Direct Testimony and Schedules
Ms. 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-19-442

Exhibit___________

Return on Equity

November 1, 2019

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I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Ann E. Bulkley. My business address is 293 Boston Post Road West, Suite 500, Marlborough, Massachusetts 01752.

Q. What is your position with Concentric Energy Advisors, Inc. ("Concentric")?

A. I am employed by Concentric as a Senior Vice President.

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

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").

Q. Please describe your education and experience.

A. I hold a Bachelor's degree in Economics and Finance from Simmons College and a Master's degree in Economics from Boston University, with more than 20 years of experience consulting to the energy industry. I have advised numerous energy and utility clients on a wide range of financial and economic issues with primary concentrations in valuation and utility rate matters. Many of these assignments have included the determination of the cost of capital for valuation and ratemaking purposes. I have included my resume and a summary of testimony that I have filed in other proceedings as Exhibit___(AEB), Schedule 13 to this testimony.

Q. Please describe Concentric's activities in energy and utility engagements.

A. Concentric provides financial and economic advisory services to many and various energy and utility clients across North America. Our regulatory, economic, and market analysis services include utility ratemaking and regulatory advisory services; energy market assessments; market entry and exit analysis; corporate and business unit strategy development; demand forecasting; resource planning; and energy contract negotiations. Our financial advisory activities include buy and sell-side merger, acquisition and divestiture assignments; due diligence and valuation assignments; project and corporate finance services; and transaction support services. In addition, we provide litigation support services on a wide range of financial and economic issues on behalf of clients throughout North America.

Q. Have you testified before any regulatory authorities?

A. Yes. A list of proceedings in which I have provided testimony is provided in Attachment A to this testimony.

II. PURPOSE AND OVERVIEW OF DIRECT TESTIMONY

Q. What is 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")[1] and to provide an assessment of the capital structure to be used for ratemaking purposes. My analyses and recommendations are supported by the data presented in

[1] Throughout my Direct Testimony, I interchangeably use the terms "ROE" and "cost of equity".

Exhibit___(AEB), Schedules 1 through 13, which were prepared by me or under my direction.

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

A. As discussed in more detail in Section IX, I applied the Constant Growth and Two-Stage Growth forms of the Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the Risk Premium Approach and the Expected Earnings Analysis. My recommendation also takes into consideration: (1) Customer Concentration; (2) the regulatory environment in which the Company operates; (3) the Company's adjustment mechanisms; and (4) the Company's rate design. Finally, I considered the Company's proposed capital structure as compared to the capital structures of the proxy companies.[2] While I did not make specific adjustments to my ROE estimates for any of these factors, I did take them into consideration in aggregate when determining where the Company's ROE falls within the range of analytical results.

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

A. 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 Minnesota Power's cost of equity in Minnesota. Section VI

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

provides an evaluation of the regulatory framework in Minnesota and its effect on the ability of Minnesota Power to earn its authorized ROE. Section VII explains my selection of a proxy group of electric utilities. Section VIII discusses the Company's customer concentration risk and it effect on the ROE to be authorized for Minnesota Power in this case. Section IX describes my analyses and the analytical basis for the recommendation of the appropriate ROE for Minnesota Power. Section X assesses the Company's proposed capital structure as compared to the proxy group. Section XI 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. In developing my recommended ROE for Minnesota Power, I considered the following:

- The *Hope* and *Bluefield* decisions[3] that established the standards for determining a fair and reasonable allowed ROE, including consistency of the allowed return with the returns of other businesses having similar risk, adequacy of the return to provide access to capital and support credit quality, and the requirement that the result lead to just and reasonable rates.
- The effect of current and projected capital market conditions on investors' return requirements.

[3] Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944); Bluefield Waterworks & Improvement Co. v. Public Service Commission of West Virginia, 262 U.S. 679 (1923).

- The results of several analytical approaches that provide estimates of the Company's cost of equity.
- The Company's regulatory, business, and financial risks relative to the proxy group of comparable companies and the implications of those risks.

Q. Please explain how you considered those factors.

A. After considering these factors and the results of my analyses, I relied primarily on the range of results produced by the Constant Growth and Two-Growth forms of the DCF model.

