Direct Testimony and Schedules
Ann E. Bulkley

Before the Minnesota Public Utilities Commission

State of Minnesota

In the Matter of the Application of Minnesota Power
For Authority to Increase Rates for Electric Utility
Service in Minnesota

Docket No. E015/GR-23-155

Exhibit _____

RETURN ON EQUITY

November 1, 2023

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I. INTRODUCTION

Q. What is your name, position, and business address?

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

Q. Please describe your educational background, as well as your business and professional 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 qualifications and a summary of testimony that I have filed in other proceedings as MP Exhibit ___ (Bulkley), Direct Schedule 1 to this testimony.

Q. On whose behalf are you testifying?

A. I am submitting this Direct Testimony before the Minnesota Public Utilities Commission ("Commission") on behalf of ALLETE, Inc. ("ALLETE"), d/b/a Minnesota Power ("Minnesota Power" or the "Company").

II. PURPOSE AND OVERVIEW OF DIRECT TESTIMONY

Q. Please describe the purpose of your Direct Testimony.

A. The purpose of my Direct Testimony is to present evidence and provide a recommendation regarding the appropriate return on equity ("ROE") and overall rate of return to be used for ratemaking purposes. I also address the appropriateness of the Company's proposed capital structure.

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

A. Yes, I am sponsoring the following exhibits, which were prepared by me or under my direction:

- MP Exhibit ___ (Bulkley), Direct Schedule 1 – Resume and Testimony Listing of Ann E. Bulkley;
- MP Exhibit ___ (Bulkley), Direct Schedule 2 – Summary of Results;
- MP Exhibit ___ (Bulkley), Direct Schedule 3 – Proxy Group Selection;
- MP Exhibit ___ (Bulkley), Direct Schedule 4 – Flotation Cost;
- MP Exhibit ___ (Bulkley), Direct Schedule 5 – Constant Growth DCF Model;
- MP Exhibit ___ (Bulkley), Direct Schedule 6 – Two-Growth DCF Model;
- MP Exhibit ___ (Bulkley), Direct Schedule 7 – Capital Asset Pricing Model / Empirical Capital Asset Pricing Model;
- MP Exhibit ___ (Bulkley), Direct Schedule 8 – Capital Asset Pricing Model Long-Term Average Beta;
- MP Exhibit ___ (Bulkley), Direct Schedule 9 – Long-Term Average Beta;
- MP Exhibit ___ (Bulkley), Direct Schedule 10 – Market Return;
- MP Exhibit ___ (Bulkley), Direct Schedule 11 – Risk Premium Approach;
- MP Exhibit ___ (Bulkley), Direct Schedule 12 – Regulatory Risk Analysis;
- MP Exhibit ___ (Bulkley), Direct Schedule 13 – Regulatory Environment Analysis; and
- MP Exhibit ___ (Bulkley), Direct Schedule 14 – Capital Structure Analysis.

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

A. I have estimated the Company's cost of equity by applying several traditional estimation methodologies to a proxy group of comparable utilities, including the constant and two-growth forms of the Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the Empirical Capital Asset Pricing Model ("ECAPM"), and a Bond Yield Risk Premium ("BYRP" or "Risk Premium") analysis. My recommendation also takes into consideration the following factors: (1) the regulatory and business

environment in which the Company operates; (2) the Company's rate adjustment mechanisms; (3) the Company's customer concentration; and (4) the Company's proposed capital structure as compared to the capital structures of the proxy group companies. While I do not make specific adjustments to my ROE recommendation for these factors, I did consider them in the aggregate when determining where my recommended ROE falls within the range of the analytical results.

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

A. The remainder of my direct testimony is organized as follows:

- Section III provides a summary of my analyses and conclusions.
- Section IV reviews the regulatory guidelines pertinent to the development of the cost of capital.
- Section V discusses current and projected capital market conditions and the effect of those conditions on the Company's cost of equity.
- Section VI explains my selection of the proxy group for the Company.
- Section VII describes my analyses and the basis for my recommended ROE in this proceeding.
- Section VIII provides a discussion of specific regulatory, business, and financial risks that have a direct bearing on the ROE to be authorized in this proceeding.
- Section IX assesses the Company's proposed capital structure.
- Section X presents my conclusions and recommendations for the market cost of equity.

III. 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,[1] which established the standards for determining a fair and reasonable authorized ROE for public utilities, including consistency of the allowed return with the returns

[1] *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) (hereinafter "*Hope*"); *Bluefield Waterworks & Improvement Co., v. Pub. Serv. Comm'n of W. Va.*, 262 U.S. 679 (1923) (hereinafter "*Bluefield*").

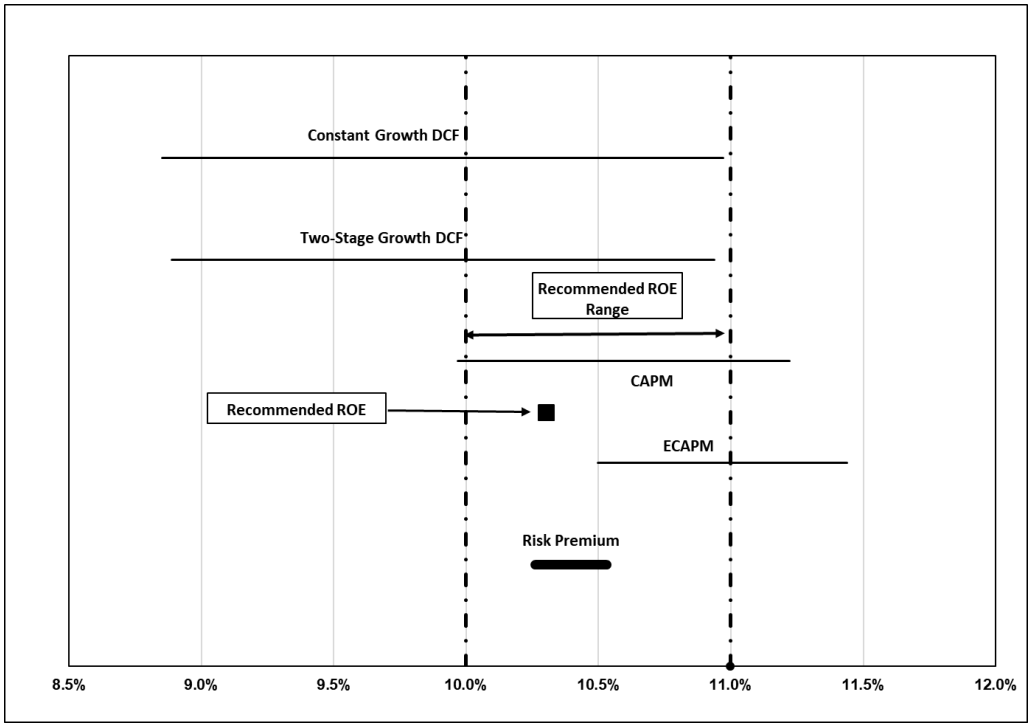
of other businesses having similar risk, adequacy of the return to provide access to capital and support credit quality, and the requirement that the result lead to just and reasonable rates.

- The effect of current and prospective capital market conditions on the cost of equity 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 authorized ROE should be a forward-looking estimate over the period during which the rates will be in effect, 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).
- The Company's regulatory, business, and financial risks relative to the proxy group of comparable companies and the implications of those risks.

Q. What are the results of the models that you have used to estimate the cost of equity for Minnesota Power?

A. Figure 1 summarizes the range of results produced by the constant growth DCF ("CGDCF"), two-growth DCF ("TGDCF"), CAPM, ECAPM, and Bond Yield Plus Risk Premium analysis.

Figure 1. Summary of Cost of Equity Analytical Results



As shown in Figure 1, the range of results across all methodologies 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. How do the results of your analyses compare to the analyses that you prepared for the Company's 2021 Rate Case, Docket No. E015/GR-21-335 ("2021 Rate Case")?

A. The current results of the CGDCF, TGDCF and Bond Yield Risk Premium analyses have increased 73 basis points to approximately 93 basis points, which suggests that the cost of equity has increased, based on the models that the Commission has historically relied upon. The CAPM and ECAPM results have declined, but the results of these additional models overlap the range established by the CGDCF and TGDCF model.

Q. Are prospective capital market conditions expected to affect the results of the cost of equity for the Company 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.
- Since utility dividend yields are now less attractive than the risk-free rates of government bonds, and interest rates are expected to remain near current levels over the next year, and since utility stock prices are inversely related to changes in interest rates, it is likely that utility share prices will decline.
- Rating agencies have responded to the risks of the utility sector, citing increasing interest rates, inflation and high natural gas prices, all of which create pressure for customer affordability and prompt rate recovery and have noted the importance of regulatory support in their current outlooks.
- 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.

- 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.

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 the Company.

Q. What is your recommended ROE for Minnesota Power in this proceeding?

A. Considering the analytical results presented in Figure 1, current and prospective capital market conditions, as well as the level of regulatory, business, and financial risk faced by Minnesota Power's electricity operations in Minnesota relative to the proxy group, I recommend a range from 10.00 to 11.00 percent for the Company's ROE, and based on the Company's overall risk profile, I conclude that the Company's ROE should be at the higher end of this range. If the Company's customer rate stabilization mechanism were to be approved, it would be reasonable for the Company's ROE to be closer to the midpoint of the range of results established by the proxy group companies, the majority of which have some form of non-volumetric cost recovery. However, assuming that the customer rate stabilization mechanism is approved and recognizing the effects of the current inflationary environment on customers, the Company is requesting an ROE of 10.30 percent, which is at the lower end of the recommended range. Company witness Mr. Joshua D. Taran explains that should the Commission reject the requested sales mechanism, it would be appropriate and important to the Company to revert to the higher end of the range to reflect the Company's relative risk and maintain its financial health.

Q. What is the approach that the Commission has employed in establishing utility ROEs?

A. For over the past decade, the Commission has traditionally relied on the TGDCF model for purposes of determining a utility's authorized ROE. Initially, the Commission relied strictly on the results of the TGDCF model; however, since approximately 2015, while the Commission has given primary weight to the TGDCF model, it has also considered various other factors, including the results of other models, market conditions, and

company risk factors. For example, in its 2017 Order for Otter Tail Power Company's ("Otter Tail") rate case, the Commission noted that:

> The record in this case establishes a compelling basis for selecting an ROE above the mean average within the DCF range, given Otter Tail's unique characteristics and circumstances relative to other utilities in the proxy group. These factors include the company's relatively smaller size, geographically diffuse customer base, and the scope of the Company's planned infrastructure investments. The Commission has also considered Otter Tail's recognized [sic] the Company's performance in completing major infrastructure projects substantially under budget, its history of providing reliable service with stable rates, and its record of effectively serving the needs of its customers, as measured by multiple customer-satisfaction metrics.[2]

Likewise, in its 2018 Order for Minnesota Energy Resources Corporation's ("MERC") rate case, the Commission acknowledged that the record included a broad diversity of modeling and noted that the authorized ROE was set in light of the record as a whole:

> The Commission believes that the record evidence in this case, including the broad diversity of modeling and expert testimony, establishes a range of reasonable costs of equity, within which the Commission must identify one value.
>
> The record does not formulaically dictate a particular ROE to be approved. Instead, the record presents a range of reasonable returns on equity that the Commission has carefully evaluated based on the analyses and arguments in the record. As such, the Commission will set the Company's authorized ROE in light of the record as a whole.[3]

The Commission used a similar approach in its orders for Minnesota Power[4] and Great Plains Natural Gas Company ("Great Plains").[5]

[2] *In re Application of Otter Tail Power Co. for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E017/GR-15-1033, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 55 (May 1, 2017) (internal citations omitted).
[3] *In re Application of Minn. Energy Res. Corp. for Auth. to Increase Rates for Natural Gas Serv. in Minn.*, Docket No. G-011/GR-17-563, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 26 (Dec. 26, 2018).
[4] *In re Application of Minn. Power for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-015/GR-16-664, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 61 (Mar. 12, 2018).
[5] *In re Petition by Great Plains Natural Gas Co., a Div. of Montana-Dakota Utils., Co., for Auth. to Increase Natural Gas Rates in Minn*., Docket No. G-004/GR-19-511, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 17 (Oct. 26, 2020).

Q. Is the overall approach you employed for determining the Company's ROE consistent with those considered by the Commission in prior cases?

A. Yes. As discussed, I have conducted and considered a range of cost of equity estimation models, including the TGDCF and CGDCF models, the CAPM, ECAPM, and Risk Premium models. Each of these methodologies has been applied consistent with the approaches I used in Minnesota Power's 2021 Rate Case. Finally, I considered Minnesota Power's business and financial risk relative to the proxy group in my conclusion as to where the Company's ROE falls within my recommended range.[6]

Q. Is Minnesota Power's requested capital structure reasonable and appropriate?

A. Yes. The Company's proposed equity ratio of 53.00 percent is within the range of equity ratios for the proxy group. Further, the Company's proposed equity ratio is reasonable considering that credit rating agencies have identified the outlook for the utility sector as "negative" due to the negative effect on the cash flows and credit metrics associated with increasing interest rates, inflation and commodity costs, and the pressure that those factors place on customer affordability and utilities' prompt rate recovery.

IV. REGULATORY PRINCIPLES

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

A. The U.S. Supreme Court's precedent-setting *Hope* and *Bluefield* cases established the standards for determining the fairness or reasonableness of a utility's authorized ROE. Among the standards established by the U.S. Supreme 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) that the end result, as

[6] *In re Application of Otter Tail Power Co. for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E017/GR-15-1033, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 55 (May 1, 2017); Docket No. E-017/GR-15-1033, Findings of Fact, Conclusions and Order, at 55. *In re Application of Minn. Energy Res. Corp. for Auth. to Increase Rates for Natural Gas Serv. in Minn.*, Docket No. G-011/GR-17-563, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 26 (Dec. 26, 2018).Docket No. G-011/GR-17-563, Findings of Fact, Conclusions and Order, at 26.

opposed to the methodology employed, is the controlling factor in arriving at just and reasonable rates.[7]

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

A. Yes, it has. For example, in a recent fully litigated case, the Commission cited Minnesota Statutes section 216B.16, subd. 6, which states that:

> In determining just and reasonable rates, the Commission is required to "give due consideration to the public need for adequate, efficient, and reasonable service and to the need of the public utility for revenue sufficient to enable it to meet the cost of furnishing service, including adequate provision for depreciation of its utility property used and useful in rendering service to the public, *and to earn a fair and reasonable return upon the investment in such property*."[8]

In the same Order, the Commission stated that it "must set rates at a level that permits stockholders an opportunity to earn a fair and reasonable return on their investment and permits the utility to continue to attract investment."[9] This guidance is in accordance with my view that an allowed rate of return must be sufficient to enable regulated companies, like Minnesota Power, the ability to attract capital on reasonable terms.

Q. Is determining a fair rate of return just about protecting the utility's interests?

A. No. As the U.S. Supreme Court noted in *Bluefield*, a proper rate of return not only assures "confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit [but also] enable[s the utility] to raise the money necessary for the proper discharge of its public duties."[10] As the U.S. Supreme Court further explained in *Hope*, "[t]he rate-making process . . . involves a balancing of the investor and consumer interests."[11]

[7] *See generally Hope*, 320 U.S. 591; *Bluefield*, 262 U.S. 679.
[8] *In re Petition by Great Plains Natural Gas Co., a Div. of Montana-Dakota Utils., Co., for Auth. to Increase Natural Gas Rates in Minn*., Docket No. G004/GR-19-511, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 14 (Oct. 26, 2020) (quoting Minn. Stat. § 216B.16, subd. 6) (emphasis in original).
[9] *Id.*
[10] *Bluefield*, 262 U.S. at 693.
[11] *Hope*, 320 U.S. at 603.

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 authorized ROE that is adequate to attract capital at reasonable terms enables the utility to continue to provide safe, clean, and reliable electricity service while maintaining its financial integrity. That return should be commensurate with returns required by investors elsewhere in the market for investments of comparable risk. It is important to recognize that equity investors have a choice of where to invest capital. If the authorized ROE is not comparable to the returns available for comparable risk investments, it is not just the value to current equity holders that will be harmed, but rather, access to incremental equity is also affected. It is reasonable to expect that equity investors will seek alternative investment opportunities for which the expected return reflects the perceived risks, thereby inhibiting the Company's ability to attract new equity capital at reasonable cost.

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

A. Yes. Utilities compete directly for capital with other investments of similar risk, which include other utilities. Therefore, the ROE authorized for 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, over the same time period, investors have an incentive to direct their capital to those alternative investments. Thus, an authorized ROE significantly below authorized ROEs for other utilities can inhibit the utility's ability to attract capital for investment.

Q. Does the fact that the Company is part of ALLETE, a publicly-traded company, affect your analysis?

A. No. In this proceeding, consistent with stand-alone ratemaking principles, it is appropriate to establish the cost of equity for the Company, not its publicly-traded entity, ALLETE. More importantly, however, it is appropriate to establish a cost of

equity and capital structure that provide the Company the ability to attract capital on reasonable terms, both on a stand-alone basis and within the overall corporate structure. While the Company is committed to investing the required capital to provide safe and reliable service, the Company competes with the ALLETE subsidiaries for discretionary investment capital. In determining how to allocate its finite discretionary capital resources, it would be reasonable for ALLETE to consider the authorized ROE of each of its subsidiaries.

Q. Has the Commission considered the authorized ROEs in other jurisdictions?

A. Yes. The Commission has routinely reviewed authorized ROEs in other jurisdictions in the determination of the ROEs for the companies that it regulates. For example, in its decision in the Company's 2021 Rate Case, the Commission stated:

> [W]hile the decisions of other jurisdictions are not binding and have limited persuasive value because of the fact-intensive nature of cost-of-equity decision-making, they do provide a check, of sorts on reasonableness.[12]

As discussed in more detail later herein, I have developed a comparison of the authorized returns for electric utilities in other jurisdictions, and the returns authorized in Minnesota for electric utilities.

Q. Is the regulatory framework, including 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', as well as the rating agencies, assessments of risk. The regulatory framework broadly considers the relationship between the regulatory commission and the utilities that it regulates with a particular focus on the regulator's supportiveness in establishing a reasonable opportunity for the companies that it regulates to recovery the operating costs of the business including the rate of return. 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

[12] *In re Application of Minn. Power for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-015/GR-21-335, FINDINGS OF FACT, CONCLUSIONS, AND ORDER at 45 (Feb. 28, 2023).

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. 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 Commission's decision in this proceeding should establish rates that provide the Company with a reasonable opportunity to earn an 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, and because there is a particular need to attract significant amounts of capital to meet the clean energy plans across the country, 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.

V. CAPITAL MARKET CONDITIONS

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

A. The models used to estimate the cost of equity 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 cost of equity estimation models can be

affected by prevailing market conditions at the time the analysis is performed. While the ROE established in a rate proceeding is intended to be forward-looking, the analyst uses both current and projected market data, specifically stock prices, dividends, growth rates, and interest rates, in the cost of equity estimation models to estimate the investor-required return for the subject company.

Analysts and regulatory commissions recognize that current market conditions affect the results of the cost of equity estimation models. Accordingly, it is important to consider the effect of these conditions on the models when determining an appropriate range for the ROE and the 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 cost of equity 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 cost of equity for regulated utility companies is being affected by several factors in the current and prospective capital markets, including: (1) changes in monetary policy; (2) relatively high inflation; 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 cost of equity estimation models.

Q. What effect do current and prospective market conditions have on the cost of equity for Minnesota Power?

A. As is discussed in more detail in the remainder of this section, the combination of inflation persistently higher than the Federal Reserve's target level 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 important 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 significantly are expected to continue to remain relatively high in direct response to the Federal Reserve's use of monetary policy to combat inflation. 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 likely understate the cost of equity during the future period that the Company's rates will be in effect.

A. Inflationary Expectations in Current and Projected Capital Market Conditions

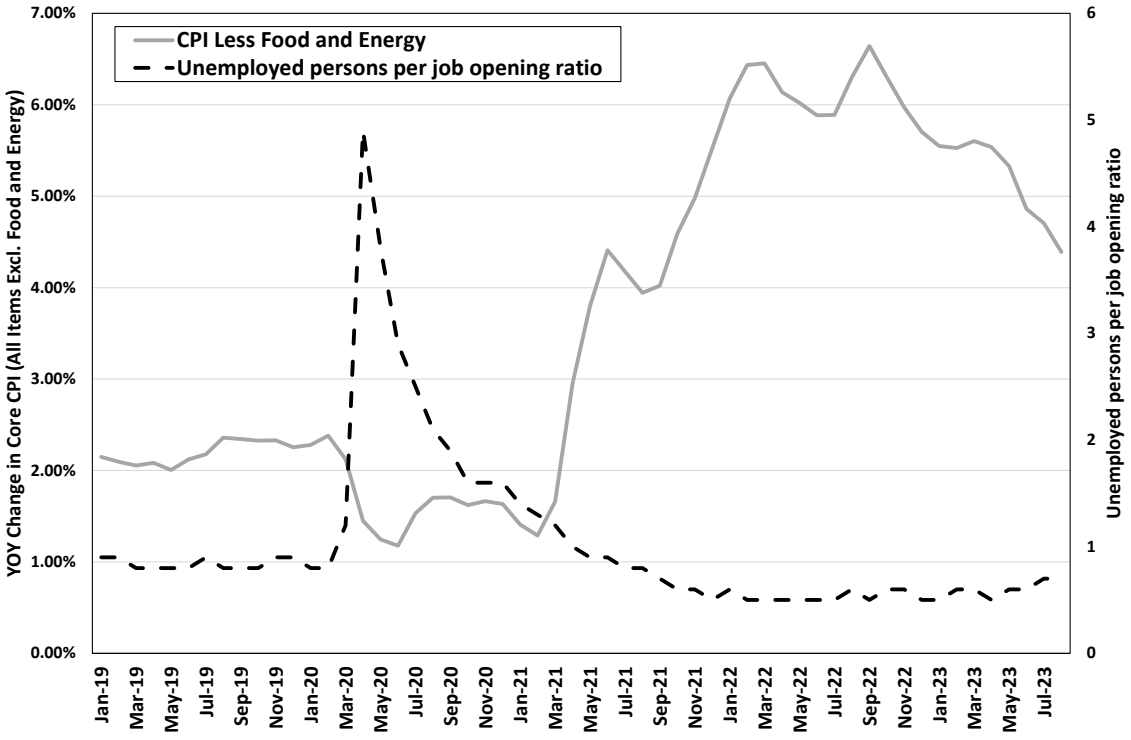
Q. Has inflation increased significantly over the past year?

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.[13] 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. Further, it is important to recognize that a reduction in the rate of inflation does not mean that costs are declining; rather costs continue to increase, albeit at a slower pace than was experienced at the peak in September 2022.

[13] 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 since it removes the effect of food and energy prices, which can be highly volatile.

Finally, Figure 2 also considers the ratio of unemployed persons per job opening, which is currently 0.7 and has been consistently below 1.0 since mid- 2021 despite the Federal Reserve's accelerated policy normalization. This metric indicates sustained strength in the labor 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[14]



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

A. The Federal Reserve has indicated that it expects inflation will remain elevated above its target level over at least the next year and that it will continue to monitor incoming information to determine whether further policy firming may be appropriate. For example, Federal Reserve Chair Powell at the Federal Open Market Committee

[14] U.S. Bureau of Labor Statistics.

("FOMC") meeting in September 2023 observed that while inflation is off of 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 and other data, we estimate that total PCE [personal consumption expenditures] 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.[15]

As a result, Federal Reserve Chair Powell noted that they intend to maintain a restrictive policy stance until substantial progress has been made to reduce inflation to the long-term target of 2 percent.[16] Moreover, the Federal Reserve is currently forecasting an additional 25 basis point increase in the federal funds rate in 2023.[17] Given the expectation that monetary policy will remain restrictive, as noted previously, yields on long-term government bonds are expected to remain elevated over the near-term.

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 July 26, 2023, the Federal Reserve increased the target federal funds rate through a series of increases from a range of 0.00 – 0.25 percent to 5.25 – 5.50

[15] Federal Reserve, Transcript of Chair Powell's Press Conference, July 26, 2023 at 2, available at https://www.federalreserve.gov/monetarypolicy/fomcpresconf20230726.htm.
[16] *Id.* at 4.
[17] Federal Reserve, Summary of Economic Projections, September 20, 2023 at 2, available at https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20230920.pdf.

percent.[18] 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 2.00 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 2.00 percent inflation over the long-run.

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

Q. What effect will inflation and the Federal Reserve's normalization of monetary policy have on long-term interest rates?

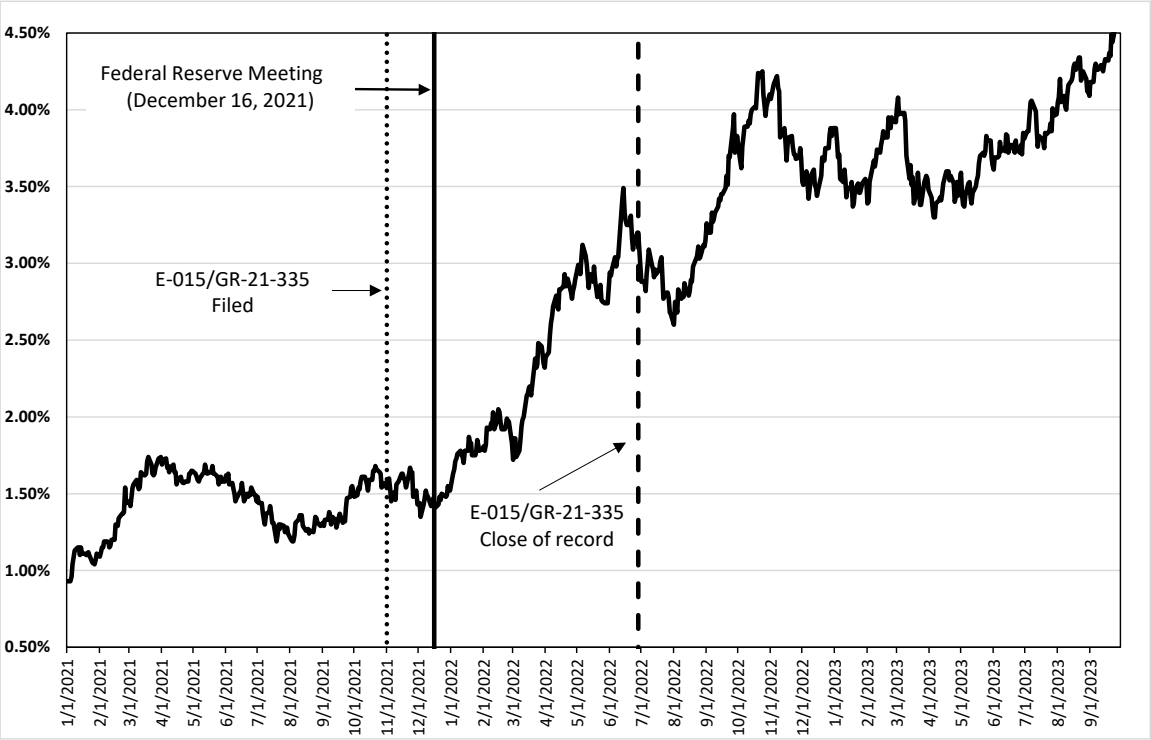
A. Inflation and the Federal Reserve's normalization of monetary policy are expected to result in long-term interest rates remaining relatively high. Specifically, inflation reduces the purchasing power of the future interest payments an investor expects to receive over the duration of the bond. As a result, if investors expect inflation to remain relatively high, they will require higher yields to compensate for the increased risk of inflation, which means interest rates will also remain relatively high.

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 show in Figure 3 since the Federal Reserve's December 2021 meeting, the yield on 10-year Treasury bond has more than doubled, increasing from 1.47 percent on December 15, 2021 to 4.09 percent at the end of August 2023. Since the December 2021 meeting, the Federal Reserve has raised the federal funds rate 525 basis points in response to increased levels of inflation that have persisted for longer than originally projected.

[18] 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, May 3, 2023, and July 26, 2023, available at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

Figure 3. 10-Year Treasury Bond Yield, January 2021 – September 2023[19]



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 through at least the end of 2024. According to the most recent *Blue Chip Financial Forecasts* report, the consensus estimate of the average yield on the 10-year Treasury bond is approximately 3.70 percent through the fourth quarter of 2024.[20] It is reasonable to expect that if government bond yields remain elevated the cost of equity also be higher than the levels experienced in the 2020 and 2021 lower interest rate environment.

Q. How have interest rates and inflation changed since the Company's 2021 Rate Case?

A. As shown in Figure 4, as of the date of my Rebuttal Testimony in the Company's 2021 Rate Case, interest rates (as measured by the 30-year Treasury bond yield) were 2.94 percent and inflation was 8.50 percent. Since the Company's 2021 Rate Case, long-

[19] S&P Capital IQ Pro.
[20] *Blue Chip Financial Forecasts*, Vol. 48, No. 9, September 1, 2023.

term interest rates have increased 148 basis points as the Federal Reserve has increased the federal funds rate to combat inflation, which remains above the Federal Reserve's target. Therefore, it is possible to expect that the Federal Reserve may continue to increase rates to reduce inflation to the target level, or based on Federal Reserve Chair Powell's recent comments, may not reduce interest rates in the near future.

Figure 4. Change in Market Conditions Since the Company's 2021 Rate Case[21]

Docket	Date	Federal Funds Rate	30-Day Avg of 30-Year Treasury Bond Yield	Inflation Rate	Auth'd ROE
E-015/GR-21-335	5/16/2022	0.83%	2.94%	8.50%	9.65%
Current	9/30/2023	5.33%	4.42%	3.71%	

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 that increases in interest rates result in declines in the share prices of utilities and vice versa. 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).[22]

[21] St. Louis Federal Reserve Bank; U.S. Bureau of Labor Statistics.

[22] Justina Lee, *Wall Street Is Rethinking the Treasury Threat to Big Tech Stocks*, Bloomberg(Mar. 11, 2021), https://www.bloomberg.com/news/articles/2021-03-11/wall-street-is-rethinking-the-treasury-threat-to-big-tech-stocks#xj4y7vzkg.

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

A. Equity analysts project that utilities will continue to underperform the broader market given high inflation and the recent increases in interest rates. Fidelity classifies the utility sector as underweight,[23] and Bank of America recently noted that they are "not so constructive on Utilities" given that the dividend yields for utilities are below both the yields available on long- and short-term treasury bonds.[24]

Q. How has the utility sector performed in 2023?

A. As interest rates have increased substantially over the past year, the valuations of utilities have declined. In a recent report, Bank of America ("BofA") indicated that the utilities sector has been the worst performing of S&P sectors and that despite the decline in utility stock prices, they were not recommending a rotation back into the sector. This suggests that equity investors expect further decline in the sector.

> Despite utilities -13% YTD decline, the clear worst S&P subsector, we do not view the pullback as an overly attractive buying opportunity. At risk of overly simplifying, the utilities sector has simply been tracking US Treasury rates. With most utilities yielding below 4%, the merits of ownership for a wide group of investors is simply not there vs Treasuries at 4.3% +… and 5.3% short-term.[25]

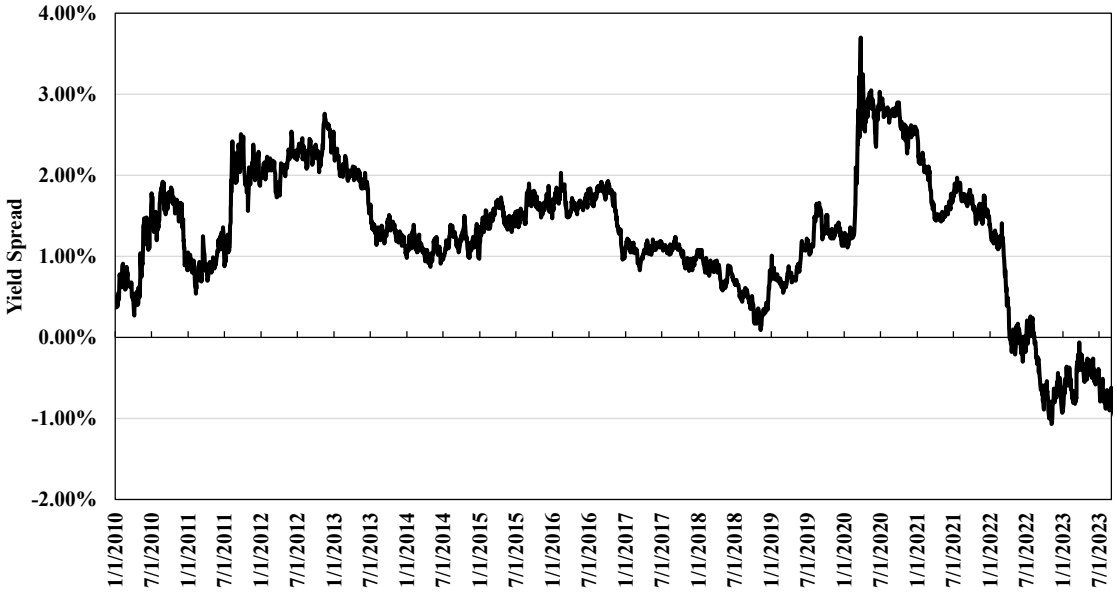
Q. Is it reasonable to expect that utilities will continue to underperform the market?

A. Yes. To illustrate why this is reasonable, I examined the difference between the dividend yields of utility stocks and the yields on long-term government bonds from January 2010 through August 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.

[23] Fidelity, "First Quarter 2023 Investment Research Update" (Feb. 8, 2023), https://www.fidelity.com/bin-public/060_www_fidelity_com/documents/learning-center/Investment-Research-Update-Q1-2023.pdf.
[24] Dumoulin-Smith, US Electric Utilities & IPPs: *As the leaves fall, preparing for Autumn utility outlook. Macro still has potholes* (Sept. 6, 2023).
[25] BofA Global Research, US Electric Utilities & IPPs, *As the leaves fall, preparing for Autumn utility outlook. Micro still has potholes*" (Sept. 6, 2023).

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 August 31, 2023 was negative 0.62 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 1.27 percent. Therefore, the current yield spread is well below the long-term average. Because the yield spread is currently well below the long-term average, and given 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 – August 2023[26]



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

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 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 greater than utility stock dividend yields, the share prices of utilities are likely to continue to decline, which is the reason a number of equity analysts have classified the sector as either underperform or underweight. The expected continued 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.

VI. PROXY GROUP SELECTION

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

A. One of the purposes of this proceeding is to estimate the cost of equity for an electric company that is not itself publicly traded. Because the cost of equity is a market-based concept and because Minnesota Power's operations do not make up the entirety of a publicly traded entity, it is necessary to establish a group of companies that are both publicly traded and comparable to the Company in certain fundamental business and financial respects to serve as its "proxy" in the cost of equity estimation process.

Even if the Company were 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 companies included in the proxy group all possess a set of operating

and risk characteristics that are substantially comparable to the Company's, and thus provide a reasonable basis to derive and estimate the appropriate cost of equity for Minnesota Power.

