WMB	1,216.42	34.40	41,844.88	0.16%	5.20%	0.01%	3.50%	0.01%
Constellation Energy Corp	CEG	321.59	112.92	36,314.17		1.00%		26.26%	
WEC Energy Group Inc	WEC	315.44	81.39	25,673.25	0.10%	3.83%	0.00%	6.47%	0.01%
Adobe Inc	ADBE	455.30	532.06	242,246.92	0.91%			17.33%	0.16%
AES Corp/The	AES	669.63	14.90	9,977.47	0.04%	4.45%	0.00%	6.37%	0.00%
Amgen Inc	AMGN	535.18	255.70	136,845.01	0.52%	3.33%	0.02%	5.33%	0.03%
Apple Inc	AAPL	15,634.23	170.77	2,669,857.80	10.07%	0.56%	0.06%	9.05%	0.91%
Autodesk Inc	ADSK	213.76	197.63	42,246.18	0.16%			13.86%	0.02%
Cintas Corp	CTAS	101.85	507.12	51,652.20	0.19%	1.06%	0.00%	11.86%	0.02%
Comcast Corp	CMCSA	4,015.64	41.29	165,805.57	0.63%	2.81%	0.02%	9.26%	0.06%
Molson Coors Beverage Co	TAP	200.96	57.77	11,609.46	0.04%	2.84%	0.00%	8.01%	0.00%
KLA Corp	KLAC	135.93	469.70	63,847.26	0.24%	1.11%	0.00%	9.93%	0.02%
Marriott International Inc/MD	MAR	298.24	188.56	56,236.13	0.21%	1.10%	0.00%	17.06%	0.04%
Fiserv Inc	FI	600.19	113.75	68,271.16	0.26%			14.08%	0.04%
McCormick & Co Inc/MD	MKC	251.29	63.90	16,057.49	0.06%	2.44%	0.00%	7.01%	0.00%
PACCAR Inc	PCAR	523.10	82.53	43,171.44	0.16%	1.31%	0.00%	12.00%	0.02%
Costco Wholesale Corp	COST	442.74	551.43	244,139.78	0.92%	0.74%	0.01%	13.06%	0.12%
Stryker Corp	SYK	379.78	270.22	102,623.61	0.39%	1.11%	0.00%	7.26%	0.03%
Tyson Foods Inc	TSN	285.55	46.35	13,235.24		4.14%		-24.28%	
Lamb Weston Holdings Inc	LW	144.93	89.52	12,974.39	0.05%	1.25%	0.00%	13.32%	0.01%
Applied Materials Inc	AMAT	836.53	132.35	110,715.27	0.42%	0.97%	0.00%	3.73%	0.02%
American Airlines Group Inc	AAL	653.54	11.15	7,286.98				54.64%	
Cardinal Health Inc	CAH	246.35	91.00	22,418.21		2.20%			
Cincinnati Financial Corp	CINF	156.91	99.67	15,639.02	0.06%	3.01%	0.00%	18.21%	0.01%
Paramount Global	PARA	610.40	10.88	6,641.14		1.84%		-22.86%	
DR Horton Inc	DHI	338.30	104.40	35,318.21		0.96%		-8.43%	
Electronic Arts Inc	EA	270.91	123.79	33,536.20	0.13%	0.61%	0.00%	9.26%	0.01%
Fair Isaac Corp	FICO	24.86	845.87	21,025.79					
Expeditors International of Washington Inc	EXPD	147.90	109.25	16,157.75		1.26%			
Fastenal Co	FAST	571.41	58.34	33,336.23		2.40%			