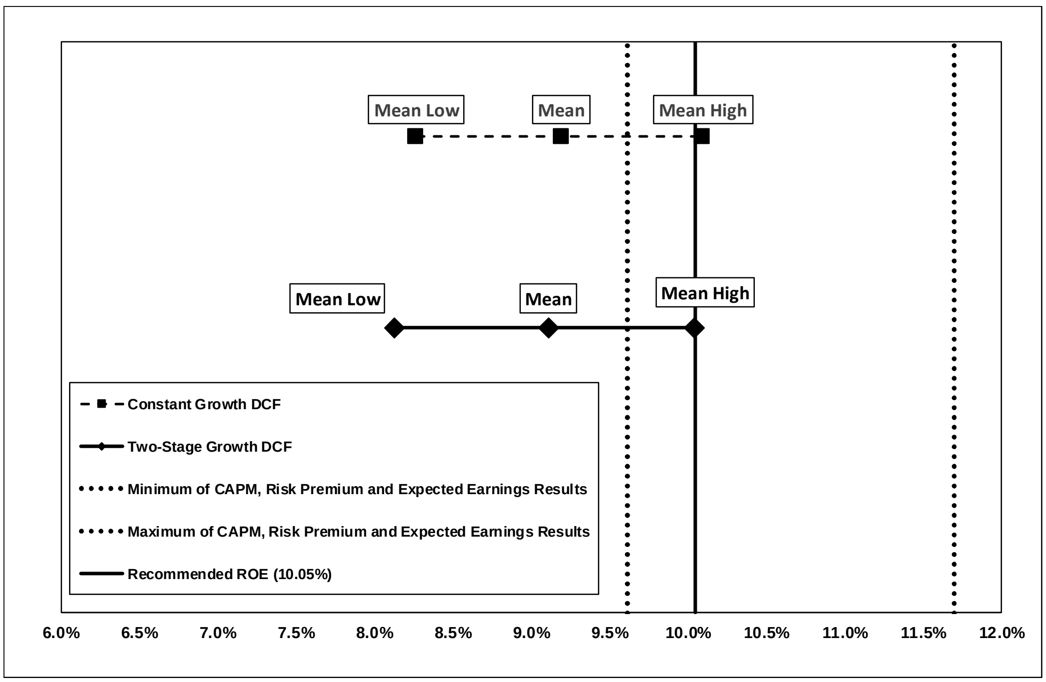
As shown in Figure 1, the Constant Growth and Two-Growth DCF models produce a wide range of results. I then used the other analytical approaches such as the CAPM, Risk Premium and Expected Earnings analyses as a check on the reasonableness of the results of the DCF models and to inform my decision as to where Minnesota Power's ROE falls.

I also considered the Company's business and financial risk relative to the proxy group in establishing the range and recommended ROE. I have selected a proxy group with similar but not identical risk profiles to Minnesota Power, and I have adjusted the results of my analysis either upwards or downwards within the reasonable range of results to account for any residual differences in risk. As will be discussed in greater detail in Section VIII below, Minnesota Power has substantially greater business risk than the proxy group as a result of the Company's high level of customer concentration risk which is reflected in the recommended range and ROE.

Q. Please summarize the results of the ROE estimation models that you considered to establish the range of ROEs for Minnesota Power.

A. Figure 1 summarizes the range of results produced by the DCF models and the overall range of results produced by the CAPM, Risk Premium and Expected Earnings analyses.

Figure 1: Summary of Cost of Equity Analytical results[4]



As shown in Figure 1 (and in Exhibit___(AEB), Schedules 6 and 7), the range of the DCF model results is wide, particularly in relation to the results of the other

4 The analytical results reflect the results of the Two-Stage Growth DCF analysis excluding the results for individual companies that did not meet the minimum threshold of 7.00 percent.

methodologies.[5] While it is common to consider multiple models to estimate the cost of equity, it is particularly important when the range of results is wide.