Q. Please provide a brief profile of Minnesota Power.

A. Minnesota Power is a vertically integrated electric utility that is an operating division of ALLETE. The Company provides electric utility service to approximately 150,000 retail customers in Minnesota.[27] As of December 31, 2022, Minnesota Power's net utility electric plant was approximately $3.15 billion.[28] In addition, Minnesota Power had 2022 electric operating revenues of $1.21 billion.[29] In 2022, approximately 52 percent of Minnesota Power's net generation needs were satisfied by its owned and joint owned facilities, while the remaining 48 percent was purchased power.[30] ALLETE currently has an investment grade long-term rating of BBB (Outlook: Stable) from Standards & Poor's ("S&P") and Baa1 (Outlook: Stable) from Moody's.[31]

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

A. I began with the group of 36 companies that *Value Line* classifies as electric utilities and applied the following screening criteria to select companies that:

- pay consistent quarterly cash dividends because such companies cannot be analyzed using the CGDCF 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;
- own regulated generation assets;
- derive at least 40 percent of generation from owned generation;

[27] ALLETE, Inc., 2022 SEC Form 10-K, at 36.
[28] FERC Form 1, 2022 Q4 at 110.
[29] FERC Form 1, 2022 Q4 at 114.
[30] ALLETE, Inc., 2022 SEC Form 10-K, at 13.
[31] SNL Financial, March 23, 2023.

- derive at least 60 percent of the Company's operating income from regulated electric operations; and
- were not parties to a merger or transformative transaction during the analytical periods relied on.

I developed the screening criteria 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 against establishing a proxy group of companies that are comparable in business and financial risk to the Company.

Q. What is the composition of your proxy group?

A. The proxy group consists of the following sixteen companies shown in Figure 6.

Figure 6. Proxy Group

Company	Ticker
Alliant Energy Corporation	LNT
Ameren Corporation	AEE
American Electric Power Company, Inc.	AEP
Avista Corporation	AVA
CMS Energy Corporation	CMS
Duke Energy Corporation	DUK
Entergy Corporation	ETR
Evergy, Inc.	EVRG
IDACORP, Inc.	IDA
NextEra Energy, Inc.	NEE
NorthWestern Corporation	NWE
OGE Energy Corporation	OGE
Pinnacle West Capital Corporation	PNW
Portland General Electric Company	POR
Southern Company	SO
Xcel Energy Inc.	XEL

VII. COST OF EQUITY ESTIMATION

Q. Please briefly discuss the ROE in the context of the regulated rate of return.

A. The overall rate of return for a regulated utility is the weighted average cost of capital, in which the cost rates of the individual sources of capital are weighted by their respective book values. The ROE is the cost of common equity capital in the utility's capital structure for ratemaking purposes. While the costs of debt and preferred stock can be directly observed, the cost of equity is market-based and, therefore, must be estimated based on observable market data.

Q. How is the required ROE determined?

A. The required ROE is estimated by using one or more analytical techniques that rely on market-based data to quantify investor expectations regarding required equity returns, adjusted for certain incremental costs and risks. Informed judgment is then applied to determine where the company's cost of equity falls within the range of results. The key consideration in determining the cost of equity 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 CGDCF model, the TGDCF model, the CAPM model, the ECAPM model and the Bond Yield Plus Risk Premium methodology. As discussed in more detail below, a reasonable ROE estimate appropriately considers alternative methodologies and the reasonableness of their individual and collective results.

A. Importance of Multiple Analytical Approaches

Q. Is it important to use more than one analytical approach to estimate the cost of equity?

A. Yes. Because the cost of equity is not directly observable, it must be estimated based on both quantitative and qualitative information. When faced with the task of estimating the cost of equity, 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 cost of equity, and we use multiple approaches to estimate the cost of equity. As a practical matter, however, all the models available for estimating the cost of equity are subject to limiting assumptions or other methodological constraints. Consequently, many well-regarded finance texts recommend using multiple approaches when estimating the cost of equity. For example, Copeland, Koller, and Murrin[32] suggest using the CAPM and Arbitrage Pricing Theory model, while Brigham and Gapenski[33] recommend the CAPM, DCF, and Bond Yield Plus Risk Premium approaches.

Q. Do current market conditions support your reliance on 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. The benefit of using multiple models is that each model relies on different assumptions, certain of which may better reflect current and projected market conditions at different times. As discussed previously, CAPM, ECAPM, and Bond Yield Plus Risk Premium analyses offer some balance through the use of projected interest rates since the effect of changes in interest rates, particularly the recent increase in interest rates, may not be captured as well in the DCF model at this time. 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.

[32] Tom Copeland, Tim Koller, and Jack Murrin, Valuation: Measuring and Managing the Value of Companies at 214 (New York, McKinsey & Company, Inc., 3rd ed., 2000).
[33] Eugene Brigham and Louis Gapenski. Financial Management: Theory and Practice at 341 (Orlando, Dryden Press, 1994).

Q. Has the Commission recognized that it is important to consider the results of multiple cost of equity estimation models?

A. Yes. For example, the Commission emphasized the importance of considering the results of each model submitted by the witnesses in authorizing the ROE for MERC in its 2018 rate proceeding:

> Not all models are equally probative, and not every application of the same model is equally probative. The Commission examines the results of every model introduced into the record in every case. In this case, the Commission agrees with the ALJ that the DCF model is the best in the record for determining return on equity. The Commission finds that the transparency and objectivity of the DCF model make it the strongest, most credible model, and that the most reasonable way to proceed is to use its results as a baseline and to use the results of other models to check, inform, and refine those results.[34]

In that order, the Commission concluded that the results of the DCF models and the other models in the case supported the ROE that was authorized for MERC.[35] Similarly, the Commission explained in its order in the 2016 Minnesota Power rate proceeding that:

> The recommendations of the parties all fall into a fairly narrow and often overlapping range, though the DCF analyses tend to support a lower ROE in that range, and CAPM and risk premium models (and blended approaches) tend to support the higher end of the range.[36]

To account for the divergence between the results of the DCF models and the CAPM and Bond Yield Plus Risk Premium analyses, the Commission authorized an ROE towards the higher end of the results of the DCF models.[37] Thus, the Commission recognizes the importance of considering the results of each model presented in the rate case since market conditions can cause the results produced by each of the models to diverge.

[34] *In re Application of Minn. Energy Res. Corp. for Auth. to Increase Rates for Natural Gas Serv. in Minn.*, Docket No. G-011/GR-17-563, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 27 (Dec. 26, 2018).
[35] *Id.*
[36] *In re Application of Minn. Power for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-015/GR-16-664, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 60 (Mar. 12, 2018).
[37] *Id.* at 61.

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:

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

Where P_0 represents the current stock price, D1…D∞ are all expected future dividends, and k is the discount rate, or required ROE. Equation [1] is a standard present value calculation that can be simplified and rearranged into the following form:

$$k = \frac{D_0(1+g)}{P_0} + g \quad \textbf{[2]}$$

Equation [2] is often referred to as the CGDCF 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 CGDCF model?

A. The CGDCF 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 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 CGDCF model?

A. The dividend yield in my CGDCF model is based on the proxy companies' current annualized dividend and average closing stock prices over the 30-, 90-, and 180-trading days ended August 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. 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 12-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 CGDCF model.

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

A. My CGDCF model incorporates three sources of long-term earnings per share ("EPS") growth rates: (1) *Zacks Investment Research* ("*Zacks*"); (2) Yahoo! Finance; and (3) *Value Line*.

Q. Why are EPS growth rates the appropriate growth rates to be relied on in the DCF model?

A. Earnings are the fundamental driver of a company's ability to pay dividends; therefore, projected EPS growth is the appropriate measure of a company's long-term growth. In

contrast, changes in a company's dividend payments are based on management decisions related to cash management and other factors. For example, a company may decide to retain earnings rather than pay out a portion of those earnings to shareholders through dividends. Therefore, dividend growth rates are less likely than earnings growth rates to reflect accurately investor perceptions of a company's growth prospects.

Q. Has the Commission supported the use of earnings growth rates in prior proceedings?

A. Yes. In its decision in Minnesota Power's 2021 Rate Case, the Commission recognized the widespread reliance on earnings growth rates and the reasonableness of using these growth rates in the DCF model:

> [T]he Department has not demonstrated inaccuracies in Minnesota Power's earnings estimates in this case to justify dismissing them from consideration. The investment community relies heavily on earnings estimates, which are rigorously audited to ensure compliance with accounting principles. And in the case of utilities, earnings estimates reflect industry-specific considerations, include assumptions based on quantitative market data, and have not been shown to produce unreasonable returns.[38]

C. Two-Growth DCF Model

Q. Did you also consider a TGDCF model?

A. Yes. In order to address some of the limiting assumptions underlying the constant growth form of the DCF model, I also considered the results of a two-growth form of the DCF model. As with the CGDCF model, the two-growth form defines the cost of equity as the discount rate that sets the current price equal to the discounted value of future cash flows; however, unlike the CGDCF model, the TGDCF model removes the effect of earnings growth rates that are considered either too high or too low to be sustainable over the long-term.

[38] *In re Application of Minn. Power for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-015/GR-21-335, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 45 (Feb. 28, 2023).

Q. Has the Commission previously relied on the result of the TGDCF model?

A. Yes. The Commission has historically placed greater weight on the results of the TGDCF model and used the results of other analytical models such as the CAPM and Bond Yield Risk Premium analyses as a check on the reasonableness of the TGDCF results. Figure 7 summarizes 19 recent decisions issued by the Commission since 2010 in fully litigated rate cases. As shown, the Commission has relied on the results of the TGDCF model in every case beginning in 2013 (and also in 2011).

Figure 7. Commission's Reliance on the TGDCF Model

Date	Company	Docket No.	Case Type	Reliance on TGDCF (Yes/No)
2023	Northern States Power Co.	E-002/GR-21-630	Electric	Yes[39]
2023	Minnesota Power	E-015/GR-21-335	Electric	Yes[40]
2022	OTP	E-017/GR-20-719	Electric	Yes.[41]
2020	Great Plains Natural Gas	G-004/GR-19-511	Gas	Yes[42]
2018	MERC	G-011/GR-17-563	Gas	Yes[43]
2017	Minnesota Power	E-015/GR-16-664	Electric	Yes[44]
2016	OTP	E-017/GR-15-1033	Electric	Yes[45]

[39] *In re Application of N. States Power Co., dba Xcel Energy, for Auth. to Increase Rates for Elec. Serv. in the State of Minn.*, Docket No. E-002/GR-21-630, FINDINGS OF FACT, AND CONCLUSIONS AND ORDER at 89-90 (July 17, 2023).
[40] *In re Application of Minn. Power for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-015/GR-21-335, FINDINGS OF FACT, AND CONCLUSIONS AND ORDER at 35-46 (Feb. 28, 2023).
[41] *In re Application of Otter Tail Power Co. for Auth. to Increase Rates for Elec. Serv. in the State of Minn.*, Docket No. E-017/GR-20-719, FINDINGS OF FACT, AND CONCLUSIONS AND ORDER at 34 (Feb. 1, 2022).
[42] *In re Petition by Great Plains Natural Gas Co., a Div. of Montana-Dakota Utils., Co., for Auth. to Increase Natural Gas Rates in Minn.*, Docket No. G-004/GR-19-511, FINDINGS OF FACT, AND CONCLUSIONS AND ORDER at 18 (Oct. 26, 2020).
[43] *In re Application of Minn. Energy Res. Corp. for Auth. to Increase Rates for Natural Gas Serv. in Minn.*, Docket No. G-011/GR-17-563, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 27 (Dec. 26, 2018).
[44] *In re Application of Minn. Power for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-015/GR-16-664, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 61 (Mar. 12, 2018).
[45] *In re Application of Otter Tail Power Co. for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-017/GR-15-1033, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 55 (May 1, 2017).

Date	Company	Docket No.	Case Type	Reliance on TGDCF (Yes/No)
2016	MERC	G-011/GR-15-736	Gas	Yes[46]
2016	CenterPoint Energy Minnesota Gas	G-008/GR-15-424	Gas	Yes[47]
2016	Great Plains Natural Gas	G-004/GR-15-879	Gas	Yes[48]
2014	Northern States Power Co.	E-002/GR-13-868	Electric	Yes[49]
2014	CenterPoint Energy Minnesota Gas	G-008/GR-13-316	Gas	Yes[50]
2014	MERC	G-011/GR-13-617	Gas	Yes[51]
2013	Northern States Power Company	E-002/GR-12-961	Electric	Yes[52]
2012	MERC	G-007,011/GR-10-977	Gas	No (used CGDCF)[53]
2011	IPL	E-001/GR-10-276	Electric	Yes[54]
2011	OTP	E-017/GR-10-239	Electric	No (CGDCF)[55]

[46] *In re Application of Minn. Energy Res. Corp. for Auth. to Increase Rates for Natural Gas Serv. in Minn.*, Docket No. G-011/GR-15-736, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 27 (Oct. 31, 2016).
[47] *In re Application of CenterPoint Energy Res. Corp. d/b/a CenterPoint Energy Minn. Gas for Auth. to Increase Natural Gas Rates in Minn.*, Docket No. G-008/GR-15-424, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 42-44 (June 3, 2016).
[48] *In re Petition by Great Plains Natural Gas Co., a Div. of MDU Res. Group, Inc., for Auth. to Increase Natural Gas Rates in Minn.*, Docket No. G-004/GR-15-879, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 23 (Sept. 6, 2016).
[49] *In re Application of N. States Power Co. for Auth. to Increase Rates for Elec. Serv. in the State of Minn.*, Docket No. E-002/GR-13-868, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 57 (May 8, 2015).
[50] *In re Application of CenterPoint Energy Res. Corp. d/b/a CenterPoint Energy Minn. Gas for Auth. to Increase Natural Gas Rates in Minn.*, Docket No. G-008/GR-13-316, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 32 (June 9, 2014); Direct Testimony of Eilon Amit, Nov. 26, 2013, at 8-13.
[51] *In re Petition by Minn. Energy Res. Corp. for Auth. to Increase Natural Gas Rates in Minn.*, Docket No. G-011/GR-13-617, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 31-32 (Oct. 28, 2014).
[52] *In Application of N. States Power Co. for Auth. to Increase Rates for Elec. Serv. in the State of Minn.*, Docket No. E002/GR-12-961, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 43 (Sept. 3, 2013); Surrebuttal Testimony of Eilon Amit, Apr. 12, 2013, at 5 and Appendix A.
[53] *In re Application of Minn. Energy Res. Corp. for Auth. to Increase Rates for Natural Gas Serv. in Minn.*, Docket No. G-007,011/GR-10-977, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 23 (July 13, 2013).
[54] *In re Application of Interstate Power & Light Co. for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-001/GR-10-276, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 10 (Aug. 12, 2011); Direct Testimony of Eilon Amit, Dec. 3, 2010, at 30-42.
[55] *In re Application of Otter Tail Power Co. for Auth. to Increase Rates for Elec. Utility Serv. in Minn.*, Docket No. E-017/GR-10-239, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 43-44 (Apr. 25, 2011).

Date	Company	Docket No.	Case Type	Reliance on TGDCF (Yes/No)
2010	Northern States Power Company	G-002/GR-09-1153	Electric	No (CGDCF)[56]
2010	CenterPoint Energy Minnesota Gas	G-008/GR-08-1075	Gas	No (used CGDCF)[57]

Q. How did you apply the TGDCF to the companies in your proxy group?

A. This TGDCF approach that I have relied on is consistent with the approach adopted by the Commission in many proceedings. The TGDCF model starts with the same share price, dividend, and projected EPS growth rate data that is used in the CGDCF model. However, the TGDCF model applies the projected earnings growth rates as the short-term growth rate for years 1–5, and a long-term growth rate for years 6 and beyond for companies that are deemed to have earnings growth rates that are outliers. Outliers are defined as EPS growth rates that are either higher than the proxy group average growth rate plus one standard deviation or lower than the proxy group average growth rate minus one standard deviation. For EPS growth rates outside of this one standard deviation range, the proxy group average growth rate plus or minus one standard deviation from the mean is substituted as the measure of the long-term growth rate. This growth rate test is applied to the mean, low, and high earnings growth rates for the proxy group.

Q. Should companies with outlier earnings growth rates be excluded from the proxy group prior to calculating the TGDCF model?

A. No. As noted, the TGDCF model applies a statistical approach to address both projected EPS growth rates that are considered to be sustainable over the long term as well as to moderate those EPS growth rates that may not be considered sustainable over the long-term. Since the purpose of the TGDCF model is to account for growth rates that may not be sustainable over the long-term, excluding a company with a growth rate that the analyst perceives to be unsustainable is not appropriate as it will bias the results of the

[56] *In re Application of N. States Power Co., a Minn. Corp., for Auth. to Increase Rates for Natural Gas Serv. in Minn.*, Docket No. G-002/GR-09-1153, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 28-29 (Dec. 6, 2010).
[57] *In re Application of CenterPoint Energy for Auth. to Increase Natural Gas Rates in Minn.*, Docket No. G-008/GR-08-1075, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 7 (Jan. 11, 2010).

TGDCF model. Specifically, the removal of a company for an unsustainable growth rate will affect the calculation of the average and standard deviation for the proxy group. These statistics are used to determine which growth rates are replaced in the second stage of the model. In this instance, the standard deviation for the proxy group will decrease and thus the range of growth rates considered sustainable also decreases. The result of removing a company could be that the growth rates of the companies that remain in the proxy group, which would otherwise be considered sustainable using the full proxy group, may be considered unsustainable in the standard deviation calculation. Therefore, interjecting an analyst's judgement about the growth rates before using the TGDCF model biases the statistical analysis that is fundamental to the TGDCF analysis and can alter the results of the TGDCF model.

Q. Has the Commission previously discussed the purpose of the TGDCF model?

A. Yes. In its order in Docket No. G-011/GR-15-736, the Commission noted:

> The DCF model uses the current dividend yield and the expected growth rate of dividends to determine what rate of return is high enough to induce investment. The model is derived from a formula used by investors to assess the attractiveness of investment opportunities using three inputs—dividends, market equity prices, and earnings/dividend growth rates. *Its two basic variants are the Constant-Growth DCF, the classic version, and the Two-Growth DCF, designed for situations in which the short-term, projected earnings growth rates may not be expected to continue in the long run.* The two-growth model uses one growth rate for an initial period, followed by a different growth rate for the long term.[58]

In summary, the Commission noted that the purpose of the TGDCF model is to identify and adjust for growth rates that are not expected to be sustainable in the long-run. This is consistent with my understanding of the TGDCF model.

[58] *In re Application of Minn. Energy Res. Corp. for Auth. to Increase Rates for Natural Gas Serv. in Minn.*, Docket No. G-011/GR-15-736, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 20 (Oct. 31, 2016) (emphasis added).

D. Flotation Costs

Q. What are flotation costs?

A. Flotation costs are the costs associated with the sale of new issues of common stock. These costs include out-of-pocket expenditures for preparation, filing, underwriting, and other issuance costs.

Q. Why is it important to consider flotation costs in the authorized ROE?

A. A regulated utility must have the opportunity to earn an ROE that is both competitive and compensatory to attract and retain new investors. To the extent that a company is denied the opportunity to recover prudently incurred flotation costs, actual returns will fall short of expected (or required) returns, thereby diluting equity share value.

Q. Are flotation costs part of the utility's invested costs or part of the utility's expenses?

A. Yes. Flotation costs are part of the invested costs of the utility, which are properly reflected on the balance sheet under "paid in capital." They are not current expenses, and, therefore, are not reflected on the income statement. Rather, like investments in rate base or the issuance costs of long-term debt, flotation costs are incurred over time. As a result, the great majority of a utility's flotation cost is incurred prior to the test year but remains part of the cost structure that exists during the test year and beyond, and as such, should be recognized for ratemaking purposes. Therefore, it is irrelevant whether an issuance occurs during the test year or is planned for the test year because failure to allow recovery of past flotation costs may deny the Company the opportunity to earn its required rate of return in the future.

Q. Please provide an example of why a flotation cost adjustment is necessary to compensate investors for the capital they have invested.

A. Suppose ALLETE issues stock with a value of $100, and an equity investor invests $100 in ALLETE in exchange for that stock. Further, suppose that after paying the flotation costs associated with the equity issuance, which include fees paid to underwriters and attorneys, among others, ALLETE ends up with only $97 of issuance proceeds, rather

than the $100 the investor contributed. ALLETE invests that $97 in plant used to serve its customers, which becomes part of rate base. Absent a flotation cost adjustment, the investor will thereafter earn a return on only the $97 invested in rate base, even though she contributed $100. Making a small flotation cost adjustment gives the investor a reasonable opportunity to earn the authorized return, rather than the lower return that results when the authorized return is applied to an amount less than what the investor contributed.

Q. Is the date of ALLETE's last issued common equity important in the determination of flotation costs?

A. No. As shown in MP Exhibit ___ (Bulkley), Direct Schedule 4, ALLETE has had eight equity issuances between 1977 and 2022 and at-market-issuances of common stock for each year between 2008 and 2017 and in 2021. The vintage of the issuance, however, is not particularly important because the investor suffers a shortfall in every year that he should have a reasonable opportunity to earn a return on the full amount of capital that he has contributed. Returning to my earlier example, the investor who contributed $100 is entitled to a reasonable opportunity to earn a return on $100 not only in the first year after the investment, but in every subsequent year in which he has the $100 invested. Leaving aside depreciation, which is dealt with separately, there is no basis to conclude that the investor is entitled to earn a return on $100 in the first year after issuance, but thereafter is entitled to earn a return on only $97. As long as the $100 is invested, the investor should have a reasonable opportunity to earn a return on the entire amount.

Q. Is the need to consider flotation costs eliminated because the Company is an operating entity of ALLETE?

A. No, it is not. Although the Company is an operating entity of ALLETE, it is appropriate to consider flotation costs. Typically, wholly-owned entities receive equity capital from their parent and provide returns on the capital that roll up to the parent, which is designated to attract and raise capital based upon the returns of those subsidiaries. For Minnesota Power, it is an operating entity of ALLETE and flotation costs should be granted since it is a direct cost to the utility. To deny recovery of issuance costs

associated with the capital that is invested in the subsidiaries ultimately penalizes the investors that fund utility operations and inhibits the utility's ability to obtain new equity capital at a reasonable cost.

Q. Is the need to consider flotation costs recognized by the academic and financial communities?

A. Yes. The need to reimburse shareholders for the lost returns associated with equity issuance costs is recognized by the academic and financial communities in the same spirit that investors are reimbursed for the costs of issuing debt. This treatment is consistent with the philosophy of a fair rate of return. According to Dr. Shannon Pratt:

> Flotation costs occur when new issues of stock or debt are sold to the public. The firm usually incurs several kinds of flotation or transaction costs, which reduce the actual proceeds received by the firm. Some of these are direct out-of-pocket outlays, such as fees paid to underwriters, legal expenses, and prospectus preparation costs. Because of this reduction in proceeds, the firm's required returns on these proceeds equate to a higher return to compensate for the additional costs. Flotation costs can be accounted for either by amortizing the cost, thus reducing the cash flow to discount, or by incorporating the cost into the cost of capital. Because flotation costs are not typically applied to operating cash flow, one must incorporate them into the cost of capital.[59]

Q. Has the Commission previously recognized the need to include flotation costs?

A. Yes. The need to reimburse investors for equity issuance costs has been recognized by the Commission in many, although not all, previous decisions.[60] My examination

[59] Shannon P. Pratt, Cost of Capital Estimation and Applications at 220-21 (2nd ed.).

[60] See, e.g., *In re Application of Interstate Power & Light Co. for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-001/GR-10-276, FINDINGS OF FACT, CONCLUSIONS, AND ORDER at 9 (Aug. 12, 2011); *In re Application of N. States Power Co. d/b/a Xcel Energy for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-002/GR-10-971, FINDINGS OF FACT, CONCLUSIONS, AND ORDER at 8 (May 14, 2012); *In re Application of N. States Power Co. d/b/a Xcel Energy for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-002/GR-08-1065, FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER at 10-11 (Oct. 23, 2009); *In re Application of Otter Tail Corp. d/b/a Otter Tail Power Co. for Auth. to Increase Rates for Elec. Util. Serv. in Minn.*, Docket No. E-017/GR-07-1178, FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER at 57-58 (Aug. 1, 2008); *In re Petition by Great Plains Natural Gas Co., a Div. of MDU Res. Group, Inc., for Auth. to Increase Natural Gas Rates in Minn.*, Docket No. G-004/GR-04-1487, FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER at 11 (May 1, 2006); *In re Petition by Great Plains Natural Gas Co., a Div. of Montana-Dakota Utils., Co., for Auth. to Increase Natural Gas Rates in Minn.*, Docket No. G-004/GR-19-511, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 18 (Oct. 26, 2020); *In re Application of N. States Power Co., dba Xcel Energy, for Auth. to Increase Rates for Elec. Serv. in the State of Minn.*, Docket No. E-002/GR-21-630, FINDINGS OF FACT, CONCLUSIONS AND ORDER at 159 (July 17, 2023).

concludes that flotation costs are properly included in the determination of the Company's ROE.

Q. How did you calculate the flotation costs for Minnesota Power?

A. My flotation cost calculation is based on the costs of issuing equity that were incurred by ALLETE in its common equity issuances between 1977 and 2021. As shown on MP Exhibit ___ (Bulkley), Direct Schedule 4, based on the costs of these issuances, the impact on the proxy group's cost of equity amounts to approximately 0.09 percent (i.e., 9 basis points).

Q. Do your DCF model results include an adjustment for flotation cost recovery?

A. Yes, consistent with the past precedent of the Commission, discussed above, I have adjusted the results of my CGDCF and TGDCF analyses to include flotation costs.

E. DCF Model Results

Q. How did you calculate the range of results for the CGDCF and TGDCF Models?

A. I calculated a low-end result for the DCF models using the minimum growth rate of the three sources (i.e., the lowest of the *Zacks*, Yahoo! Finance, and *Value Line* projected earnings growth rates) for each of the proxy group companies. I used a similar approach to calculate a high-end result, using the maximum growth rate of the three sources for each proxy group company. Lastly, I also calculated results using the average growth rate from all three sources for each proxy group company.

Q. What are the results of your DCF analyses?

A. Figure 8 summarizes the results of my DCF analyses. As shown, the mean CGDCF results using the average growth rates range from 9.86 percent to 10.12 percent, and the mean results using the maximum growth rates range from 10.85 percent to 11.11 percent.[61] The results of the TGDCF using mean growth rates range from 9.82 percent to 10.08 percent and the results of the TGDCF using the high end growth rates are from

[61] *See* MP Exhibit ___ (Bulkley), Direct Schedule 5 and Schedule 6.

10.82 percent to 11.08 percent. While I also summarize the mean DCF results using the minimum growth rates, given the expectation of equity analysts that utility stocks may continue to underperform, and thus the likelihood that the DCF model is understating the cost of equity, I do not believe it is appropriate to consider these DCF results at this time.

Figure 8. Discounted Cash Flow Results

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.99%	10.12%	11.11%
90-Day Average	8.83%	9.95%	10.95%
180-Day Average	8.73%	9.86%	10.85%
Constant Growth Average	8.85%	9.98%	10.97%
Two-Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	9.03%	10.08%	11.08%
90-Day Average	8.86%	9.91%	10.91%
180-Day Average	8.77%	9.82%	10.82%
Two-Growth Average	8.89%	9.94%	10.94%

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

A. Yes. For example, in its May 2022 decision establishing the cost of equity for Aqua Pennsylvania, Inc., the Pennsylvania Public Utility Commission concluded that the current capital market conditions of high inflation and increased 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.[62]
>
> ***
>
> We have previously determined, above, that we shall utilize I&E's DCF and CAPM methodologies. I&E's DCF and CAPM produce a range of reasonableness for the ROE in this proceeding from 8.90% [DCF] to 9.89% [CAPM]. Based upon our informed judgment, which includes consideration of a variety of factors, including increasing inflation leading to increases in interest rates and capital costs since the rate filing, we determine that a base ROE of 9.75% is reasonable and appropriate for Aqua.[63]

More recently, the Massachusetts Department of Public Utilities ("MDPU") also came to a similar conclusion:

> The Department recently considered the relationship between low interest rates and utility stock prices over the last several years and whether a projected increase in long-term interest rates caused the DCF analysis to understate the cost of equity. D.P.U. 20-120, at 416-419. The Department found that, although utility stocks had increased above historic levels in conjunction with low interest rates, the evidence in that proceeding that long-term interest rates would change was speculative. D.P.U. 20-120, at 417-419. In this proceeding, the record is clear that long-term interest rates have increased compared to the period of time from which the parties derived the dividend yields used in the DCF analyses (Exh. ES-VVR-Rebutal-1, at 23-26; Tr. 14, at 1463). We also have considered the Attorney General's evidence of investors forecasting that utility stocks will retain their high valuations in the near term (Tr. 14, at 1449-1452; RR-DPU-48). *Based on the foregoing*

[62] Pennsylvania Public Utility Commission, Docket Nos. R-2021-3027385 and R-2021-3027386, Opinion and Order, May 12, 2022, pp. 154–155.
[63] *Id*., pp. 177–178.

evidence, the Department finds that there is greater certainty that the DCF results understate the Company's cost of equity.[64]

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

A. As discussed previously, one primary assumption of the DCF models is a constant price-to-earnings ratio, and 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 remain elevated and yields on long-term government bonds exceed utility dividend yields, it is important to consider the results of the DCF models with caution. Therefore, while I have given weight to the results of the DCF models, my recommendation also gives weight to the results of other cost of equity estimation models.

F. CAPM Analysis

Q. Please briefly describe the CAPM.

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

$$K_e = r_f + \beta(r_m - r_f) \quad [3]$$

Where:

K_e = the required market ROE;

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,

[64] Massachusetts Department of Public Utilities, D.P.U. 22-22, November 30, 2022, p. 385-386; (emphasis added).

investors should only be concerned with systematic or non-diversifiable risk. Non-diversifiable risk is measured by Beta, which is defined as:

$$\beta = \frac{Covariance(r_e, r_m)}{Variance(r_m)} \quad [4]$$

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 rely on three sources for my estimate of the risk-free rate: (1) the current 30-day average yield on 30-year Treasury bonds of 4.42 percent;[65] (2) the average projected 30-year Treasury yield for the fourth quarter of 2023 through the fourth quarter of 2024, which is 4.24 percent;[66] and (3) the average projected 30-year Treasury bond yield for the period 2025 through 2029 of 3.80 percent.[67]

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

A. As shown on MP Exhibit ___ (Bulkley), Direct Schedule 7, I used the beta coefficients for the proxy group companies as reported by Bloomberg and *Value Line*. The beta coefficients reported by Bloomberg are calculated using ten years of weekly returns relative to the S&P 500 Index. The *Value Line* beta coefficients are calculated based on five years of weekly returns relative to the New York Stock Exchange Composite Index. Additionally, as shown in MP Exhibit ___ (Bulkley), Direct Schedule 8 and Schedule 9, I also consider an additional CAPM analysis that relies on the long-term average utility beta coefficient for the companies in my proxy group, which is calculated as an average of the *Value Line* beta coefficients for the companies in my proxy group from 2013 through 2022.

[65]Bloomberg Professional as of September 30, 2023.
[66]*Blue Chip Financial Forecasts*, Vol. 42, No. 10, October 2, 2023, at 2.
[67]*Blue Chip Financial Forecasts*, Vol. 42, No. 6, June 1, 2023, at 14.

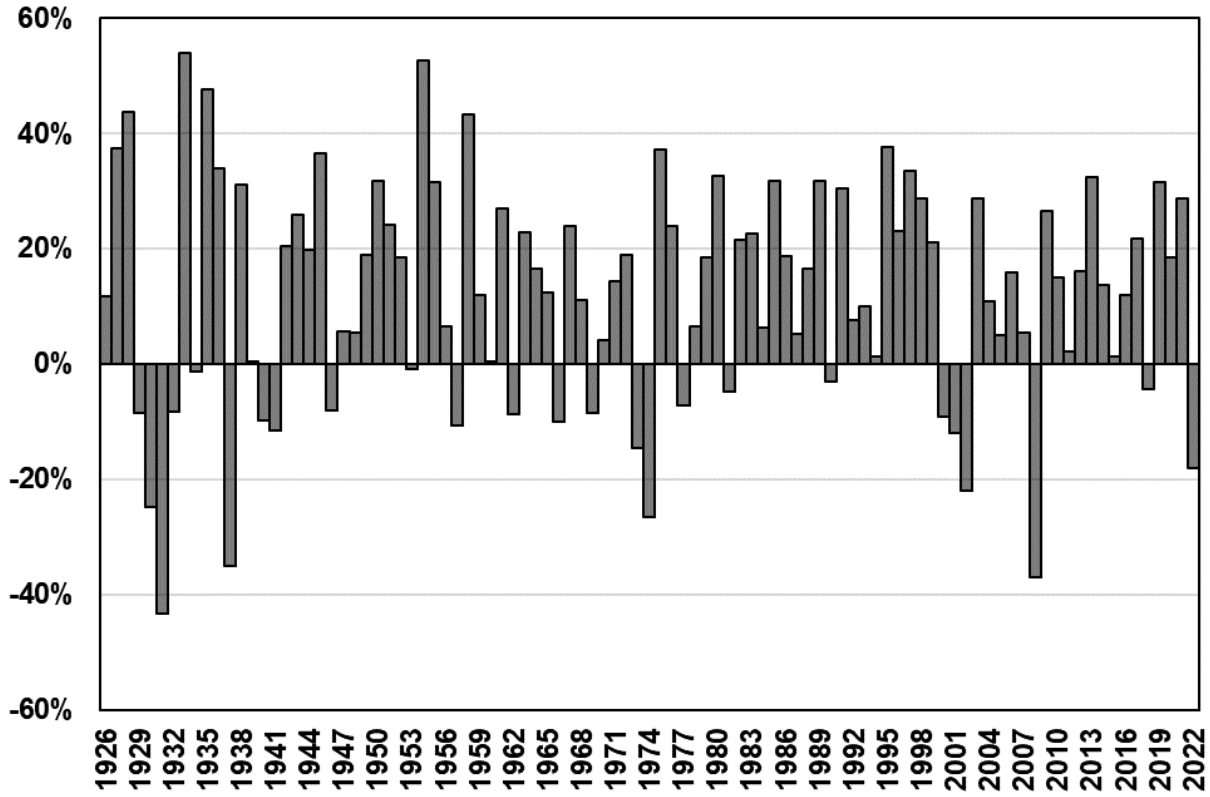
Q. How did you estimate the market risk premium in the CAPM?

A. I estimated the market risk premium as the difference between the implied expected equity market return and the risk-free rate. As shown in MP Exhibit ___ (Bulkley), Direct Schedule 10, the expected market return is calculated using the CGDCF model discussed previously as applied to the companies in the S&P 500 Index. Based on an estimated market capitalization-weighted dividend yield of 1.76 percent and a weighted long-term growth rate of 10.23 percent, the estimated required market return for the S&P 500 Index as of September 30, 2023 is 12.08 percent. Based on the three risk-free rates considered, the market risk premium ranges from 7.66 percent to 8.28 percent.