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Bloomberg Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
M&T Bank Corp	MTB	165.97	112.75	18,713.12	0.07%	4.61%	0.00%	11.59%	0.01%
Xcel Energy Inc	XEL	551.82	59.27	32,706.13	0.12%	3.51%	0.00%	5.95%	0.01%
Fifth Third Bancorp	FITB	680.99	23.71	16,146.27		5.90%		25.00%	
Gilead Sciences Inc	GILD	1,246.01	78.54	97,861.94	0.37%	3.82%	0.01%	2.15%	0.01%
Hasbro Inc	HAS	138.74	45.15	6,264.16		6.20%		-3.49%	
Huntington Bancshares Inc/OH	HBAN	1,448.08	9.65	13,973.92		6.42%		-7.69%	
Welltower Inc	WELL	532.27	83.61	44,502.93	0.17%	2.92%	0.00%	10.19%	0.02%
Biogen Inc	BIIB	144.82	237.54	34,401.26	0.13%			0.05%	0.00%
Northern Trust Corp	NTRS	207.04	65.91	13,645.74	0.05%	4.55%	0.00%	13.00%	0.01%
Packaging Corp of America	PKG	89.92	153.05	13,761.49	0.05%	3.27%	0.00%	3.00%	0.00%
Paychex Inc	PAYX	361.23	111.05	40,114.81	0.15%	3.21%	0.00%	7.00%	0.01%
QUALCOMM Inc	QCOM	1,116.00	108.99	121,632.84		2.94%		-1.35%	
Ross Stores Inc	ROST	338.63	115.97	39,271.15	0.15%	1.16%	0.00%	10.00%	0.01%
IDEXX Laboratories Inc	IDXX	83.01	399.47	33,160.80	0.13%			17.57%	0.02%
Starbucks Corp	SBUX	1,145.40	92.24	105,651.70		2.47%		20.53%	
KeyCorp	KEY	936.16	10.22	9,567.57	0.04%	8.02%	0.00%	7.08%	0.00%
Fox Corp	FOXA	253.68	30.39	7,709.46	0.03%	1.71%	0.00%	6.24%	0.00%
Fox Corp	FOX	235.58	27.91	6,575.07	0.02%	1.86%	0.00%	6.24%	0.00%
State Street Corp	STT	308.58	64.63	19,943.78	0.08%	4.27%	0.00%	6.92%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	425.42	13.60	5,785.77					
US Bancorp	USB	1,556.97	31.88	49,636.04	0.19%	6.02%	0.01%	7.50%	0.01%
A O Smith Corp	AOS	122.83	69.76	8,568.48		1.83%			
Gen Digital Inc	GEN	639.44	16.66	10,653.05		3.00%			
T Rowe Price Group Inc	TROW	223.47	90.50	20,224.04		5.39%		-3.90%	
Waste Management Inc	WM	402.78	164.33	66,188.02	0.25%	1.70%	0.00%	10.05%	0.03%
Constellation Brands Inc	STZ	183.66	233.26	42,841.23	0.16%	1.53%	0.00%	9.75%	0.02%
DENTSPLY SIRONA Inc	XRAY	211.72	30.41	6,438.28	0.02%	1.84%	0.00%	9.78%	0.00%
Zions Bancorp NA	ZION	148.15	30.85	4,570.30		5.32%		-9.73%	
Alaska Air Group Inc	ALK	127.12	31.63	4,020.81	0.02%			3.56%	0.00%
Invesco Ltd	IVZ	449.55	12.97	5,830.72		6.17%		-4.35%	
Intuit Inc	INTU	280.26	494.95	138,714.19	0.52%	0.73%	0.00%	18.84%	0.10%
Morgan Stanley	MS	1,656.97	70.82	117,346.40	0.44%	4.80%	0.02%	3.64%	0.02%
Microchip Technology Inc	MCHP	544.33	71.29	38,805.57	0.15%	2.30%	0.00%	12.06%	0.02%
Chubb Ltd	CB	407.98	214.62	87,561.53	0.33%	1.60%	0.01%	15.50%	0.05%
Hologic Inc	HOLX	244.94	66.17	16,207.81				-16.00%	
Citizens Financial Group Inc	CFG	466.22	23.43	10,923.58		7.17%		-10.63%	
O'Reilly Automotive Inc	ORLY	59.62	930.44	55,473.76	0.21%			11.39%	0.02%
Allstate Corp/The	ALL	261.57	128.13	33,515.48		2.78%		-3.00%	
Equity Residential	EQR	379.03	55.33	20,971.84	0.08%	4.79%	0.00%	5.17%	0.00%
BorgWarner Inc	BWA	235.06	36.90	8,673.82	0.03%	1.19%	0.00%	5.16%	0.00%
Keurig Dr Pepper Inc	KDP	1,398.34	30.33	42,411.53	0.16%	2.84%	0.00%	6.85%	0.01%
Host Hotels & Resorts Inc	HST	711.61	15.48	11,015.65		4.65%			
Incyte Corp	INCY	224.11	53.93	12,086.20				36.36%	
Simon Property Group Inc	SPG	326.25	109.89	35,851.28	0.14%	6.92%	0.01%	1.71%	0.00%
Eastman Chemical Co	EMN	118.56	74.73	8,860.29	0.03%	4.23%	0.00%	4.75%	0.00%
AvalonBay Communities Inc	AVB	142.02	165.74	23,537.73	0.09%	3.98%	0.00%	10.62%	0.01%
Prudential Financial Inc	PRU	363.00	91.44	33,192.72	0.13%	5.47%	0.01%	10.60%	0.01%
United Parcel Service Inc	UPS	723.28	141.25	102,162.74	0.39%	4.59%	0.02%	1.64%	0.01%
Walgreens Boots Alliance Inc	WBA	863.92	21.08	18,211.33	0.07%	9.11%	0.01%	0.25%	0.00%
STERIS PLC	STE	98.78	209.98	20,742.03		0.99%			
McKesson Corp	MCK	134.90	455.36	61,428.97	0.23%	0.54%	0.00%	10.03%	0.02%
Lockheed Martin Corp	LMT	248.10	454.64	112,795.73	0.43%	2.77%	0.01%	7.04%	0.03%
Cencora Inc	COR	202.18	185.15	37,432.70	0.14%	1.05%	0.00%	9.44%	0.01%
Capital One Financial Corp	COF	381.00	101.29	38,591.49		2.37%		-6.32%	
Waters Corp	WAT	59.10	238.53	14,097.84	0.05%			5.37%	0.00%
Nordson Corp	NDSN	57.01	212.59	12,120.61		1.28%			
Dollar Tree Inc	DLTR	220.01	111.09	24,440.47	0.09%			7.37%	0.01%
Darden Restaurants Inc	DRI	120.32	145.53	17,509.44	0.07%	3.60%	0.00%	10.45%	0.01%
Evergy Inc	EVRG	229.58	49.14	11,281.71	0.04%	4.99%	0.00%	4.82%	0.00%
Match Group Inc	MTCH	278.09	34.60	9,621.81				48.68%	
Domino's Pizza Inc	DPZ	34.88	338.99	11,824.31	0.04%	1.43%	0.00%	13.97%	0.01%
NVR Inc	NVR	3.21	5,412.62	17,374.51				-4.57%	
NetApp Inc	NTAP	208.79	72.78	15,195.81	0.06%	2.75%	0.00%	7.40%	0.00%
Old Dominion Freight Line Inc	ODFL	109.27	376.66	41,156.88	0.16%	0.42%	0.00%	5.83%	0.01%
DaVita Inc	DVA	91.30	77.23	7,051.10	0.03%			15.78%	0.00%
Hartford Financial Services Group Inc/The	HIG	300.77	73.45	22,091.56	0.08%	2.56%	0.00%	7.00%	0.01%
Iron Mountain Inc	IRM	291.85	59.07	17,239.70	0.07%	4.40%	0.00%	4.00%	0.00%
Estee Lauder Cos Inc/The	EL	232.30	128.87	29,936.11		2.05%		22.00%	
Cadence Design Systems Inc	CDNS	272.06	239.85	65,254.07	0.25%			18.56%	0.05%
Tyler Technologies Inc	TYL	42.08	372.90	15,690.89					
Universal Health Services Inc	UHS	62.14	125.89	7,822.80	0.03%	0.64%	0.00%	9.41%	0.00%
Skyworks Solutions Inc	SWKS	159.39	86.74	13,825.75	0.05%	3.14%	0.00%	4.99%	0.00%
Quest Diagnostics Inc	DGX	112.44	130.10	14,627.79		2.18%		-1.27%	
Rockwell Automation Inc	ROK	114.86	262.81	30,186.36	0.11%	1.90%	0.00%	15.47%	0.02%
Kraft Heinz Co/The	KHC	1,228.30	31.46	38,642.16	0.15%	5.09%	0.01%	3.92%	0.01%
American Tower Corp	AMT	466.17	178.19	83,065.94	0.31%	3.64%	0.01%	13.67%	0.04%
Regeneron Pharmaceuticals Inc	REGN	106.74	779.89	83,246.24	0.31%			3.33%	0.01%
Amazon.com Inc	AMZN	10,334.03	133.09	1,375,356.19				52.33%	
Jack Henry & Associates Inc	JKHY	72.80	140.99	10,264.21	0.04%	1.48%	0.00%	7.52%	0.00%
Ralph Lauren Corp	RL	40.39	112.53	4,544.86	0.02%	2.67%	0.00%	10.82%	0.00%
Boston Properties Inc	BXP	156.87	53.57	8,403.26	0.03%	7.32%	0.00%	3.79%	0.00%
Amphenol Corp	APH	598.31	80.55	48,193.87	0.18%	1.09%	0.00%	4.04%	0.01%
Howmet Aerospace Inc	HWM	412.21	44.10	18,178.37	0.07%	0.45%	0.00%	19.27%	0.01%
Pioneer Natural Resources Co	PXD	233.31	239.00	55,760.85		3.08%		-3.00%	
Valero Energy Corp	VLO	340.45	127.00	43,237.53		3.21%		35.66%	
Synopsys Inc	SNPS	152.08	469.44	71,394.31	0.27%			16.27%	0.04%
Etsy Inc	ETSY	123.01	62.30	7,663.77	0.03%			7.02%	0.00%
CH Robinson Worldwide Inc	CHRW	116.44	81.83	9,528.20	0.04%	2.98%	0.00%	5.00%	0.00%
Accenture PLC	ACN	664.79	297.09	197,501.57	0.75%	1.74%	0.01%	10.00%	0.07%
TransDigm Group Inc	TDG	55.18	828.09	45,696.49				26.65%	
Yum! Brands Inc	YUM	280.21	120.86	33,866.30	0.13%	2.00%	0.00%	12.91%	0.02%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Bloomberg Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Prologis Inc	PLD	923.86	100.75	93,079.10	0.35%	3.45%	0.01%	8.04%	0.03%
FirstEnergy Corp	FE	573.82	35.60	20,427.81		4.61%		-0.83%	
VeriSign Inc	VRSN	102.10	199.66	20,385.29	0.08%			11.50%	0.01%
Quanta Services Inc	PWR	145.20	167.12	24,265.66	0.09%	0.19%	0.00%	8.00%	0.01%
Henry Schein Inc	HSIC	130.59	64.98	8,485.41	0.03%			5.16%	0.00%
Ameren Corp	AEE	262.48	75.71	19,871.98	0.07%	3.33%	0.00%	6.21%	0.00%
ANSYS Inc	ANSS	86.79	278.26	24,150.46	0.09%			11.14%	0.01%
FactSet Research Systems Inc	FDS	37.99	431.89	16,406.64	0.06%	0.91%	0.00%	10.45%	0.01%
NVIDIA Corp	NVDA	2,470.00	407.80	1,007,266.00		0.04%		56.84%	
Sealed Air Corp	SEE	144.41	30.79	4,446.38	0.02%	2.60%	0.00%	0.93%	0.00%
Cognizant Technology Solutions Corp	CTSH	505.04	64.47	32,559.99	0.12%	1.80%	0.00%	12.00%	0.01%
Intuitive Surgical Inc	ISRG	352.07	262.22	92,320.32	0.35%			11.57%	0.04%
Take-Two Interactive Software Inc	TTWO	169.83	133.75	22,714.90				54.11%	
Republic Services Inc	RSG	314.64	148.49	46,720.45	0.18%	1.44%	0.00%	9.93%	0.02%
eBay Inc	EBAY	532.16	39.23	20,876.52	0.08%	2.55%	0.00%	9.50%	0.01%
Goldman Sachs Group Inc/The	GS	329.67	303.61	100,091.41	0.38%	3.62%	0.01%	7.71%	0.03%
SBA Communications Corp	SBAC	108.38	208.63	22,611.95	0.09%	1.63%	0.00%	8.00%	0.01%
Sempra	SRE	629.31	70.03	44,070.37	0.17%	3.40%	0.01%	5.49%	0.01%
Moody's Corp	MCO	183.00	308.00	56,364.00	0.21%	1.00%	0.00%	14.08%	0.03%
ON Semiconductor Corp	ON	430.70	62.64	26,978.92	0.10%			5.81%	0.01%
Booking Holdings Inc	BKNG	35.69	2,789.56	99,564.98	0.38%			17.50%	0.07%
F5 Inc	FFIV	59.21	151.59	8,975.19	0.03%			5.45%	0.00%
Akamai Technologies Inc	AKAM	151.71	103.33	15,676.50	0.06%			10.72%	0.01%
Charles River Laboratories International Inc	CRL	51.27	168.36	8,631.99	0.03%			11.00%	0.00%
MarketAxess Holdings Inc	MKTX	37.91	213.75	8,102.19		1.35%			
Devon Energy Corp	DVN	640.70	46.57	29,837.40		4.21%		-4.00%	
Bio-Techne Corp	TECH	158.24	54.63	8,644.65	0.03%	0.59%	0.00%	5.00%	0.00%