Furthermore, as shown in Exhibit___(AEB), Schedules 6 and 7, the mean low Constant Growth DCF results (prior to exclusions for outliers) for the proxy group range from 7.69 to 7.80 percent for the 30-, 90-, and 180-day assumption while the mean low Two-Growth DCF results (prior to exclusions for outliers) for the proxy group range from 7.83 to 7.94 percent for the 30-, 90-, and 180-day assumption. Thus, the DCF results are below any authorized ROE for an electric utility or natural gas utility in the U.S. since at least 1980.[6] Therefore, I conclude that the mean low DCF results do not provide a sufficient risk premium to compensate equity investors for the residual risks of ownership, including the risk that they have the lowest claim on the assets and income of Minnesota Power.

As a result, my ROE recommendation considers the mean and mean-high results of the Constant Growth and Two-Growth DCF models. As shown in Figure 1, relying on the range between the mean and mean-high results of the DCF models is also supported by the results of the CAPM, Bond Yield Plus Risk Premium and Expected Earnings analyses. The selected range of DCF results also considers company-specific risk factors and current and prospective capital market conditions.

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5 My DCF models generated a mean low, mean, and mean high result. The mean low result is the mean of the proxy group DCF results calculated using the lowest earnings growth rate for each company from Value Line, Yahoo! Finance or Zacks.

6 Source: Regulatory Research Associates, Rate Case History, January 1, 1980 – August 31, 2019.

Q. What is your recommended ROE for Minnesota Power?

A. In addition to the analytical results presented in Figure 1, I also considered the level of regulatory, business, and financial risk faced by Minnesota Power's electric operations in Minnesota relative to the proxy group to establish the range of reasonable returns. Specifically, I considered Minnesota Power's high degree of customer concentration, which poses a significant risk to the Company that is not reflected in the mean results using the proxy group since the companies in the proxy group rely on more diverse customer bases. The additional risk supports a recommendation towards the high-end of the range of results. The range of the results is from 9.75 to 10.10 percent. The high end of this range is bounded by the results of the Two-Growth DCF model. The Company is requesting a return of 10.05 percent, which reflects the relative risk of Minnesota Power's electric operations in Minnesota as compared to the proxy group, and current capital market conditions and is a reasonable estimate of the investor-required ROE for Minnesota Power.

Q. Please describe the approach recently employed by the Commission for determining a company's ROE.

A. Historically, the Commission has relied largely on the mean result of the Two-Growth DCF analysis using a proxy group of comparable companies to determine the authorized ROE for the subject company.[7] However, in its most recent Orders for Minnesota Power, Otter Tail Power Company ("Otter Tail") and Minnesota

[7] Docket No. G008/GR-15-424, Findings of Fact, Conclusions and Order, at 43 (June 3, 2016).

Energy Resources Corporation ("MERC"), the Commission has recognized the short-comings of such a mathematical approach and strict reliance on a single methodology. Instead, the Commission has considered additional factors and analyses. For example, in its most recent order for Otter Tail, the Commission awarded an authorized ROE that was equal to the midpoint between the mean and mean-high results of the Two-Growth DCF model.[8] In support of the decision, the Commission noted that:

> [t]he 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.[9]

The Commission cited a similar approach in its most recent order for Minnesota Power where the awarded ROE was also set above the mean results of the Two-Growth DCF model. In that order, the Commission concluded that:

> it is appropriate to establish an ROE toward the higher end of the DCF-supported results to adjust for the divergence between ROEs supported by the DCF models and the models the Commission has historically relied upon for confirmation

8 Docket No. E017/GR-15-1033, Findings of Fact, Conclusions and Order, at 55 (May 1, 2017).
9 *Ibid.*

> of reasonableness—the CAPM and Bond Yield Plus Risk Premium models.[10]

Finally, in its most recent Order for MERC, 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.[11] In that case, the Commission authorized an ROE of 9.70 percent and noted that the authorized ROE was "comfortably between the mean growth-rate and high-growth-rate two-growth DCF results calculated by both MERC and the OAG in surrebuttal testimony."[12]

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

A. Yes, it is. As discussed above, I relied primarily on the range of results produced by the Constant Growth DCF model and the Two-Growth DCF model, which is the model that has been relied on historically by the Commission. Then, similar to recent Commission decisions, I used the results of other analytical approaches such as the CAPM, Risk Premium and Expected Earnings analyses as a check on the reasonableness of the DCF results and to determine where the Company's ROE should fall. As shown in Figure 1, the other analytical approaches produced a range of 9.61 percent to 11.70 percent. Again, consistent with the Commission's recent decisions, I also considered the Company's business and financial risk relative to

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[10] Docket No. E015/GR-16-664, Findings of Fact, Conclusions and Order, at 61 (Mar. 12, 2018).