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

A. As shown in Figure 9, given the range of annual equity returns that have been observed over the past century, a current expected market return of 11.83 percent is reasonable. As shown, in 53 out of the past 97 years (or roughly 55 percent of observations), the realized equity market return was 11.83 percent or greater.

Figure 9. Realized U.S. equity market returns (1926-2022)[68]



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

A. Yes, I did. I have also considered the results of an ECAPM in estimating the cost of equity for Minnesota Power.[69] 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 [5] below:

$$k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f) \qquad [5]$$

Where:

k_e = the required market ROE;

β = Adjusted beta coefficient of an individual security;

[68] Depicts total annual returns on large company stocks, as reported in the 2023 *Kroll* SBBI Yearbook.

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

rf = the risk-free rate of return; and

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

In essence, the ECAPM 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 in the traditional CAPM, but 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.[70]

Consistent with my CAPM, my application of the ECAPM uses the same three yields on the 30-year Treasury bonds as the risk-free rate, forward-looking market risk premium estimates, and beta coefficients.

Q. What are the results of your CAPM and ECAPM analyses?

A. As shown in Figure 10 (*see also* MP Exhibit ___ (Bulkley), Direct Schedule 7 and Schedule 8), my traditional CAPM analysis produces a range of returns from 9.97 percent to 11.22 percent, and the ECAPM analysis results range from 10.50 percent to 11.44 percent.

[70] *Id*. at 191.

Figure 10. CAPM and ECAPM Results

CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.22%	11.20%	11.15%
Bloomberg Beta	10.49%	10.45%	10.36%
Long-Term Avg. Beta	10.13%	10.08%	9.97%
ECAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.44%	11.42%	11.39%
Bloomberg Beta	10.89%	10.86%	10.79%
Long-Term Avg. Beta	10.62%	10.58%	10.50%

G. 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 bondholders. In other words, because returns to equity holders have greater risk than returns to bondholders, equity investors must be compensated to bear that risk. Thus, risk premium approaches estimate the cost of equity as the sum of the equity risk premium and the yield on a particular class of bonds. In my analysis, I use actual authorized returns for vertically integrated electric companies as the historical measure of the cost of equity to determine the risk premium.

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

A. Yes. 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 (i.e., 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 Treasury bond yields. When the authorized ROEs for electric utilities serve as the measure of required equity returns and the yield on the long-term Treasury bond is defined as the relevant measure of interest rates, the risk premium is the difference between those two points.[71]

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

A. Yes. Investors are aware of authorized ROEs in other jurisdictions, and they consider those authorizations as a benchmark for a reasonable level of equity returns for utilities of comparable risk operating in other jurisdictions. Because our 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 11, from 1992 through September 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 authorized ROEs and the yield on 30-year U.S. Treasury bonds)

a = intercept term

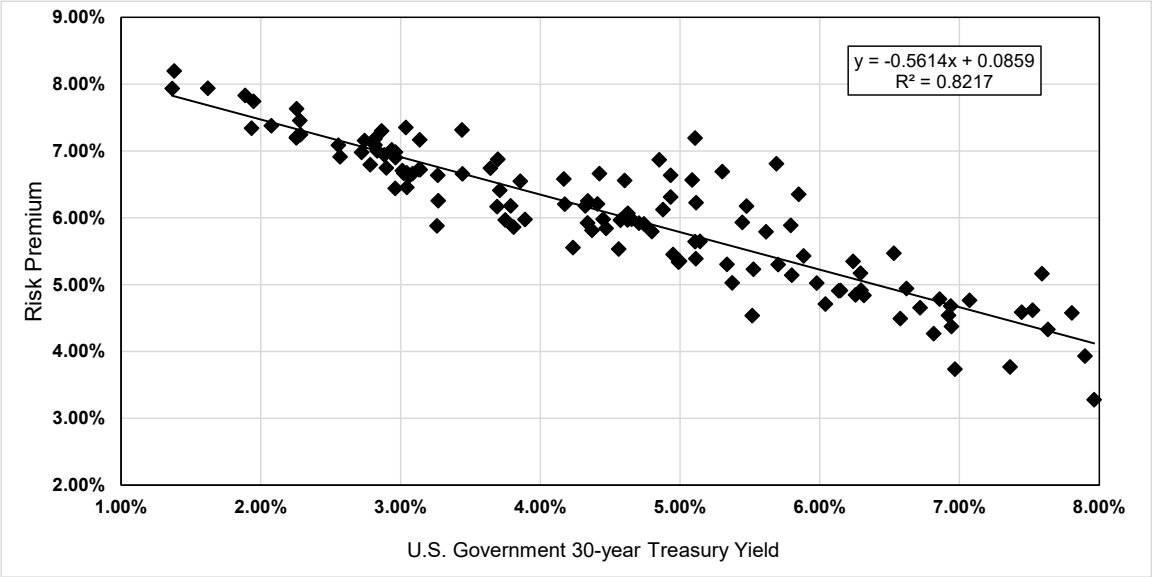
b = slope term

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

[71] *See, e.g.*, Keith S. Berry, *Interest Rate Risk and Utility Risk Premia during 1982-93*, Managerial and Decision Economics, Vol. 19, No. 2 (March, 1998) (the author used a similar methodology, including using authorized 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 Shareholder Required Rates of Return* at 66, Financial Management (Spring 1986).

Data regarding allowed ROEs were derived from all vertically integrated electric rate cases from 1992 through September 2023 as reported by Regulatory Research Associates ("RRA"). This equation's coefficients were statistically significant at the 99.00 percent level.

Figure 11. Risk Premium Regression Analysis



As shown on MP Exhibit ___ (Bulkley), Direct Schedule 11, based on the current 30-day average of the 30-year Treasury bond yield (i.e., 4.42 percent), the risk premium would be 6.11 percent, resulting in an estimated cost of equity of 10.53 percent. Based on the consensus estimate of the near-term (i.e., Q4/2023 – Q4/2024) projected 30-year Treasury bond yield (i.e., 4.24 percent), the risk premium would be 6.21 percent, resulting in an estimated cost of equity of 10.45 percent. Based on a consensus estimate of the longer-term (i.e., 2025 – 2029) projection of the 30-year Treasury bond yield (i.e., 3.80 percent), the risk premium would be 6.46 percent, resulting in an estimated cost of equity of 10.26 percent.

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

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

VIII. REGULATORY AND BUSINESS RISKS

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

A. No. These results 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.

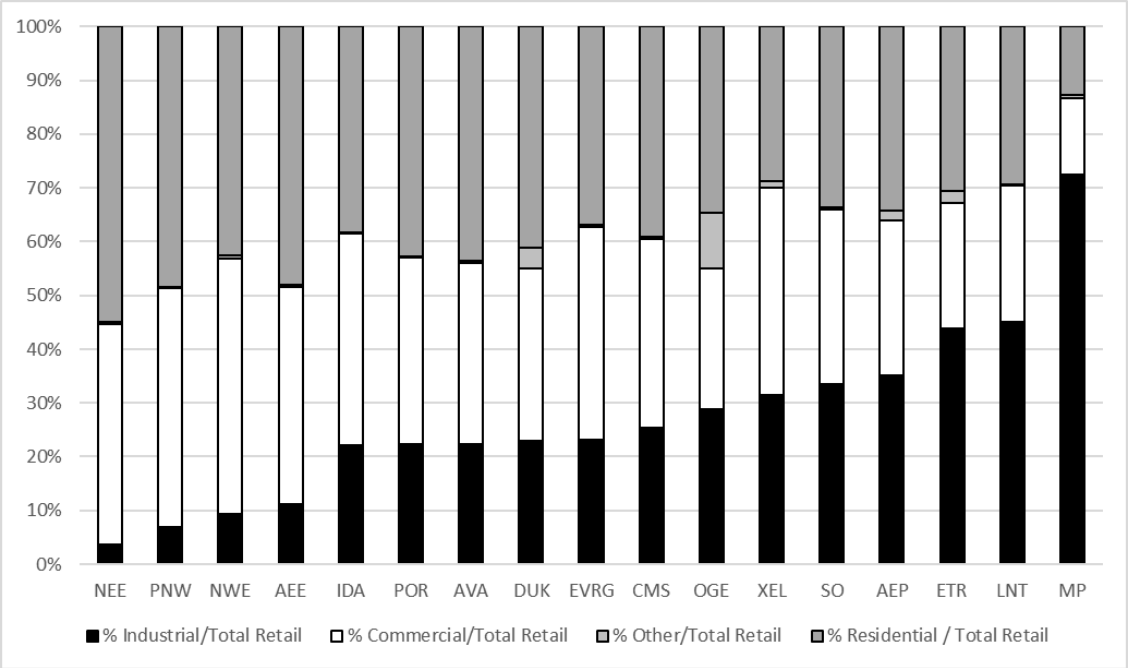
A. Customer Concentration

Q. Please summarize Minnesota Power's customer concentration risk.

A. Approximately 73 percent of Minnesota Power's 2022 total retail kWh electric sales in Minnesota were derived from industrial customers.[72] As shown in Figure 12, Minnesota Power's industrial sales volume as a percentage of total retail electric sales was higher than all of the companies in the proxy group by a significant margin.[73]

[72] Based on Form FERC Form 1 for ALLETE, Inc. (2022).
[73] Does not include "other" commercial or residential customers.

Figure 12. Customer Concentration[74]



Q. How does customer concentration affect business risk?

A. An extremely high concentration of industrial customers, operating in only two industries, each with the independent ability to create large swings in utility revenues, results in higher business risk. More specifically, over half of Minnesota Power's 2022 retail kWh electric sales came from the mining sector which consists of taconite facilities owned currently by two companies. Furthermore, the two companies are in discussions regarding a potential sale and acquisition. If that were to occur, the entire load from taconite processing would be consolidated into one company controlling all six taconite mines.[75]

Consolidation of load into fewer large customers can create risk because a significant portion of a company's sales could be lost if a customer goes out of business or experiences an economic downturn. As noted by Dhaliwal, Judd, Serfling and Shaikh in their article, *Customer Concentration Risk and the Cost of Equity Capital*:

[74] Source: S&P Global Market Intelligence - Other sales includes: Total Public Street and Highway Lighting, Other Sales to Public Authorities, Sales to Railroad and Railways, and Interdepartmental Sales.
[75] Source: Direct Testimony of Company witness Mr. Frank L. Frederickson.

> Depending on a major customer for a large portion of sales can be risky for a supplier for two primary reasons. First, a supplier faces the risk of losing substantial future sales if a major customer becomes financially distressed or declares bankruptcy, switches to a different supplier, or decides to develop products internally. Consistent with this notion, Hertzel et al. (2008) and Kolay et al. (2015) document negative supplier abnormal stock returns to the announcement that a major customer declares bankruptcy. Further, a customer's weak financial condition or actions could signal inherent problems about the supplier's viability to its remaining customers and lead to compounding losses in sales. Second, a supplier faces the risk of losing anticipated cash flows from being unable to collect outstanding receivables if the customer goes bankrupt. This assertion is consistent with the finding that suppliers offering customers more trade credit experience larger negative abnormal stock returns around the announcement of a customer filing for Chapter 11 bankruptcy (Jorion and Zhang, 2009; Kolay et al., 2015).[76]

Therefore, a company that has a high degree of customer concentration will be inherently riskier than a company that derived income from a larger customer base. Furthermore, as Dhaliwal, Judd, Serfling and Shaik detail in the article, the increased risk associated with a more concentrated customer base will have the effect of increasing a company's cost of equity.[77]

Q. Please describe how changes in economic conditions and Minnesota Power's high degree of customer concentration can affect its business risk.

A. Minnesota Power's major industrial customers are engaged in industries such as taconite mining and processing, pulp and paper manufacturing, and pipelines. Taconite processing constitutes over half of Minnesota Power's retail kWh sales and is highly dependent on economic conditions and the business cycle as taconite is an input into steel which is used in durable consumer goods. Pulp and paper manufacturing companies (i.e., paper mills) are also facing decreased demand as companies are moving away from printed materials and instead providing information electronically.

[76] Dan S. Dhaliwal, J. Scott Judd, Matthew A. Serfling, and Sarah Shaikh, *Customer Concentration Risk and the Cost of Equity Capital*, SSRN Electronic Journal (2016): 1-2. Web.
[77] *Id.* at 4.

Q. How have mining and logging employment faired in recent economic conditions?

A. As shown in Figure 13, total mining and logging employment in Minnesota has been volatile. As a result of COVID-19, mining and logging employment decreased from 6,600 in February 2020 to a low of 5,300 in June 2020 before rebounding to close to pre-recession levels at the end of 2020. Similarly, during the Great Financial crises of 2008/2009, mining and logging employment decreased from a high of 6,300 in 2008 to a low of 4,300 in 2009 before rebounding to pre-recession levels in the beginning of 2011.

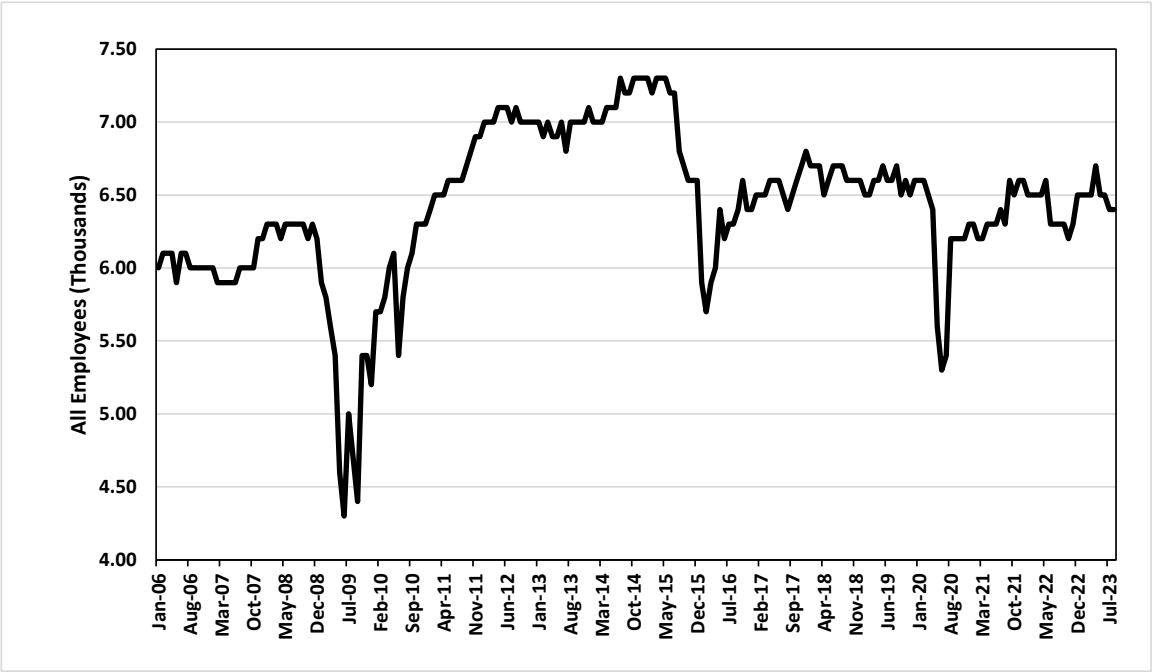
Q. Are Minnesota Power's electric sales dependent on the taconite processing and paper manufacturing industries?

A. Yes. As discussed by Company witness Mr. Frederickson, Minnesota Power provides service to all six of the taconite plants and four pulp and paper mills, in Minnesota Power's service territory which produce a variety of graphic paper and pulp to serve U.S. and global markets. The taconite mines represent more than 50 percent of the Company's total 2022 retail kWh energy sales. Forest products accounted for 9 percent of retail kWh energy sales in 2022 and is consolidated into four customers. The pipelines category, which accounted for four percent of retail kWh energy sales in 2022, is composed of two customers. The remaining approximately 370 other industrial customers account for four percent of retail kWh energy sales.

As discussed previously, the taconite mine ownership, with two companies controlling all six taconite mines is already highly consolidated. Should the potential sale and acquisition between US Steel and Cleveland-Cliffs proceed, it would put the six taconite mines under the control and operation of a single company, which could create even greater volatility and risk for the Company. This would increase Minnesota Power's sales concentration to approximately 50 percent of its retail kWh energy sales to a single corporation. As a result, consolidation of the ownership in the mines and fluctuations in the business cycle could have a large impact on Minnesota Power's retail electric sales. Furthermore, if taconite production facilities and paper mills reduce output due to weak economic conditions, the effect could be compounded if local

employment declined leading to persons and businesses moving to other areas and reducing the electric sales for Minnesota Power.

Figure 13. Minnesota Mining and Logging Employment (Thousands)[78]



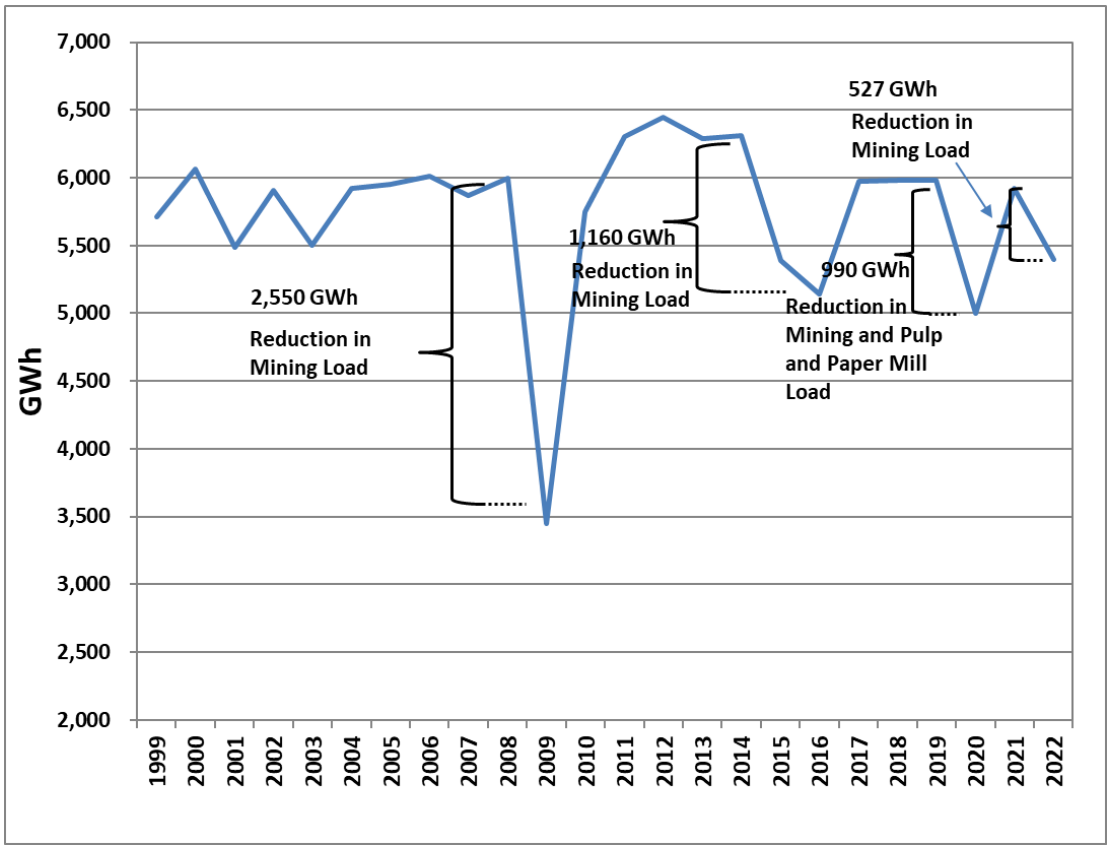
Q. How have the Company's sales been affected by changes in the business cycle of its large industrial customers?

A. As shown in Figure 14, energy sales to industrial customers have been significantly affected by the business cycle. In 2009, sales fell sharply in response to the recession. The decrease in 2009 was primarily related to the mining industry curtailing production. There was another downturn in 2015-2016 that was also mainly related to the taconite mines curtailing production as a result of increased competition from steel imports as global steel production increased. In 2020, the COVID-19 pandemic had a substantial impact on these customers. Since that time, mining load has been volatile, rebounding in 2021 and experiencing a significant reduction in 2022. As discussed by Company

[78] U.S. Bureau of Labor Statistics, State and Area Employment, Hours, and Earnings, Minnesota Mining and Logging employment, Series Id: SMS27000001000000001.

witness Mr. Frederickson, the Company is currently projecting actual retail sales to be approximately 2.5 percent higher than 2022 actual retail sales, with changes in the sales to industrial customers. Mr. Frederickson notes that the primary changes in the projections are attributable to recent trends of increased volatility in taconite production levels resulting in lower average annual production and associated Industrial customer energy sales. The increased volatility in industrial customer operations creates increased risk for Minnesota Power.

Figure 14. Minnesota Power Sales to Large Power ("LP") Customers



Q. Have credit rating agencies commented on the effect of the Company's customer concentration on credit metrics?

A. Yes. For example, S&P noted that ALLETE's strong business risk profile reflects its smaller size and heightened exposure to industrial and commercial customers. S&P also noted that they believe these customers are more susceptible to impacts from economic

cyclicality.[79] Additionally, Moody's noted that the Company's high industrial customer exposure, the highest within the Moody's U.S. regulated utility universe, heightens the company's business risk profile. Moody's further recognized that the three industries served by Minnesota Power, taconite producers, paper and wood products and oil pipelines face cyclical market conditions that is credit negative, because of the material negative impact that lower regulatory volumes can have on the Company's cash flow from operations.[80]

Q. What does this information indicate regarding the importance of the Commission's decision in this proceeding for Minnesota Power?

A. The credit rating agencies recognized the overall improvement in the Company's credit metrics, and the stability provided through the Company's cost recovery mechanisms, however the credit rating agency also noted that it had concerns about the inconsistency in the outcome of rate cases for Minnesota Power. Moody's further noted that regulatory support would be necessary to for the Company's capital investment plan.

Q. How would Minnesota Power's proposed customer rate stabilization mechanism affect the Company's customer concentration risk?

A. Minnesota Power's proposed customer rate stabilization mechanism would modulate the impacts industrial customer volatility by establishing a deferred revenue account ("tracker") to track LP base rate revenues annually and carry over from year to year, reflecting both positive and negative variances compared to the baseline level established for the 2024 test year.[81] Once the tracker reaches a threshold level, proposed to be triggered by an amount of five percent or more of LP base revenues, the balance would be either credited or billed to customers as a rider on bills. In essence, the Company would account for the level of base revenues approved by the Commission in this proceeding and all variances over or under that level would flow to customers over time.

[79] S&P Global Ratings, RatingsDirect, Allete Inc., June 14, 2023.
[80] Moody's Investors Service, "ALLETE, Inc.: Update to Credit Analysis," June 1, 2023.
[81] The calculated variance would also account for any margins that the Company received from sales due to the reduction in LP load.

Q. How would the proposed customer rate stabilization mechanism address the Company's customer concentration risk as compared to the proxy group?

A. Minnesota Power's proposed customer rate stabilization mechanism would significantly reduce the impact of customer concentration risk of the Company by flowing all variances of LP sales to customers over time without the need for a lengthy rate case. However, the customer rate stabilization would not entirely eliminate the effect of customer concentration risk. For example, there could be a lag between when the revenue shortfall is incurred and when the balance of the tracker exceeds the threshold of five percent to be recovered from customers. Additionally, the ownership concentration of the Company's largest customers further increases risk of revenue recovery should any one customer face economic hardship resulting in bankruptcy. Moreover, as shown in MP Exhibit ___ (Bulkley), Direct Schedule 12 and discussed in more detail above, approximately 61 percent of the operating companies held by the proxy group have either a sales true-up mechanism or an alternative mechanism such as revenue decoupling or formula rates which mitigate the customer concentration and electric sales variability risk. Since the proxy group companies have already implemented similar risk mitigation measures for loads that are typically less concentrated than Minnesota Power's, Minnesota Power would not have less risk than the benchmark group if the Company's proposed customer rate stabilization mechanism was approved. Conversely, to the extent that Minnesota Power is not granted its proposed rate stabilization mechanism in this rate case, the Company's risk would be substantially elevated, relative to the proxy group.

Q. What is your conclusion regarding the Company's customer concentration and its effect on the cost of equity for Minnesota Power?

A. Minnesota Power is heavily reliant on sales to industrial customers. As noted above, approximately 73 percent of Minnesota Power's total 2022 retail electric sales in Minnesota were to industrial customers. This concentration is higher than all of the proxy group companies, especially when considering that over 50 percent of Minnesota Power's total retail electric sales are to industrial customers owned by only two

companies. A high degree of customer concentration increases Minnesota Power's risk related to customer migration, economic conditions or competition.[82] Therefore, the risk of eroding revenue resulting from customer concentration is higher for Minnesota Power than the proxy group companies on average.

Minnesota Power has proposed a customer rate stabilization mechanism to mitigate the risk posed by customer concentration. When considering the relative risk of the Company and the proxy group, it is important to recognize that most of the companies in the proxy group have some form of a mechanism to mitigate electric sales risk. Therefore, adopting a customer rate stabilization mechanism will result in volumetric risk for the Company that is similar to the volumetric risk faced by the proxy group companies.

Absent the implementation of the customer rate stabilization mechanism, Minnesota Power has significant risk related to its high concentration of sales in a small number of customers that are cyclical businesses, which is greater than the risk faced by the proxy group companies on average, the majority of which have some form of sales true-up mechanism. If the Company's proposed customer rate stabilization mechanism were not approved, then the Company is at much higher overall risk than the proxy group companies, and I would recommend that the authorized ROE for Minnesota Power be placed at the very high-end of my recommended ROE range.

B. Regulatory Risk

Q. Please explain how the regulatory environment affects 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 a reasonable 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

[82] Conversely, greater customer diversity decreases the effect that any one customer can have on a company's sales.

attract capital at reasonable terms, and 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 utility 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 utility'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.

In addition, equity investors require that the authorized return be adequate to provide a risk-comparable return on the equity portion of the utility's capital investments. Because equity investors are the residual claimants on the utility'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.[83]

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."[84] 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.[85]

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."[86] Moody's has 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 rates), as well as the predictability and consistency of decision-making provided by that foundation."[87]

[83] Moody's Investors Service. Rating Methodology: Regulated Electric and Gas Utilities. June 23, 2017, at 4.
[84] Standard & Poor's Global Ratings, Ratings Direct, "Assessing U.S. Investor-Owned Utility Regulatory Environments," August 10, 2016, at 2.
[85] *Id*.
[86] Moody's Investors Service. Rating Methodology: Regulated Electric and Gas Utilities. June 23, 2017, at 6.
[87] *Id*.

Q. What analysis have you conducted to compare the regulatory framework in Minnesota relative to the jurisdictions in which the utility operating subsidiaries of the companies in your proxy group operate?

A. I have evaluated the regulatory framework in Minnesota on three factors that are important in terms of providing a regulated utility an opportunity to earn its authorized ROE. These are: (1) test year convention (i.e., forecast vs. historical); (2) use of revenue decoupling mechanisms or other clauses that provide revenue stabilization; and (3) the prevalence of capital cost recovery between rate cases. The results of this regulatory risk assessment are shown in MP Exhibit ___ (Bulkley), Direct Schedule 12 and are summarized below.

Test Year Convention: Minnesota Power is proposing a forecasted test year. As shown in MP Exhibit ___ (Bulkley), Direct Schedule 12, approximately 44 percent of the utility operating subsidiaries of the companies in the proxy group also have partially or fully forecast test years.

Volumetric Risk: Minnesota Power does not currently have protection against volumetric risk through a revenue decoupling mechanism, formula-based rate, or a straight fixed-variable rate design. Although, the Company is requesting a customer rate stabilization mechanism for Minnesota Power's LP class in this case to mitigate the effect on revenues of volatility in sales to LP customers. Approximately 61 percent of the utility operating subsidiaries of the proxy group companies have some form of protection against volumetric risk.

Capital Cost Recovery: Minnesota Power does have certain capital tracking mechanisms to recover a portion of capital investment costs between rate cases. While capital tracking mechanisms are available to the Company, not all of the costs included in the Company's capital expenditures plan would qualify for recovery through the capital tracking mechanisms. Approximately 67 percent of the utility operating subsidiaries of the proxy group companies have some form of capital cost recovery mechanism in place.

Q. Do analysts rank the various regulatory jurisdictions in terms of their relative credit supportiveness?

A. Yes. RRA and others provide a ranking of regulatory jurisdictions. RRA assigns a ranking for each regulatory jurisdiction as "Above Average," "Average," or "Below Average," and then within each of those categories, a numeric ranking from 1 to 3. Thus, the RRA rankings for each jurisdiction range from the most supportive of "Above Average/1" to the least supportive of "Below Average/3."

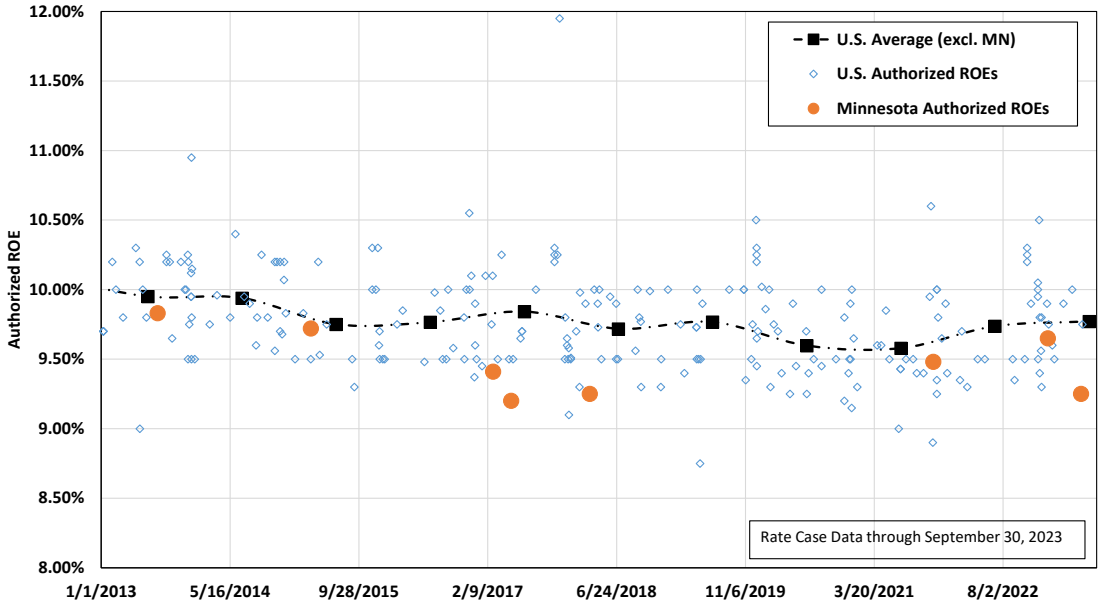
Q. How does the supportiveness of Minnesota regulation compare with the jurisdictions where the proxy group companies operate?

A. RRA ranks Minnesota as an Average/2, which is the middle score of the nine tiers. As shown in MP Exhibit ___ (Bulkley), Direct Schedule 13, the average ranking of the proxy group is between Average/1 and Average/2, meaning that Minnesota's ranking is slightly below the average of the proxy group.

Q. How do the returns that have been authorized in Minnesota compared with the authorized returns in other jurisdictions?

A. Figure 15 shows the authorized returns for vertically integrated electric utilities in Minnesota and in other jurisdictions throughout the United States over the past decade. As shown, since 2013, the authorized returns for vertically integrated electric utilities in Minnesota were consistently below the national average and, in certain instances, near the bottom of the range produced by the authorized ROEs from other state jurisdictions.

Figure 15. Comparison of Minnesota and U.S. Authorized Vertically Integrated Electric Returns[88]



Q. Is there any reason that the Commission should be concerned about authorizing equity returns that are at the low end of the range established by other state regulatory jurisdictions?

A. Yes, for several reasons. First, as noted previously, the Company must compete for capital within its own corporate structure. In the process of allocating its finite discretionary capital resources, it would be reasonable for ALLETE to consider the authorized ROEs of its regulated utilities as well as the earned ROEs of the non-regulated business operations. Additionally, ALLETE must in turn compete for capital with other utilities and businesses. As a result, placing Minnesota Power at the low end of authorized ROEs outside Minnesota over the longer term can negatively impact the Company's access to capital.

Second, as noted previously, interest rates are expected to remain elevated through at least 2024 and utility stock prices are expected to underperform the market. The expected underperformance of utilities means that DCF models using recent historical data likely underestimate investors' required return over the period in which Minnesota

[88] S&P Capital IQ Pro.

Power's rates will be in effect. As a result, it is important that the Commission, as it has done so previously, to consider the results of alternative methods such as the forward-looking CAPM, ECAPM, and Bond Yield Plus Risk Premium analyses, and the range of returns that have been authorized for other electric utilities across the United States.

Q. How are credit rating agencies currently viewing the utility sector?

A. As discussed previously, the credit rating agencies have identified that the utility sector has tight credit metrics and require constructive regulatory support to maintain a neutral rating. Therefore, it is critically important to consider these factors and to recognize that the investor-required ROE would be higher today than at the time of Commission decisions in the recent past.

Q. Are you aware of any utilities that have been affected by negative rate case developments?

A. Yes. In a recent report on NSPM, Moody's highlighted that the utility's request for reconsideration of certain aspects of the Commission's recent rate case decision "provides further evidence of a less supportive Minnesota regulatory environment."[89] Moody's further noted that the Commission's decision was lower than the Administrative Law Judge's recommended ROE and "compares unfavorably to other Minnesotan electric and natural gas utility authorized ROEs in both litigated and settled rates cases."[90] Moody's also noted that the utility's cash flow from operations before changes in working capital-to-debt ratio was approximately 25 percent for the last 12 months, but that on a pro forma basis based on the rate case decision that this ratio would reduce to approximately 23 percent, "bringing it closer to its current downgrade threshold of 22%, a credit negative as it limits the utility's cushion at the current A2 rating."[91]

[89] Moody's Investors Service, Issuer Comment, Northern States Power Company (Minnesota), August 15, 2023, at 1.
[90] *Id.*
[91] *Id.*

Another example is the negative response from the market to the outcome of the 2021 rate case of Arizona Public Service Company ("APS"), which included an authorized ROE that was well below the national average at the time for vertically-integrated electric utilities. At the time, APS had an existing ROE of 10.00 percent, and the Recommended Opinion and Order ("ROO") issued in the APS rate proceeding on August 2, 2021 recommended an ROE of 9.16 percent. However, in October 2021, that recommendation was subsequently amended to reduce the company's ROE to 8.70 percent,[92] which was finalized pursuant to an ACC vote in November 2021. As a result of the rate case outcome, Fitch downgraded the issuer default credit rating of APS from A to A-, and its parent, Pinnacle West Corporation's ("PNW"), from A- to BBB+, citing heighted business risk.[93] Similarly, both Standard & Poor's and Moody's also downgraded PNW's and APS' credit ratings and put the companies on credit watch negative.[94] In addition, PNW's share price also decreased approximately 24 percent from August 2021 (i.e., the issuance of the ROO) through November 2021 (i.e., the ACC's on the final order).