Alphabet Inc	GOOGL	5,918.00	124.08	734,305.44	2.77%			16.65%	0.46%
Teleflex Inc	TFX	46.99	184.75	8,681.77	0.03%	0.74%	0.00%	7.03%	0.00%
Bunge Ltd	6369743D	145.29	105.98	15,397.62		2.50%			
Netflix Inc	NFLX	437.68	411.69	180,188.48				30.96%	
Allegion plc	ALLE	87.79	98.36	8,634.83	0.03%	1.83%	0.00%	5.93%	0.00%
Agilent Technologies Inc	A	292.59	103.37	30,244.72	0.11%	0.87%	0.00%	11.00%	0.01%
Warner Bros Discovery Inc	WBD	2,437.38	9.94	24,227.60				71.32%	
Elevance Health Inc	ELV	234.96	450.09	105,752.70	0.40%	1.32%	0.01%	10.85%	0.04%
Trimble Inc	TRMB	248.32	47.13	11,703.42					
CME Group Inc	CME	359.75	213.46	76,791.38	0.29%	2.06%	0.01%	11.10%	0.03%
Juniper Networks Inc	JNPR	318.87	26.92	8,583.93	0.03%	3.27%	0.00%	7.96%	0.00%
BlackRock Inc	BLK	149.30	612.28	91,415.24	0.34%	3.27%	0.01%	6.72%	0.02%
DTE Energy Co	DTE	206.11	96.38	19,864.79	0.07%	3.95%	0.00%	6.00%	0.00%
Nasdaq Inc	NDAQ	491.32	49.60	24,369.27	0.09%	1.77%	0.00%	2.68%	0.00%
Celanese Corp	CE	108.85	114.51	12,464.64	0.05%	2.45%	0.00%	3.27%	0.00%
Philip Morris International Inc	PM	1,552.41	89.16	138,412.52	0.52%	5.83%	0.03%	9.19%	0.05%
Salesforce Inc	CRM	973.00	200.83	195,407.59				21.67%	
Ingersoll Rand Inc	IR	404.40	60.68	24,538.93		0.13%			
Roper Technologies Inc	ROP	106.71	488.57	52,135.79		0.56%		-1.00%	
Huntington Ingalls Industries Inc	HII	39.87	219.82	8,763.78		2.26%		40.00%	
MetLife Inc	MET	752.02	60.01	45,128.84	0.17%	3.47%	0.01%	12.89%	0.02%
Tapestry Inc	TPR	227.44	27.56	6,268.22	0.02%	5.08%	0.00%	15.00%	0.00%
CSX Corp	CSX	1,976.13	29.85	58,987.51	0.22%	1.47%	0.00%	6.39%	0.01%
Edwards Lifesciences Corp	EW	606.50	63.72	38,646.18	0.15%			8.45%	0.01%
Ameriprise Financial Inc	AMP	102.63	314.57	32,283.06	0.12%	1.72%	0.00%	15.82%	0.02%
Zebra Technologies Corp	ZBRA	51.36	209.43	10,756.32					
Zimmer Biomet Holdings Inc	ZBH	208.96	104.41	21,817.93	0.08%	0.92%	0.00%	9.48%	0.01%
CBRE Group Inc	CBRE	304.79	69.34	21,134.35					
Camden Property Trust	CPT	106.77	84.88	9,062.72	0.03%	4.71%	0.00%	6.77%	0.00%
Mastercard Inc	MA	930.44	376.35	350,170.34	1.32%	0.61%	0.01%	17.85%	0.24%
CarMax Inc	KMX	158.67	61.09	9,693.03	0.04%			16.34%	0.01%
Intercontinental Exchange Inc	ICE	594.94	107.44	63,919.92	0.24%	1.56%	0.00%	9.87%	0.02%
Fidelity National Information Services Inc	FIS	592.47	49.11	29,095.96	0.11%	4.24%	0.00%	2.68%	0.00%
Chipotle Mexican Grill Inc	CMG	27.45	1,942.20	53,303.68				25.41%	
Wynn Resorts Ltd	WYNN	113.94	87.78	10,001.30		1.14%			
Live Nation Entertainment Inc	LYV	230.15	80.02	18,416.68					
Assurant Inc	AIZ	53.02	148.90	7,895.12	0.03%	1.88%	0.00%	14.70%	0.00%
NRG Energy Inc	NRG	229.12	42.38	9,709.98	0.04%	3.56%	0.00%	10.26%	0.00%
Regions Financial Corp	RF	938.38	14.53	13,634.62	0.05%	6.61%	0.00%	0.99%	0.00%
Monster Beverage Corp	MNST	1,047.52	51.10	53,528.17	0.20%			15.56%	0.03%
Mosaic Co/The	MOS	332.28	32.48	10,792.45		2.46%		22.93%	
Baker Hughes Co	BKR	1,006.23	34.42	34,634.57	0.13%	2.32%	0.00%	16.00%	0.02%
Expedia Group Inc	EXPE	137.84	95.29	13,134.87	0.05%			17.50%	0.01%
CF Industries Holdings Inc	CF	192.95	79.78	15,393.39		2.01%		44.50%	
Leidos Holdings Inc	LDOS	137.51	99.12	13,629.59	0.05%	1.53%	0.00%	6.45%	0.00%
APA Corp	APA	307.27	39.72	12,204.57		2.52%		-2.68%	
Alphabet Inc	GOOG	5,725.00	125.30	717,342.50	2.71%			16.65%	0.45%
First Solar Inc	FSLR	106.84	142.45	15,219.93	0.06%			19.80%	0.01%
TE Connectivity Ltd	TEL	313.94	117.85	36,997.71	0.14%	2.00%	0.00%	3.10%	0.00%
Discover Financial Services	DFS	250.06	82.08	20,524.76		3.41%		56.16%	
Linde PLC	LIN	484.89	382.16	185,305.56	0.70%	1.33%	0.01%	12.47%	0.09%
Visa Inc	V	1,594.00	235.10	374,749.40	1.41%	0.88%	0.01%	14.73%	0.21%
Mid-America Apartment Communities Inc	MAA	116.68	118.15	13,785.39	0.05%	4.74%	0.00%	2.36%	0.00%
Xylem Inc/NY	XYL	241.08	93.54	22,550.44	0.09%	1.41%	0.00%	12.00%	0.01%
Marathon Petroleum Corp	MPC	379.70	151.25	57,429.17		2.18%		83.00%	
Tractor Supply Co	TSCO	108.81	192.56	20,952.07	0.08%	2.14%	0.00%	3.81%	0.00%
Advanced Micro Devices Inc	AMD	1,615.67	98.50	159,143.59				27.10%	
ResMed Inc	RMD	147.09	141.22	20,772.33	0.08%	1.36%	0.00%	7.00%	0.01%
Mettler-Toledo International Inc	MTD	21.87	985.20	21,541.40	0.08%			8.29%	0.01%
Jacobs Solutions Inc	J	125.92	133.30	16,784.87	0.06%	0.78%	0.00%	9.26%	0.01%
Copart Inc	CPRT	960.18	43.52	41,787.16					
VICI Properties Inc	VICI	1,034.53	27.90	28,863.44	0.11%	5.95%	0.01%	11.05%	0.01%
Albemarle Corp	ALB	117.35	126.78	14,877.25		1.26%		25.23%	
Fortinet Inc	FTNT	785.34	57.17	44,897.72	0.17%			18.00%	0.03%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Bloomberg Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Moderna Inc	MRNA	380.59	75.96	28,909.84				-42.47%	
Essex Property Trust Inc	ESS	64.18	213.92	13,730.03	0.05%	4.32%	0.00%	9.46%	0.00%
CoStar Group Inc	CSGP	408.36	73.41	29,977.93	0.11%			20.00%	0.02%
Realty Income Corp	O	723.91	47.38	34,298.95		6.48%			
Westrock Co	WRK	256.40	35.93	9,212.56		3.37%		-6.74%	
Westinghouse Air Brake Technologies Corp	WAB	179.16	106.02	18,994.44	0.07%	0.64%	0.00%	12.86%	0.01%
Pool Corp	POOL	38.68	315.77	12,213.67		1.39%		-5.49%	
Western Digital Corp	WDC	324.15	40.15	13,014.42				-10.00%	
PepsiCo Inc	PEP	1,374.86	163.28	224,487.79	0.85%	3.10%	0.03%	8.70%	0.07%
Diamondback Energy Inc	FANG	178.82	160.32	28,668.10	0.11%	2.10%	0.00%	8.97%	0.01%
Palo Alto Networks Inc	PANW	310.82	243.02	75,534.50				20.50%	
ServiceNow Inc	NOW	205.00	581.85	119,279.25					
Church & Dwight Co Inc	CHD	246.05	90.94	22,375.51	0.08%	1.20%	0.00%	5.85%	0.00%
Federal Realty Investment Trust	FRT	81.52	91.19	7,434.08	0.03%	4.78%	0.00%	6.53%	0.00%
MGM Resorts International	MGM	350.89	34.92	12,253.04					
American Electric Power Co Inc	AEP	515.18	75.54	38,916.40	0.15%	4.66%	0.01%	4.83%	0.01%
SolarEdge Technologies Inc	SEDG	56.56	75.95	4,295.58	0.02%			19.59%	0.00%
Invitation Homes Inc	INVH	611.96	29.69	18,169.03	0.07%	3.50%	0.00%	4.51%	0.00%
PTC Inc	PTC	118.83	140.42	16,686.53	0.06%			16.99%	0.01%
JB Hunt Transport Services Inc	JBHT	103.14	171.87	17,727.19		0.98%		27.00%	
Lam Research Corp	LRCX	131.79	588.22	77,522.69	0.29%	1.36%	0.00%	5.44%	0.02%
Mohawk Industries Inc	MHK	63.68	80.38	5,118.76				-3.08%	
GE HealthCare Technologies Inc	GEHC	455.24	66.57	30,305.53	0.11%	0.18%	0.00%	12.70%	0.01%
Pentair PLC	PNR	165.30	58.12	9,607.18	0.04%	1.51%	0.00%	6.22%	0.00%
Vertex Pharmaceuticals Inc	VRTX	258.10	362.11	93,458.78	0.35%			13.55%	0.05%
Amcor PLC	AMCR	1,446.44	8.89	12,858.82	0.05%	5.62%	0.00%	1.33%	0.00%
Meta Platforms Inc	META	2,219.61	301.27	668,701.00				24.05%	
T-Mobile US Inc	TMUS	1,156.48	143.86	166,370.49		1.81%		38.46%	
United Rentals Inc	URI	67.78	406.27	27,537.39	0.10%	1.46%	0.00%	17.87%	0.02%
Honeywell International Inc	HON	659.25	183.26	120,814.34	0.46%	2.36%	0.01%	7.69%	0.04%
Alexandria Real Estate Equities Inc	ARE	173.78	93.13	16,183.67	0.06%	5.33%	0.00%	5.53%	0.00%
Delta Air Lines Inc	DAL	643.46	31.25	20,108.22		1.28%		30.85%	
Seagate Technology Holdings PLC	STX	209.18	68.25	14,276.81	0.05%	4.10%	0.00%	6.11%	0.00%
United Airlines Holdings Inc	UAL	326.73	35.01	11,438.78				46.54%	
News Corp	NWS	191.84	21.44	4,112.99	0.02%	0.93%	0.00%	8.00%	0.00%
Centene Corp	CNC	534.20	68.98	36,849.18	0.14%			4.72%	0.01%
Martin Marietta Materials Inc	MLM	61.80	408.94	25,274.13	0.10%	0.72%	0.00%	19.03%	0.02%
Teradyne Inc	TER	154.01	83.27	12,824.75	0.05%	0.53%	0.00%	7.82%	0.00%
PayPal Holdings Inc	PYPL	1,098.04	51.80	56,878.32	0.21%			15.96%	0.03%
Tesla Inc	TSLA	3,178.92	200.84	638,454.49				32.00%	
Arch Capital Group Ltd	ACGL	373.10	86.68	32,340.31	0.12%			14.50%	0.02%
Dow Inc	DOW	703.08	48.34	33,986.65	0.13%	5.79%	0.01%	0.93%	0.00%
Everest Group Ltd	EG	43.40	395.62	17,169.91		1.77%		35.22%	
Teledyne Technologies Inc	TDY	47.19	374.59	17,675.03	0.07%			6.36%	0.00%
News Corp	NWSA	379.59	20.68	7,849.82	0.03%	0.97%	0.00%	8.00%	0.00%
Exelon Corp	EXC	994.30	38.94	38,718.00	0.15%	3.70%	0.01%	4.00%	0.01%
Global Payments Inc	GPN	260.39	106.22	27,658.52	0.10%	0.94%	0.00%	13.33%	0.01%
Crown Castle Inc	CCI	434.00	92.98	40,353.32	0.15%	6.73%	0.01%	7.00%	0.01%
Aptiv PLC	APTV	282.82	87.20	24,662.25	0.09%			12.44%	0.01%
Align Technology Inc	ALGN	76.53	184.59	14,127.41					
Illumina Inc	ILMN	158.30	109.42	17,321.19					
Kenvue Inc	KVUE	1,914.89	18.60	35,617.03		4.30%			
Targa Resources Corp	TRGP	223.71	83.61	18,704.56	0.07%	2.39%	0.00%	15.00%	0.01%
LKQ Corp	LKQ	267.60	43.92	11,752.90		2.73%			
Zoetis Inc	ZTS	460.32	157.00	72,269.77	0.27%	0.96%	0.00%	10.91%	0.03%
Equinix Inc	EQIX	93.88	729.64	68,500.79	0.26%	2.34%	0.01%	15.33%	0.04%
Digital Realty Trust Inc	DLR	302.85	124.36	37,661.93	0.14%	3.92%	0.01%	6.80%	0.01%
Molina Healthcare Inc	MOH	58.30	332.95	19,410.99	0.07%			11.24%	0.01%
Las Vegas Sands Corp	LVS	764.49	47.46	36,282.74		1.69%			