[11] Docket No. G011/GR-17-563, Findings of Fact, Conclusions and Order, at 26 (Dec. 26, 2018).

[12] Docket No. G011/GR-17-563, Findings of Fact, Conclusions and Order, at 27 (Dec. 26, 2018).

the proxy group in my conclusion as to where the Company's ROE falls.[13] The Company selected an ROE of 10.05 percent which, based on these analyses, is reasonable if not conservative.

Q. Please summarize the analysis you conducted in determining that Minnesota Power's requested capital structure is reasonable and appropriate.

A. Based on the analysis presented in Section X of my testimony, I conclude that Minnesota Power's proposed 53.81 percent common equity is reasonable. To determine if Minnesota Power's requested capital structure was reasonable, I reviewed the capital structures of the utility subsidiaries of the proxy companies. As shown in Exhibit ___(AEB), Schedule 11, the results of that analysis demonstrate that the average equity ratios for the utility operating companies of the proxy group range from 47.29 percent to 56.81 percent with an average of 52.63 percent. Comparing the recommended equity ratio to the proxy group demonstrates that the requested equity ratio is only slightly above the average equity ratio for the utility operating subsidiaries of the proxy group companies and well below the high-end of the proxy group range. Further, the Company's proposed equity ratio is reasonable considering that federal tax reform legislation has had a negative effect on the cash flows and credit metrics of regulated utilities.

[13] Docket No. E017/GR-15-1033, Findings of Fact, Conclusions and Order, at 55 (May 1, 2017). Docket No. G011/GR-17-563, Findings of Fact, Conclusions and Order, at 26 (Dec. 26, 2018).

IV. REGULATORY GUIDELINES

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

A. The United States Supreme Court's precedent-setting *Hope* and *Bluefield* cases established the standards for determining the fairness or reasonableness of a utility's allowed ROE. Among the standards established by the Court in those cases are: (1) consistency with other businesses having similar or comparable risks; (2) adequacy of the return to support credit quality and access to capital; and (3) the principle that the result reached, as opposed to the methodology employed, is the controlling factor in arriving at just and reasonable rates.[14]

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

A. Yes, it has. In its most recent order in Docket No. G011/GR-17-563 for MERC, the Commission cited Minnesota Statute Section 216B.16, subd. 6, which states that:

> [i]n 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

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

> service to the public, *and to earn a fair and reasonable return upon the investment in such property*.[15]

Additionally, 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."[16] This guidance is in accordance with the *Hope* and *Bluefield* decisions and the principles that I employed to estimate the ROE for the Company, including the principle that an allowed rate of return must be sufficient to enable regulated companies like Minnesota Power to attract capital on reasonable terms.

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

A. An ROE that is adequate to attract capital at reasonable terms enables the Company to continue to provide safe, reliable electric service while maintaining its financial integrity. To the extent the Company is provided the opportunity to earn its market-based cost of capital, neither customers nor shareholders are disadvantaged.

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

A. Yes. Utilities compete directly for capital with other investments of similar risk, which include other natural gas and electric utilities. Therefore, the ROE awarded to a utility sends an important signal to investors regarding whether there is

[15] Docket No. G011/GR-17-563, Findings of Fact, Conclusions and Order, at 23 (Dec. 26, 2018).
[16] *Ibid.*

regulatory support for financial integrity, dividends, growth, and fair compensation for business and financial risk. The cost of capital represents an opportunity cost to investors. If higher returns are available for other investments of comparable risk, investors have an incentive to direct their capital to those investments. Thus, an authorized ROE significantly below authorized ROEs for other natural gas and electric utilities can inhibit the utility's ability to attract capital for investment in Minnesota.