Q. What are your conclusions regarding the perceived risks related to the Minnesota regulatory environment?

A. As discussed throughout this section of my testimony, both Moody's and S&P have identified the supportiveness of the regulatory environment as an important consideration in developing their overall credit ratings for regulated utilities. Considering the regulatory adjustment mechanisms, many of the companies in the proxy group have timely cost recovery through forecasted test years, cost recovery trackers and revenue stabilization mechanisms. Additionally, authorized ROEs in Minnesota have been below the average authorized ROEs for vertically integrated electric utilities across the U.S. Moreover, a comparison of Minnesota's RRA jurisdictional ranking to the proxy group indicates slightly greater risk than the average for the proxy group. For

[92] Arizona Corporation Commission. Docket No. E-01345A-19-0236. Commissioner Olson Proposed Amendment No. 1 to the Recommended Opinion and Order (Oct. 4, 2021).
[93] FitchRatings, "Fitch Downgrades Pinnacle West Capital & Arizona Public Service to 'BBB+'; Outlooks Remain Negative," October 12, 2021.
[94] *See* S&P Capital IQ and Moody's Investors Service. "Rating Actions: Moody's downgrades Pinnacle West to Baa1 and Arizona Public Service to A3; outlook negative," November 17, 2021.

these reasons, I conclude that Minnesota Power has greater than average regulatory risk when compared to the proxy group, indicating that the authorized ROE for Minnesota Power should be higher than the proxy group mean/median.

Finally, while my analysis assumes that the Company's proposed customer rate stabilization mechanism will be approved, the volumetric risk of Minnesota Power would increase substantially if the Commission does not approve the Company's proposal. Thus, if the customer rate stabilization mechanism is not approved then the authorized ROE for Minnesota Power should be placed at the very high-end of my recommended ROE range.

IX. CAPITAL STRUCTURE

Q. Is the Company's capital structure an important consideration in the determination of the appropriate ROE?

A. Yes. The equity ratio is the primary indicator of financial risk for a regulated utility such as Minnesota Power. All else 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 the claim of debt holders. Therefore, the greater the debt service requirement, the less cash flow 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 Minnesota Power's proposed capital structure?

A. The Company is proposing to establish a capital structure consisting of 53.00 percent common equity and 47.00 percent long-term debt.

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

A. Yes. I compared 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 group to benchmark the equity ratios for the Company.

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

A. I calculated the average proportion of common equity, long-term debt, and preferred equity for the most recent eight quarters for each of the companies in the proxy group at the operating subsidiary level. As shown on MP Exhibit ___ (Bulkley), Direct Schedule 14, the average common equity ratio for the operating subsidiaries of the proxy group companies was 53.10 percent (within a range from 45.52 percent to 61.26 percent). Minnesota proposed equity ratio of 53.00 percent is lower than the requested equity ratio in the Company's last rate proceeding and represents a modest increase above the 52.50 percent that was recently authorized by the Commission. Further, the proposed equity ratio is within the range of equity ratios for the utility operating subsidiaries of the proxy group companies. Considering the Company's business risk, which is higher than the proxy group on average, I consider their proposed equity ratio to be reasonable.

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 outlook 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, noting that constructive

regulatory outcomes that promote timely cost recovery are a key factor in supporting utility credit quality.[95]

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 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."[96]

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.[97]

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

[95] Moody's Investors Service, Outlook, "Outlook turns stable on low natural gas prices and credit-supportive regulation," September 7, 2023.
[96] Fitch Ratings. "North American Utilities, Power & Gas Outlook 2023," December 7, 2022, at 1-2.
[97] S&P Global Ratings, "The Outlook for North American Regulated Utilities Turns Stable," May 18, 2023, at 8.

X. CONCLUSIONS AND RECOMMENDATION

Q. What is your conclusion regarding a fair ROE for Minnesota Power?

A. Based on the quantitative and qualitative analyses presented in my direct testimony and summarized in Figure 16 and the business and financial risks of the Company as compared to the proxy group, I conclude that the Company's ROE would be at the higher end of my recommended range of 10.00 to 11.00 percent. If the Company's customer rate stabilization mechanism is approved, the Company's risk profile would be more like the proxy group; 60 percent of which have implemented some form of non-volumetric cost recovery mechanism and therefore it would be reasonable for the Company's ROE to be near the middle of my recommended range. Assuming the customer rate stabilization mechanism is approved, the Company is requesting an ROE of 10.30 percent, which is below the midpoint of my recommended range, in an attempt to also mitigate the effect of the rate increase on customers as a result of the current inflationary environment.

Figure 16. Summary of Analytical Results

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.99%	10.12%	11.11%
90-Day Average	8.83%	9.95%	10.95%
180-Day Average	8.73%	9.86%	10.85%
Constant Growth Average	8.85%	9.98%	10.97%
Two-Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	9.03%	10.08%	11.08%
90-Day Average	8.86%	9.91%	10.91%
180-Day Average	8.77%	9.82%	10.82%
Two-Growth Average	8.89%	9.94%	10.94%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.22%	11.20%	11.15%
Bloomberg Beta	10.49%	10.45%	10.36%
Long-Term Avg. Beta	10.13%	10.08%	9.97%
ECAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.44%	11.42%	11.39%
Bloomberg Beta	10.89%	10.86%	10.79%
Long-Term Avg. Beta	10.62%	10.58%	10.50%
Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
	10.53%	10.45%	10.26%

Q. What is your conclusion with respect to Minnesota Power's proposed capital structure?

A. My conclusion is that the Company's proposal to establish a capital structure consisting of 53.00 percent common equity and 47.00 percent long-term debt is reasonable when compared to actual capital structures of the proxy group companies. The company's requested equity ratio represents a modest increase to the currently authorized equity ratio of 52.50 percent. Based on the Company's relatively higher risk profile, its requested equity ratio is reasonable and appropriate. Further, taking into consideration

the impact of current and projected market conditions on the cash flows of utilities as raised by the credit rating agencies, I conclude that the Company's proposal is reasonable and should be adopted for ratemaking purposes.

Q. Does this conclude your Direct Testimony?

A. Yes, it does.

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With more than 25 years of experience in the energy industry, Ms. Bulkley specializes in regulatory economics for the electric and natural gas and water utility sectors, including valuation of regulated and unregulated utility assets, cost of capital, 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

Brattle

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 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.

- Conducted a strategic review of the acquisition of nuclear generation assets. Review included the evaluation of the operating costs of the facilities and the long-term liabilities associated with the assets including the decommissioning of the assets.
- 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.
- Conducted a valuation of regulated utility assets for the fair value rate base estimate used in electric rate proceedings in Indiana.
- 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 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.

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BULKLEY TESTIMONY LISTING

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
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
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				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
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

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SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
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				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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 ROE ANALYSES RESULTS

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.99%	10.12%	11.11%
90-Day Average	8.83%	9.95%	10.95%
180-Day Average	8.73%	9.86%	10.85%
Constant Growth Average	8.85%	9.98%	10.97%

Two-Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.93%	9.90%	10.81%
90-Day Average	8.81%	9.78%	10.69%
180-Day Average	8.76%	9.74%	10.64%
Two-Growth Average	8.83%	9.81%	10.71%

CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.22%	11.19%	11.15%
Bloomberg Beta	10.49%	10.43%	10.36%
Long-Term Avg. Beta	10.13%	10.06%	9.97%

ECAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.44%	11.42%	11.39%
Bloomberg Beta	10.89%	10.85%	10.79%
Long-Term Avg. Beta	10.62%	10.57%	10.50%

Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
	10.53%	10.42%	10.26%

Minnesota Power
Docket No. E015/GR-23-155

PROXY GROUP SCREENING DATA AND RESULTS

Company		[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] Generation Assets Included in Rate Base	[6] % Company-Owned Generation > 40%	[7] % Regulated Electric Operating Income > 60%	[8] Announced Merger
Alliant Energy Corporation	LNT	Yes	A-	Yes	Yes	Yes	72.75%	87.90%	No
Ameren Corporation	AEE	Yes	BBB+	Yes	Yes	Yes	75.34%	84.57%	No
American Electric Power Company, Inc.	AEP	Yes	A-	Yes	Yes	Yes	51.62%	97.34%	No
Avista Corporation	AVA	Yes	BBB	Yes	Yes	Yes	59.47%	73.85%	No
CMS Energy Corporation	CMS	Yes	BBB+	Yes	Yes	Yes	42.50%	65.48%	No
Duke Energy Corporation	DUK	Yes	BBB+	Yes	Yes	Yes	81.53%	91.02%	No
Entergy Corporation	ETR	Yes	BBB+	Yes	Yes	Yes	71.43%	98.21%	No
Evergy, Inc.	EVRG	Yes	A-	Yes	Yes	Yes	62.14%	100.00%	No
IDACORP, Inc.	IDA	Yes	BBB	Yes	Yes	Yes	65.35%	99.91%	No
NextEra Energy, Inc.	NEE	Yes	A-	Yes	Yes	Yes	96.40%	92.16%	No
NorthWestern Corporation	NWE	Yes	BBB	Yes	Yes	Yes	55.82%	84.28%	No
OGE Energy Corporation	OGE	Yes	BBB+	Yes	Yes	Yes	50.65%	100.00%	No
Pinnacle West Capital Corporation	PNW	Yes	BBB+	Yes	Yes	Yes	76.09%	100.00%	No
Portland General Electric Company	POR	Yes	BBB+	Yes	Yes	Yes	54.88%	100.00%	No
Southern Company	SO	Yes	BBB+	Yes	Yes	Yes	76.85%	75.31%	No
Xcel Energy Inc.	XEL	Yes	A-	Yes	Yes	Yes	57.97%	86.47%	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] to [6] Source: S&P Capital IQ Pro
[7] Source: Form 10-Ks for 2022, 2021, and 2020
[8] SNL Financial News Releases

FLOTATION COST ADJUSTMENT -- MINNESOTA POWER PROXY GROUP

Company	Date [i]	[1] Shares Issued (000)	[2] Offering Price	[3] Under-writing Discount [ii]	[4] Offering Expense ($000)	[5] Net Proceeds Per Share	[6] Total Flotation Costs ($000)	[7] Gross Equity Issue Before Costs ($000)	[8] Net Proceeds ($000)	[9] Flotation Cost Percentage
Minnesota Power	6/2/1977	1,300.00	$ 21.50	$ 0.60	$ 105.00	$ 20.82	$ 885.00	$ 27,950.00	$ 27,065.00	3.166%
Minnesota Power	4/5/1978	1,500.00	$ 21.00	$ 0.61	$ 95.00	$ 20.33	$ 1,010.00	$ 31,500.00	$ 30,490.00	3.206%
Minnesota Power	3/13/1979	1,000.00	$ 20.15	$ 0.63	$ 95.00	$ 19.43	$ 725.00	$ 20,150.00	$ 19,425.00	3.598%
Minnesota Power	9/14/1993	1,000.00	$ 35.88	$ 1.07	$ 172.85	$ 34.64	$ 1,242.85	$ 35,880.00	$ 34,637.15	3.464%
Minnesota Power	9/24/1998	2,100.00	$ 43.75	$ 1.25	$ 185.00	$ 42.41	$ 2,810.00	$ 91,875.00	$ 89,065.00	3.059%
Minnesota Power	5/30/2001	6,600.00	$ 23.68	$ 0.95	$ 220.00	$ 22.70	$ 6,490.00	$ 156,288.00	$ 149,798.00	4.153%
Minnesota Power	2/26/2014	3,220.00	$ 49.75	$ 1.74	n/a	$ 48.01	$ 5,606.99	$ 160,195.00	$ 154,588.01	3.500%
Minnesota Power	3/31/2022	3,680.00	$ 63.00	$ 2.21	n/a	$ 60.80	$ 8,114.40	$ 231,840.00	$ 223,725.60	3.500%
Minnesota Power	2008-2023	11,460.49	$ 46.83	n/a	n/a	$ 46.75	$ 960.06	$ 536,717.16	$ 535,757.09	0.179%
Mean							$ 3,093.81	$ 143,599.46	$ 140,505.65	
							WEIGHTED AVERAGE FLOTATION COSTS			2.154% [10]

[i] Offering Completion Date
[ii] Underwriting discount was calculated as the market price minus the offering price when not explicitly given in the prospectus.

The flotation cost adjustment is derived by dividing the dividend yield by 1 − F (where F = flotation costs expressed in percentage terms), or by 0.9785, and adding that result to the constant growth rate to determine the cost of equity. Using the formulas shown previously in my testimony, the Constant Growth DCF calculation is modified as follows to accommodate an adjustment for flotation costs:

$$k = \frac{D \times (1 + 0.5g)}{P \times (1 - F)} + g$$

Company	Ticker	[11] Annualized Dividend	[12] Stock Price	[13] Dividend Yield	[14] Expected Dividend Yield	[15] Expected Dividend Yield Adjusted for Flotation Costs	[16] Value Line Earnings Growth	[17] Yahoo! Finance Earnings Growth	[18] Zacks Earnings Growth	[19] Average Earnings Growth	[20] ROE	[21] ROE Adjusted for Flotation Costs
Alliant Energy Corporation	LNT	$1.81	$50.54	3.58%	3.70%	3.78%	6.50%	6.80%	6.50%	6.60%	10.30%	10.38%
Ameren Corporation	AEE	$2.52	$78.90	3.19%	3.29%	3.37%	6.50%	5.90%	6.40%	6.27%	9.56%	9.63%
American Electric Power Company, Inc.	AEP	$3.32	$78.39	4.24%	4.36%	4.45%	6.50%	5.20%	5.60%	5.77%	10.12%	10.22%
Avista Corporation	AVA	$1.84	$33.48	5.50%	5.67%	5.80%	6.50%	6.30%	6.30%	6.37%	12.04%	12.16%
CMS Energy Corporation	CMS	$1.95	$56.01	3.48%	3.60%	3.68%	6.50%	5.87%	7.80%	6.72%	10.32%	10.40%
Duke Energy Corporation	DUK	$4.10	$91.09	4.50%	4.63%	4.73%	5.00%	6.45%	6.10%	5.85%	10.48%	10.58%
Entergy Corporation	ETR	$4.28	$95.60	4.48%	4.57%	4.67%	0.50%	6.60%	5.70%	4.27%	8.84%	8.94%
Evergy, Inc.	EVRG	$2.45	$54.17	4.52%	4.64%	4.74%	7.50%	2.67%	5.20%	5.12%	9.76%	9.86%
IDACORP, Inc.	IDA	$3.16	$95.82	3.30%	3.37%	3.44%	5.00%	3.70%	3.70%	4.13%	7.50%	7.57%
NextEra Energy, Inc.	NEE	$1.87	$66.33	2.82%	2.94%	3.01%	9.50%	8.80%	8.40%	8.90%	11.84%	11.91%
NorthWestern Corporation	NWE	$2.56	$50.31	5.09%	5.19%	5.31%	3.50%	3.66%	5.20%	4.12%	9.31%	9.43%
OGE Energy Corporation	OGE	$1.66	$34.45	4.81%	4.93%	5.04%	6.50%	negative	3.70%	5.10%	10.03%	10.14%
Pinnacle West Capital Corporation	PNW	$3.46	$77.25	4.48%	4.60%	4.70%	2.50%	7.50%	6.50%	5.50%	10.10%	10.20%
Portland General Electric Company	POR	$1.90	$43.05	4.41%	4.54%	4.64%	5.00%	5.90%	6.00%	5.63%	10.17%	10.27%
Southern Company	SO	$2.80	$68.23	4.10%	4.23%	4.32%	6.50%	7.30%	4.00%	5.93%	10.16%	10.25%
Xcel Energy Inc.	XEL	$2.08	$57.44	3.62%	3.73%	3.81%	6.00%	6.30%	6.10%	6.13%	9.87%	9.95%
Mean											10.03%	10.12%
Flotation Cost Adjustment											[12]	0.09%

Notes:
[1]-[4] Source: Company-provided information
[5] Equals [8]/[1]
[6] Equals [4] + ([1] x [3])
[7] Equals [1] x [2]
[8] Equals [7] - [6]
[9] Equals [6] / [7]
[10] Equals average [6] / average [7]
[11] Source: Bloomberg Professional
[12] Source: Bloomberg Professional, equals 30-day average as of September 30, 2023
[13] Equals [11] / [12]
[14] Equals [13] x (1 + 0.5 x [19])
[15] Equals [14] / (1 − Flotation Cost)
[16] Source: Value Line
[17] Source: Yahoo! Finance
[18] Source: Zacks
[19] Equals Average ([16], [17], [18])
[20] Equals [14] + [19]
[21] Equals [15] + [19]
[22] Equals Average ([21]) − Average ([20])

30-DAY CONSTANT GROWTH DCF -- MINNESOTA POWER PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	All Proxy Group [9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
Alliant Energy Corporation	LNT	$1.81	$50.54	3.58%	3.70%	6.50%	6.80%	6.50%	6.60%	10.20%	10.30%	10.50%
Ameren Corporation	AEE	$2.52	$78.90	3.19%	3.29%	6.50%	5.90%	6.40%	6.27%	9.19%	9.56%	9.80%
American Electric Power Company, Inc.	AEP	$3.32	$78.39	4.24%	4.36%	6.50%	5.20%	5.60%	5.77%	9.55%	10.12%	10.87%
Avista Corporation	AVA	$1.84	$33.48	5.50%	5.67%	6.50%	6.30%	6.30%	6.37%	11.97%	12.04%	12.17%
CMS Energy Corporation	CMS	$1.95	$56.01	3.48%	3.60%	6.50%	5.87%	7.80%	6.72%	9.45%	10.32%	11.42%
Duke Energy Corporation	DUK	$4.10	$91.09	4.50%	4.63%	5.00%	6.45%	6.10%	5.85%	9.61%	10.48%	11.10%
Entergy Corporation	ETR	$4.28	$95.60	4.48%	4.57%	0.50%	6.60%	5.70%	4.27%	4.99%	8.84%	11.22%
Evergy, Inc.	EVRG	$2.45	$54.17	4.52%	4.64%	7.50%	2.67%	5.20%	5.12%	7.25%	9.76%	12.19%
IDACORP, Inc.	IDA	$3.16	$95.82	3.30%	3.37%	5.00%	3.70%	3.70%	4.13%	7.06%	7.50%	8.38%
NextEra Energy, Inc.	NEE	$1.87	$66.33	2.82%	2.94%	9.50%	8.80%	8.40%	8.90%	11.34%	11.84%	12.45%
NorthWestern Corporation	NWE	$2.56	$50.31	5.09%	5.19%	3.50%	3.66%	5.20%	4.12%	8.68%	9.31%	10.42%
OGE Energy Corporation	OGE	$1.66	$34.45	4.81%	4.93%	6.50%	negative	3.70%	5.10%	8.60%	10.03%	11.46%
Pinnacle West Capital Corporation	PNW	$3.46	$77.25	4.48%	4.60%	2.50%	7.50%	6.50%	5.50%	7.03%	10.10%	12.15%
Portland General Electric Company	POR	$1.90	$43.05	4.41%	4.54%	5.00%	5.90%	6.00%	5.63%	9.52%	10.17%	10.55%
Southern Company	SO	$2.80	$68.23	4.10%	4.23%	6.50%	7.30%	4.00%	5.93%	8.19%	10.16%	11.55%
Xcel Energy Inc.	XEL	$2.08	$57.44	3.62%	3.73%	6.00%	6.30%	6.10%	6.13%	9.73%	9.87%	10.04%
Mean				4.13%	4.25%	5.63%	5.93%	5.83%	5.78%	8.90%	10.03%	11.02%
Flotation Cost										0.09%	0.09%	0.09%
Flotation Cost-Adjusted Result										8.99%	10.12%	11.11%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 30-day average as of September 30, 2023
[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 -- MINNESOTA POWER PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	All Proxy Group [9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
Alliant Energy Corporation	LNT	$1.81	$51.79	3.49%	3.61%	6.50%	6.80%	6.50%	6.60%	10.11%	10.21%	10.41%
Ameren Corporation	AEE	$2.52	$81.07	3.11%	3.21%	6.50%	5.90%	6.40%	6.27%	9.10%	9.47%	9.71%
American Electric Power Company, Inc.	AEP	$3.32	$81.58	4.07%	4.19%	6.50%	5.20%	5.60%	5.77%	9.38%	9.95%	10.70%
Avista Corporation	AVA	$1.84	$36.84	4.99%	5.15%	6.50%	6.30%	6.30%	6.37%	11.45%	11.52%	11.66%
CMS Energy Corporation	CMS	$1.95	$58.03	3.36%	3.47%	6.50%	5.87%	7.80%	6.72%	9.33%	10.20%	11.29%
Duke Energy Corporation	DUK	$4.10	$90.59	4.53%	4.66%	5.00%	6.45%	6.10%	5.85%	9.64%	10.51%	11.12%
Entergy Corporation	ETR	$4.28	$97.39	4.39%	4.49%	0.50%	6.60%	5.70%	4.27%	4.91%	8.76%	11.14%
Evergy, Inc.	EVRG	$2.45	$56.86	4.31%	4.42%	7.50%	2.67%	5.20%	5.12%	7.04%	9.54%	11.97%
IDACORP, Inc.	IDA	$3.16	$99.95	3.16%	3.23%	5.00%	3.70%	3.70%	4.13%	6.92%	7.36%	8.24%
NextEra Energy, Inc.	NEE	$1.87	$70.28	2.66%	2.78%	9.50%	8.80%	8.40%	8.90%	11.17%	11.68%	12.29%
NorthWestern Corporation	NWE	$2.56	$53.90	4.75%	4.85%	3.50%	3.66%	5.20%	4.12%	8.33%	8.97%	10.07%
OGE Energy Corporation	OGE	$1.66	$35.16	4.71%	4.83%	6.50%	negative	3.70%	5.10%	8.50%	9.93%	11.36%
Pinnacle West Capital Corporation	PNW	$3.46	$79.15	4.37%	4.49%	2.50%	7.50%	6.50%	5.50%	6.93%	9.99%	12.04%
Portland General Electric Company	POR	$1.90	$45.65	4.16%	4.28%	5.00%	5.90%	6.00%	5.63%	9.27%	9.91%	10.29%
Southern Company	SO	$2.80	$69.22	4.05%	4.17%	6.50%	7.30%	4.00%	5.93%	8.13%	10.10%	11.49%
Xcel Energy Inc.	XEL	$2.08	$60.54	3.44%	3.54%	6.00%	6.30%	6.10%	6.13%	9.54%	9.67%	9.84%
Mean				3.97%	4.08%	5.63%	5.93%	5.83%	5.78%	8.73%	9.86%	10.85%
Flotation Cost										0.09%	0.09%	0.09%
Flotation Cost-Adjusted Result										8.83%	9.95%	10.95%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 90-day average as of September 30, 2023.
[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 -- MINNESOTA POWER PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	All Proxy Group [9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
Alliant Energy Corporation	LNT	$1.81	$52.24	3.46%	3.58%	6.50%	6.80%	6.50%	6.60%	10.08%	10.18%	10.38%
Ameren Corporation	AEE	$2.52	$82.94	3.04%	3.13%	6.50%	5.90%	6.40%	6.27%	9.03%	9.40%	9.64%
American Electric Power Company, Inc.	AEP	$3.32	$85.49	3.88%	4.00%	6.50%	5.20%	5.60%	5.77%	9.18%	9.76%	10.51%
Avista Corporation	AVA	$1.84	$38.93	4.73%	4.88%	6.50%	6.30%	6.30%	6.37%	11.18%	11.24%	11.38%
CMS Energy Corporation	CMS	$1.95	$59.07	3.30%	3.41%	6.50%	5.87%	7.80%	6.72%	9.27%	10.14%	11.23%
Duke Energy Corporation	DUK	$4.10	$93.09	4.40%	4.53%	5.00%	6.45%	6.10%	5.85%	9.51%	10.38%	11.00%
Entergy Corporation	ETR	$4.28	$100.72	4.25%	4.34%	0.50%	6.60%	5.70%	4.27%	4.76%	8.61%	10.99%
Evergy, Inc.	EVRG	$2.45	$58.17	4.21%	4.32%	7.50%	2.67%	5.20%	5.12%	6.94%	9.44%	11.87%
IDACORP, Inc.	IDA	$3.16	$102.57	3.08%	3.14%	5.00%	3.70%	3.70%	4.13%	6.84%	7.28%	8.16%
NextEra Energy, Inc.	NEE	$1.87	$72.75	2.57%	2.68%	9.50%	8.80%	8.40%	8.90%	11.08%	11.58%	12.19%
NorthWestern Corporation	NWE	$2.56	$55.01	4.65%	4.75%	3.50%	3.66%	5.20%	4.12%	8.24%	8.87%	9.97%
OGE Energy Corporation	OGE	$1.66	$35.96	4.61%	4.72%	6.50%	negative	3.70%	5.10%	8.39%	9.82%	11.26%
Pinnacle West Capital Corporation	PNW	$3.46	$77.31	4.48%	4.60%	2.50%	7.50%	6.50%	5.50%	7.03%	10.10%	12.14%
Portland General Electric Company	POR	$1.90	$46.53	4.08%	4.20%	5.00%	5.90%	6.00%	5.63%	9.19%	9.83%	10.21%
Southern Company	SO	$2.80	$68.42	4.09%	4.21%	6.50%	7.30%	4.00%	5.93%	8.17%	10.15%	11.54%
Xcel Energy Inc.	XEL	$2.08	$63.53	3.27%	3.37%	6.00%	6.30%	6.10%	6.13%	9.37%	9.51%	9.68%
Mean				3.88%	3.99%	5.63%	5.93%	5.83%	5.78%	8.64%	9.77%	10.76%
Flotation Cost										0.09%	0.09%	0.09%
Flotation Cost-Adjusted Result										8.73%	9.86%	10.85%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 180-day average as of September 30, 2023.
[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])

30-DAY TWO-GROWTH DCF -- MEAN GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Average Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$1.81	$50.54	3.58%	3.70%	6.60%	6.60%	10.27%	0.41	$1.87	1.10	1.70	$1.99	1.22	1.64	$2.12	1.34	1.58	$2.26	1.48	1.53	$2.41	1.63	1.48	$2.57	$70.14	$43.02	$50.95
Ameren Corporation	AEE	$2.52	$78.90	3.19%	3.29%	6.27%	6.27%	9.43%	3.36	$2.60	1.09	2.38	$2.76	1.20	2.31	$2.93	1.31	2.24	$3.12	1.43	2.18	$3.31	1.57	2.11	$3.52	$111.47	$71.05	$82.26
American Electric Power Company, Inc.	AEP	$3.32	$78.39	4.24%	4.36%	5.77%	5.77%	9.80%	6.33	$3.42	1.10	3.11	$3.61	1.21	3.00	$3.82	1.32	2.89	$4.04	1.45	2.78	$4.27	1.60	2.68	$4.52	$112.13	$70.27	$84.72
Avista Corporation	AVA	$1.84	$33.48	5.50%	5.67%	6.37%	6.37%	11.70%	2.11	$1.90	1.12	1.70	$2.02	1.25	1.62	$2.15	1.39	1.54	$2.28	1.56	1.47	$2.43	1.74	1.40	$2.58	$48.46	$27.87	$35.59
CMS Energy Corporation	CMS	$1.95	$56.01	3.48%	3.60%	6.72%	6.72%	10.52%	-2.92	$2.02	1.11	1.82	$2.15	1.22	1.76	$2.30	1.35	1.70	$2.45	1.49	1.64	$2.61	1.65	1.59	$2.79	$73.50	$44.58	$53.09
Duke Energy Corporation	DUK	$4.10	$91.09	4.50%	4.63%	5.85%	5.85%	10.31%	3.56	$4.22	1.10	3.83	$4.47	1.22	3.67	$4.73	1.34	3.52	$5.00	1.48	3.38	$5.30	1.63	3.24	$5.61	$125.77	$77.01	$94.65
Entergy Corporation	ETR	$4.28	$95.60	4.48%	4.57%	4.27%	4.60%	8.96%	3.39	$4.37	1.09	4.01	$4.56	1.19	3.84	$4.75	1.29	3.67	$4.96	1.41	3.51	$5.17	1.54	3.36	$5.40	$123.79	$80.58	$98.99
Evergy, Inc.	EVRG	$2.45	$54.17	4.52%	4.64%	5.12%	5.12%	9.49%	3.44	$2.51	1.09	2.30	$2.64	1.20	2.20	$2.78	1.31	2.12	$2.92	1.44	2.03	$3.07	1.57	1.95	$3.23	$73.96	$47.01	$57.61
IDACORP, Inc.	IDA	$3.16	$95.82	3.30%	3.37%	4.13%	4.60%	7.77%	4.30	$3.23	1.08	2.99	$3.36	1.16	2.89	$3.50	1.25	2.79	$3.64	1.35	2.70	$3.79	1.45	2.61	$3.97	$125.19	$86.13	$100.11
NextEra Energy, Inc.	NEE	$1.87	$66.33	2.82%	2.94%	8.90%	6.95%	10.02%	1.86	$1.95	1.10	1.78	$2.13	1.21	1.76	$2.32	1.33	1.74	$2.52	1.47	1.72	$2.75	1.61	1.70	$2.94	$95.89	$59.49	$68.19
NorthWestern Corporation	NWE	$2.56	$50.31	5.09%	5.19%	4.12%	4.60%	9.33%	3.99	$2.61	1.09	2.39	$2.72	1.20	2.28	$2.83	1.31	2.17	$2.95	1.43	2.06	$3.07	1.56	1.97	$3.21	$67.85	$43.43	$54.30
OGE Energy Corporation	OGE	$1.66	$34.45	4.81%	4.93%	5.10%	5.10%	9.97%	0.45	$1.70	1.10	1.54	$1.79	1.21	1.48	$1.88	1.33	1.41	$1.97	1.46	1.35	$2.07	1.61	1.29	$2.18	$44.75	$27.83	$34.90
Pinnacle West Capital Corporation	PNW	$3.46	$77.25	4.48%	4.60%	5.50%	5.50%	9.49%	11.87	$3.56	1.09	3.25	$3.75	1.20	3.13	$3.96	1.31	3.01	$4.17	1.44	2.90	$4.40	1.57	2.80	$4.65	$116.47	$74.02	$89.12
Portland General Electric Company	POR	$1.90	$43.05	4.41%	4.54%	5.63%	5.63%	9.88%	2.99	$1.95	1.10	1.78	$2.06	1.21	1.71	$2.18	1.33	1.64	$2.30	1.46	1.58	$2.43	1.60	1.52	$2.57	$60.55	$37.81	$46.04
Southern Company	SO	$2.80	$68.23	4.10%	4.23%	5.93%	5.93%	10.11%	0.79	$2.88	1.10	2.62	$3.05	1.21	2.52	$3.24	1.34	2.42	$3.43	1.47	2.33	$3.63	1.62	2.24	$3.85	$92.08	$56.89	$69.02
Xcel Energy Inc.	XEL	$2.08	$57.44	3.62%	3.73%	6.13%	6.13%	9.87%	0.00	$2.14	1.10	1.95	$2.28	1.21	1.88	$2.41	1.33	1.82	$2.56	1.46	1.76	$2.72	1.60	1.70	$2.89	$77.35	$48.32	$57.44
Mean				4.13%	4.25%	5.78%	5.73%	9.81%																				
Median								9.87%																				
Flotation Cost								0.09%																				
								9.90%																				

Standard Deviation [6]	1.18%
Avg. less Standard Dev [7]	4.60%
Avg. plus Standard Dev [8]	6.95%

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] = [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]
[30] Excludes companies with ROEs less than the a 7.00% return, consistent with the Department position in Docket No. E-002/GR-15-826

90-DAY TWO-GROWTH DCF -- MEAN GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Average Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$1.81	$51.79	3.49%	3.61%	6.60%	6.60%	10.23%	-0.25	$1.87	1.10	1.70	$1.99	1.22	1.64	$2.12	1.34	1.59	$2.26	1.48	1.53	$2.41	1.63	1.48	$2.57	$70.95	$43.60	$51.55
Ameren Corporation	AEE	$2.52	$81.07	3.11%	3.21%	6.27%	6.27%	9.38%	2.38	$2.60	1.09	2.38	$2.76	1.20	2.31	$2.93	1.31	2.24	$3.12	1.43	2.18	$3.31	1.57	2.12	$3.52	$113.09	$72.23	$83.45
American Electric Power Company, Inc.	AEP	$3.32	$81.58	4.07%	4.19%	5.77%	5.77%	9.66%	6.16	$3.42	1.10	3.11	$3.61	1.20	3.00	$3.82	1.32	2.90	$4.04	1.45	2.79	$4.27	1.59	2.70	$4.52	$116.14	$73.24	$87.74
Avista Corporation	AVA	$1.84	$36.84	4.99%	5.15%	6.37%	6.37%	11.25%	2.01	$1.90	1.11	1.71	$2.02	1.24	1.63	$2.15	1.38	1.56	$2.28	1.53	1.49	$2.43	1.70	1.43	$2.58	$52.90	$31.03	$38.85
CMS Energy Corporation	CMS	$1.95	$58.03	3.36%	3.47%	6.72%	6.72%	10.47%	-4.31	$2.02	1.10	1.82	$2.15	1.22	1.76	$2.30	1.35	1.70	$2.45	1.49	1.64	$2.61	1.65	1.59	$2.79	$74.38	$45.20	$53.72
Duke Energy Corporation	DUK	$4.10	$90.59	4.53%	4.66%	5.85%	5.85%	10.30%	4.33	$4.22	1.10	3.83	$4.47	1.22	3.67	$4.73	1.34	3.52	$5.00	1.48	3.38	$5.30	1.63	3.25	$5.61	$126.12	$77.27	$94.92
Entergy Corporation	ETR	$4.28	$97.39	4.39%	4.49%	4.27%	4.60%	8.90%	3.19	$4.37	1.09	4.01	$4.56	1.19	3.84	$4.75	1.29	3.68	$4.96	1.41	3.52	$5.17	1.53	3.37	$5.40	$125.78	$82.14	$100.58
Evergy, Inc.	EVRG	$2.45	$56.86	4.31%	4.42%	5.12%	5.12%	9.42%	1.62	$2.51	1.09	2.30	$2.64	1.20	2.21	$2.78	1.31	2.12	$2.92	1.43	2.04	$3.07	1.57	1.96	$3.23	$75.08	$47.87	$58.48
IDACORP, Inc.	IDA	$3.16	$99.95	3.16%	3.23%	4.13%	4.60%	7.63%	4.79	$3.23	1.08	3.00	$3.36	1.16	2.90	$3.50	1.25	2.81	$3.64	1.34	2.71	$3.79	1.44	2.63	$3.97	$130.98	$90.70	$104.74
NextEra Energy, Inc.	NEE	$1.87	$70.28	2.66%	2.78%	8.90%	6.95%	9.89%	0.75	$1.95	1.10	1.78	$2.13	1.21	1.76	$2.32	1.33	1.75	$2.52	1.46	1.73	$2.75	1.60	1.71	$2.94	$99.87	$62.31	$71.03
NorthWestern Corporation	NWE	$2.56	$53.90	4.75%	4.85%	4.12%	4.60%	9.11%	3.05	$2.61	1.09	2.39	$2.72	1.19	2.29	$2.83	1.30	2.18	$2.95	1.42	2.08	$3.07	1.55	1.99	$3.21	$71.18	$46.02	$56.95
OGE Energy Corporation	OGE	$1.66	$35.16	4.71%	4.83%	5.10%	5.10%	9.87%	0.48	$1.70	1.10	1.55	$1.79	1.21	1.48	$1.88	1.33	1.41	$1.97	1.46	1.35	$2.07	1.60	1.29	$2.18	$45.71	$28.56	$35.64
Pinnacle West Capital Corporation	PNW	$3.46	$79.15	4.37%	4.49%	5.50%	5.50%	9.49%	9.88	$3.56	1.09	3.25	$3.75	1.20	3.13	$3.96	1.31	3.01	$4.17	1.44	2.90	$4.40	1.57	2.80	$4.65	$116.35	$73.93	$89.03
Portland General Electric Company	POR	$1.90	$45.65	4.16%	4.28%	5.63%	5.63%	9.73%	2.00	$1.95	1.10	1.78	$2.06	1.20	1.71	$2.18	1.32	1.65	$2.30	1.45	1.59	$2.43	1.59	1.53	$2.57	$62.67	$39.39	$47.65
Southern Company	SO	$2.80	$69.22	4.05%	4.17%	5.93%	5.93%	10.05%	0.81	$2.88	1.10	2.62	$3.05	1.21	2.52	$3.24	1.33	2.43	$3.43	1.47	2.34	$3.63	1.61	2.25	$3.85	$93.42	$57.87	$70.03
Xcel Energy Inc.	XEL	$2.08	$60.54	3.44%	3.54%	6.13%	6.13%	9.67%	0.00	$2.14	1.10	1.95	$2.28	1.20	1.89	$2.41	1.32	1.83	$2.56	1.45	1.77	$2.72	1.59	1.71	$2.89	$81.53	$51.38	$60.54
Mean				3.97%	4.08%	5.78%	5.73%	9.69%																				
Median								9.70%																				
Flotation Cost								0.09%																				
								9.78%																				
				Standard Deviation [6]		1.18%																						
				Avg. less Standard Dev [7]		4.60%																						
				Avg. plus Standard Dev [8]		6.95%																						