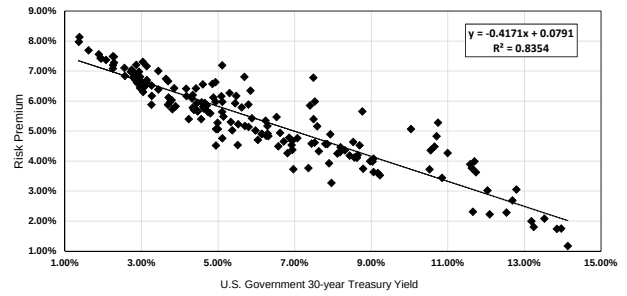
Notes:
[1] Equals sum of Col. [9]
[2] Equals sum of Col. [11]
[3] Equals ([1] x (1 + (0.5 x [2]))) + [2]
[4] Source: Bloomberg Professional as of October 31, 2023
[5] Source: Bloomberg Professional as of October 31, 2023
[6] Equals [4] x [5]
[7] Equals weight in S&P 500 based on market capitalization [6] if Growth Rate >0% and≤20%
[8] Source: Bloomberg Professional, as of October 31, 2023
[9] Equals [7] x [8]
[10] Source: Bloomberg Professional, as of October 31, 2023
[11] Equals [7] x [10]

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
Quarter	Average Authorized Electric ROE	U.S. Govt. 30-year Treasury	Risk Premium
1980.1	13.97%	11.66%	2.31%
1980.2	14.25%	10.52%	3.73%
1980.3	14.30%	10.85%	3.45%
1980.4	14.32%	12.10%	2.23%
1981.1	14.82%	12.53%	2.28%
1981.2	15.05%	13.24%	1.81%
1981.3	15.31%	14.13%	1.17%
1981.4	15.59%	13.85%	1.74%
1982.1	15.71%	13.96%	1.75%
1982.2	15.60%	13.52%	2.08%
1982.3	15.85%	12.79%	3.06%
1982.4	16.03%	10.75%	5.28%
1983.1	15.54%	10.71%	4.83%
1983.2	15.13%	10.65%	4.48%
1983.3	15.39%	11.62%	3.77%
1983.4	15.37%	11.74%	3.63%
1984.1	15.06%	12.04%	3.02%
1984.2	15.18%	13.18%	2.00%
1984.3	15.38%	12.69%	2.69%
1984.4	15.69%	11.70%	3.99%
1985.1	15.48%	11.58%	3.90%
1985.2	15.27%	11.00%	4.27%
1985.3	14.91%	10.55%	4.36%
1985.4	15.11%	10.04%	5.07%
1986.1	14.42%	8.77%	5.65%
1986.2	14.27%	7.49%	6.78%
1986.3	13.26%	7.40%	5.86%
1986.4	13.52%	7.53%	5.99%
1987.1	12.90%	7.49%	5.40%
1987.2	13.17%	8.53%	4.64%
1987.3	13.14%	9.06%	4.08%
1987.4	12.76%	9.23%	3.53%
1988.1	12.74%	8.63%	4.11%
1988.2	12.70%	9.06%	3.63%
1988.3	12.78%	9.18%	3.60%
1988.4	12.97%	8.97%	4.00%
1989.1	13.02%	9.04%	3.99%
1989.2	13.22%	8.70%	4.52%
1989.3	12.38%	8.12%	4.26%
1989.4	12.83%	7.93%	4.90%
1990.1	12.62%	8.44%	4.19%
1990.2	12.85%	8.65%	4.20%
1990.3	12.54%	8.79%	3.75%
1990.4	12.68%	8.56%	4.12%
1991.1	12.66%	8.20%	4.46%
1991.2	12.67%	8.31%	4.36%
1991.3	12.49%	8.19%	4.30%
1991.4	12.42%	7.85%	4.57%
1992.1	12.38%	7.81%	4.58%
1992.2	11.83%	7.90%	3.93%
1992.3	12.03%	7.45%	4.59%
1992.4	12.14%	7.52%	4.62%
1993.1	11.84%	7.07%	4.76%
1993.2	11.64%	6.86%	4.78%
1993.3	11.15%	6.32%	4.84%
1993.4	11.04%	6.14%	4.91%
1994.1	11.07%	6.58%	4.49%
1994.2	11.13%	7.36%	3.77%
1994.3	12.75%	7.59%	5.16%
1994.4	11.24%	7.96%	3.28%
1995.1	11.96%	7.63%	4.33%
1995.2	11.32%	6.94%	4.37%
1995.3	11.37%	6.72%	4.65%
1995.4	11.58%	6.24%	5.35%
1996.1	11.46%	6.29%	5.17%
1996.2	11.46%	6.92%	4.54%
1996.3	10.70%	6.97%	3.73%
1996.4	11.56%	6.62%	4.94%
1997.1	11.08%	6.82%	4.26%
1997.2	11.62%	6.94%	4.68%
1997.3	12.00%	6.53%	5.47%