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

A. Yes. In its Order in Docket No. E-001/GR-10-276 for Interstate Power and Light Company ("IPL"), the Commission noted a previous Order where it explained the following:

> While the probative value of ROEs set in other jurisdictions is limited because the record does not allow the Commission to assess the differing regulatory circumstances affecting those awards, they do provide some window to national context and, as such, can serve a limited function as a check on reasonableness.[17]

In its decision, the Commission also considered the ROE that at the time IPL had just been authorized in Iowa by the Iowa Utilities Board. Specifically, the Commission stated that "[w]hile the helpfulness of other commissions' decisions is very limited by the fact-intensive nature of utility regulation, the decision does offer a reality check of sorts."[18] Therefore, the Commission has considered the

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[17] Docket No. E001/GR-10-276, Findings of Fact, Conclusions and Order, at 11 (Aug. 12, 2011).
[18] *Ibid.*

returns that have been authorized nationally as well the returns that have been authorized for other subsidiaries of the subject company's parent company in other jurisdictions. This should also be an important consideration for the Commission in the current case.

Q. What are your conclusions regarding regulatory guidelines?

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 services, a utility must have the opportunity to recover the return of, and the market-required return on, its invested capital. Because utility operations are capital-intensive, regulatory decisions should enable the utility to attract capital at reasonable terms under a variety of economic and financial market conditions; doing so balances the long-term interests of the utility and its ratepayers.

The financial community carefully monitors the current and expected financial condition of utility companies, and the regulatory framework in which they operate. In that respect, the regulatory framework is one of the most important factors in both debt and equity investors' assessments of risk. The Commission's order in this proceeding, therefore, should establish rates that provide the Company with the opportunity to earn an ROE that is: (1) adequate to attract capital at reasonable terms under a variety of economic and financial market conditions; (2) sufficient to ensure good financial management and firm integrity; and (3) commensurate with returns on investments in enterprises with similar risk. To the extent Minnesota

Power is authorized the opportunity to earn its market-based cost of capital, the proper balance is achieved between customers' and shareholders' interests.

V. CAPITAL MARKET CONDITIONS

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

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

As discussed in the remainder of this section, analysts and regulatory commissions have concluded that current market conditions have affected the results of the ROE estimation models. As a result, it is important to consider the effect of these conditions on the ROE estimation models when determining the appropriate range and recommended ROE for a future period. If investors do not expect current market conditions to be sustained in the future, it is possible that the ROE 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) the current market uncertainty has resulted in valuations of utility stocks that are at historically high levels, which has an inverse relationship to dividend yields; (2) current market uncertainty, its current effect on interest rates and long-term expectations for interest rates; and (3) recent Federal tax reform. In this section, I discuss each of these factors and how it affects the models used to estimate the cost of equity for regulated utilities.

A. The Effect of Market Conditions on Valuations

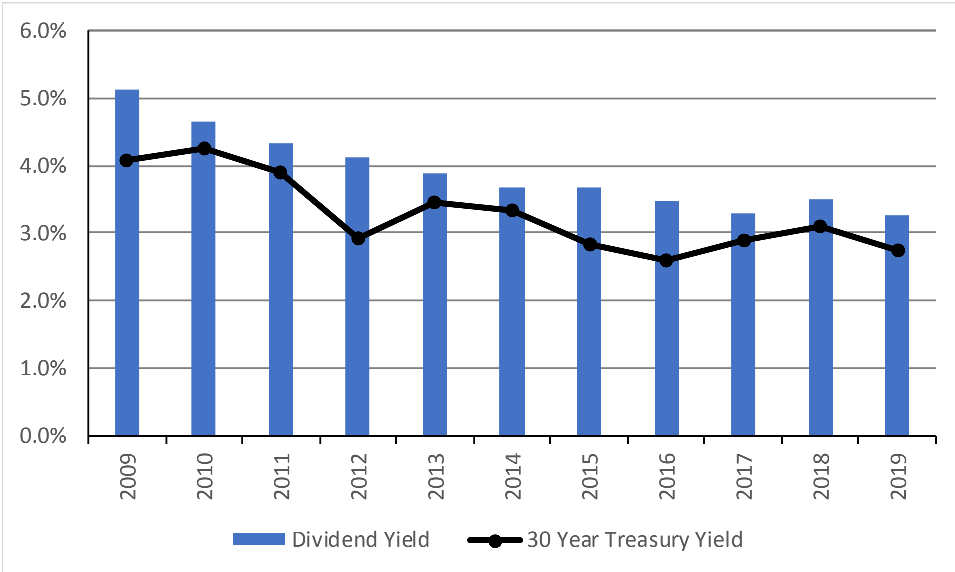
Q. How has the Federal Reserve's monetary policy affected capital markets in recent years?