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] = [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]

180-DAY TWO-GROWTH DCF -- MEAN GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Average Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$1.81	$52.24	3.46%	3.58%	6.60%	6.60%	10.22%	-0.61	$1.87	1.10	1.70	$1.99	1.21	1.64	$2.12	1.34	1.59	$2.26	1.48	1.53	$2.41	1.63	1.48	$2.57	$71.06	$43.68	$51.63
Ameren Corporation	AEE	$2.52	$82.94	3.04%	3.13%	6.27%	6.27%	9.34%	1.59	$2.60	1.09	2.38	$2.76	1.20	2.31	$2.93	1.31	2.25	$3.12	1.43	2.18	$3.31	1.56	2.12	$3.52	$114.54	$73.29	$84.53
American Electric Power Company, Inc.	AEP	$3.32	$85.49	3.88%	4.00%	5.77%	5.77%	9.52%	5.63	$3.42	1.10	3.12	$3.61	1.20	3.01	$3.82	1.31	2.91	$4.04	1.44	2.81	$4.27	1.58	2.71	$4.52	$120.60	$76.55	$91.12
Avista Corporation	AVA	$1.84	$38.93	4.73%	4.88%	6.37%	6.37%	11.13%	0.91	$1.90	1.11	1.71	$2.02	1.24	1.64	$2.15	1.37	1.57	$2.28	1.53	1.50	$2.43	1.70	1.43	$2.58	$54.24	$32.00	$39.84
CMS Energy Corporation	CMS	$1.95	$59.07	3.30%	3.41%	6.72%	6.72%	10.43%	-4.74	$2.02	1.10	1.83	$2.15	1.22	1.76	$2.30	1.35	1.70	$2.45	1.49	1.65	$2.61	1.64	1.59	$2.79	$75.22	$45.79	$54.33
Duke Energy Corporation	DUK	$4.10	$93.09	4.40%	4.53%	5.85%	5.85%	10.17%	4.63	$4.22	1.10	3.83	$4.47	1.21	3.68	$4.73	1.34	3.54	$5.00	1.47	3.40	$5.30	1.62	3.26	$5.61	$129.85	$80.01	$97.72
Entergy Corporation	ETR	$4.28	$100.72	4.25%	4.34%	4.27%	4.60%	8.77%	2.87	$4.37	1.09	4.02	$4.56	1.18	3.85	$4.75	1.29	3.69	$4.96	1.40	3.54	$5.17	1.52	3.39	$5.40	$129.55	$85.09	$103.59
Evergy, Inc.	EVRG	$2.45	$58.17	4.21%	4.32%	5.12%	5.12%	9.38%	0.91	$2.51	1.09	2.30	$2.64	1.20	2.21	$2.78	1.31	2.12	$2.92	1.43	2.04	$3.07	1.57	1.96	$3.23	$75.84	$48.45	$59.08
IDACORP, Inc.	IDA	$3.16	$102.57	3.08%	3.14%	4.13%	4.60%	7.60%	3.09	$3.23	1.08	3.00	$3.36	1.16	2.90	$3.50	1.25	2.81	$3.64	1.34	2.72	$3.79	1.44	2.63	$3.97	$132.14	$91.61	$105.66
NextEra Energy, Inc.	NEE	$1.87	$72.75	2.57%	2.68%	8.90%	6.95%	9.81%	0.52	$1.95	1.10	1.78	$2.13	1.21	1.76	$2.32	1.32	1.75	$2.52	1.45	1.74	$2.75	1.60	1.72	$2.94	$103.00	$64.52	$73.27
NorthWestern Corporation	NWE	$2.56	$55.01	4.65%	4.75%	4.12%	4.60%	9.10%	2.11	$2.61	1.09	2.39	$2.72	1.19	2.29	$2.83	1.30	2.18	$2.95	1.42	2.08	$3.07	1.55	1.99	$3.21	$71.39	$46.19	$57.12
OGE Energy Corporation	OGE	$1.66	$35.96	4.61%	4.72%	5.10%	5.10%	9.77%	0.43	$1.70	1.10	1.55	$1.79	1.20	1.48	$1.88	1.32	1.42	$1.97	1.45	1.36	$2.07	1.59	1.30	$2.18	$46.67	$29.28	$36.39
Pinnacle West Capital Corporation	PNW	$3.46	$77.31	4.48%	4.60%	5.50%	5.50%	9.64%	8.62	$3.56	1.10	3.24	$3.75	1.20	3.12	$3.96	1.32	3.00	$4.17	1.44	2.89	$4.40	1.58	2.78	$4.65	$112.31	$70.90	$85.93
Portland General Electric Company	POR	$1.90	$46.53	4.08%	4.20%	5.63%	5.63%	9.74%	1.02	$1.95	1.10	1.78	$2.06	1.20	1.71	$2.18	1.32	1.65	$2.30	1.45	1.59	$2.43	1.59	1.53	$2.57	$62.53	$39.29	$47.55
Southern Company	SO	$2.80	$68.42	4.09%	4.21%	5.93%	5.93%	10.14%	0.07	$2.88	1.10	2.62	$3.05	1.21	2.52	$3.24	1.34	2.42	$3.43	1.47	2.33	$3.63	1.62	2.24	$3.85	$91.36	$56.36	$68.49
Xcel Energy Inc.	XEL	$2.08	$63.53	3.27%	3.37%	6.13%	6.13%	9.51%	0.00	$2.14	1.10	1.96	$2.28	1.20	1.90	$2.41	1.31	1.84	$2.56	1.44	1.78	$2.72	1.57	1.73	$2.89	$85.55	$54.32	$63.53
Mean				3.88%	3.99%	5.78%	5.73%	9.64%																				
Median								9.69%																				
Flotation Cost								0.09%																				
								9.74%																				
				Standard Deviation [6]		1.18%																						
				Avg. less Standard Dev [7]		4.60%																						
				Avg. plus Standard Dev [8]		6.95%																						

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] = [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]

30-DAY TWO-GROWTH DCF -- LOW GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Low Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$1.81	$50.54	3.58%	3.70%	6.50%	6.50%	10.10%	1.37	$1.87	1.10	1.70	$1.99	1.21	1.64	$2.12	1.33	1.59	$2.26	1.47	1.54	$2.40	1.62	1.49	$2.56	$71.13	$43.96	$51.91
Ameren Corporation	AEE	$2.52	$78.90	3.19%	3.29%	5.90%	5.90%	9.05%	3.36	$2.59	1.09	2.38	$2.75	1.19	2.31	$2.91	1.30	2.24	$3.08	1.41	2.18	$3.26	1.54	2.12	$3.46	$109.56	$71.03	$82.26
American Electric Power Company, Inc.	AEP	$3.32	$78.39	4.24%	4.35%	5.20%	5.20%	9.39%	2.90	$3.41	1.09	3.11	$3.58	1.20	2.99	$3.77	1.31	2.88	$3.97	1.43	2.77	$4.17	1.57	2.66	$4.39	$104.74	$66.87	$81.29
Avista Corporation	AVA	$1.84	$33.48	5.50%	5.67%	6.30%	6.30%	11.63%	2.11	$1.90	1.12	1.70	$2.02	1.25	1.62	$2.14	1.39	1.54	$2.28	1.55	1.47	$2.42	1.73	1.40	$2.58	$48.31	$27.87	$35.59
CMS Energy Corporation	CMS	$1.95	$56.01	3.48%	3.58%	5.87%	5.87%	9.95%	-6.85	$2.01	1.10	1.83	$2.13	1.21	1.76	$2.25	1.33	1.69	$2.38	1.46	1.63	$2.52	1.61	1.57	$2.67	$65.39	$40.69	$49.16
Duke Energy Corporation	DUK	$4.10	$91.09	4.50%	4.61%	5.00%	5.00%	9.61%	0.08	$4.20	1.10	3.83	$4.41	1.20	3.67	$4.63	1.32	3.52	$4.86	1.44	3.37	$5.11	1.58	3.23	$5.36	$116.35	$73.54	$91.17
Entergy Corporation	ETR	$4.28	$95.60	4.48%	4.49%	0.50%	2.76%	6.82%	1.96	$4.29	1.07	4.02	$4.31	1.14	3.78	$4.33	1.22	3.56	$4.36	1.30	3.35	$4.38	1.39	3.15	$4.50	$110.84	$79.71	$97.56
Evergy, Inc.	EVRG	$2.45	$54.17	4.52%	4.58%	2.67%	2.76%	7.06%	3.36	$2.48	1.07	2.32	$2.55	1.15	2.22	$2.62	1.23	2.13	$2.69	1.31	2.05	$2.76	1.41	1.96	$2.83	$65.89	$46.85	$57.53
IDACORP, Inc.	IDA	$3.16	$95.82	3.30%	3.36%	3.70%	3.70%	6.98%	2.43	$3.22	1.07	3.01	$3.34	1.14	2.92	$3.46	1.22	2.83	$3.59	1.31	2.74	$3.72	1.40	2.66	$3.86	$117.83	$84.10	$98.25
NextEra Energy, Inc.	NEE	$1.87	$66.33	2.82%	2.94%	8.40%	6.58%	9.64%	1.55	$1.95	1.10	1.78	$2.11	1.20	1.76	$2.29	1.32	1.74	$2.48	1.45	1.72	$2.69	1.58	1.70	$2.87	$93.79	$59.19	$67.88
NorthWestern Corporation	NWE	$2.56	$50.31	5.09%	5.18%	3.50%	3.50%	8.35%	3.34	$2.60	1.08	2.40	$2.70	1.17	2.30	$2.79	1.27	2.19	$2.89	1.38	2.10	$2.99	1.49	2.00	$3.09	$63.72	$42.66	$53.65
OGE Energy Corporation	OGE	$1.66	$34.45	4.81%	4.90%	3.70%	3.70%	8.53%	0.45	$1.69	1.09	1.55	$1.75	1.18	1.49	$1.81	1.28	1.42	$1.88	1.39	1.36	$1.95	1.51	1.30	$2.02	$41.85	$27.79	$34.90
Pinnacle West Capital Corporation	PNW	$3.46	$77.25	4.48%	4.53%	2.50%	2.76%	7.12%	2.25	$3.50	1.07	3.27	$3.59	1.15	3.13	$3.68	1.23	2.99	$3.77	1.32	2.86	$3.87	1.41	2.74	$3.97	$90.99	$64.50	$79.50
Portland General Electric Company	POR	$1.90	$43.05	4.41%	4.52%	5.00%	5.00%	9.23%	2.99	$1.95	1.09	1.78	$2.04	1.19	1.71	$2.15	1.30	1.65	$2.25	1.42	1.58	$2.37	1.55	1.52	$2.49	$58.76	$37.79	$46.04
Southern Company	SO	$2.80	$68.23	4.10%	4.19%	4.00%	4.00%	8.14%	0.79	$2.86	1.08	2.64	$2.97	1.17	2.54	$3.09	1.26	2.44	$3.21	1.37	2.35	$3.34	1.48	2.26	$3.47	$83.98	$56.79	$69.02
Xcel Energy Inc.	XEL	$2.08	$57.44	3.62%	3.73%	6.00%	6.00%	9.73%	0.00	$2.14	1.10	1.95	$2.27	1.20	1.89	$2.41	1.32	1.82	$2.55	1.45	1.76	$2.70	1.59	1.70	$2.87	$76.87	$48.32	$57.44
Mean				4.13%	4.23%	4.67%	4.72%	8.83%																				
								9.14%																				
Flotation Cost								0.09%																				
								8.93%																				

Standard Deviation [6]	1.91%
Avg. less Standard Dev [7]	2.76%
Avg. plus Standard Dev [8]	6.58%

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] = [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]

90-DAY TWO-GROWTH DCF -- LOW GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Low Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$1.81	$51.79	3.49%	3.61%	6.50%	6.50%	10.06%	0.74	$1.87	1.10	1.70	$1.99	1.21	1.64	$2.12	1.33	1.59	$2.26	1.47	1.54	$2.40	1.61	1.49	$2.56	$71.97	$44.57	$52.53
Ameren Corporation	AEE	$2.52	$81.07	3.11%	3.20%	5.90%	5.90%	9.01%	2.38	$2.59	1.09	2.38	$2.75	1.19	2.31	$2.91	1.30	2.25	$3.08	1.41	2.18	$3.26	1.54	2.12	$3.46	$111.15	$72.21	$83.45
American Electric Power Company, Inc.	AEP	$3.32	$81.58	4.07%	4.18%	5.20%	5.20%	9.25%	2.49	$3.41	1.09	3.12	$3.58	1.19	3.00	$3.77	1.30	2.89	$3.97	1.42	2.78	$4.17	1.56	2.68	$4.39	$108.33	$69.60	$84.07
Avista Corporation	AVA	$1.84	$36.84	4.99%	5.15%	6.30%	6.30%	11.19%	2.01	$1.90	1.11	1.71	$2.02	1.24	1.63	$2.14	1.37	1.56	$2.28	1.53	1.49	$2.42	1.70	1.43	$2.58	$52.73	$31.03	$38.85
CMS Energy Corporation	CMS	$1.95	$58.03	3.36%	3.46%	5.87%	5.87%	9.91%	-8.33	$2.01	1.10	1.83	$2.13	1.21	1.76	$2.25	1.33	1.69	$2.38	1.46	1.63	$2.52	1.60	1.57	$2.67	$66.11	$41.22	$49.70
Duke Energy Corporation	DUK	$4.10	$90.59	4.53%	4.64%	5.00%	5.00%	9.60%	0.82	$4.20	1.10	3.83	$4.41	1.20	3.67	$4.63	1.32	3.52	$4.86	1.44	3.37	$5.11	1.58	3.23	$5.36	$116.67	$73.78	$91.41
Entergy Corporation	ETR	$4.28	$97.39	4.39%	4.41%	0.50%	2.76%	6.75%	1.72	$4.29	1.07	4.02	$4.31	1.14	3.78	$4.33	1.22	3.56	$4.36	1.30	3.35	$4.38	1.39	3.16	$4.50	$112.61	$81.23	$99.11
Evergy, Inc.	EVRG	$2.45	$56.86	4.31%	4.37%	2.67%	2.76%	7.00%	1.54	$2.48	1.07	2.32	$2.55	1.14	2.23	$2.62	1.22	2.14	$2.69	1.31	2.05	$2.76	1.40	1.97	$2.83	$66.89	$47.70	$58.40
IDACORP, Inc.	IDA	$3.16	$99.95	3.16%	3.22%	3.70%	3.70%	6.83%	2.75	$3.22	1.07	3.01	$3.34	1.14	2.92	$3.46	1.22	2.84	$3.59	1.30	2.76	$3.72	1.39	2.67	$3.86	$123.15	$88.49	$102.69
NextEra Energy, Inc.	NEE	$1.87	$70.28	2.66%	2.77%	8.40%	6.58%	9.52%	0.41	$1.95	1.10	1.78	$2.11	1.20	1.76	$2.29	1.31	1.74	$2.48	1.44	1.73	$2.69	1.58	1.71	$2.87	$97.66	$61.98	$70.69
NorthWestern Corporation	NWE	$2.56	$53.90	4.75%	4.83%	3.50%	3.50%	8.13%	2.34	$2.60	1.08	2.41	$2.70	1.17	2.31	$2.79	1.26	2.21	$2.89	1.37	2.11	$2.99	1.48	2.02	$3.09	$66.80	$45.18	$56.24
OGE Energy Corporation	OGE	$1.66	$35.16	4.71%	4.80%	3.70%	3.70%	8.43%	0.48	$1.69	1.08	1.56	$1.75	1.18	1.49	$1.81	1.27	1.42	$1.88	1.38	1.36	$1.95	1.50	1.30	$2.02	$42.74	$28.51	$35.64
Pinnacle West Capital Corporation	PNW	$3.46	$79.15	4.37%	4.43%	2.50%	2.76%	7.13%	0.27	$3.50	1.07	3.27	$3.59	1.15	3.13	$3.68	1.23	2.99	$3.77	1.32	2.86	$3.87	1.41	2.74	$3.97	$90.91	$64.43	$79.42
Portland General Electric Company	POR	$1.90	$45.65	4.16%	4.27%	5.00%	5.00%	9.09%	2.00	$1.95	1.09	1.79	$2.04	1.19	1.72	$2.15	1.30	1.65	$2.25	1.42	1.59	$2.37	1.54	1.53	$2.49	$60.81	$39.36	$47.65
Southern Company	SO	$2.80	$69.22	4.05%	4.13%	4.00%	4.00%	8.08%	0.81	$2.86	1.08	2.64	$2.97	1.17	2.54	$3.09	1.26	2.45	$3.21	1.36	2.35	$3.34	1.47	2.27	$3.47	$85.20	$57.77	$70.03
Xcel Energy Inc.	XEL	$2.08	$60.54	3.44%	3.54%	6.00%	6.00%	9.54%	0.00	$2.14	1.10	1.96	$2.27	1.20	1.89	$2.41	1.31	1.83	$2.55	1.44	1.77	$2.70	1.58	1.72	$2.87	$81.02	$51.38	$60.54
Mean				3.97%	4.06%	4.67%	4.72%	8.72%																				
								9.05%																				
Flotation Cost								0.09%																				
								8.81%																				

Standard Deviation [6]	1.91%
Avg. less Standard Dev [7]	2.76%
Avg. plus Standard Dev [8]	6.58%

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] = [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]

180-DAY TWO-GROWTH DCF -- LOW GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Low Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$1.81	$52.24	3.46%	3.58%	6.50%	6.50%	10.05%	0.37	$1.87	1.10	1.70	$1.99	1.21	1.64	$2.12	1.33	1.59	$2.26	1.47	1.54	$2.40	1.61	1.49	$2.56	$72.08	$44.65	$52.61
Ameren Corporation	AEE	$2.52	$82.94	3.04%	3.13%	5.90%	5.90%	8.97%	1.59	$2.59	1.09	2.38	$2.75	1.19	2.31	$2.91	1.29	2.25	$3.08	1.41	2.19	$3.26	1.54	2.12	$3.46	$112.58	$73.27	$84.53
American Electric Power Company, Inc.	AEP	$3.32	$85.49	3.88%	3.98%	5.20%	5.20%	9.11%	1.68	$3.41	1.09	3.12	$3.58	1.19	3.01	$3.77	1.30	2.90	$3.97	1.42	2.80	$4.17	1.55	2.70	$4.39	$112.31	$72.64	$87.17
Avista Corporation	AVA	$1.84	$38.93	4.73%	4.88%	6.30%	6.30%	11.06%	0.91	$1.90	1.11	1.71	$2.02	1.23	1.64	$2.14	1.37	1.57	$2.28	1.52	1.50	$2.42	1.69	1.43	$2.58	$54.07	$32.00	$39.84
CMS Energy Corporation	CMS	$1.95	$59.07	3.30%	3.40%	5.87%	5.87%	9.87%	-8.86	$2.01	1.10	1.83	$2.13	1.21	1.76	$2.25	1.33	1.70	$2.38	1.46	1.63	$2.52	1.60	1.58	$2.67	$66.78	$41.72	$50.21
Duke Energy Corporation	DUK	$4.10	$93.09	4.40%	4.51%	5.00%	5.00%	9.47%	0.92	$4.20	1.09	3.84	$4.41	1.20	3.68	$4.63	1.31	3.53	$4.86	1.44	3.39	$5.11	1.57	3.25	$5.36	$119.99	$76.32	$94.01
Entergy Corporation	ETR	$4.28	$100.72	4.25%	4.26%	0.50%	2.76%	6.64%	1.30	$4.29	1.07	4.02	$4.31	1.14	3.79	$4.33	1.21	3.57	$4.36	1.29	3.37	$4.38	1.38	3.17	$4.50	$115.94	$84.08	$102.02
Evergy, Inc.	EVRG	$2.45	$58.17	4.21%	4.27%	2.67%	2.76%	6.95%	0.82	$2.48	1.07	2.32	$2.55	1.14	2.23	$2.62	1.22	2.14	$2.69	1.31	2.05	$2.76	1.40	1.97	$2.83	$67.57	$48.28	$58.99
IDACORP, Inc.	IDA	$3.16	$102.57	3.08%	3.14%	3.70%	3.70%	6.81%	1.01	$3.22	1.07	3.01	$3.34	1.14	2.93	$3.46	1.22	2.84	$3.59	1.30	2.76	$3.72	1.39	2.68	$3.86	$124.21	$89.36	$103.58
NextEra Energy, Inc.	NEE	$1.87	$72.75	2.57%	2.68%	8.40%	6.58%	9.43%	0.16	$1.95	1.09	1.78	$2.11	1.20	1.76	$2.29	1.31	1.75	$2.48	1.43	1.73	$2.69	1.57	1.71	$2.87	$100.71	$64.17	$72.91
NorthWestern Corporation	NWE	$2.56	$55.01	4.65%	4.74%	3.50%	3.50%	8.12%	1.39	$2.60	1.08	2.41	$2.70	1.17	2.31	$2.79	1.26	2.21	$2.89	1.37	2.11	$2.99	1.48	2.02	$3.09	$66.99	$45.34	$56.40
OGE Energy Corporation	OGE	$1.66	$35.96	4.61%	4.69%	3.70%	3.70%	8.34%	0.43	$1.69	1.08	1.56	$1.75	1.17	1.49	$1.81	1.27	1.43	$1.88	1.38	1.37	$1.95	1.49	1.31	$2.02	$43.64	$29.24	$36.39
Pinnacle West Capital Corporation	PNW	$3.46	$77.31	4.48%	4.53%	2.50%	2.76%	7.27%	-0.36	$3.50	1.07	3.27	$3.59	1.15	3.12	$3.68	1.23	2.98	$3.77	1.32	2.85	$3.87	1.42	2.72	$3.97	$88.07	$62.01	$76.95
Portland General Electric Company	POR	$1.90	$46.53	4.08%	4.19%	5.00%	5.00%	9.10%	1.02	$1.95	1.09	1.79	$2.04	1.19	1.72	$2.15	1.30	1.65	$2.25	1.42	1.59	$2.37	1.55	1.53	$2.49	$60.68	$39.27	$47.55
Southern Company	SO	$2.80	$68.42	4.09%	4.17%	4.00%	4.00%	8.17%	0.07	$2.86	1.08	2.64	$2.97	1.17	2.54	$3.09	1.27	2.44	$3.21	1.37	2.35	$3.34	1.48	2.26	$3.47	$83.32	$56.26	$68.49
Xcel Energy Inc.	XEL	$2.08	$63.53	3.27%	3.37%	6.00%	6.00%	9.37%	0.00	$2.14	1.09	1.96	$2.27	1.20	1.90	$2.41	1.31	1.84	$2.55	1.43	1.78	$2.70	1.57	1.73	$2.87	$85.01	$54.32	$63.53
Mean				3.88%	3.97%	4.67%	4.72%	8.67%																				
Median								9.03%																				
Flotation Cost								0.09%																				
								8.76%																				

Standard Deviation [6]	1.91%
Avg. less Standard Dev [7]	2.76%
Avg. plus Standard Dev [8]	6.58%

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] = [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]

30-DAY TWO-GROWTH DCF -- HIGH GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	High Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$ 1.81	$ 50.54	3.58%	3.70%	6.80%	6.80%	10.61%	-1.40	$1.87	1.11	1.69	$2.00	1.22	1.63	$2.13	1.35	1.58	$2.28	1.50	1.52	$2.43	1.66	1.47	$2.60	$68.28	$41.24	$49.14
Ameren Corporation	AEE	$ 2.52	$ 78.90	3.19%	3.30%	6.50%	6.50%	9.66%	3.36	$2.60	1.10	2.37	$2.77	1.20	2.30	$2.95	1.32	2.24	$3.14	1.45	2.17	$3.35	1.59	2.11	$3.56	$112.70	$71.06	$82.26
American Electric Power Company, Inc.	AEP	$ 3.32	$ 78.39	4.24%	4.37%	6.50%	6.50%	10.21%	14.09	$3.43	1.10	3.11	$3.65	1.21	3.01	$3.89	1.34	2.90	$4.14	1.48	2.81	$4.41	1.63	2.71	$4.70	$126.70	$77.94	$92.48
Avista Corporation	AVA	$ 1.84	$ 33.48	5.50%	5.67%	6.50%	6.50%	11.84%	2.11	$1.90	1.12	1.70	$2.02	1.25	1.62	$2.15	1.40	1.54	$2.29	1.56	1.47	$2.44	1.75	1.40	$2.60	$48.76	$27.87	$35.59
CMS Energy Corporation	CMS	$ 1.95	$ 56.01	3.48%	3.62%	7.80%	7.80%	11.19%	3.74	$2.03	1.11	1.82	$2.18	1.24	1.77	$2.35	1.37	1.71	$2.54	1.53	1.66	$2.74	1.70	1.61	$2.95	$86.98	$51.18	$59.75
Duke Energy Corporation	DUK	$ 4.10	$ 91.09	4.50%	4.65%	6.45%	6.45%	10.73%	7.69	$4.23	1.11	3.82	$4.51	1.23	3.67	$4.80	1.36	3.53	$5.11	1.50	3.40	$5.43	1.67	3.26	$5.78	$135.02	$81.09	$98.78
Entergy Corporation	ETR	$ 4.28	$ 95.60	4.48%	4.62%	6.60%	6.60%	11.13%	2.10	$4.42	1.11	3.98	$4.71	1.23	3.82	$5.02	1.37	3.66	$5.36	1.52	3.51	$5.71	1.69	3.37	$6.09	$134.49	$79.36	$97.70
Evergy, Inc.	EVRG	$ 2.45	$ 54.17	4.52%	4.69%	7.50%	7.50%	11.91%	3.44	$2.54	1.12	2.27	$2.73	1.25	2.18	$2.94	1.40	2.10	$3.16	1.57	2.01	$3.39	1.76	1.93	$3.65	$82.70	$47.11	$57.61
IDACORP, Inc.	IDA	$ 3.16	$ 95.82	3.30%	3.38%	5.00%	5.69%	8.81%	5.50	$3.24	1.09	2.98	$3.40	1.18	2.87	$3.57	1.29	2.77	$3.75	1.40	2.67	$3.94	1.53	2.58	$4.16	$133.38	$87.44	$101.31
NextEra Energy, Inc.	NEE	$ 1.87	$ 66.33	2.82%	2.95%	9.50%	7.80%	10.71%	5.08	$1.96	1.11	1.77	$2.14	1.23	1.75	$2.35	1.36	1.73	$2.57	1.50	1.71	$2.82	1.66	1.69	$3.04	$104.38	$62.76	$71.41
NorthWestern Corporation	NWE	$ 2.56	$ 50.31	5.09%	5.22%	5.20%	5.69%	10.41%	4.39	$2.63	1.10	2.38	$2.76	1.22	2.27	$2.91	1.35	2.16	$3.06	1.49	2.06	$3.22	1.64	1.96	$3.40	$72.00	$43.87	$54.70
OGE Energy Corporation	OGE	$ 1.66	$ 34.45	4.81%	4.96%	6.50%	6.50%	11.40%	0.45	$1.71	1.11	1.54	$1.82	1.24	1.47	$1.94	1.38	1.40	$2.07	1.54	1.34	$2.20	1.72	1.28	$2.34	$47.82	$27.87	$34.90
Pinnacle West Capital Corporation	PNW	$ 3.46	$ 77.25	4.48%	4.65%	7.50%	7.50%	10.99%	25.67	$3.59	1.11	3.23	$3.86	1.23	3.13	$4.15	1.37	3.03	$4.46	1.52	2.94	$4.79	1.68	2.85	$5.15	$147.75	$87.73	$102.92
Portland General Electric Company	POR	$ 1.90	$ 43.05	4.41%	4.55%	6.00%	6.00%	10.25%	2.99	$1.96	1.10	1.78	$2.07	1.22	1.71	$2.20	1.34	1.64	$2.33	1.48	1.58	$2.47	1.63	1.52	$2.62	$61.61	$37.82	$46.04
Southern Company	SO	$ 2.80	$ 68.23	4.10%	4.25%	7.30%	7.30%	11.50%	0.80	$2.90	1.12	2.60	$3.11	1.24	2.50	$3.34	1.39	2.41	$3.59	1.55	2.32	$3.85	1.72	2.23	$4.13	$98.18	$56.96	$69.02
Xcel Energy Inc.	XEL	$ 2.08	$ 57.44	3.62%	3.74%	6.30%	6.30%	10.04%	0.00	$2.15	1.10	1.95	$2.28	1.21	1.88	$2.42	1.33	1.82	$2.58	1.47	1.76	$2.74	1.61	1.70	$2.91	$77.96	$48.33	$57.44
Mean				4.13%	4.27%	6.75%	6.71%	10.71%																				
Median								10.72%																				
Flotation Cost								0.09%																				
								10.81%																				

Standard Deviation [6]	1.05%
Avg. less Standard Dev [7]	5.69%
Avg. plus Standard Dev [8]	7.80%

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] = [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]

90-DAY TWO-GROWTH DCF -- HIGH GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	High Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$ 1.81	$51.79	3.49%	3.61%	6.80%	6.80%	10.57%	-2.10	$1.87	1.11	1.69	$2.00	1.22	1.64	$2.13	1.35	1.58	$2.28	1.49	1.53	$2.43	1.65	1.47	$2.60	$69.04	$41.78	$49.69
Ameren Corporation	AEE	$ 2.52	$81.07	3.11%	3.21%	6.50%	6.50%	9.62%	2.38	$2.60	1.10	2.37	$2.77	1.20	2.31	$2.95	1.32	2.24	$3.14	1.44	2.18	$3.35	1.58	2.11	$3.56	$114.34	$72.24	$83.45
American Electric Power Company, Inc.	AEP	$ 3.32	$81.58	4.07%	4.20%	6.50%	6.50%	10.07%	14.51	$3.43	1.10	3.11	$3.65	1.21	3.01	$3.89	1.33	2.92	$4.14	1.47	2.82	$4.41	1.62	2.73	$4.70	$131.65	$81.49	$96.09
Avista Corporation	AVA	$ 1.84	$36.84	4.99%	5.16%	6.50%	6.50%	11.39%	2.01	$1.90	1.11	1.71	$2.02	1.24	1.63	$2.15	1.38	1.56	$2.29	1.54	1.49	$2.44	1.71	1.43	$2.60	$53.23	$31.04	$38.85
CMS Energy Corporation	CMS	$ 1.95	$58.03	3.36%	3.49%	7.80%	7.80%	11.15%	2.51	$2.03	1.11	1.82	$2.18	1.24	1.77	$2.35	1.37	1.71	$2.54	1.53	1.66	$2.74	1.70	1.61	$2.95	$88.14	$51.96	$60.54
Duke Energy Corporation	DUK	$ 4.10	$90.59	4.53%	4.67%	6.45%	6.45%	10.72%	8.48	$4.23	1.11	3.82	$4.51	1.23	3.67	$4.80	1.36	3.53	$5.11	1.50	3.40	$5.43	1.66	3.27	$5.78	$135.41	$81.38	$99.07
Entergy Corporation	ETR	$ 4.28	$97.39	4.39%	4.54%	6.60%	6.60%	11.05%	1.86	$4.42	1.11	3.98	$4.71	1.23	3.82	$5.02	1.37	3.67	$5.36	1.52	3.52	$5.71	1.69	3.38	$6.09	$136.62	$80.88	$99.25
Evergy, Inc.	EVRG	$ 2.45	$56.86	4.31%	4.47%	7.50%	7.50%	11.85%	1.62	$2.54	1.12	2.27	$2.73	1.25	2.18	$2.94	1.40	2.10	$3.16	1.56	2.02	$3.39	1.75	1.94	$3.65	$83.96	$47.97	$58.48
IDACORP, Inc.	IDA	$ 3.16	$99.95	3.16%	3.24%	5.00%	5.69%	8.67%	6.11	$3.24	1.09	2.98	$3.40	1.18	2.88	$3.57	1.28	2.78	$3.75	1.39	2.69	$3.94	1.52	2.60	$4.16	$139.64	$92.13	$106.06
NextEra Energy, Inc.	NEE	$ 1.87	$70.28	2.66%	2.79%	9.50%	7.80%	10.59%	4.27	$1.96	1.11	1.77	$2.14	1.22	1.75	$2.35	1.35	1.74	$2.57	1.50	1.72	$2.82	1.65	1.70	$3.04	$108.95	$65.87	$74.55
NorthWestern Corporation	NWE	$ 2.56	$53.90	4.75%	4.87%	5.20%	5.69%	10.19%	3.50	$2.63	1.10	2.38	$2.76	1.21	2.28	$2.91	1.34	2.17	$3.06	1.47	2.07	$3.22	1.62	1.98	$3.40	$75.56	$46.51	$57.39
OGE Energy Corporation	OGE	$ 1.66	$35.16	4.71%	4.86%	6.50%	6.50%	11.30%	0.48	$1.71	1.11	1.54	$1.82	1.24	1.47	$1.94	1.38	1.41	$2.07	1.53	1.35	$2.20	1.71	1.29	$2.34	$48.83	$28.60	$35.64
Pinnacle West Capital Corporation	PNW	$ 3.46	$79.15	4.37%	4.54%	7.50%	7.50%	10.99%	23.65	$3.59	1.11	3.23	$3.86	1.23	3.13	$4.15	1.37	3.03	$4.46	1.52	2.94	$4.79	1.68	2.85	$5.15	$147.59	$87.62	$102.80
Portland General Electric Company	POR	$ 1.90	$45.65	4.16%	4.29%	6.00%	6.00%	10.11%	2.00	$1.96	1.10	1.78	$2.07	1.21	1.71	$2.20	1.33	1.65	$2.33	1.47	1.59	$2.47	1.62	1.53	$2.62	$63.76	$39.40	$47.65
Southern Company	SO	$ 2.80	$69.22	4.05%	4.19%	7.30%	7.30%	11.44%	0.81	$2.90	1.11	2.60	$3.11	1.24	2.51	$3.34	1.38	2.41	$3.59	1.54	2.32	$3.85	1.72	2.24	$4.13	$99.60	$57.94	$70.03
Xcel Energy Inc.	XEL	$ 2.08	$60.54	3.44%	3.54%	6.30%	6.30%	9.84%	0.00	$2.15	1.10	1.95	$2.28	1.21	1.89	$2.42	1.33	1.83	$2.58	1.46	1.77	$2.74	1.60	1.71	$2.91	$82.17	$51.39	$60.54
Mean				3.97%	4.10%	6.75%	6.71%	10.60%																				
Median								10.66%																				
Flotation Cost								0.09%																				
								10.69%																				