Quarter	[1] Average Authorized Electric ROE	[2] U.S. Govt. 30-year Treasury	[3] Risk Premium
1997.4	11.06%	6.15%	4.91%
1998.1	11.31%	5.88%	5.43%
1998.2	12.20%	5.85%	6.35%
1998.3	11.65%	5.48%	6.17%
1998.4	12.30%	5.11%	7.19%
1999.1	10.40%	5.37%	5.03%
1999.2	10.94%	5.80%	5.14%
1999.3	10.75%	6.04%	4.71%
1999.4	11.10%	6.26%	4.84%
2000.1	11.21%	6.30%	4.92%
2000.2	11.00%	5.98%	5.02%
2000.3	11.68%	5.79%	5.89%
2000.4	12.50%	5.69%	6.81%
2001.1	11.38%	5.45%	5.93%
2001.2	10.88%	5.70%	5.17%
2001.3	10.76%	5.53%	5.23%
2001.4	11.57%	5.30%	6.27%
2002.1	10.05%	5.52%	4.53%
2002.2	11.41%	5.62%	5.79%
2002.3	11.25%	5.09%	6.16%
2002.4	11.57%	4.93%	6.63%
2003.1	11.43%	4.85%	6.57%
2003.2	11.16%	4.60%	6.56%
2003.3	9.88%	5.11%	4.76%
2003.4	11.09%	5.11%	5.98%
2004.1	11.00%	4.88%	6.12%
2004.2	10.64%	5.34%	5.30%
2004.3	10.75%	5.11%	5.64%
2004.4	10.91%	4.93%	5.98%
2005.1	10.56%	4.71%	5.85%
2005.2	10.13%	4.47%	5.65%
2005.3	10.85%	4.42%	6.42%
2005.4	10.59%	4.65%	5.94%
2006.1	10.38%	4.63%	5.75%
2006.2	10.63%	5.14%	5.49%
2006.3	10.06%	5.00%	5.07%
2006.4	10.39%	4.74%	5.64%
2007.1	10.39%	4.80%	5.59%

	[1]	[2]	[3]
Quarter	Average Authorized Electric ROE	U.S. Govt. 30-year Treasury	Risk Premium
2007.2	10.27%	4.99%	5.28%
2007.3	10.02%	4.95%	5.07%
2007.4	10.43%	4.61%	5.81%
2008.1	10.15%	4.41%	5.74%
2008.2	10.54%	4.57%	5.96%
2008.3	10.38%	4.45%	5.93%
2008.4	10.39%	3.64%	6.74%
2009.1	10.45%	3.44%	7.01%
2009.2	10.58%	4.17%	6.41%
2009.3	10.41%	4.32%	6.09%
2009.4	10.54%	4.34%	6.20%
2010.1	10.45%	4.62%	5.82%
2010.2	10.08%	4.37%	5.71%
2010.3	10.29%	3.86%	6.43%
2010.4	10.34%	4.17%	6.17%
2011.1	9.96%	4.56%	5.40%
2011.2	10.12%	4.34%	5.78%
2011.3	10.36%	3.70%	6.66%
2011.4	10.34%	3.04%	7.31%
2012.1	10.30%	3.14%	7.17%
2012.2	9.92%	2.94%	6.98%
2012.3	9.78%	2.74%	7.04%
2012.4	10.07%	2.86%	7.21%
2013.1	9.77%	3.13%	6.64%
2013.2	9.84%	3.14%	6.70%
2013.3	9.83%	3.71%	6.12%
2013.4	9.82%	3.79%	6.04%
2014.1	9.57%	3.69%	5.88%
2014.2	9.83%	3.44%	6.39%
2014.3	9.79%	3.27%	6.52%
2014.4	9.78%	2.96%	6.81%
2015.1	9.66%	2.55%	7.11%
2015.2	9.50%	2.88%	6.61%
2015.3	9.40%	2.96%	6.44%
2015.4	9.65%	2.96%	6.69%
2016.1	9.70%	2.72%	6.98%
2016.2	9.41%	2.57%	6.84%
2016.3	9.76%	2.28%	7.48%
2016.4	9.55%	2.83%	6.72%
2017.1	9.61%	3.05%	6.57%
2017.2	9.61%	2.90%	6.71%
2017.3	9.73%	2.82%	6.91%
2017.4	9.74%	2.82%	6.92%
2018.1	9.59%	3.02%	6.57%
2018.2	9.57%	3.09%	6.49%
2018.3	9.66%	3.06%	6.60%
2018.4	9.44%	3.27%	6.17%
2019.1	9.57%	3.01%	6.55%
2019.2	9.58%	2.78%	6.79%
2019.3	9.57%	2.29%	7.28%
2019.4	9.74%	2.26%	7.49%
2020.1	9.45%	1.89%	7.56%
2020.2	9.52%	1.38%	8.14%
2020.3	9.34%	1.37%	7.98%
2020.4	9.32%	1.62%	7.69%
2021.1	9.45%	2.07%	7.38%
2021.2	9.46%	2.26%	7.20%
2021.3	9.37%	1.93%	7.43%
2021.4	9.37%	1.95%	7.42%
2022.1	9.34%	2.25%	7.08%
2022.2	9.35%	3.05%	6.30%
2022.3	9.14%	3.26%	5.88%
2022.4	9.72%	3.89%	5.83%
2023.1	9.71%	3.75%	5.96%
2023.2	9.54%	3.81%	5.73%
2023.3	9.63%	4.23%	5.40%
2023.4	9.47%	4.95%	4.52%
AVERAGE	11.46%	6.09%	5.37%
MEDIAN	11.00%	5.35%	5.62%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9139992
R Square	0.8353945
Adjusted R Square	0.8344484
Standard Error	0.0057010
Observations	176

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.02870	0.02870	883.07251	0.00000
Residual	174	0.00566	0.00003		
Total	175	0.03436			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0791	0.00	82.74	0.0000	0.0772	0.0810	0.0772	0.0810
U.S. Govt. 30-year Treasury	(0.4171)	0.01	(29.72)	0.0000	(0.4448)	(0.3894)	(0.4448)	(0.3894)

	[7] U.S. Govt. 30-year Treasury	[8] Risk Premium	[9] ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	4.84%	5.89%	10.74%
Blue Chip Near-Term Projected Forecast (Q1 2024 - Q1 2025) [5]	4.44%	6.06%	10.50%
Blue Chip Long-Term Projected Forecast (2025-2029) [6]	3.80%	6.33%	10.13%
AVERAGE			10.46%

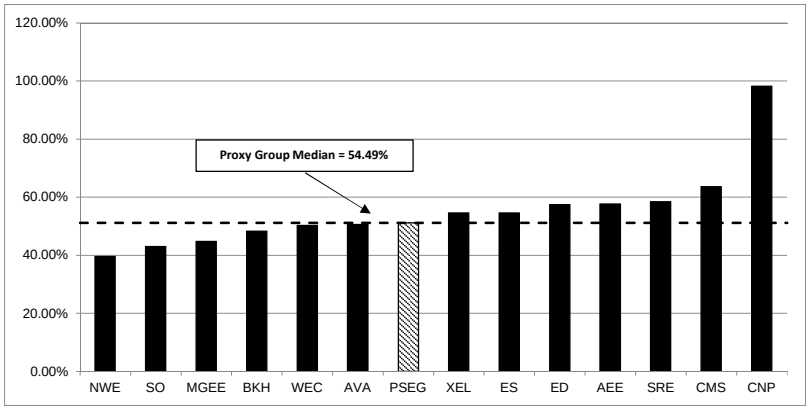
Notes:
[1] Source: Regulatory Research Associates, rate cases through October 31, 2023
[2] Source: S&P Capital IQ Pro, quarterly bond yields are the average of each trading day in the quarter
[3] Equals Column [1] − Column [2]
[4] Source: S&P Capital IQ Pro, 30-day average as of October 31, 2023
[5] Source: Blue Chip Financial Forecasts, Vol. 42, No. 11, November 1, 2023, at 2
[6] Source: Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14.
[7] See notes [4], [5] & [6]
[8] Equals 0.079130 + (-0.417135 x Column [7])
[9] Equals Column [7] + Column [8]