Standard Deviation [6]	1.05%
Avg. less Standard Dev [7]	5.69%
Avg. plus Standard Dev [8]	7.80%

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]

180-DAY TWO-GROWTH DCF -- HIGH GROWTH RATE

		[1]	[2]	[3]	[4]	[5]	[9]	[10]		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	High Growth Rate	Second Growth Rate	Mean ROE	Check	Year 1 Div.	(1+k)^1	PV of Year 1 Div.	Year 2 Div.	(1+k)^2	PV of Year 2 Div.	Year 3 Div.	(1+k)^3	PV of Year 3 Div.	Year 4 Div.	(1+k)^4	PV of Year 4 Div.	Year 5 Div.	(1+k)^5	PV of Year 5 Div.	Year 6 Div.	Year 5 Stock Price	PV of Year 5 Stock Price	Current Stock Price
Alliant Energy Corporation	LNT	$ 1.81	$52.24	3.46%	3.58%	6.80%	6.80%	10.56%	-2.48	$1.87	1.11	1.69	$2.00	1.22	1.64	$2.13	1.35	1.58	$2.28	1.49	1.53	$2.43	1.65	1.47	$2.60	$69.15	$41.86	$49.77
Ameren Corporation	AEE	$ 2.52	$82.94	3.04%	3.14%	6.50%	6.50%	9.58%	1.59	$2.60	1.10	2.37	$2.77	1.20	2.31	$2.95	1.32	2.24	$3.14	1.44	2.18	$3.35	1.58	2.12	$3.56	$115.81	$73.30	$84.53
American Electric Power Company, Inc.	AEP	$ 3.32	$85.49	3.88%	4.01%	6.50%	6.50%	9.92%	14.65	$3.43	1.10	3.12	$3.65	1.21	3.02	$3.89	1.33	2.93	$4.14	1.46	2.84	$4.41	1.60	2.75	$4.70	$137.20	$85.49	$100.14
Avista Corporation	AVA	$ 1.84	$38.93	4.73%	4.88%	6.50%	6.50%	11.27%	0.91	$1.90	1.11	1.71	$2.02	1.24	1.63	$2.15	1.38	1.56	$2.29	1.53	1.50	$2.44	1.71	1.43	$2.60	$54.58	$32.00	$39.84
CMS Energy Corporation	CMS	$ 1.95	$59.07	3.30%	3.43%	7.80%	7.80%	11.11%	2.23	$2.03	1.11	1.82	$2.18	1.23	1.77	$2.35	1.37	1.72	$2.54	1.52	1.67	$2.74	1.69	1.62	$2.95	$89.24	$52.71	$61.30
Duke Energy Corporation	DUK	$ 4.10	$93.09	4.40%	4.55%	6.45%	6.45%	10.59%	9.04	$4.23	1.11	3.83	$4.51	1.22	3.68	$4.80	1.35	3.55	$5.11	1.50	3.41	$5.43	1.65	3.28	$5.78	$139.59	$84.37	$102.13
Entergy Corporation	ETR	$ 4.28	$100.72	4.25%	4.39%	6.60%	6.60%	10.93%	1.45	$4.42	1.11	3.99	$4.71	1.23	3.83	$5.02	1.36	3.68	$5.36	1.51	3.54	$5.71	1.68	3.40	$6.09	$140.64	$83.74	$102.17
Evergy, Inc.	EVRG	$ 2.45	$58.17	4.21%	4.37%	7.50%	7.50%	11.80%	0.91	$2.54	1.12	2.27	$2.73	1.25	2.19	$2.94	1.40	2.10	$3.16	1.56	2.02	$3.39	1.75	1.94	$3.65	$84.81	$48.55	$59.08
IDACORP, Inc.	IDA	$ 3.16	$102.57	3.08%	3.16%	5.00%	5.69%	8.65%	4.44	$3.24	1.09	2.98	$3.40	1.18	2.88	$3.57	1.28	2.78	$3.75	1.39	2.69	$3.94	1.51	2.60	$4.16	$140.89	$93.07	$107.01
NextEra Energy, Inc.	NEE	$ 1.87	$72.75	2.57%	2.69%	9.50%	7.80%	10.50%	4.28	$1.96	1.10	1.77	$2.14	1.22	1.76	$2.35	1.35	1.74	$2.57	1.49	1.73	$2.82	1.65	1.71	$3.04	$112.55	$68.32	$77.03
NorthWestern Corporation	NWE	$ 2.56	$55.01	4.65%	4.77%	5.20%	5.69%	10.18%	2.55	$2.63	1.10	2.38	$2.76	1.21	2.28	$2.91	1.34	2.17	$3.06	1.47	2.08	$3.22	1.62	1.98	$3.40	$75.78	$46.67	$57.56
OGE Energy Corporation	OGE	$ 1.66	$35.96	4.61%	4.76%	6.50%	6.50%	11.20%	0.43	$1.71	1.11	1.54	$1.82	1.24	1.47	$1.94	1.38	1.41	$2.07	1.53	1.35	$2.20	1.70	1.29	$2.34	$49.86	$29.32	$36.39
Pinnacle West Capital Corporation	PNW	$ 3.46	$77.31	4.48%	4.64%	7.50%	7.50%	11.14%	21.40	$3.59	1.11	3.23	$3.86	1.24	3.12	$4.15	1.37	3.02	$4.46	1.53	2.92	$4.79	1.70	2.83	$5.15	$141.71	$83.58	$98.71
Portland General Electric Company	POR	$ 1.90	$46.53	4.08%	4.21%	6.00%	6.00%	10.12%	1.02	$1.96	1.10	1.78	$2.07	1.21	1.71	$2.20	1.34	1.65	$2.33	1.47	1.59	$2.47	1.62	1.53	$2.62	$63.63	$39.30	$47.55
Southern Company	SO	$ 2.80	$68.42	4.09%	4.24%	7.30%	7.30%	11.54%	0.07	$2.90	1.12	2.60	$3.11	1.24	2.50	$3.34	1.39	2.41	$3.59	1.55	2.32	$3.85	1.73	2.23	$4.13	$97.41	$56.43	$68.49
Xcel Energy Inc.	XEL	$ 2.08	$63.53	3.27%	3.38%	6.30%	6.30%	9.68%	0.00	$2.15	1.10	1.96	$2.28	1.20	1.90	$2.42	1.32	1.84	$2.58	1.45	1.78	$2.74	1.59	1.73	$2.91	$86.22	$54.33	$63.53
Mean				3.88%	4.01%	6.75%	6.71%	10.55%																				
Median								10.58%																				
Flotation Cost								0.09%																				
Flotation Cost-Adjusted Result								10.64%																				

Standard Deviation [6]	1.05%
Avg. less Standard Dev [7]	5.69%
Avg. plus Standard Dev [8]	7.80%

Notes:
[1] Source: Schedule 5
[2] Source: Schedule 5
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 5
[6] Standard Deviation of Column [5]
[7] Mean of Column [5], minus [6]
[8] Mean of Column [5], plus [6]
[9] If [5] > [8], then [8]; If [5] < [7], then [7], Else [5]
[10] ROE that sets [2] equal to [29] using Excel's goal seek function
[11] [2] x [4]
[12] = (1 + [10]) ^ 1
[13] = [11] / [12]
[14] = [11] * (1 + [5])
[15] = (1 + [10]) ^ 2
[16] = [14] / [15]
[17] = [14] * (1 + [5])
[18] = (1 + [10]) ^ 3
[19] = [17] / [18]
[20] = [17] * (1 + [5])
[21] = (1 + [10]) ^ 4
[22] = [20] / [21]
[23] = [20] * (1 + [5])
[24] = (1 + [10]) ^ 5
[25] = [23] / [24]
[26] = [23] * (1 + [9])
[27] = [26] / ([10] - [9])
[28] = [27] / [24]
[29] = [13] + [16] + [19] + [22] + [25] + [28]

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)
Alliant Energy Corporation	LNT	4.42%	0.85	12.08%	7.66%	10.93%	11.22%
Ameren Corporation	AEE	4.42%	0.85	12.08%	7.66%	10.93%	11.22%
American Electric Power Company, Inc.	AEP	4.42%	0.80	12.08%	7.66%	10.55%	10.93%
Avista Corporation	AVA	4.42%	0.90	12.08%	7.66%	11.32%	11.51%
CMS Energy Corporation	CMS	4.42%	0.80	12.08%	7.66%	10.55%	10.93%
Duke Energy Corporation	DUK	4.42%	0.85	12.08%	7.66%	10.93%	11.22%
Entergy Corporation	ETR	4.42%	0.95	12.08%	7.66%	11.70%	11.80%
Evergy, Inc.	EVRG	4.42%	0.90	12.08%	7.66%	11.32%	11.51%
IDACORP, Inc.	IDA	4.42%	0.80	12.08%	7.66%	10.55%	10.93%
NextEra Energy, Inc.	NEE	4.42%	0.95	12.08%	7.66%	11.70%	11.80%
NorthWestern Corporation	NWE	4.42%	0.95	12.08%	7.66%	11.70%	11.80%
OGE Energy Corporation	OGE	4.42%	1.05	12.08%	7.66%	12.47%	12.37%
Pinnacle West Capital Corporation	PNW	4.42%	0.90	12.08%	7.66%	11.32%	11.51%
Portland General Electric Company	POR	4.42%	0.90	12.08%	7.66%	11.32%	11.51%
Southern Company	SO	4.42%	0.90	12.08%	7.66%	11.32%	11.51%
Xcel Energy Inc.	XEL	4.42%	0.85	12.08%	7.66%	10.93%	11.22%
Mean						11.22%	11.44%
Median						11.32%	11.51%

Notes:
[1] Source: Bloomberg Professional, as of September 30, 2023
[2] Source: Value Line
[3] Source: Schedule 10
[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 (Q4 2023 - Q4 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
Alliant Energy Corporation	LNT	4.16%	0.85	12.08%	7.92%	10.90%	11.19%
Ameren Corporation	AEE	4.16%	0.85	12.08%	7.92%	10.90%	11.19%
American Electric Power Company, Inc.	AEP	4.16%	0.80	12.08%	7.92%	10.50%	10.90%
Avista Corporation	AVA	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
CMS Energy Corporation	CMS	4.16%	0.80	12.08%	7.92%	10.50%	10.90%
Duke Energy Corporation	DUK	4.16%	0.85	12.08%	7.92%	10.90%	11.19%
Entergy Corporation	ETR	4.16%	0.95	12.08%	7.92%	11.69%	11.79%
Evergy, Inc.	EVRG	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
IDACORP, Inc.	IDA	4.16%	0.80	12.08%	7.92%	10.50%	10.90%
NextEra Energy, Inc.	NEE	4.16%	0.95	12.08%	7.92%	11.69%	11.79%
NorthWestern Corporation	NWE	4.16%	0.95	12.08%	7.92%	11.69%	11.79%
OGE Energy Corporation	OGE	4.16%	1.05	12.08%	7.92%	12.48%	12.38%
Pinnacle West Capital Corporation	PNW	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
Portland General Electric Company	POR	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
Southern Company	SO	4.16%	0.90	12.08%	7.92%	11.29%	11.49%
Xcel Energy Inc.	XEL	4.16%	0.85	12.08%	7.92%	10.90%	11.19%
Mean						11.19%	11.42%
Median						11.29%	11.49%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 10, October 2, 2023, at 2
[2] Source: Value Line
[3] Source: Schedule 10
[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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
Alliant Energy Corporation	LNT	3.80%	0.85	12.08%	8.28%	10.84%	11.15%
Ameren Corporation	AEE	3.80%	0.85	12.08%	8.28%	10.84%	11.15%
American Electric Power Company, Inc.	AEP	3.80%	0.80	12.08%	8.28%	10.43%	10.84%
Avista Corporation	AVA	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
CMS Energy Corporation	CMS	3.80%	0.80	12.08%	8.28%	10.43%	10.84%
Duke Energy Corporation	DUK	3.80%	0.85	12.08%	8.28%	10.84%	11.15%
Entergy Corporation	ETR	3.80%	0.95	12.08%	8.28%	11.67%	11.77%
Evergy, Inc.	EVRG	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
IDACORP, Inc.	IDA	3.80%	0.80	12.08%	8.28%	10.43%	10.84%
NextEra Energy, Inc.	NEE	3.80%	0.95	12.08%	8.28%	11.67%	11.77%
NorthWestern Corporation	NWE	3.80%	0.95	12.08%	8.28%	11.67%	11.77%
OGE Energy Corporation	OGE	3.80%	1.05	12.08%	8.28%	12.50%	12.39%
Pinnacle West Capital Corporation	PNW	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
Portland General Electric Company	POR	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
Southern Company	SO	3.80%	0.90	12.08%	8.28%	11.26%	11.46%
Xcel Energy Inc.	XEL	3.80%	0.85	12.08%	8.28%	10.84%	11.15%
Mean						11.15%	11.39%
Median						11.26%	11.46%

Notes:
[1] Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14
[2] Source: Value Line
[3] Source: Schedule 10
[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

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

		[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)
Alliant Energy Corporation	LNT	4.42%	0.79	12.08%	7.66%	10.48%	10.88%
Ameren Corporation	AEE	4.42%	0.75	12.08%	7.66%	10.18%	10.65%
American Electric Power Company, Inc.	AEP	4.42%	0.76	12.08%	7.66%	10.23%	10.69%
Avista Corporation	AVA	4.42%	0.75	12.08%	7.66%	10.19%	10.66%
CMS Energy Corporation	CMS	4.42%	0.75	12.08%	7.66%	10.16%	10.64%
Duke Energy Corporation	DUK	4.42%	0.72	12.08%	7.66%	9.92%	10.46%
Entergy Corporation	ETR	4.42%	0.86	12.08%	7.66%	10.98%	11.25%
Evergy, Inc.	EVRG	4.42%	0.78	12.08%	7.66%	10.39%	10.81%
IDACORP, Inc.	IDA	4.42%	0.80	12.08%	7.66%	10.51%	10.91%
NextEra Energy, Inc.	NEE	4.42%	0.82	12.08%	7.66%	10.69%	11.04%
NorthWestern Corporation	NWE	4.42%	0.86	12.08%	7.66%	10.99%	11.26%
OGE Energy Corporation	OGE	4.42%	0.92	12.08%	7.66%	11.47%	11.63%
Pinnacle West Capital Corporation	PNW	4.42%	0.82	12.08%	7.66%	10.74%	11.07%
Portland General Electric Company	POR	4.42%	0.79	12.08%	7.66%	10.44%	10.85%
Southern Company	SO	4.42%	0.78	12.08%	7.66%	10.37%	10.80%
Xcel Energy Inc.	XEL	4.42%	0.74	12.08%	7.66%	10.08%	10.58%
Mean						10.49%	10.89%
Median						10.44%	10.85%

Notes:
[1] Source: Bloomberg Professional, as of September 30, 2023
[2] Source: Bloomberg Professional, based on 10-year weekly returns
[3] Source: Schedule 10
[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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q4 2023 - Q4 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
Alliant Energy Corporation	LNT	4.16%	0.79	12.08%	7.92%	10.43%	10.84%
Ameren Corporation	AEE	4.16%	0.75	12.08%	7.92%	10.11%	10.60%
American Electric Power Company, Inc.	AEP	4.16%	0.76	12.08%	7.92%	10.17%	10.65%
Avista Corporation	AVA	4.16%	0.75	12.08%	7.92%	10.12%	10.61%
CMS Energy Corporation	CMS	4.16%	0.75	12.08%	7.92%	10.09%	10.59%
Duke Energy Corporation	DUK	4.16%	0.72	12.08%	7.92%	9.85%	10.41%
Entergy Corporation	ETR	4.16%	0.86	12.08%	7.92%	10.94%	11.23%
Evergy, Inc.	EVRG	4.16%	0.78	12.08%	7.92%	10.33%	10.77%
IDACORP, Inc.	IDA	4.16%	0.80	12.08%	7.92%	10.46%	10.87%
NextEra Energy, Inc.	NEE	4.16%	0.82	12.08%	7.92%	10.64%	11.00%
NorthWestern Corporation	NWE	4.16%	0.86	12.08%	7.92%	10.95%	11.24%
OGE Energy Corporation	OGE	4.16%	0.92	12.08%	7.92%	11.45%	11.61%
Pinnacle West Capital Corporation	PNW	4.16%	0.82	12.08%	7.92%	10.69%	11.04%
Portland General Electric Company	POR	4.16%	0.79	12.08%	7.92%	10.39%	10.81%
Southern Company	SO	4.16%	0.78	12.08%	7.92%	10.31%	10.75%
Xcel Energy Inc.	XEL	4.16%	0.74	12.08%	7.92%	10.01%	10.53%
Mean						10.43%	10.85%
Median						10.39%	10.81%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 10, October 2, 2023, at 2
[2] Source: Bloomberg Professional, based on 10-year weekly returns
[3] Source: Schedule 10
[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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
Alliant Energy Corporation	LNT	3.80%	0.79	12.08%	8.28%	10.35%	10.79%
Ameren Corporation	AEE	3.80%	0.75	12.08%	8.28%	10.02%	10.54%
American Electric Power Company, Inc.	AEP	3.80%	0.76	12.08%	8.28%	10.08%	10.58%
Avista Corporation	AVA	3.80%	0.75	12.08%	8.28%	10.03%	10.54%
CMS Energy Corporation	CMS	3.80%	0.75	12.08%	8.28%	10.00%	10.52%
Duke Energy Corporation	DUK	3.80%	0.72	12.08%	8.28%	9.74%	10.33%
Entergy Corporation	ETR	3.80%	0.86	12.08%	8.28%	10.89%	11.19%
Evergy, Inc.	EVRG	3.80%	0.78	12.08%	8.28%	10.25%	10.71%
IDACORP, Inc.	IDA	3.80%	0.80	12.08%	8.28%	10.39%	10.81%
NextEra Energy, Inc.	NEE	3.80%	0.82	12.08%	8.28%	10.58%	10.95%
NorthWestern Corporation	NWE	3.80%	0.86	12.08%	8.28%	10.90%	11.20%
OGE Energy Corporation	OGE	3.80%	0.92	12.08%	8.28%	11.42%	11.59%
Pinnacle West Capital Corporation	PNW	3.80%	0.82	12.08%	8.28%	10.63%	10.99%
Portland General Electric Company	POR	3.80%	0.79	12.08%	8.28%	10.31%	10.75%
Southern Company	SO	3.80%	0.78	12.08%	8.28%	10.23%	10.69%
Xcel Energy Inc.	XEL	3.80%	0.74	12.08%	8.28%	9.91%	10.46%
Mean						10.36%	10.79%
Median						10.31%	10.75%

Notes:
[1] 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: Schedule 10
[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 AVERAGE BETA

CAPM: $K = R_f + \beta (R_m - R_f)$ / ECAPM: $K = Rf + 0.25(Rm - Rf) + 0.75\beta (Rm - Rf)$

	[4]	[5]	[6]	[7]	[8]	[9]
	Risk-Free Rate (R_f)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	CAPM (K)	ECAPM (K)
Current 30-day average of 30-year U.S. Treasury bond yield [1]	4.42%	0.745	12.08%	7.66%	10.13%	10.62%
Near-term projected 30-year U.S. Treasury bond yield (Q4 2023 - Q4 2024) [2]	4.16%	0.745	12.08%	7.92%	10.06%	10.57%
Projected 30-year U.S. Treasury bond yield (2025 - 2029) [3]	3.80%	0.745	12.08%	8.28%	9.97%	10.50%
				Average:	10.05%	10.56%

Notes:

[1] Source: Bloomberg Professional, as of September 30, 2023
[2] Source: Blue Chip Financial Forecasts, Vol. 42, No. 10, October 2, 2023, at 2
[3] Blue Chip Financial Forecasts, Vol. 42, No. 6, June 1, 2023, at 14
[4] See Notes [1], [2], and [3]
[5] Source: Schedule 9
[6] Source: Schedule 10
[7] Equals [6] − [4]
[8] Equals [4] + [5] x [7]
[9] Equals [4] + 0.25 x ([7]) + 0.75 x ([5] x [7])

HISTORICAL BETA - 2011 - 2020

Company	Ticker	[1] 12/31/2013	[2] 12/31/2014	[3] 12/31/2015	[4] 12/31/2016	[5] 12/31/2017	[6] 12/31/2018	[7] 12/31/2019	[8] 12/31/2020	[9] 12/31/2021	[10] 12/31/2022	[11] Average
Alliant Energy Corporation	LNT	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.85	0.85	0.75
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
American Electric Power Company, Inc.	AEP	0.70	0.70	0.70	0.65	0.65	0.55	0.55	0.75	0.75	0.75	0.68
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
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
Duke Energy Corporation	DUK	0.65	0.60	0.65	0.60	0.60	0.50	0.50	0.85	0.85	0.85	0.67
Entergy Corporation	ETR	0.70	0.70	0.70	0.65	0.65	0.60	0.60	0.95	0.95	0.95	0.75
Evergy, Inc.	EVRG						NMF	NMF	1.00	0.95	0.90	0.95
IDACORP, Inc.	IDA	0.75	0.80	0.80	0.75	0.70	0.55	0.55	0.80	0.80	0.80	0.73
NextEra Energy, Inc.	NEE	0.70	0.70	0.75	0.65	0.65	0.55	0.55	0.90	0.90	0.95	0.73
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
OGE Energy Corporation	OGE	0.85	0.90	0.95	0.90	0.95	0.85	0.75	1.10	1.05	1.00	0.93
Pinnacle West Capital Corporation	PNW	0.75	0.70	0.75	0.70	0.70	0.55	0.50	0.90	0.90	0.90	0.74
Portland General Electric Company	POR	0.75	0.80	0.80	0.70	0.70	0.60	0.55	0.85	0.90	0.85	0.75
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
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		0.72	0.72	0.74	0.68	0.68	0.58	0.56	0.89	0.88	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])

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MARKET RISK PREMIUM DERIVED FROM S&P 500 INDEX

[1] Estimated Weighted Average Dividend Yield	1.76%
[2] Estimated Weighted Average Long-Term Growth Rate	10.23%
[3] S&P 500 Estimated Required Market Return	12.08%

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] VL Growth Rate	[11] Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	324.20	94.70	30,701	0.10%	5.28%	0.01%	2.00%	0.00%
American Express Co	AXP	736.46	149.19	109,872	0.36%	1.61%	0.01%	8.50%	0.03%
Verizon Communications Inc	VZ	4,204.04	32.41	136,253	0.44%	8.21%	0.04%	1.50%	0.01%
Broadcom Inc	AVGO	412.74	830.58	342,810		2.22%		30.00%	
Boeing Co/The	BA	603.20	191.68	115,622					
Caterpillar Inc	CAT	510.14	273.00	139,269	0.45%	1.90%	0.01%	13.50%	0.06%
JPMorgan Chase & Co	JPM	2,906.09	145.02	421,440	1.37%	2.90%	0.04%	8.50%	0.12%
Chevron Corp	CVX	1,867.25	168.62	314,855		3.58%		21.50%	
Coca-Cola Co/The	KO	4,324.35	55.98	242,077	0.79%	3.29%	0.03%	7.50%	0.06%
AbbVie Inc	ABBV	1,765.05	149.06	263,098	0.86%	3.97%	0.03%	2.00%	0.02%
Walt Disney Co/The	DIS	1,829.78	81.05	148,304				65.00%	
FleetCor Technologies Inc	FLT	73.96	255.34	18,884	0.06%			13.50%	0.01%
Extra Space Storage Inc	EXR	211.28	121.58	25,687	0.08%	2.01%	0.00%	5.00%	0.00%
Exxon Mobil Corp	XOM	4,003.19	117.58	470,695	1.54%	3.10%	0.05%	7.00%	0.11%
Phillips 66	PSX	445.29	120.15	53,501	0.17%	3.50%	0.01%	15.50%	0.03%
General Electric Co	GE	1,088.38	110.55	120,320		0.29%		26.00%	
HP Inc	HPQ	988.27	25.70	25,399	0.08%	4.09%	0.00%	12.50%	0.01%
Home Depot Inc/The	HD	1,000.07	302.16	302,180	0.99%	2.77%	0.03%	6.50%	0.06%
Monolithic Power Systems Inc	MPWR	47.78	462.00	22,073	0.07%	0.87%	0.00%	15.00%	0.01%
International Business Machines Corp	IBM	911.01	140.30	127,814	0.42%	4.73%	0.02%	3.00%	0.01%
Johnson & Johnson	JNJ	2,401.49	155.75	374,031	1.22%	3.06%	0.04%	5.00%	0.06%
McDonald's Corp	MCD	728.76	263.44	191,985	0.63%	2.31%	0.01%	10.50%	0.07%
Merck & Co Inc	MRK	2,537.52	102.95	261,238	0.85%	2.84%	0.02%	8.50%	0.07%
3M Co	MMM	551.99	93.62	51,677	0.17%	6.41%	0.01%	4.50%	0.01%
American Water Works Co Inc	AWK	194.67	123.83	24,106	0.08%	2.29%	0.00%	3.00%	0.00%
Bank of America Corp	BAC	7,946.37	27.38	217,572		3.51%		0.00%	
Pfizer Inc	PFE	5,645.96	33.17	187,276	0.61%	4.94%	0.03%	2.00%	0.01%
Procter & Gamble Co/The	PG	2,356.89	145.86	343,777	1.12%	2.58%	0.03%	5.50%	0.06%
AT&T Inc	T	7,149.00	15.02	107,378	0.35%	7.39%	0.03%	1.50%	0.01%
Travelers Cos Inc/The	TRV	228.94	163.31	37,389	0.12%	2.45%	0.00%	7.50%	0.01%
RTX Corp	RTX	1,455.52	71.97	104,753	0.34%	3.28%	0.01%	15.00%	0.05%
Analog Devices Inc	ADI	498.31	175.09	87,250	0.28%	1.96%	0.01%	11.50%	0.03%
Walmart Inc	WMT	2,691.56	159.93	430,462	1.40%	1.43%	0.02%	6.50%	0.09%

		[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	VL Growth Rate	Cap-Weighted Long-Term Growth Est.
Cisco Systems Inc	CSCO	4,054.86	53.76	217,989	0.71%	2.90%	0.02%	8.50%	0.06%
Intel Corp	INTC	4,188.00	35.55	148,883		1.41%			
General Motors Co	GM	1,375.91	32.97	45,364	0.15%	1.09%	0.00%	8.50%	0.01%
Microsoft Corp	MSFT	7,429.76	315.75	2,345,948	7.65%	0.95%	0.07%	12.50%	0.96%
Dollar General Corp	DG	219.48	105.80	23,221	0.08%	2.23%	0.00%	5.50%	0.00%
Cigna Group/The	CI	295.98	286.07	84,671	0.28%	1.72%	0.00%	10.00%	0.03%
Kinder Morgan Inc	KMI	2,228.17	16.58	36,943	0.12%	6.82%	0.01%	17.50%	0.02%
Citigroup Inc	C	1,925.70	41.13	79,204	0.26%	5.15%	0.01%	3.50%	0.01%
American International Group Inc	AIG	711.90	60.60	43,141	0.14%	2.38%	0.00%	4.00%	0.01%
Altria Group Inc	MO	1,774.61	42.05	74,622	0.24%	9.32%	0.02%	6.00%	0.01%
HCA Healthcare Inc	HCA	271.99	245.98	66,904	0.22%	0.98%	0.00%	12.50%	0.03%
International Paper Co	IP	346.00	35.47	12,273	0.04%	5.22%	0.00%	6.00%	0.00%
Hewlett Packard Enterprise Co	HPE	1,282.87	17.37	22,283	0.07%	2.76%	0.00%	7.50%	0.01%
Abbott Laboratories	ABT	1,735.36	96.85	168,069	0.55%	2.11%	0.01%	4.50%	0.02%
Aflac Inc	AFL	594.06	76.75	45,594	0.15%	2.19%	0.00%	8.00%	0.01%
Air Products and Chemicals Inc	APD	222.15	283.40	62,957	0.21%	2.47%	0.01%	10.50%	0.02%
Royal Caribbean Cruises Ltd	RCL	256.17	92.14	23,604					
Hess Corp	HES	307.06	153.00	46,980		1.14%		23.50%	
Archer-Daniels-Midland Co	ADM	536.10	75.42	40,433	0.13%	2.39%	0.00%	7.50%	0.01%
Automatic Data Processing Inc	ADP	411.99	240.58	99,116	0.32%	2.08%	0.01%	11.00%	0.04%
Verisk Analytics Inc	VRSK	145.03	236.24	34,261	0.11%	0.58%	0.00%	8.00%	0.01%
AutoZone Inc	AZO	18.16	2,539.99	46,116	0.15%			13.00%	0.02%
Avery Dennison Corp	AVY	80.58	182.67	14,720	0.05%	1.77%	0.00%	9.50%	0.00%
Enphase Energy Inc	ENPH	136.36	120.15	16,383				27.50%	
MSCI Inc	MSCI	79.09	513.08	40,579	0.13%	1.08%	0.00%	12.50%	0.02%
Ball Corp	BALL	315.06	49.78	15,684	0.05%	1.61%	0.00%	13.00%	0.01%
Axon Enterprise Inc	AXON	74.76	198.99	14,876				24.00%	
Ceridian HCM Holding Inc	CDAY	155.61	67.85	10,558					
Carrier Global Corp	CARR	837.63	55.20	46,237	0.15%	1.34%	0.00%	13.00%	0.02%
Bank of New York Mellon Corp/The	BK	778.78	42.65	33,215	0.11%	3.94%	0.00%	7.00%	0.01%
Otis Worldwide Corp	OTIS	411.75	80.31	33,067	0.11%	1.69%	0.00%	11.00%	0.01%
Baxter International Inc	BAX	506.41	37.74	19,112	0.06%	3.07%	0.00%	6.00%	0.00%
Becton Dickinson & Co	BDX	290.11	258.53	75,002	0.24%	1.41%	0.00%	5.00%	0.01%
Berkshire Hathaway Inc	BRK/B	1,308.07	350.30	458,217					
Best Buy Co Inc	BBY	217.64	69.47	15,119	0.05%	5.30%	0.00%	3.00%	0.00%
Boston Scientific Corp	BSX	1,464.22	52.80	77,311	0.25%			13.00%	0.03%
Bristol-Myers Squibb Co	BMY	2,089.10	58.04	121,252		3.93%			
Brown-Forman Corp	BF/B	310.14	57.69	17,892		1.42%			
Coterra Energy Inc	CTRA	755.05	27.05	20,424		2.96%			
Campbell Soup Co	CPB	297.95	41.08	12,240	0.04%	3.60%	0.00%	5.00%	0.00%
Hilton Worldwide Holdings Inc	HLT	261.51	150.18	39,274		0.40%			
Carnival Corp	CCL	1,119.45	13.72	15,359					
Qorvo Inc	QRVO	97.91	95.47	9,347	0.03%			14.50%	0.00%
UDR Inc	UDR	329.48	35.67	11,753	0.04%	4.71%	0.00%	15.50%	0.01%

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		[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	VL Growth Rate	Cap-Weighted Long-Term Growth Est.
Clorox Co/The	CLX	123.83	131.06	16,229	0.05%	3.66%	0.00%	11.00%	0.01%
Paycom Software Inc	PAYC	60.47	259.27	15,677	0.05%	0.58%	0.00%	19.50%	0.01%
CMS Energy Corp	CMS	291.73	53.11	15,494	0.05%	3.67%	0.00%	6.50%	0.00%
Colgate-Palmolive Co	CL	826.69	71.11	58,786	0.19%	2.70%	0.01%	8.50%	0.02%
EPAM Systems Inc	EPAM	57.96	255.69	14,820				20.50%	
Comerica Inc	CMA	131.78	41.55	5,475	0.02%	6.84%	0.00%	4.00%	0.00%
Conagra Brands Inc	CAG	477.87	27.42	13,103	0.04%	5.11%	0.00%	4.50%	0.00%
Airbnb Inc	ABNB	426.36	137.21	58,501					
Consolidated Edison Inc	ED	344.92	85.53	29,501	0.10%	3.79%	0.00%	6.00%	0.01%
Corning Inc	GLW	852.98	30.47	25,990	0.08%	3.68%	0.00%	17.50%	0.01%
Cummins Inc	CMI	141.65	228.46	32,361	0.11%	2.94%	0.00%	10.00%	0.01%
Caesars Entertainment Inc	CZR	215.29	46.35	9,979					
Danaher Corp	DHR	738.35	219.91	162,373	0.53%	0.49%	0.00%	11.00%	0.06%
Target Corp	TGT	461.61	110.57	51,040	0.17%	3.98%	0.01%	12.00%	0.02%
Deere & Co	DE	288.00	377.38	108,686	0.35%	1.43%	0.01%	13.50%	0.05%
Dominion Energy Inc	D	836.77	44.67	37,379	0.12%	5.98%	0.01%	2.50%	0.00%
Dover Corp	DOV	139.87	139.51	19,514	0.06%	1.46%	0.00%	6.50%	0.00%
Alliant Energy Corp	LNT	252.72	48.45	12,244	0.04%	3.74%	0.00%	6.50%	0.00%
Steel Dynamics Inc	STLD	165.64	107.22	17,760	0.06%	1.59%	0.00%	2.00%	0.00%
Duke Energy Corp	DUK	771.00	88.26	68,048	0.22%	4.65%	0.01%	5.00%	0.01%
Regency Centers Corp	REG	171.00	59.44	10,164	0.03%	4.37%	0.00%	10.50%	0.00%
Eaton Corp PLC	ETN	399.00	213.28	85,099	0.28%	1.61%	0.00%	12.00%	0.03%
Ecolab Inc	ECL	285.03	169.40	48,285	0.16%	1.25%	0.00%	10.00%	0.02%
Revvity Inc	RVTY	124.14	110.70	13,742		0.25%		-1.50%	
Emerson Electric Co	EMR	571.50	96.57	55,190	0.18%	2.15%	0.00%	6.50%	0.01%
EOG Resources Inc	EOG	582.26	126.76	73,807	0.24%	2.60%	0.01%	15.00%	0.04%
Aon PLC	AON	202.87	324.22	65,774	0.21%	0.76%	0.00%	9.50%	0.02%
Entergy Corp	ETR	211.46	92.50	19,560	0.06%	4.63%	0.00%	0.50%	0.00%
Equifax Inc	EFX	122.72	183.18	22,480	0.07%	0.85%	0.00%	12.00%	0.01%
EQT Corp	EQT	411.26	40.58	16,689		1.48%			
IQVIA Holdings Inc	IQV	183.12	196.75	36,029	0.12%			14.50%	0.02%
Gartner Inc	IT	78.83	343.61	27,085	0.09%			10.50%	0.01%
FedEx Corp	FDX	251.42	264.92	66,606	0.22%	1.90%	0.00%	7.00%	0.02%
FMC Corp	FMC	124.73	66.97	8,353	0.03%	3.46%	0.00%	10.00%	0.00%
Brown & Brown Inc	BRO	283.61	69.84	19,808	0.06%	0.66%	0.00%	6.50%	0.00%
Ford Motor Co	F	3,931.37	12.42	48,828		4.83%		45.50%	
NextEra Energy Inc	NEE	2,023.71	57.29	115,939	0.38%	3.26%	0.01%	9.50%	0.04%
Franklin Resources Inc	BEN	498.98	24.58	12,265	0.04%	4.88%	0.00%	2.00%	0.00%
Garmin Ltd	GRMN	191.45	105.20	20,141	0.07%	2.78%	0.00%	5.00%	0.00%
Freeport-McMoRan Inc	FCX	1,433.64	37.29	53,460	0.17%	1.61%	0.00%	12.50%	0.02%
Dexcom Inc	DXCM	387.87	93.30	36,188					
General Dynamics Corp	GD	273.04	220.97	60,334	0.20%	2.39%	0.00%	9.50%	0.02%
General Mills Inc	GIS	581.28	63.99	37,196	0.12%	3.69%	0.00%	4.50%	0.01%
Genuine Parts Co	GPC	140.44	144.38	20,276	0.07%	2.63%	0.00%	9.00%	0.01%

		[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	VL Growth Rate	Cap-Weighted Long-Term Growth Est.
Atmos Energy Corp	ATO	148.46	105.93	15,727	0.05%	2.79%	0.00%	7.00%	0.00%
WW Grainger Inc	GWW	50.00	691.84	34,593	0.11%	1.08%	0.00%	11.00%	0.01%
Halliburton Co	HAL	898.55	40.50	36,391		1.58%		30.00%	
L3Harris Technologies Inc	LHX	189.13	174.12	32,932	0.11%	2.62%	0.00%	19.50%	0.02%
Healthpeak Properties Inc	PEAK	547.05	18.36	10,044	0.03%	6.54%	0.00%	14.50%	0.00%
Insulet Corp	PODD	69.82	159.49	11,136					
Catalent Inc	CTLT	180.27	45.53	8,208				21.00%	
Fortive Corp	FTV	352.02	74.16	26,106	0.09%	0.38%	0.00%	16.00%	0.01%
Hershey Co/The	HSY	149.85	200.08	29,983	0.10%	2.38%	0.00%	9.50%	0.01%
Synchrony Financial	SYF	418.18	30.57	12,784		3.27%		47.00%	
Hormel Foods Corp	HRL	546.48	38.03	20,783	0.07%	2.89%	0.00%	7.50%	0.01%
Arthur J Gallagher & Co	AJG	215.51	227.93	49,120		0.97%		22.00%	
Mondelez International Inc	MDLZ	1,360.42	69.40	94,413	0.31%	2.45%	0.01%	10.00%	0.03%
CenterPoint Energy Inc	CNP	629.43	26.85	16,900	0.06%	2.98%	0.00%	6.50%	0.00%
Humana Inc	HUM	123.91	486.52	60,283	0.20%	0.73%	0.00%	12.50%	0.02%
Willis Towers Watson PLC	WTW	104.82	208.96	21,904	0.07%	1.61%	0.00%	9.50%	0.01%
Illinois Tool Works Inc	ITW	302.39	230.31	69,643	0.23%	2.43%	0.01%	11.00%	0.02%
CDW Corp/DE	CDW	134.05	201.76	27,046	0.09%	1.17%	0.00%	7.00%	0.01%
Trane Technologies PLC	TT	228.40	202.91	46,344	0.15%	1.48%	0.00%	13.00%	0.02%
Interpublic Group of Cos Inc/The	IPG	384.94	28.66	11,032	0.04%	4.33%	0.00%	8.50%	0.00%
International Flavors & Fragrances Inc	IFF	255.25	68.17	17,401	0.06%	4.75%	0.00%	8.00%	0.00%
Generac Holdings Inc	GNRC	62.24	108.96	6,782	0.02%			19.00%	0.00%
NXP Semiconductors NV	NXPI	257.80	199.92	51,540	0.17%	2.03%	0.00%	8.50%	0.01%
Kellanova	K	342.35	55.84	19,117	0.06%	4.30%	0.00%	3.00%	0.00%
Broadridge Financial Solutions Inc	BR	117.62	179.05	21,060	0.07%	1.79%	0.00%	8.50%	0.01%
Kimberly-Clark Corp	KMB	338.19	120.85	40,870	0.13%	3.91%	0.01%	7.00%	0.01%
Kimco Realty Corp	KIM	619.89	17.59	10,904	0.04%	5.23%	0.00%	11.00%	0.00%
Oracle Corp	ORCL	2,739.38	105.92	290,155	0.95%	1.51%	0.01%	10.00%	0.09%
Kroger Co/The	KR	719.32	44.75	32,189	0.11%	2.59%	0.00%	6.00%	0.01%
Lennar Corp	LEN	250.15	112.23	28,075	0.09%	1.34%	0.00%	3.50%	0.00%
Eli Lilly & Co	LLY	949.30	537.13	509,895	1.66%	0.84%	0.01%	19.00%	0.32%
Bath & Body Works Inc	BBWI	227.38	33.80	7,685		2.37%		26.50%	
Charter Communications Inc	CHTR	149.67	439.82	65,828	0.21%			12.50%	0.03%
Loews Corp	L	225.51	63.31	14,277		0.39%		25.50%	
Lowe's Cos Inc	LOW	577.12	207.84	119,948	0.39%	2.12%	0.01%	8.00%	0.03%
IDEX Corp	IEX	75.60	208.02	15,727	0.05%	1.23%	0.00%	8.00%	0.00%
Marsh & McLennan Cos Inc	MMC	493.95	190.30	93,999	0.31%	1.49%	0.00%	9.00%	0.03%
Masco Corp	MAS	224.93	53.45	12,022	0.04%	2.13%	0.00%	6.50%	0.00%
S&P Global Inc	SPGI	318.20	365.41	116,273	0.38%	0.99%	0.00%	7.50%	0.03%
Medtronic PLC	MDT	1,330.53	78.36	104,261	0.34%	3.52%	0.01%	7.50%	0.03%
Viatris Inc	VTRS	1,199.53	9.86	11,827		4.87%			
CVS Health Corp	CVS	1,284.40	69.82	89,677	0.29%	3.47%	0.01%	8.50%	0.02%
DuPont de Nemours Inc	DD	459.06	74.59	34,241	0.11%	1.93%	0.00%	9.50%	0.01%
Micron Technology Inc	MU	1,095.30	68.03	74,513	0.24%	0.68%	0.00%	9.50%	0.02%

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Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	VL Growth Rate	Cap-Weighted Long-Term Growth Est.
Motorola Solutions Inc	MSI	167.02	272.24	45,470	0.15%	1.29%	0.00%	11.00%	0.02%
Cboe Global Markets Inc	CBOE	105.52	156.21	16,483	0.05%	1.41%	0.00%	12.50%	0.01%
Laboratory Corp of America Holdings	LH	88.60	201.05	17,813	0.06%	1.43%	0.00%	1.00%	0.00%
Newmont Corp	NEM	794.80	36.95	29,368	0.10%	4.33%	0.00%	8.00%	0.01%
NIKE Inc	NKE	1,225.07	95.62	117,142	0.38%	1.42%	0.01%	18.00%	0.07%
NiSource Inc	NI	413.26	24.68	10,199	0.03%	4.05%	0.00%	9.50%	0.00%
Norfolk Southern Corp	NSC	227.02	196.93	44,706	0.15%	2.74%	0.00%	8.50%	0.01%
Principal Financial Group Inc	PFG	241.72	72.07	17,420	0.06%	3.61%	0.00%	5.50%	0.00%
Eversource Energy	ES	349.09	58.15	20,299	0.07%	4.64%	0.00%	6.50%	0.00%
Northrop Grumman Corp	NOC	151.30	440.19	66,601	0.22%	1.70%	0.00%	9.50%	0.02%
Wells Fargo & Co	WFC	3,667.70	40.86	149,862	0.49%	3.43%	0.02%	12.00%	0.06%
Nucor Corp	NUE	248.72	156.35	38,888	0.13%	1.30%	0.00%	2.00%	0.00%
Occidental Petroleum Corp	OXY	884.68	64.88	57,398	0.19%	1.11%	0.00%	17.00%	0.03%
Omnicom Group Inc	OMC	197.57	74.48	14,715	0.05%	3.76%	0.00%	7.00%	0.00%
ONEOK Inc	OKE	582.47	63.43	36,946	0.12%	6.02%	0.01%	12.00%	0.01%
Raymond James Financial Inc	RJF	208.84	100.43	20,974	0.07%	1.67%	0.00%	15.00%	0.01%
PG&E Corp	PCG	2,091.24	16.13	33,732	0.11%			7.50%	0.01%
Parker-Hannifin Corp	PH	128.51	389.52	50,057	0.16%	1.52%	0.00%	14.50%	0.02%
Rollins Inc	ROL	484.10	37.33	18,071	0.06%	1.39%	0.00%	10.50%	0.01%
PPL Corp	PPL	737.09	23.56	17,366	0.06%	4.07%	0.00%	8.00%	0.00%
ConocoPhillips	COP	1,197.49	119.80	143,459	0.47%	0.50%	0.00%	9.00%	0.04%
PulteGroup Inc	PHM	219.45	74.05	16,250	0.05%	0.86%	0.00%	8.00%	0.00%
Pinnacle West Capital Corp	PNW	113.31	73.68	8,349	0.03%	4.70%	0.00%	2.50%	0.00%
PNC Financial Services Group Inc/The	PNC	398.26	122.77	48,894	0.16%	5.05%	0.01%	7.50%	0.01%
PPG Industries Inc	PPG	235.51	129.80	30,570	0.10%	2.00%	0.00%	3.00%	0.00%
Progressive Corp/The	PGR	585.10	139.30	81,504	0.27%	0.29%	0.00%	12.00%	0.03%
Public Service Enterprise Group Inc	PEG	499.11	56.91	28,404	0.09%	4.01%	0.00%	4.00%	0.00%
Robert Half Inc	RHI	107.08	73.28	7,847	0.03%	2.62%	0.00%	9.50%	0.00%
Cooper Cos Inc/The	COO	49.52	318.01	15,749	0.05%	0.02%	0.00%	12.00%	0.01%
Edison International	EIX	383.29	63.29	24,258	0.08%	4.66%	0.00%	4.50%	0.00%
Schlumberger NV	SLB	1,421.19	58.30	82,855		1.72%		26.00%	
Charles Schwab Corp/The	SCHW	1,770.22	54.90	97,185	0.32%	1.82%	0.01%	9.00%	0.03%
Sherwin-Williams Co/The	SHW	257.15	255.05	65,586	0.21%	0.95%	0.00%	7.00%	0.01%
West Pharmaceutical Services Inc	WST	73.86	375.21	27,713	0.09%	0.20%	0.00%	17.00%	0.02%
J M Smucker Co/The	SJM	102.14	122.91	12,554	0.04%	3.45%	0.00%	6.00%	0.00%
Snap-on Inc	SNA	52.92	255.06	13,497	0.04%	2.54%	0.00%	6.00%	0.00%
AMETEK Inc	AME	230.71	147.76	34,090	0.11%	0.68%	0.00%	10.00%	0.01%
Southern Co/The	SO	1,091.52	64.72	70,643	0.23%	4.33%	0.01%	6.50%	0.01%
Truist Financial Corp	TFC	1,331.98	28.61	38,108	0.12%	7.27%	0.01%	6.00%	0.01%
Southwest Airlines Co	LUV	595.63	27.07	16,124		2.66%			
W R Berkley Corp	WRB	257.52	63.49	16,350	0.05%	0.69%	0.00%	15.00%	0.01%
Stanley Black & Decker Inc	SWK	153.23	83.58	12,807	0.04%	3.88%	0.00%	1.00%	0.00%
Public Storage	PSA	175.83	263.52	46,334	0.15%	4.55%	0.01%	7.50%	0.01%
Arista Networks Inc	ANET	309.58	183.93	56,941	0.19%			13.00%	0.02%

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Sysco Corp	SYY	504.93	66.05	33,350	0.11%	3.03%	0.00%	18.50%	0.02%
Corteva Inc	CTVA	709.52	51.16	36,299	0.12%	1.25%	0.00%	13.50%	0.02%
Texas Instruments Inc	TXN	907.97	159.01	144,376	0.47%	3.27%	0.02%	3.00%	0.01%
Textron Inc	TXT	198.07	78.14	15,477	0.05%	0.10%	0.00%	16.00%	0.01%
Thermo Fisher Scientific Inc	TMO	385.95	506.17	195,356	0.64%	0.28%	0.00%	9.50%	0.06%
TJX Cos Inc/The	TJX	1,144.08	88.88	101,686	0.33%	1.50%	0.00%	17.00%	0.06%
Globe Life Inc	GL	94.82	108.73	10,310	0.03%	0.83%	0.00%	9.00%	0.00%
Johnson Controls International plc	JCI	680.32	53.21	36,200	0.12%	2.78%	0.00%	11.50%	0.01%
Ulta Beauty Inc	ULTA	49.23	399.45	19,665	0.06%			13.50%	0.01%
Union Pacific Corp	UNP	609.46	203.63	124,104	0.40%	2.55%	0.01%	6.50%	0.03%
Keysight Technologies Inc	KEYS	177.58	132.31	23,495	0.08%			13.00%	0.01%
UnitedHealth Group Inc	UNH	926.31	504.19	467,034	1.52%	1.49%	0.02%	12.00%	0.18%
Blackstone Inc	BX	709.75	107.14	76,043	0.25%	2.95%	0.01%	15.00%	0.04%
Marathon Oil Corp	MRO	605.69	26.75	16,202		1.50%		22.50%	
Bio-Rad Laboratories Inc	BIO	24.00	358.45	8,604	0.03%			11.50%	0.00%
Ventas Inc	VTR	402.38	42.13	16,952		4.27%		23.50%	
VF Corp	VFC	388.87	17.67	6,871	0.02%	6.79%	0.00%	9.00%	0.00%
Vulcan Materials Co	VMC	132.87	202.02	26,842	0.09%	0.85%	0.00%	9.50%	0.01%
Weyerhaeuser Co	WY	730.75	30.66	22,405		2.48%		-2.50%	
Whirlpool Corp	WHR	54.82	133.70	7,329		5.24%		-1.50%	
Williams Cos Inc/The	WMB	1,216.42	33.69	40,981	0.13%	5.31%	0.01%	10.50%	0.01%
Constellation Energy Corp	CEG	321.59	109.08	35,079		1.03%			
WEC Energy Group Inc	WEC	315.44	80.55	25,408	0.08%	3.87%	0.00%	6.00%	0.00%
Adobe Inc	ADBE	455.30	509.90	232,157	0.76%			11.00%	0.08%
AES Corp/The	AES	669.63	15.20	10,178	0.03%	4.37%	0.00%	14.00%	0.00%
Amgen Inc	AMGN	534.90	268.76	143,760	0.47%	3.17%	0.01%	6.00%	0.03%
Apple Inc	AAPL	15,634.23	171.21	2,676,737	8.73%	0.56%	0.05%	10.50%	0.92%
Autodesk Inc	ADSK	213.76	206.91	44,230	0.14%			10.00%	0.01%
Cintas Corp	CTAS	101.93	481.01	49,028	0.16%	1.12%	0.00%	14.00%	0.02%
Comcast Corp	CMCSA	4,115.69	44.34	182,490	0.60%	2.62%	0.02%	9.00%	0.05%
Molson Coors Beverage Co	TAP	200.96	63.59	12,779		2.58%		35.00%	
KLA Corp	KLAC	136.32	458.66	62,525	0.20%	1.13%	0.00%	13.50%	0.03%
Marriott International Inc/MD	MAR	298.24	196.56	58,622	0.19%	1.06%	0.00%	17.50%	0.03%
Fiserv Inc	FI	609.62	112.96	68,862	0.22%			9.50%	0.02%
McCormick & Co Inc/MD	MKC	251.10	75.64	18,993	0.06%	2.06%	0.00%	4.50%	0.00%
PACCAR Inc	PCAR	522.81	85.02	44,449	0.15%	1.27%	0.00%	5.00%	0.01%
Costco Wholesale Corp	COST	442.79	564.96	250,160	0.82%	0.72%	0.01%	10.50%	0.09%
Stryker Corp	SYK	379.78	273.27	103,782	0.34%	1.10%	0.00%	7.00%	0.02%
Tyson Foods Inc	TSN	285.55	50.49	14,417	0.05%	3.80%	0.00%	6.00%	0.00%
Lamb Weston Holdings Inc	LW	145.67	92.46	13,468	0.04%	1.21%	0.00%	15.50%	0.01%
Applied Materials Inc	AMAT	836.53	138.45	115,818	0.38%	0.92%	0.00%	5.50%	0.02%
American Airlines Group Inc	AAL	653.36	12.81	8,370					
Cardinal Health Inc	CAH	246.35	86.32	21,265	0.07%	2.32%	0.00%	6.50%	0.00%
Cincinnati Financial Corp	CINF	156.86	102.29	16,045	0.05%	2.93%	0.00%	10.50%	0.01%

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Paramount Global	PARA	610.40	12.90	7,874	0.03%	1.55%	0.00%	1.50%	0.00%
DR Horton Inc	DHI	338.30	107.47	36,357	0.12%	0.93%	0.00%	5.00%	0.01%
Electronic Arts Inc	EA	270.91	120.40	32,618	0.11%	0.63%	0.00%	16.00%	0.02%
Fair Isaac Corp	FICO	24.86	868.53	21,589	0.07%			16.00%	0.01%
Expeditors International of Washington Inc	EXPD	147.90	114.63	16,953	0.06%	1.20%	0.00%	10.00%	0.01%
Fastenal Co	FAST	571.33	54.64	31,218	0.10%	2.56%	0.00%	6.50%	0.01%
M&T Bank Corp	MTB	165.95	126.45	20,984	0.07%	4.11%	0.00%	6.50%	0.00%
Xcel Energy Inc	XEL	551.53	57.22	31,559	0.10%	3.64%	0.00%	6.00%	0.01%
Fifth Third Bancorp	FITB	680.89	25.33	17,247	0.06%	5.53%	0.00%	4.50%	0.00%
Gilead Sciences Inc	GILD	1,246.01	74.94	93,376	0.30%	4.00%	0.01%	13.50%	0.04%
Hasbro Inc	HAS	138.74	66.14	9,176	0.03%	4.23%	0.00%	8.50%	0.00%
Huntington Bancshares Inc/OH	HBAN	1,447.88	10.40	15,058	0.05%	5.96%	0.00%	10.50%	0.01%
Welltower Inc	WELL	518.73	81.92	42,494	0.14%	2.98%	0.00%	12.00%	0.02%
Biogen Inc	BIIB	144.82	257.01	37,221				-1.00%	
Northern Trust Corp	NTRS	207.00	69.48	14,383	0.05%	4.32%	0.00%	5.50%	0.00%
Packaging Corp of America	PKG	89.92	153.55	13,806	0.05%	3.26%	0.00%	9.00%	0.00%
Paychex Inc	PAYX	361.23	115.33	41,661	0.14%	3.09%	0.00%	9.50%	0.01%
QUALCOMM Inc	QCOM	1,116.00	111.06	123,943	0.40%	2.88%	0.01%	5.50%	0.02%
Ross Stores Inc	ROST	338.63	112.95	38,248	0.12%	1.19%	0.00%	14.00%	0.02%
IDEXX Laboratories Inc	IDXX	83.01	437.27	36,299	0.12%			10.50%	0.01%
Starbucks Corp	SBUX	1,145.40	91.27	104,541	0.34%	2.50%	0.01%	16.00%	0.05%
KeyCorp	KEY	935.92	10.76	10,070	0.03%	7.62%	0.00%	7.50%	0.00%
Fox Corp	FOXA	253.68	31.20	7,915	0.03%	1.67%	0.00%	8.50%	0.00%
Fox Corp	FOX	235.58	28.88	6,804		1.80%			
State Street Corp	STT	318.64	66.96	21,336	0.07%	4.12%	0.00%	9.00%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	425.42	16.48	7,011					
US Bancorp	USB	1,556.97	33.06	51,473	0.17%	5.81%	0.01%	4.00%	0.01%
A O Smith Corp	AOS	124.59	66.13	8,239	0.03%	1.81%	0.00%	9.50%	0.00%
Gen Digital Inc	GEN	639.44	17.68	11,305	0.04%	2.83%	0.00%	10.50%	0.00%
T Rowe Price Group Inc	TROW	224.30	104.87	23,522	0.08%	4.65%	0.00%	2.00%	0.00%
Waste Management Inc	WM	405.06	152.44	61,747	0.20%	1.84%	0.00%	6.50%	0.01%
Constellation Brands Inc	STZ	183.30	251.33	46,069	0.15%	1.42%	0.00%	5.50%	0.01%
DENTSPLY SIRONA Inc	XRAY	211.72	34.16	7,232	0.02%	1.64%	0.00%	12.00%	0.00%
Zions Bancorp NA	ZION	148.15	34.89	5,169	0.02%	4.70%	0.00%	6.50%	0.00%
Alaska Air Group Inc	ALK	127.22	37.08	4,717					
Invesco Ltd	IVZ	448.62	14.52	6,514	0.02%	5.51%	0.00%	6.50%	0.00%
Intuit Inc	INTU	280.26	510.94	143,196	0.47%	0.70%	0.00%	14.50%	0.07%
Morgan Stanley	MS	1,656.97	81.67	135,324	0.44%	4.16%	0.02%	7.50%	0.03%
Microchip Technology Inc	MCHP	544.33	78.05	42,485	0.14%	2.10%	0.00%	10.00%	0.01%
Chubb Ltd	CB	410.74	208.18	85,507	0.28%	1.65%	0.00%	15.00%	0.04%
Hologic Inc	HOLX	244.94	69.40	16,999				25.00%	
Citizens Financial Group Inc	CFG	472.29	26.80	12,657	0.04%	6.27%	0.00%	7.50%	0.00%
O'Reilly Automotive Inc	ORLY	60.26	908.86	54,766	0.18%			12.00%	0.02%
Allstate Corp/The	ALL	261.57	111.41	29,142	0.10%	3.20%	0.00%	10.50%	0.01%

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Equity Residential	EQR	379.03	58.71	22,253		4.51%		-5.00%	
BorgWarner Inc	BWA	235.06	40.37	9,489	0.03%	1.09%	0.00%	7.00%	0.00%
Keurig Dr Pepper Inc	KDP	1,397.26	31.57	44,111	0.14%	2.72%	0.00%	12.50%	0.02%
Organon & Co	OGN	255.57	17.36	4,437		6.45%			
Host Hotels & Resorts Inc	HST	711.61	16.07	11,435		4.48%		51.00%	
Incyte Corp	INCY	224.09	57.77	12,946				32.00%	
Simon Property Group Inc	SPG	327.19	108.03	35,346	0.12%	7.04%	0.01%	3.50%	0.00%
Eastman Chemical Co	EMN	118.56	76.72	9,096	0.03%	4.12%	0.00%	6.00%	0.00%
AvalonBay Communities Inc	AVB	142.02	171.74	24,390	0.08%	3.84%	0.00%	6.00%	0.00%
Prudential Financial Inc	PRU	363.00	94.89	34,445	0.11%	5.27%	0.01%	3.00%	0.00%
United Parcel Service Inc	UPS	723.28	155.87	112,737	0.37%	4.16%	0.02%	7.50%	0.03%
Walgreens Boots Alliance Inc	WBA	863.26	22.24	19,199	0.06%	8.63%	0.01%	1.00%	0.00%
STERIS PLC	STE	98.78	219.42	21,675	0.07%	0.95%	0.00%	10.00%	0.01%
McKesson Corp	MCK	134.90	434.85	58,662	0.19%	0.57%	0.00%	9.00%	0.02%
Lockheed Martin Corp	LMT	251.83	408.96	102,989	0.34%	2.93%	0.01%	7.00%	0.02%
Cencora Inc	COR	202.18	179.97	36,385	0.12%	1.08%	0.00%	9.00%	0.01%
Capital One Financial Corp	COF	381.44	97.05	37,019	0.12%	2.47%	0.00%	4.00%	0.00%
Waters Corp	WAT	59.10	274.21	16,207	0.05%			10.00%	0.01%
Nordson Corp	NDSN	57.01	223.17	12,724	0.04%	1.22%	0.00%	9.00%	0.00%
Dollar Tree Inc	DLTR	220.01	106.45	23,420	0.08%			9.00%	0.01%
Darden Restaurants Inc	DRI	120.32	143.22	17,232	0.06%	3.66%	0.00%	15.00%	0.01%
Evergy Inc	EVRG	229.58	50.70	11,640	0.04%	4.83%	0.00%	7.50%	0.00%
Match Group Inc	MTCH	278.09	39.18	10,894	0.04%			16.50%	0.01%
Domino's Pizza Inc	DPZ	35.09	378.79	13,293	0.04%	1.28%	0.00%	12.00%	0.01%
NVR Inc	NVR	3.26	5,963.30	19,464	0.06%			3.50%	0.00%
NetApp Inc	NTAP	208.79	75.88	15,843	0.05%	2.64%	0.00%	8.00%	0.00%
DXC Technology Co	DXC	205.17	20.83	4,274	0.01%			9.00%	0.00%
Old Dominion Freight Line Inc	ODFL	109.27	409.14	44,706	0.15%	0.39%	0.00%	9.00%	0.01%
DaVita Inc	DVA	91.30	94.53	8,631	0.03%			7.00%	0.00%
Hartford Financial Services Group Inc/The	HIG	305.82	70.91	21,685	0.07%	2.40%	0.00%	8.00%	0.01%
Iron Mountain Inc	IRM	291.85	59.45	17,351	0.06%	4.37%	0.00%	4.00%	0.00%
Estee Lauder Cos Inc/The	EL	232.30	144.55	33,579	0.11%	1.83%	0.00%	8.00%	0.01%
Cadence Design Systems Inc	CDNS	271.79	234.30	63,680	0.21%			12.00%	0.02%
Tyler Technologies Inc	TYL	42.08	386.14	16,248	0.05%			10.50%	0.01%
Universal Health Services Inc	UHS	62.14	125.73	7,813	0.03%	0.64%	0.00%	6.00%	0.00%
Skyworks Solutions Inc	SWKS	159.39	98.59	15,715	0.05%	2.76%	0.00%	3.50%	0.00%
Quest Diagnostics Inc	DGX	112.24	121.86	13,677	0.04%	2.33%	0.00%	4.00%	0.00%
Activision Blizzard Inc	ATVI	786.80	93.63	73,668	0.24%	1.06%	0.00%	13.50%	0.03%
Rockwell Automation Inc	ROK	114.86	285.87	32,835	0.11%	1.65%	0.00%	9.50%	0.01%
Kraft Heinz Co/The	KHC	1,228.30	33.64	41,320	0.13%	4.76%	0.01%	6.00%	0.01%
American Tower Corp	AMT	466.16	164.45	76,659	0.25%	3.94%	0.01%	5.00%	0.01%
Regeneron Pharmaceuticals Inc	REGN	106.74	822.96	87,844	0.29%			1.50%	0.00%
Amazon.com Inc	AMZN	10,317.75	127.12	1,311,593	4.28%			19.50%	0.83%
Jack Henry & Associates Inc	JKHY	72.94	151.14	11,023	0.04%	1.38%	0.00%	7.00%	0.00%

		[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	VL Growth Rate	Cap-Weighted Long-Term Growth Est.
Ralph Lauren Corp	RL	40.39	116.09	4,689	0.02%	2.58%	0.00%	12.50%	0.00%
Boston Properties Inc	BXP	156.87	59.48	9,330		6.59%		-1.00%	
Amphenol Corp	APH	596.45	83.99	50,096	0.16%	1.00%	0.00%	12.50%	0.02%
Howmet Aerospace Inc	HWM	412.21	46.25	19,065	0.06%	0.43%	0.00%	12.00%	0.01%
Pioneer Natural Resources Co	PXD	233.14	229.55	53,518	0.17%	3.21%	0.01%	8.50%	0.01%
Valero Energy Corp	VLO	353.13	141.71	50,042	0.16%	2.88%	0.00%	1.50%	0.00%
Synopsys Inc	SNPS	152.08	458.97	69,802	0.23%			15.00%	0.03%
Etsy Inc	ETSY	123.01	64.58	7,944	0.03%			10.00%	0.00%
CH Robinson Worldwide Inc	CHRW	116.44	86.13	10,029	0.03%	2.83%	0.00%	6.00%	0.00%
Accenture PLC	ACN	630.80	307.11	193,723	0.63%	1.68%	0.01%	12.50%	0.08%
TransDigm Group Inc	TDG	55.18	843.13	46,526				26.00%	
Yum! Brands Inc	YUM	280.21	124.94	35,010	0.11%	1.94%	0.00%	11.50%	0.01%
Prologis Inc	PLD	923.86	112.21	103,667	0.34%	3.10%	0.01%	2.50%	0.01%
FirstEnergy Corp	FE	573.36	34.18	19,598	0.06%	4.80%	0.00%	4.00%	0.00%
VeriSign Inc	VRSN	103.13	202.53	20,888	0.07%			13.00%	0.01%
Quanta Services Inc	PWR	145.20	187.07	27,162	0.09%	0.17%	0.00%	15.00%	0.01%
Henry Schein Inc	HSIC	130.59	74.25	9,696	0.03%			9.00%	0.00%
Ameren Corp	AEE	262.48	74.83	19,641	0.06%	3.37%	0.00%	6.50%	0.00%
ANSYS Inc	ANSS	86.79	297.55	25,825	0.08%			8.50%	0.01%
FactSet Research Systems Inc	FDS	38.15	437.26	16,680	0.05%	0.90%	0.00%	10.50%	0.01%
NVIDIA Corp	NVDA	2,470.00	434.99	1,074,425		0.04%		40.00%	
Sealed Air Corp	SEE	144.41	32.86	4,745	0.02%	2.43%	0.00%	7.50%	0.00%
Cognizant Technology Solutions Corp	CTSH	505.04	67.74	34,211	0.11%	1.71%	0.00%	8.00%	0.01%
Intuitive Surgical Inc	ISRG	351.36	292.29	102,698	0.34%			12.50%	0.04%
Take-Two Interactive Software Inc	TTWO	169.83	140.39	23,843					
Republic Services Inc	RSG	316.33	142.51	45,080	0.15%	1.50%	0.00%	12.50%	0.02%
eBay Inc	EBAY	532.16	44.09	23,463	0.08%	2.27%	0.00%	9.50%	0.01%
Goldman Sachs Group Inc/The	GS	329.67	323.57	106,672	0.35%	3.40%	0.01%	5.00%	0.02%
SBA Communications Corp	SBAC	108.38	200.17	21,695		1.70%		23.50%	
Sempra	SRE	629.31	68.03	42,812	0.14%	3.50%	0.00%	7.00%	0.01%
Moody's Corp	MCO	183.50	316.17	58,017	0.19%	0.97%	0.00%	16.00%	0.03%
ON Semiconductor Corp	ON	431.53	92.95	40,111	0.13%			13.00%	0.02%
Booking Holdings Inc	BKNG	35.69	3,083.95	110,072				22.00%	
F5 Inc	FFIV	59.31	161.14	9,557	0.03%			10.00%	0.00%
Akamai Technologies Inc	AKAM	151.71	106.54	16,164	0.05%			5.00%	0.00%
Charles River Laboratories International Inc	CRL	51.27	195.98	10,048	0.03%			8.00%	0.00%
MarketAxess Holdings Inc	MKTX	37.68	213.64	8,049	0.03%	1.35%	0.00%	10.50%	0.00%
Devon Energy Corp	DVN	640.70	47.70	30,561	0.10%	4.11%	0.00%	10.50%	0.01%
Bio-Techne Corp	TECH	158.24	68.07	10,771	0.04%	0.47%	0.00%	13.00%	0.00%
Alphabet Inc	GOOGL	5,933.00	130.86	776,392					
Teleflex Inc	TFX	46.99	196.41	9,230	0.03%	0.69%	0.00%	10.00%	0.00%
Bunge Ltd	BG	150.64	108.25	16,307	0.05%	2.45%	0.00%	1.50%	0.00%
Netflix Inc	NFLX	443.15	377.60	167,332	0.55%			13.00%	0.07%
Allegion plc	ALLE	87.78	104.20	9,147	0.03%	1.73%	0.00%	10.50%	0.00%