2024-2028 CAPITAL EXPENDITURES AS A PERCENT OF 2022 NET PLANT
($ Millions)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
		2022	2024	2025	2026	2027	2028	2024-28 Cap. Ex. / 2022 Net Plant
Ameren Corporation	AEE							
Capital Spending per Share			$12.55	$12.78	$13.00	$13.00	$13.00	
Common Shares Outstanding			269.00	277.00	285.00	285.00	285.00	
Capital Expenditures			$3,376.0	$3,538.7	$3,705.0	$3,705.0	$3,705.0	57.67%
Net Plant		$31,262.0						
Avista Corporation	AVA							
Capital Spending per Share			$6.35	$6.55	$6.75	$6.75	$6.75	
Common Shares Outstanding			78.50	81.75	85.00	85.00	85.00	
Capital Expenditures			$498.5	$535.5	$573.8	$573.8	$573.8	50.60%
Net Plant		$5,444.7						
Black Hills Corporation	BKH							
Capital Spending per Share			$9.50	$9.38	$9.25	$9.25	$9.25	
Common Shares Outstanding			69.00	70.00	71.00	71.00	71.00	
Capital Expenditures			$655.5	$656.3	$656.8	$656.8	$656.8	48.28%
Net Plant		$6,797.9						
CenterPoint Energy, Inc.	CNP							
Capital Spending per Share			$7.05	$8.03	$9.00	$9.00	$9.00	
Common Shares Outstanding			632.00	633.00	634.00	634.00	634.00	
Capital Expenditures			$4,455.6	$5,079.8	$5,706.0	$5,706.0	$5,706.0	98.20%
Net Plant		$27,143.0						
CMS Energy Corporation	CMS							
Capital Spending per Share			$9.50	$9.63	$9.75	$9.75	$9.75	
Common Shares Outstanding			295.00	297.50	300.00	300.00	300.00	
Capital Expenditures			$2,802.5	$2,863.4	$2,925.0	$2,925.0	$2,925.0	63.58%
Net Plant		$22,713.0						
Consolidated Edison, Inc.	ED							
Capital Spending per Share			$14.50	$15.25	$16.00	$16.00	$16.00	
Common Shares Outstanding			345.00	345.00	345.00	345.00	345.00	
Capital Expenditures			$5,002.5	$5,261.3	$5,520.0	$5,520.0	$5,520.0	57.36%
Net Plant		$46,766.0						
Eversource Energy	ES							
Capital Spending per Share			$11.00	$11.00	$11.00	$11.00	$11.00	
Common Shares Outstanding			355.00	357.50	360.00	360.00	360.00	
Capital Expenditures			$3,905.0	$3,932.5	$3,960.0	$3,960.0	$3,960.0	54.60%
Net Plant		$36,113.0						
MGE Energy, Inc.	MGEE							
Capital Spending per Share			$4.00	$4.63	$5.25	$5.25	$5.25	
Common Shares Outstanding			36.16	36.16	36.16	36.16	36.16	
Capital Expenditures			$144.6	$167.2	$189.8	$189.8	$189.8	44.72%
Net Plant		$1,971.1						
NorthWestern Corporation	NWE							
Capital Spending per Share			$7.75	$7.38	$7.00	$7.00	$7.00	
Common Shares Outstanding			62.00	62.00	62.00	62.00	62.00	
Capital Expenditures			$480.5	$457.3	$434.0	$434.0	$434.0	39.59%
Net Plant		$5,657.5						
Sempra Energy	SRE							
Capital Spending per Share			$8.55	$8.78	$9.00	$9.00	$9.00	
Common Shares Outstanding			630.00	630.00	630.00	630.00	630.00	
Capital Expenditures			$5,386.5	$5,528.3	$5,670.0	$5,670.0	$5,670.0	58.44%
Net Plant		$47,782.0						
Southern Company	SO							
Capital Spending per Share			$7.85	$7.68	$7.50	$7.50	$7.50	
Common Shares Outstanding			1070.00	1070.00	1070.00	1070.00	1070.00	
Capital Expenditures			$8,399.5	$8,212.3	$8,025.0	$8,025.0	$8,025.0	43.02%
Net Plant		$94,570.0						
Wisconsin Energy Corporation	WEC							
Capital Spending per Share			$9.30	$9.28	$9.25	$9.25	$9.25	
Common Shares Outstanding			315.43	315.43	315.43	315.43	315.43	
Capital Expenditures			$2,933.5	$2,925.6	$2,917.7	$2,917.7	$2,917.7	50.19%
Net Plant		$29,114.0						
Xcel Energy Inc.	XEL							
Capital Spending per Share			$9.25	$9.38	$9.50	$9.50	$9.50	
Common Shares Outstanding			553.00	556.50	560.00	560.00	560.00	
Capital Expenditures			$5,115.3	$5,217.2	$5,320.0	$5,320.0	$5,320.0	54.49%
Net Plant		$48,253.0						
Public Service Electric and Gas Company	PSEG							
Capital Expenditures [8]								51.16%
Net Plant [9]		$33,230.0						
PSEG CapEx Total (2023 - 2027)								$17,000.0
PSEG CapEx Annual Average								
Proxy Group Median								54.49%
PSEG as % Proxy Group Median								0.94

Notes:
[1] - [6] Source: Value Line, dated October 20, 2023, September 8 2023, and August 11, 2023.
[7] Equals (Column [2] + [3] + [4] + [5] + [6]) / Column [1]
[8] Source: PSEG December 2023 Investor Update, approximate mid-point of PSE&G capital spending range 2023-2027 $16.0-$18.5B.
[9] Source: From the PSEG 2022 10K. Net utility plant is from the PSE&G Consolidated Balance Sheet, page 68, Net Property, Plant and Equipment (December 31, 2022 balance is $32,830 million); the Energy Efficiency regulatory asset is from the Financial Statement Note 7, page 88 (Green Program Recovery Charges (GPRC), December 31, 2022 non-current asset balance is $447 million).

2024-2028 CAPITAL EXPENDITURES AS A PERCENT OF 2022 NET PLANT



Projected CAPEX / 2022 Net Plant

Rank	Company		2024-2028
1	NorthWestern Corporation	NWE	39.59%
2	Southern Company	SO	43.02%
3	MGE Energy, Inc.	MGEE	44.72%
4	Black Hills Corporation	BKH	48.28%
5	Wisconsin Energy Corporation	WEC	50.19%
6	Avista Corporation	AVA	50.60%
7	Public Service Electric and Gas Company	PSEG	51.16%
8	Xcel Energy Inc.	XEL	54.49%
9	Eversource Energy	ES	54.60%
10	Consolidated Edison, Inc.	ED	57.36%
11	Ameren Corporation	AEE	57.67%
12	Sempra Energy	SRE	58.44%
13	CMS Energy Corporation	CMS	63.58%
14	CenterPoint Energy, Inc.	CNP	98.20%
	Proxy Group Median		51.16%
	PSEG/Proxy Group		0.94

Notes:
Source: Exhibit AEB-9, page 1 col. [7]