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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] VL Growth Rate	[11] Cap-Weighted Long-Term Growth Est.
Warner Bros Discovery Inc	WBD	2,437.38	10.86	26,470					
Agilent Technologies Inc	A	292.59	111.60	32,651	0.11%	0.81%	0.00%	13.50%	0.01%
Trimble Inc	TRMB	248.32	53.86	13,375	0.04%			5.50%	0.00%
Elevance Health Inc	ELV	235.65	435.42	102,606	0.33%	1.36%	0.00%	12.50%	0.04%
CME Group Inc	CME	359.75	200.22	72,028	0.23%	2.20%	0.01%	7.50%	0.02%
Juniper Networks Inc	JNPR	321.36	27.79	8,931	0.03%	3.17%	0.00%	10.50%	0.00%
BlackRock Inc	BLK	149.30	646.49	96,523	0.31%	3.09%	0.01%	7.50%	0.02%
DTE Energy Co	DTE	206.11	99.28	20,463	0.07%	3.84%	0.00%	4.50%	0.00%
Celanese Corp	CE	108.85	125.52	13,663	0.04%	2.23%	0.00%	6.50%	0.00%
Nasdaq Inc	NDAQ	491.32	48.59	23,873	0.08%	1.81%	0.00%	6.00%	0.00%
Philip Morris International Inc	PM	1,552.35	92.58	143,716	0.47%	5.62%	0.03%	5.00%	0.02%
Ingersoll Rand Inc	IR	404.40	63.72	25,768	0.08%	0.13%	0.00%	12.00%	0.01%
Salesforce Inc	CRM	973.00	202.78	197,305	0.64%			18.00%	0.12%
Huntington Ingalls Industries Inc	HII	39.87	204.58	8,156	0.03%	2.42%	0.00%	10.00%	0.00%
Roper Technologies Inc	ROP	106.71	484.28	51,678	0.17%	0.56%	0.00%	8.00%	0.01%
MetLife Inc	MET	752.02	62.91	47,310	0.15%	3.31%	0.01%	7.50%	0.01%
Tapestry Inc	TPR	227.44	28.75	6,539	0.02%	4.87%	0.00%	12.00%	0.00%
CSX Corp	CSX	2,006.33	30.75	61,695	0.20%	1.43%	0.00%	8.50%	0.02%
Edwards Lifesciences Corp	EW	607.92	69.28	42,116	0.14%			10.50%	0.01%
Ameriprise Financial Inc	AMP	102.63	329.68	33,834	0.11%	1.64%	0.00%	11.00%	0.01%
Zebra Technologies Corp	ZBRA	51.34	236.53	12,143	0.04%			1.50%	0.00%
Zimmer Biomet Holdings Inc	ZBH	208.96	112.22	23,450	0.08%	0.86%	0.00%	6.50%	0.00%
Camden Property Trust	CPT	106.77	94.58	10,098		4.23%		-3.00%	
CBRE Group Inc	CBRE	309.84	73.86	22,885	0.07%			8.50%	0.01%
Mastercard Inc	MA	934.85	395.91	370,116	1.21%	0.58%	0.01%	16.00%	0.19%
CarMax Inc	KMX	158.67	70.73	11,223				-3.50%	
Intercontinental Exchange Inc	ICE	594.94	110.02	65,455	0.21%	1.53%	0.00%	6.00%	0.01%
Fidelity National Information Services Inc	FIS	592.47	55.27	32,746		3.76%		23.50%	
Chipotle Mexican Grill Inc	CMG	27.59	1,831.83	50,537	0.16%			20.00%	0.03%
Wynn Resorts Ltd	WYNN	113.94	92.41	10,529		1.08%		27.00%	
Live Nation Entertainment Inc	LYV	230.15	83.04	19,112					
Assurant Inc	AIZ	53.02	143.58	7,613	0.02%	1.95%	0.00%	10.50%	0.00%
NRG Energy Inc	NRG	229.12	38.52	8,826		3.92%		-2.50%	
Monster Beverage Corp	MNST	1,047.52	52.95	55,466	0.18%			11.00%	0.02%
Regions Financial Corp	RF	938.38	17.20	16,140	0.05%	5.58%	0.00%	11.50%	0.01%
Baker Hughes Co	BKR	1,009.65	35.32	35,661		2.27%			
Mosaic Co/The	MOS	332.28	35.60	11,829	0.04%	2.25%	0.00%	1.50%	0.00%
Expedia Group Inc	EXPE	137.84	103.07	14,207					
CF Industries Holdings Inc	CF	192.95	85.74	16,543	0.05%	1.87%	0.00%	9.00%	0.00%
APA Corp	APA	307.27	41.10	12,629		2.43%		21.00%	
Leidos Holdings Inc	LDOS	137.35	92.16	12,658	0.04%	1.56%	0.00%	7.00%	0.00%
Alphabet Inc	GOOG	5,801.00	131.85	764,862	2.50%			10.50%	0.26%
First Solar Inc	FSLR	106.83	161.59	17,263				27.50%	
TE Connectivity Ltd	TEL	313.94	123.53	38,781	0.13%	1.91%	0.00%	10.50%	0.01%

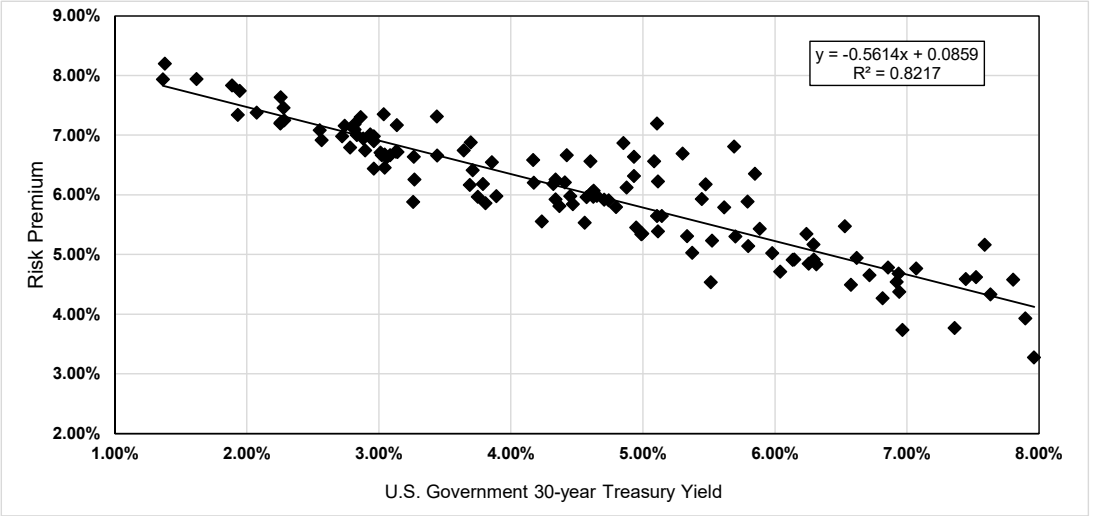
		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	VL Growth Rate	Cap-Weighted Long-Term Growth Est.
Discover Financial Services	DFS	249.95	86.63	21,653	0.07%	3.23%	0.00%	4.00%	0.00%
Linde PLC	LIN	487.95	372.35	181,687	0.59%	1.37%	0.01%	8.50%	0.05%
Visa Inc	V	1,606.79	230.01	369,577	1.21%	0.78%	0.01%	13.50%	0.16%
Mid-America Apartment Communities Inc	MAA	116.68	128.65	15,010		4.35%		-12.50%	
Xylem Inc/NY	XYL	240.83	91.03	21,923	0.07%	1.45%	0.00%	6.00%	0.00%
Marathon Petroleum Corp	MPC	399.84	151.34	60,512	0.20%	1.98%	0.00%	14.50%	0.03%
Advanced Micro Devices Inc	AMD	1,615.67	102.82	166,123				25.50%	
Tractor Supply Co	TSCO	108.81	203.05	22,093	0.07%	2.03%	0.00%	13.50%	0.01%
ResMed Inc	RMD	147.07	147.87	21,747	0.07%	1.30%	0.00%	9.50%	0.01%
Mettler-Toledo International Inc	MTD	21.87	1,108.07	24,228	0.08%			11.00%	0.01%
VICI Properties Inc	VICI	1,013.43	29.10	29,491	0.10%	5.70%	0.01%	8.00%	0.01%
Copart Inc	CPRT	957.36	43.09	41,252	0.13%			7.00%	0.01%
Jacobs Solutions Inc	J	125.92	136.50	17,188	0.06%	0.76%	0.00%	11.00%	0.01%
Fortinet Inc	FTNT	785.34	58.68	46,084				24.00%	
Albemarle Corp	ALB	117.35	170.04	19,954		0.94%		-4.50%	
Moderna Inc	MRNA	380.59	103.29	39,311				-20.00%	
Essex Property Trust Inc	ESS	64.18	212.09	13,613	0.04%	4.36%	0.00%	2.00%	0.00%
CoStar Group Inc	CSGP	408.34	76.89	31,397	0.10%			14.00%	0.01%
Realty Income Corp	O	708.79	49.94	35,397	0.12%	6.15%	0.01%	5.50%	0.01%
Westrock Co	WRK	256.40	35.80	9,179	0.03%	3.07%	0.00%	8.50%	0.00%
Westinghouse Air Brake Technologies Corp	WAB	179.13	106.27	19,036	0.06%	0.64%	0.00%	10.50%	0.01%
Pool Corp	POOL	39.05	356.10	13,906	0.05%	1.24%	0.00%	14.00%	0.01%
Western Digital Corp	WDC	321.90	45.63	14,688	0.05%			3.00%	0.00%
PepsiCo Inc	PEP	1,376.58	169.44	233,248	0.76%	2.99%	0.02%	5.50%	0.04%
Diamondback Energy Inc	FANG	178.82	154.88	27,695		2.17%			
Palo Alto Networks Inc	PANW	308.60	234.44	72,347					
ServiceNow Inc	NOW	204.00	558.96	114,028				61.00%	
Church & Dwight Co Inc	CHD	246.05	91.63	22,545	0.07%	1.19%	0.00%	6.00%	0.00%
Federal Realty Investment Trust	FRT	81.52	90.63	7,388	0.02%	4.81%	0.00%	2.50%	0.00%
MGM Resorts International	MGM	350.89	36.76	12,899				25.00%	
American Electric Power Co Inc	AEP	515.18	75.22	38,752	0.13%	4.41%	0.01%	6.50%	0.01%
SolarEdge Technologies Inc	SEDG	56.56	129.51	7,325				27.00%	
Invitation Homes Inc	INVH	611.96	31.69	19,393		3.28%			
PTC Inc	PTC	118.83	141.68	16,836	0.05%			15.00%	0.01%
JB Hunt Transport Services Inc	JBHT	103.35	188.52	19,483	0.06%	0.89%	0.00%	9.00%	0.01%
Lam Research Corp	LRCX	132.51	626.77	83,055	0.27%	1.28%	0.00%	8.00%	0.02%
Mohawk Industries Inc	MHK	63.68	85.81	5,465	0.02%			2.50%	0.00%
Pentair PLC	PNR	165.11	64.75	10,691	0.03%	1.36%	0.00%	12.00%	0.00%
GE HealthCare Technologies Inc	GEHC	454.84	68.04	30,947		0.18%			
Vertex Pharmaceuticals Inc	VRTX	258.10	347.74	89,750	0.29%			12.00%	0.04%
Amcor PLC	AMCR	1,446.44	9.16	13,249	0.04%	5.35%	0.00%	13.00%	0.01%
Meta Platforms Inc	META	2,222.58	300.21	667,242	2.18%			9.00%	0.20%
T-Mobile US Inc	TMUS	1,176.46	140.05	164,763	0.54%	1.86%	0.01%	20.00%	0.11%
United Rentals Inc	URI	68.28	444.57	30,357	0.10%	1.33%	0.00%	17.00%	0.02%

Name	Ticker	Shares Outst'g [4]	Price [5]	Market Capitalization [6]	Weight in Index [7]	Estimated Dividend Yield [8]	Cap-Weighted Dividend Yield [9]	VL Growth Rate [10]	Cap-Weighted Long-Term Growth Est. [11]
Alexandria Real Estate Equities Inc	ARE	173.03	100.10	17,320	0.06%	4.96%	0.00%	11.00%	0.01%
Honeywell International Inc	HON	663.96	184.74	122,660	0.40%	2.34%	0.01%	11.00%	0.04%
Delta Air Lines Inc	DAL	643.42	37.00	23,806		1.08%			
United Airlines Holdings Inc	UAL	326.73	42.30	13,821					
Seagate Technology Holdings PLC	STX	207.39	65.95	13,678	0.04%	4.25%	0.00%	7.00%	0.00%
News Corp	NWS	191.84	20.87	4,004		0.96%			
Centene Corp	CNC	541.48	68.88	37,297	0.12%			10.00%	0.01%
Martin Marietta Materials Inc	MLM	61.80	410.48	25,369	0.08%	0.72%	0.00%	12.00%	0.01%
Teradyne Inc	TER	154.01	100.46	15,472	0.05%	0.44%	0.00%	12.50%	0.01%
PayPal Holdings Inc	PYPL	1,098.04	58.46	64,191	0.21%			12.00%	0.03%
Tesla Inc	TSLA	3,173.99	250.22	794,197				26.00%	
Arch Capital Group Ltd	ACGL	372.95	79.71	29,728				21.00%	
Dow Inc	DOW	703.08	51.56	36,251	0.12%	5.43%	0.01%	7.00%	0.01%
Everest Group Ltd	EG	43.40	371.67	16,132	0.05%	1.88%	0.00%	10.00%	0.01%
Teledyne Technologies Inc	TDY	47.08	408.58	19,234	0.06%			9.50%	0.01%
News Corp	NWSA	379.59	20.06	7,614		1.00%			
Exelon Corp	EXC	994.30	37.79	37,575		3.81%			
Global Payments Inc	GPN	259.99	115.39	30,001	0.10%	0.87%	0.00%	13.50%	0.01%
Crown Castle Inc	CCI	433.68	92.03	39,911	0.13%	6.80%	0.01%	7.00%	0.01%
Aptiv PLC	APTV	282.82	98.59	27,884				33.50%	
Align Technology Inc	ALGN	76.53	305.32	23,367	0.08%			17.00%	0.01%
Illumina Inc	ILMN	158.30	137.28	21,731	0.07%			6.50%	0.00%
Kenvue Inc	KVUE	1,914.89	20.08	38,451		3.98%			
Targa Resources Corp	TRGP	223.71	85.72	19,177		2.33%			
LKQ Corp	LKQ	267.56	49.51	13,247	0.04%	2.22%	0.00%	13.00%	0.01%
Zoetis Inc	ZTS	460.32	173.98	80,086	0.26%	0.86%	0.00%	9.00%	0.02%
Digital Realty Trust Inc	DLR	302.71	121.02	36,634		4.03%		-3.00%	
Equinix Inc	EQIX	93.57	726.26	67,953	0.22%	1.88%	0.00%	15.00%	0.03%
Las Vegas Sands Corp	LVS	764.45	45.84	35,042		1.75%			
Molina Healthcare Inc	MOH	58.30	327.89	19,116	0.06%			11.50%	0.01%

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 September 30, 2023
[5] Source: Bloomberg Professional as of September 30, 2023
[6] Equals [4] x [5]
[7] Equals weight in the S&P 500
[8] Source: Bloomberg Professional as of September 30, 2023
[9] Equals [7] x [8]
[10] Source: Bloomberg Professional, as of September 30, 2023
[11] Equals [7] x [10]

BOND YIELD PLUS RISK PREMIUM

Quarter	[1] Average Authorized VI Electric ROE	[2] U.S. Govt. 30-year Treasury	[3] Risk Premium
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%
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	11.00%	5.70%	5.30%
2001.3	10.76%	5.53%	5.23%
2001.4	11.99%	5.30%	6.69%
2002.1	10.05%	5.52%	4.53%
2002.2	11.41%	5.62%	5.79%
2002.3	11.65%	5.09%	6.56%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.906494264
R Square	0.821731851
Adjusted R Square	0.820305706
Standard Error	0.00430928
Observations	127

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.010699802	0.010699802	576.1908796	1.22074E-48
Residual	125	0.002321236	1.85699E-05		
Total	126	0.013021038			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.085934054	0.00112871	76.13473508	1.3711E-106	0.083700196	0.088167912	0.083700196	0.088167912
X Variable 1	-0.561389806	0.023387367	-24.00397633	1.22074E-48	-0.607676308	-0.515103304	-0.607676308	-0.515103304

	U.S. Govt. 30-year Treasury	Risk Premium	ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	4.42%	6.11%	10.53%
Blue Chip Near-Term Projected Forecast (Q4 2023 - Q4 2024) [5]	4.16%	6.26%	10.42%

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2002.4	11.57%	4.93%	6.63%
2003.1	11.72%	4.85%	6.87%
2003.2	11.16%	4.60%	6.56%
2003.3	10.50%	5.11%	5.39%
2003.4	11.34%	5.11%	6.23%
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	11.24%	4.93%	6.31%
2005.1	10.63%	4.71%	5.92%
2005.2	10.31%	4.47%	5.84%
2005.3	11.08%	4.42%	6.66%
2005.4	10.63%	4.65%	5.98%
2006.1	10.70%	4.63%	6.07%
2006.2	10.79%	5.14%	5.64%
2006.3	10.35%	5.00%	5.35%
2006.4	10.65%	4.74%	5.91%
2007.1	10.59%	4.80%	5.79%
2007.2	10.33%	4.99%	5.34%
2007.3	10.40%	4.95%	5.45%
2007.4	10.65%	4.61%	6.04%
2008.1	10.62%	4.41%	6.21%
2008.2	10.54%	4.57%	5.96%
2008.3	10.43%	4.45%	5.98%
2008.4	10.39%	3.64%	6.74%
2009.1	10.75%	3.44%	7.31%
2009.2	10.75%	4.17%	6.58%
2009.3	10.50%	4.32%	6.18%
2009.4	10.59%	4.34%	6.25%
2010.1	10.59%	4.62%	5.97%
2010.2	10.18%	4.37%	5.81%
2010.3	10.40%	3.86%	6.55%
2010.4	10.38%	4.17%	6.20%
2011.1	10.09%	4.56%	5.53%
2011.2	10.26%	4.34%	5.92%
2011.3	10.57%	3.70%	6.88%
2011.4	10.39%	3.04%	7.35%
2012.1	10.30%	3.14%	7.17%
2012.2	9.95%	2.94%	7.01%
2012.3	9.90%	2.74%	7.16%
2012.4	10.16%	2.86%	7.30%
2013.1	9.85%	3.13%	6.72%
2013.2	9.86%	3.14%	6.72%
2013.3	10.12%	3.71%	6.41%
2013.4	9.97%	3.79%	6.18%
2014.1	9.86%	3.69%	6.16%
2014.2	10.10%	3.44%	6.66%
2014.3	9.90%	3.27%	6.63%
2014.4	9.94%	2.96%	6.98%
2015.1	9.64%	2.55%	7.08%

Blue Chip Long-Term Projected Forecast (2025-2029) [6]	3.80%	6.46%	10.26%
AVERAGE			10.40%

Notes:
[1] Source: Regulatory Research Associates, rate cases through September 30, 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 September 30, 2023
[5] Source: Blue Chip Financial Forecasts, Vol. 42, No. 10, October 2, 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 0.085934 + (-0.561390 x Column [7])
[9] Equals Column [7] + Column [8]

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2015.2	9.83%	2.88%	6.94%
2015.3	9.40%	2.96%	6.44%
2015.4	9.86%	2.96%	6.90%
2016.1	9.70%	2.72%	6.98%
2016.2	9.48%	2.57%	6.91%
2016.3	9.74%	2.28%	7.46%
2016.4	9.83%	2.83%	7.00%
2017.1	9.72%	3.05%	6.67%
2017.2	9.64%	2.90%	6.75%
2017.3	10.00%	2.82%	7.18%
2017.4	9.91%	2.82%	7.09%
2018.1	9.69%	3.02%	6.66%
2018.2	9.75%	3.09%	6.66%
2018.3	9.69%	3.06%	6.63%
2018.4	9.52%	3.27%	6.25%
2019.1	9.72%	3.01%	6.70%
2019.2	9.58%	2.78%	6.79%
2019.3	9.53%	2.29%	7.25%
2019.4	9.89%	2.26%	7.63%
2020.1	9.72%	1.89%	7.83%
2020.2	9.58%	1.38%	8.19%
2020.3	9.30%	1.37%	7.93%
2020.4	9.56%	1.62%	7.94%
2021.1	9.45%	2.07%	7.38%
2021.2	9.47%	2.26%	7.21%
2021.3	9.27%	1.93%	7.34%
2021.4	9.69%	1.95%	7.74%
2022.1	9.45%	2.25%	7.20%
2022.2	9.50%	3.05%	6.45%
2022.3	9.14%	3.26%	5.88%
2022.4	9.87%	3.89%	5.98%
2023.1	9.72%	3.75%	5.97%
2023.2	9.67%	3.81%	5.86%
2023.3	9.79%	4.23%	5.55%
AVERAGE	10.59%	4.54%	6.04%
MEDIAN	10.54%	4.57%	6.16%

COMPARISON OF MINNESOTA POWER AND PROXY GROUP COMPANIES
RISK ASSESSMENT

				[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
					Non-Volumetric Rate Design				Capital Cost Recovery				
Proxy Group Company	Operating Subsidiary	Jurisdiction	Service	Test Year	Revenue Decoupling	Formula-based rates	Straight Fixed-Variable Rate Design	Non-Volumetric Rate Design	Traditional Generation	Renewables/Non-Traditional Generation	Delivery Infrastructure	Environmental Compliance	Capital Cost Recovery
Alliant Energy Corporation	Interstate Power & Light Co.	Iowa	Electric	Historical	No	No	No	No	No	Yes	No	Yes	Yes
	Interstate Power & Light Co.	Iowa	Gas	Historical	No	No	No	No	No	No	No	No	No
	Wisconsin Power & Light Co.	Wisconsin	Electric	Fully Forecast	No	No	No	No	No	No	No	No	No
	Wisconsin Power & Light Co.	Wisconsin	Gas	Fully Forecast	No	No	No	No	No	No	No	No	No
Ameren Corporation	Ameren Illinois Co.	Illinois	Electric	Historical	Partial	Yes	No	Yes	No	Yes	No	Yes	Yes
	Ameren Illinois Co.	Illinois	Gas	Fully Forecast	Partial	No	No	Yes	No	No	Yes	Yes	Yes
	Union Electric Co.	Missouri	Electric	Historical	Partial	No	No	Yes	No	Yes	No	No	Yes
	Union Electric Co.	Missouri	Gas	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
American Electric Power Company, Inc.	Southwestern Electric Power Co.	Arkansas	Electric	Historical	Partial	Yes	No	Yes	Yes	No	No	Yes	Yes
	Indiana Michigan Power Co.	Indiana	Electric	Fully Forecast	Full	No	No	Yes	No	Yes	Yes	Yes	Yes
	Kentucky Power Co.	Kentucky	Electric	Fully Forecast	Partial	No	No	Yes	No	No	Yes	No	Yes
	Southwestern Electric Power Co.	Louisiana	Electric	Historical	Partial	Yes	No	Yes	No	No	No	No	No
	Indiana Michigan Power Co.	Michigan	Electric	Fully Forecast	Partial	No	No	Yes	No	Yes	No	No	Yes
	Ohio Power Co.	Ohio	Electric	Partially Forecast	Partial	No	No	Yes	No	Yes	Yes	No	Yes
	Public Service Co. of Oklahoma	Oklahoma	Electric	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
	Kingsport Power Co.	Tennessee	Electric	Fully Forecast	No	No	No	No	No	No	No	No	No
	AEP Texas Inc.	Texas	Electric	Historical	No	No	No	No	No	No	Yes	No	Yes
	Southwestern Electric Power Co.	Texas	Electric	Historical	No	No	No	No	No	No	Yes	No	Yes
	Appalachian Power Co.	Virginia	Electric	Historical	No	No	No	No	Yes	No	No	Yes	Yes
	Appalachian Power Co./Wheeling Power Co.	West Virginia	Electric	Historical	No	No	No	No	No	No	No	Yes	Yes
Avista Corporation	Alaska Electric Light & Power Co.	Alaska	Electric	Historical	No	No	No	No	No	No	No	No	No
	Avista Corp.	Idaho	Electric	Historical	Full	No	No	Yes	No	No	No	No	No
	Avista Corp.	Idaho	Gas	Historical	Full	No	No	Yes	No	No	No	No	No
	Avista Corp.	Oregon	Gas	Fully Forecast	Partial	No	No	Yes	No	No	No	No	No
	Avista Corp.	Washington	Electric	Historical	Full	No	No	Yes	No	No	No	No	No
	Avista Corp.	Washington	Gas	Historical	Full	No	No	Yes	No	No	No	No	No
CMS Energy Corporation	Consumers Energy Co.	Michigan	Electric	Fully Forecast	No	No	No	No	No	Yes	No	No	Yes
	Consumers Energy Co.	Michigan	Gas	Fully Forecast	Partial	No	No	Yes	No	No	No	No	No
Duke Energy Corporation	Duke Energy Florida LLC	Florida	Electric	Fully Forecast	No	No	No	No	Yes	Yes	No	Yes	Yes
	Duke Energy Indiana LLC	Indiana	Electric	Historical	Partial	No	No	Yes	No	Yes	Yes	Yes	Yes
	Duke Energy Kentucky Inc.	Kentucky	Electric	Fully Forecast	Partial	No	No	Yes	No	No	No	Yes	Yes
	Duke Energy Kentucky Inc.	Kentucky	Gas	Fully Forecast	Partial	No	No	Yes	No	No	Yes	No	Yes
	Duke Energy Carolinas LLC/Duke Energy Progress LLC	North Carolina	Electric	Historical	No	No	No	No	No	Yes	No	Yes	Yes
	Piedmont Natural Gas Co. Inc.	North Carolina	Gas	Historical	Full	No	No	Yes	No	No	Yes	No	Yes
	Duke Energy Ohio Inc.	Ohio	Electric	Partially Forecast	Partial	No	No	Yes	No	Yes	Yes	No	Yes
	Duke Energy Ohio Inc.	Ohio	Gas	Partially Forecast	No	No	Yes	Yes	No	No	Yes	Yes	Yes
	Duke Energy Carolinas LLC/Duke Energy Progress LLC	South Carolina	Electric	Historical	No	No	No	No	No	Yes	Yes	Yes	Yes
	Piedmont Natural Gas Co. Inc.	South Carolina	Gas	Historical	Partial	No	No	Yes	No	No	No	No	No
	Piedmont Natural Gas Co. Inc.	Tennessee	Gas	Fully Forecast	Partial	No	No	Yes	No	No	Yes	No	Yes
Entergy Corporation	Entergy Arkansas LLC	Arkansas	Electric	Fully Forecast	Partial	Yes	No	Yes	Yes	Yes	Yes	No	Yes
	Entergy New Orleans LLC	Louisiana-NOCC	Electric	Partially Forecast	No	Yes	No	Yes	No	Yes	No	Yes	Yes
	Entergy New Orleans LLC	Louisiana-NOCC	Gas	Partially Forecast	No	Yes	No	Yes	No	No	No	No	No
	Entergy Louisiana LLC	Louisiana	Electric	Historical	Partial	Yes	No	Yes	No	No	No	Yes	Yes
	Entergy Louisiana LLC	Louisiana	Gas	Historical	No	Yes	No	Yes	No	No	Yes	No	Yes
	Entergy Mississippi LLC	Mississippi	Electric	Fully Forecast	Partial	Yes	No	Yes	No	No	No	No	No
	Entergy Texas Inc.	Texas	Electric	Historical	No	No	No	No	Yes	No	Yes	No	Yes
Evergy, Inc.	Evergy Kansas Central Inc	Kansas	Electric	Historical	Partial	No	No	Yes	No	Yes	No	Yes	Yes
	Evergy Metro Inc.	Kansas	Electric	Historical	No	No	No	No	No	No	Yes	No	Yes
	Evergy Metro Inc	Missouri	Electric	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
	Evergy Missouri West Inc.	Missouri	Electric	Historical	Partial	No	No	Yes	No	Yes	Yes	No	Yes
IDACORP, Inc.	Idaho Power Co.	Idaho	Electric	Partially Forecast	Full	No	No	Yes	No	No	No	No	No
	Idaho Power Co.	Oregon	Electric	Partially Forecast	No	No	No	No	No	No	No	No	No
NextEra Energy, Inc.	Florida Power & Light Co.	Florida	Electric	Fully Forecast	No	No	No	No	Yes	Yes	No	Yes	Yes
	Pivotal Utility Holdings Inc.	Florida	Gas	Fully Forecast	No	No	No	No	No	No	Yes	Yes	Yes
	Lone Star Transmission LLC	Texas	Electric	Historical	No	No	No	No	No	No	Yes	No	Yes
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
OGE Energy Corporation	Oklahoma Gas & Electric Co.	Arkansas	Electric	Historical	Partial	No	Yes	Yes	No	No	Yes	No	Yes
	Oklahoma Gas & Electric Co.	Oklahoma	Electric	Historical	Partial	No	Yes	Yes	No	No	Yes	Yes	Yes
Pinnacle West Capital Corporation	Arizona Public Service Co.	Arizona	Electric	Historical	Partial	No	No	Yes	No	Yes	No	Yes	Yes
Portland General Electric Company	Portland General Electric Co.	Oregon	Electric	Fully Forecast	No	No	No	No	Yes	Yes	No	Yes	Yes
Southern Company	Alabama Power Co.	Alabama	Electric	Historical	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes
	Atlanta Gas Light Co.	Georgia	Electric	Fully Forecast	No	Yes	No	Yes	No	No	Yes	Yes	Yes
	Georgia Power Co.	Georgia	Gas	Fully Forecast	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	Northern Illinois Gas Co.	Illinois	Gas	Fully Forecast	Partial	No	No	Yes	No	No	Yes	Yes	Yes
	Mississippi Power Co.	Mississippi	Electric	Fully Forecast	Partial	Yes	No	Yes	No	No	No	Yes	Yes
	Chattanooga Gas Co.	Tennessee	Gas	Historical	Partial	Yes	No	Yes	No	No	No	No	No
	Virginia Natural Gas Inc.	Virginia	Gas	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
Xcel Energy Inc.	Public Service Co. of Colorado	Colorado	Electric	Historical	Partial	No	No	Yes	No	Yes	No	No	Yes
	Public Service Co. of Colorado	Colorado	Gas	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
	Northern States Power Co.-Minnesota	Minnesota	Electric	Fully Forecast	Partial	Yes	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
	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	Yes	Yes	No	No	No	No	No
	Northern States Power Co.-Minnesota	South Dakota	Electric	Historical	Partial	No	No	Yes	Yes	No	Yes	Yes	Yes
	Southwestern Public Service Co.	Texas	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

					Non-Volumetric Rate Design		CCRM
Proxy Group Average	Fully Forecast	29		Yes	50	Yes	55
	Partially Forecast	7		No	32	No	27
	Historical	46					
	Forecast	43.90%		NVRD	60.98%	CCRM	67.07%
Minnesota Power [11]	Fully Forecasted	No	No	No	No	No	Yes	No	No	Yes

Notes:
[1] Sources: Regulatory Research Associates, effective as of July 31, 2023
[2] Sources: 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.
[3] Sources: Company Form 10-K, Company Tariffs, S&P Capital IQ Pro
[4] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[5] Equals IF(AND([2]=No, [3]=No, [4]=No), No, Yes)
[6] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[7] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[8] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[9] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[10] Equals IF(AND([6]=No, [7]=No, [8]=No, [9]=No), No, Yes)
[11] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.

COMPARISON OF MINNESOTA POWER AND PROXY GROUP COMPANIES
RRA JURISDICTIONAL RANKINGS

		[1]	[2]
		RRA	
	Operation State	Rank	Numeric Rank
Alliant Energy Corporation	Iowa	Above Average/3	3
	Wisconsin	Above Average/3	3
Ameren Corporation	Illinois	Average/2	5
	Missouri	Average/3	6
American Electric Power Company, Inc.	Arkansas	Average/1	4
	Indiana	Average/1	4
	Kentucky	Average/2	5
	Louisiana	Average/2	5
	Michigan	Above Average/3	3
	Ohio	Average/3	6
	Oklahoma	Average/2	5
	Tennessee	Above Average/3	3
	Texas	Average/3	6
	Virginia	Average/2	5
	West Virginia	Below Average/1	7
Avista Corporation	Alaska	Below Average/1	7
	Idaho	Average/2	5
	Oregon	Average/2	5
	Washington	Average/3	6
CMS Energy Corporation	Michigan	Above Average/3	3
Duke Energy Corporation	Florida	Above Average/2	2
	Indiana	Average/1	4
	Kentucky	Average/2	5
	North Carolina	Above Average/3	3
	Ohio	Average/3	6
	South Carolina	Average/3	6
	Tennessee	Above Average/3	3
Entergy Corporation	Arkansas	Average/1	4
	Louisiana (NOCC)	Average/3	6
	Louisiana	Average/2	5
	Mississippi	Above Average/3	3
	Texas	Average/3	6
Evergy, Inc.	Kansas	Below Average/1	7
	Missouri	Average/3	6
IDACORP, Inc.	Idaho	Average/2	5
	Oregon	Average/2	5
NextEra Energy, Inc.	Florida	Above Average/2	2

COMPARISON OF MINNESOTA POWER AND PROXY GROUP COMPANIES
RRA JURISDICTIONAL RANKINGS

		[1]	[2]
		RRA	
	Operation State	Rank	Numeric Rank
	Texas	Average/3	6
NorthWestern Corporation	Montana	Below Average/1	7
	Nebraska	Average/1	4
	South Dakota	Average/2	5
OGE Energy Corporation	Arkansas	Average/1	4
	Oklahoma	Average/2	5
Pinnacle West Capital Corporation	Arizona	Below Average/3	9
Portland General Electric Company	Oregon	Average/2	5
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
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	Average/3	6
	Wisconsin	Above Average/3	3
Proxy Group Average		Average/1 - Average/2	4.71
Minnesota Power	Minnesota	Average/2	5

Notes

[1] State Regulatory Evaluations, Regulatory Research Associates, 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

CAPITAL STRUCTURE ANALYSIS

		Most Recent 8 Quarters (2021Q3 - 2023Q2)			
Proxy Group Company	Ticker	Common Equity Ratio	Long-Term Debt Ratio	Preferred Equity Ratio	Total Capitalization
Alliant Energy Corporation	LNT	52.09%	47.71%	0.19%	100%
Ameren Corporation	AEE	53.17%	46.26%	0.57%	100%
American Electric Power Company, Inc.	AEP	47.90%	52.10%	0.00%	100%
Avista Corporation	AVA	61.26%	38.74%	0.00%	100%
CMS Energy Corporation	CMS	51.59%	48.21%	0.19%	100%
Duke Energy Corporation	DUK	52.80%	47.20%	0.00%	100%
Entergy Corporation	ETR	47.31%	52.59%	0.10%	100%
Evergy, Inc.	EVRG	61.10%	38.90%	0.00%	100%
IDACORP, Inc.	IDA	53.66%	46.34%	0.00%	100%
NextEra Energy, Inc.	NEE	61.26%	38.74%	0.00%	100%
NorthWestern Corporation	NWE	49.29%	50.71%	0.00%	100%
OGE Energy Corp.	OGE	53.98%	46.02%	0.00%	100%
Pinnacle West Capital Corporation	PNW	50.99%	49.01%	0.00%	100%
Portland General Electric Company	POR	45.52%	54.48%	0.00%	100%
The Southern Company	SO	54.52%	45.17%	0.31%	100%
Xcel Energy Inc.	XEL	54.44%	45.56%	0.00%	100%
Average		53.18%	46.73%	0.09%	
Median		52.98%	46.77%	0.00%	
Maximum		61.26%	54.48%	0.57%	
Minimum		45.52%	38.74%	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.