REGULATORY RISK ASSESSMENT

				[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Revenue Stabilization				Capital Cost Recovery				
Company	Operating Subsidiary	State	Utility Type	Test Year Convention	Revenue Decoupling	Formula-Based Rates	Straight Fixed Variable Rate Design	Overall Revenue Stabilization	Traditional Generation	Renewable/ Non-Traditional Generation	Delivery Infrastructure	Environmental Compliance	Overall Capital Cost Recovery
Ameren Corporation	Ameren Illinois Co.	Illinois	Electric	Historical	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes
	Ameren Illinois Co.	Illinois	Gas	Fully Forecast	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
	Union Electric Co.	Missouri	Electric	Historical	Yes	No	No	Yes	No	Yes	Yes	No	Yes
	Union Electric Co.	Missouri	Gas	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
Avista Corporation	Alaska Electric Light and Power Co.	Alaska	Electric	Historical	No	No	No	No	No	No	No	No	No
	Avista Corp.	Idaho	Electric	Historical	Yes	No	No	Yes	No	No	No	No	No
	Avista Corp.	Idaho	Gas	Historical	Yes	No	No	Yes	No	No	No	No	No
	Avista Corp.	Oregon	Gas	Fully Forecast	Yes	No	No	Yes	No	No	No	No	No
	Avista Corp.	Washington	Electric	Historical	Yes	No	No	Yes	No	No	No	No	No
	Avista Corp.	Washington	Gas	Historical	Yes	No	No	Yes	No	No	No	No	No
Black Hills Corporation	Black Hills Energy Arkansas Inc.	Arkansas	Gas	Historical	Yes	Yes	No	Yes	No	No	Yes	No	Yes
	Black Hills Colorado Electric Inc.	Colorado	Electric	Historical	No	No	No	No	Yes	Yes	No	No	Yes
	Black Hills Gas Distribution LLC	Colorado	Gas	Historical	No	No	No	No	No	No	Yes	No	Yes
	Black Hills Iowa Gas Utility Co.	Iowa	Gas	Historical	No	No	No	No	No	No	Yes	No	Yes
	Black Hills/Kansas Gas Utility Co.	Kansas	Gas	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
	Black Hills Nebraska Gas LLC	Nebraska	Gas	Historical	No	No	No	No	No	No	Yes	No	Yes
	Black Hills Power Inc.	South Dakota	Electric	Historical	No	No	No	No	No	No	No	Yes	Yes
	Black Hills Wyoming Gas LLC	Wyoming	Gas	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
	Cheyenne Light Fuel & Power Co.	Wyoming	Electric	Historical	Yes	No	No	Yes	No	No	No	No	No
CenterPoint Energy, Inc.	Indiana Gas Co.	Indiana	Gas	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
	Southern Indiana Gas & Electric Co.	Indiana	Electric	Historical	Yes	No	No	Yes	No	No	Yes	Yes	Yes
	Southern Indiana Gas & Electric Co.	Indiana	Gas	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
	CenterPoint Energy Arkla	Louisiana (PSC)	Gas	Historical	Yes	Yes	Yes	Yes	No	No	No	No	No
	CenterPoint Energy Resources Corp.	Minnesota	Gas	Fully Forecast	Yes	No	No	Yes	No	No	No	No	No
	Vectren Energy Delivery of Ohio Inc.	Ohio	Gas	Partially Forecast	No	No	No	No	No	No	Yes	No	Yes
	CenterPoint Energy Houston Electric LLC	Texas (PUC)	Electric	Historical	No	No	No	No	No	No	Yes	No	Yes
	CenterPoint Energy Resources Corp.	Texas (RRC)	Gas	Historical	No	No	No	No	No	No	Yes	No	Yes
CMS	Consumers Energy Co.	Michigan	Electric	Fully Forecast	No	No	No	No	No	Yes	No	No	Yes
	Consumers Energy Co.	Michigan	Gas	Fully Forecast	Yes	No	No	Yes	No	No	No	No	No
Consolidated Edison, Inc.	Rockland Electric Co.	New Jersey	Electric	Partially Forecast	Yes	No	No	Yes	No	No	No	Yes	Yes
	Consolidated Edison Co. of New York Inc.	New York	Electric	Fully Forecast	Yes	No	No	Yes	No	Yes	Yes	No	Yes
	Consolidated Edison Co. of New York Inc.	New York	Gas	Fully Forecast	Yes	No	No	Yes	No	No	Yes	No	Yes
	Orange & Rockland Utilities Inc.	New York	Electric	Fully Forecast	Yes	No	No	Yes	No	Yes	No	No	Yes
	Orange & Rockland Utilities Inc.	New York	Gas	Fully Forecast	Yes	No	No	Yes	No	No	No	No	No
Eversource Energy	Connecticut Light and Power Co.	Connecticut	Electric	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
	Yankee Gas Services Co.	Connecticut	Gas	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
	Eversource Gas Co. of Massachusetts	Massachusetts	Gas	Historical	Yes	No	No	Yes	No	No	Yes	Yes	Yes
	NSTAR Electric Co.	Massachusetts	Electric	Historical	Yes	No	No	Yes	No	Yes	Yes	No	Yes
	NSTAR Gas Co.	Massachusetts	Gas	Historical	Yes	No	No	Yes	No	No	Yes	Yes	Yes
	Public Service Co. of New Hampshire	New Hampshire	Electric	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
MGE Energy, Inc.	Madison Gas & Electric Co.	Wisconsin	Electric	Fully Forecast	No	No	No	No	No	Yes	No	No	Yes
	Madison Gas & Electric Co.	Wisconsin	Gas	Fully Forecast	No	No	No	No	No	No	No	No	No
NorthWestern Corporation	NorthWestern Corporation	Montana	Electric	Historical	No	No	No	No	No	No	No	No	No
	NorthWestern Corporation	Montana	Gas	Historical	No	No	No	No	No	No	No	No	No
	NorthWestern Corporation	Nebraska	Gas	Historical	No	No	No	No	No	No	No	No	No
	NorthWestern Corporation	South Dakota	Electric	Historical	No	No	No	No	No	No	No	No	No
	NorthWestern Corporation	South Dakota	Gas	Historical	No	No	No	No	No	No	No	No	No
Sempra Energy	San Diego Gas & Electric Co.	California	Electric	Fully Forecast	Yes	No	No	Yes	No	No	No	No	No
	San Diego Gas & Electric Co.	California	Gas	Fully Forecast	Yes	No	No	Yes	No	No	No	No	No
	Southern California Gas Co.	California	Gas	Fully Forecast	Yes	No	No	Yes	No	No	No	No	No
	Oncor Electric Delivery Co.	Texas (PUC)	Electric	Historical	No	No	No	No	No	No	Yes	No	Yes
Southern Company	Alabama Power Co.	Alabama	Electric	Historical	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes
	Atlanta Gas Light Co.	Georgia	Gas	Fully Forecast	No	No	No	No	No	No	Yes	Yes	Yes
	Georgia Power Co.	Georgia	Electric	Fully Forecast	No	No	No	No	Yes	No	No	Yes	Yes
	Northern Illinois Gas Co.	Illinois	Gas	Fully Forecast	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
	Mississippi Power Co.	Mississippi	Electric	Fully Forecast	Yes	Yes	No	Yes	No	No	No	Yes	Yes
	Chattanooga Gas Co.	Tennessee	Gas	Historical	Yes	No	No	Yes	No	No	No	No	No
	Virginia Natural Gas Inc.	Virginia	Gas	Fully Forecast	Yes	No	No	Yes	No	No	Yes	No	Yes
Wisconsin Energy Corporation	North Shore Gas Co.	Illinois	Gas	Fully Forecast	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
	Peoples Gas Light & Coke Co.	Illinois	Gas	Fully Forecast	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
	Michigan Gas Utilities Corp.	Michigan	Gas	Fully Forecast	No	No	No	No	No	No	Yes	No	Yes
	Upper Michigan Energy Resources Corp.	Michigan	Electric	Fully Forecast	No	No	No	No	No	Yes	No	No	Yes
	Minnesota Energy Resources Corp.	Minnesota	Gas	Fully Forecast	Yes	No	No	Yes	No	No	Yes	No	Yes
	Wisconsin Electric Power Co.	Wisconsin	Electric	Fully Forecast	No	No	No	No	No	Yes	No	No	Yes
	Wisconsin Electric Power Co.	Wisconsin	Gas	Fully Forecast	No	No	No	No	No	No	No	No	No
	Wisconsin Gas LLC	Wisconsin	Gas	Fully Forecast	No	No	No	No	No	No	No	No	No
	Wisconsin Public Service Corp.	Wisconsin	Electric	Fully Forecast	No	No	No	No	No	No	No	No	No
	Wisconsin Public Service Corp.	Wisconsin	Gas	Fully Forecast	No	No	No	No	No	No	No	No	No
Xcel Energy Inc.	Public Service Co. of Colorado	Colorado	Electric	Partially Forecast	Yes	No	No	Yes	No	Yes	No	No	Yes
	Public Service Co. of Colorado	Colorado	Gas	Historical	Yes	No	No	Yes	No	No	Yes	No	Yes
	Northern States Power Co. - Minnesota	Minnesota	Electric	Fully Forecast	Yes	No	No	Yes	No	Yes	No	Yes	Yes
	Northern States Power Co. - Minnesota	Minnesota	Gas	Fully Forecast	No	No	No	No	No	No	Yes	No	Yes

REGULATORY RISK ASSESSMENT

Company	Operating Subsidiary	State	Utility Type	[1] Test Year Convention	[2] Revenue Decoupling	[3] Formula-Based Rates	[4] Straight Fixed Variable Rate Design	[5] Overall Revenue Stabilization	[6] Traditional Generation	[7] Renewable/ Non-Traditional Generation	[8] Delivery Infrastructure	[9] Environmental Compliance	[10] Overall Capital Cost Recovery
					Revenue Stabilization				Capital Cost Recovery				
	Southwestern Public Service Co.	New Mexico	Electric	Historical	No	No	No	No	No	Yes	No	No	Yes
	Northern States Power Co. - Minnesota	North Dakota	Electric	Fully Forecast	No	No	No	No	No	Yes	Yes	No	Yes
	Northern States Power Co. - Minnesota	North Dakota	Gas	Fully Forecast	No	No	No	No	No	No	No	No	No
	Northern States Power Co. - Minnesota	South Dakota	Electric	Historical	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
	Southwestern Public Service Co.	Texas (PUC)	Electric	Historical	No	No	No	No	No	No	No	No	No
	Northern States Power Co. - Wisconsin	Wisconsin	Electric	Fully Forecast	No	No	No	No	No	No	No	No	No
	Northern States Power Co. - Wisconsin	Wisconsin	Gas	Fully Forecast	No	No	No	No	No	No	No	No	No
Proxy Group Average			Fully Forecast	35				Yes 45				Yes	50
			Partially Forecast	3				No 34				No	29
			Historical	41									
			Forecast	48.10%	44.30%			% Yes 57.0%				% Yes	63.3%
Public Service Electric and Gas Co.	[11]	New Jersey	Electric	Partially Forecast	Yes	No	No	Yes	No	No	Yes	Yes	Yes
Public Service Electric and Gas Co.	[11]	New Jersey	Gas	Partially Forecast	Yes	No	No	Yes	No	No	Yes	Yes	Yes

Notes:
[1] Regulatory Research Associates, effective as of October 31, 2023
[2] S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022. Operating subsidiaries not covered in this report were excluded from this exhibit. A designation of "Yes" indicates full or partial decoupling.
[3] - [4] Form 10-K; company tariffs; S&P Global Market Intelligence
[5] If either [2], [3], or [4] equals "Yes", then "Yes"; if not, then "No"
[6] - [9] S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022. Operating subsidiaries not covered in this report were excluded from this exhibit.
[10] If [6] or [7] or [8] or [9] equals "Yes", then "Yes"; if not, then "No"
[11] Data provided by the Company

COMPARISON OF PSEG AND PROXY GROUP COMPANIES
RRA JURISDICTIONAL RANKINGS

Ultimate Parent Company	Jurisdiction	[1] RRA Rank	[2] RRA Numeric Rank
Ameren Corporation	Illinois	Average/2	5
	Missouri	Average/3	6
Avista Corporation	Alaska	Below Average/1	7
	Idaho	Average/2	5
	Oregon	Average/2	5
	Washington	Average/3	6
Black Hills Corporation	Arkansas	Average/1	4
	Colorado	Average/1	4
	Iowa	Above Average/3	3
	Kansas	Below Average/1	7
	Nebraska	Average/1	4
	South Dakota	Average/2	5
	Wyoming	Average/2	5
CenterPoint Energy, Inc.	Indiana	Average/1	4
	Louisiana (PSC)	Average/2	5
	Minnesota	Average/2	5
	Ohio	Average/3	6
	Texas (PUC)	Average/3	6
	Texas (RRC)	Average/1	4
CMS	Michigan	Above Average/3	3
Consolidated Edison, Inc.	New Jersey	Below Average/1	7
	New York	Average/2	5
Eversource Energy	Connecticut	Below Average/2	8
	Massachusetts	Average/2	5
	New Hampshire	Average/2	5
MGE Energy, Inc.	Wisconsin	Above Average/3	3
NorthWestern Corporation	Montana	Below Average/1	7
	Nebraska	Average/1	4
	South Dakota	Average/2	5
Sempra Energy	California	Average/1	4
	Texas (PUC)	Average/3	6
Southern Company	Alabama	Above Average/1	1
	Georgia	Above Average/2	2
	Illinois	Average/2	5
	Mississippi	Above Average/3	3
	Tennessee	Above Average/3	3
	Virginia	Average/2	5
Wisconsin Energy Corporation	Illinois	Average/2	5
	Michigan	Above Average/3	3
	Minnesota	Average/2	5
	Wisconsin	Above Average/3	3
Xcel Energy Inc.	Colorado	Average/1	4
	Minnesota	Average/2	5
	New Mexico	Below Average/2	8
	North Dakota	Average/1	4
	South Dakota	Average/2	5
	Texas (PUC)	Average/3	6
	Wisconsin	Above Average/3	3
Proxy Group Average		Average/1 to Average/2	4.75
Public Service Electric and Gas Co.	New Jersey	Below Average/1	7

Notes
[1] Source: State Regulatory Evaluations, Regulatory Research Associates, as of August 23, 2023.
[2] AA/1= 1, AA/2= 2, AA/3= 3, A/1= 4, A/2= 5, A/3=6, BA/1= 7, BA/2= 8, BA/3= 9

COMPARISON OF PSEG AND PROXY GROUP COMPANIES
S&P JURISDICTIONAL RANKINGS

Ultimate Parent Company	Jurisdiction	[1] S&P Rank	[2] Numeric Rank
Ameren Corporation	Illinois	Very credit supportive	3
	Missouri	Very credit supportive	3
Avista Corporation	Alaska	More credit supportive	4
	Idaho	Very credit supportive	3
	Oregon	More credit supportive	4
	Washington	Very credit supportive	3
Black Hills Corporation	Arkansas	Highly credit supportive	2
	Colorado	Very credit supportive	3
	Iowa	Most credit supportive	1
	Kansas	Highly credit supportive	2
	Nebraska	Very credit supportive	3
	South Dakota	Very credit supportive	3
	Wyoming	Very credit supportive	3
CenterPoint Energy, Inc.	Indiana	Highly credit supportive	2
	Louisiana (PSC)	Highly credit supportive	2
	Minnesota	Highly credit supportive	2
	Ohio	Very credit supportive	3
	Texas (PUC)	Very credit supportive	3
	Texas (RRC)	Highly credit supportive	2
CMS	Michigan	Most credit supportive	1
Consolidated Edison, Inc.	New Jersey	More credit supportive	4
	New York	Very credit supportive	3
Eversource Energy	Connecticut	More credit supportive	4
	Massachusetts	Highly credit supportive	2
	New Hampshire	Highly credit supportive	2
MGE Energy, Inc.	Wisconsin	Most credit supportive	1
NorthWestern Corporation	Montana	More credit supportive	4
	Nebraska	Very credit supportive	3
	South Dakota	Very credit supportive	3
Sempra Energy	California	More credit supportive	4
	Texas (PUC)	Very credit supportive	3
Southern Company	Alabama	Most credit supportive	1
	Georgia	Highly credit supportive	2
	Illinois	Very credit supportive	3
	Mississippi	Very credit supportive	3
	Tennessee	Highly credit supportive	2
	Virginia	Highly credit supportive	2
Wisconsin Energy Corporation	Illinois	Very credit supportive	3
	Michigan	Most credit supportive	1
	Minnesota	Highly credit supportive	2
	Wisconsin	Most credit supportive	1
Xcel Energy Inc.	Colorado	Very credit supportive	3
	Minnesota	Highly credit supportive	2
	New Mexico	Credit supportive	5
	North Dakota	Highly credit supportive	2
	South Dakota	Very credit supportive	3
	Texas (PUC)	Very credit supportive	3
	Wisconsin	Most credit supportive	1
Proxy Group Average		Very Credit Supportive to Highly Credit Supportive	2.58
Public Service Electric and Gas Co.	New Jersey	More credit supportive	4

Notes
[1] S&P Global Ratings, "North American Utility Regulatory Jurisdictions Update: No Revised Assessments, But Notable Developments," July 10, 2023.
[2] Most Credit Supp. = 1, Highly Credit Supp. = 2, Very Credit Supp. = 3, More Credit Supp. = 4, Credit Supp. = 5

CAPITAL STRUCTURE ANALYSIS

Proxy Group Company	Ticker	Most Recent 8 Quarters (2021Q3 - 2023Q2) Common Equity Ratio	Long-Term Debt Ratio	Preferred Equity Ratio	Total Capitalization
Ameren Corporation	AEE	53.17%	46.26%	0.57%	100%
Avista Corporation	AVA	49.76%	50.24%	0.00%	100%
Black Hills Corporation	BKH	66.21%	33.79%	0.00%	100%
CenterPoint Energy, Inc.	CNP	47.21%	52.79%	0.00%	100%
CMS Energy Corporation	CMS	51.59%	48.21%	0.19%	100%
Consolidated Edison, Inc.	ED	48.18%	51.82%	0.00%	100%
Eversource Energy	ES	54.62%	44.69%	0.69%	100%
MGE Energy, Inc.	MGEE	60.59%	39.41%	0.00%	100%
NorthWestern Corporation	NWE	49.29%	50.71%	0.00%	100%
Sempra Energy	SRE	55.16%	44.79%	0.04%	100%
Southern Company	SO	55.56%	44.20%	0.24%	100%
Wisconsin Energy Corporation	WEC	57.26%	42.58%	0.16%	100%
Xcel Energy Inc.	XEL	54.44%	45.56%	0.00%	100%
Average		54.08%	45.77%	0.15%	
Median		54.44%	45.56%	0.00%	
Maximum		66.21%	52.79%	0.69%	
Minimum		47.21%	33.79%	0.00%	

Notes:
[1] Ratios are weighted by actual common capital, preferred capital, and long-term debt of the operating subsidiaries.
[2] Electric and Natural Gas operating subsidiaries with data listed as N/A from S&P Capital IQ have been excluded from the analysis.