A. Extraordinary and persistent federal intervention in capital markets artificially lowered government bond yields after the Great Recession of 2008-2009, as the Federal Open Market Committee ("FOMC") used monetary policy (both reductions in short-term interest rates and purchases of Treasury bonds and mortgage-backed securities) to stimulate the U.S. economy. As a result of very low or zero returns on short-term government bonds, yield-seeking investors have been forced into longer-term instruments, bidding up prices and reducing yields on those investments. As investors have moved along the risk spectrum in search of yields that meet their return requirements, there has been increased demand for dividend-paying equities, such as natural gas and electric utility stocks.

Q. How have recent market conditions affected the valuation and dividend yields of utility shares?

A. The Federal Reserve's accommodative monetary policy has caused investors to seek alternatives to the historically low interest rates available on Treasury bonds. A result of this search for higher yield is that the share prices for many common stocks, especially dividend-paying stocks such as utilities, have been driven higher while the dividend yields (which are computed by dividing the dividend payment by the stock price) have decreased to levels well below the historical average. As shown in Figure 2, over the period from 2009 through 2019, which is the period in which the Federal Reserve has intervened to stabilize financial markets and support the economic recovery after the Great Recession of 2008-09, Treasury bond yields and utility dividend yields have declined. Specifically, Treasury bond yields declined by approximately 118 basis points, and electric utility dividend yields have declined by about 182 basis points over this same period.

Figure 2: Dividend Yields for Electric Utility Stocks[19]



Q. Have equity analysts commented on the valuations of utility stocks?

A. Yes. Several equity analysts have recognized that utility stock valuations are very high relative to historical levels. In the electric utilities industry report, Value Line noted the high valuations:

> Most electric utility equities have fared very well in 2019. In fact, many issues have risen in price by more than 15%. There are some exceptions. The prices of Exelon and AVANGRID stocks are virtually unchanged due to worsening conditions in the power markets for Exelon and disappointing earnings for AVANGRID. On the other hand, the price of Southern Company stock has surged more than 30%. Investors have apparently become more comfortable with the progress the company's Georgia Power subsidiary is making in the construction of two nuclear units.
>
> Why are most issues in this industry faring so well? The expectation of continued low interest rates has prompted many investors to ''reach for yield'' by purchasing utility stocks for their generous dividends. However, this has driven the

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[19] Source: Bloomberg Professional. Figure 2 includes 2019 data through August 30, 2019.

> valuation of utility stocks to unusually high levels. For many years, utility equities' price-earnings ratios were at a premium to the market only if earnings were depressed. Now, most utility stocks have a relative price-earnings ratio above 1.0—significantly above that figure, in some cases. The average dividend yield of stocks in the Electric Utility Industry is just 3.25%, which is low, by historical standards. Moreover, the recent quotations of most utility stocks are well within their 2022-2024 Target Price Range.[20]

This is further supported by a recent Edward Jones report on the utility sector:

> Utility valuations have climbed back to record levels as 10-year Treasury bond rates have fallen back below 2%. On a price-to-earnings basis, [utility stocks] remain significantly above their historical average, and have been trading near all-time highs. We have seen utility valuations moving in line with interest rate movements, although there have been exceptions to this. Overall, however, we believe the low-interest rate environment has been the biggest factor in pushing utilities higher since many investors buy them for their dividend yield.
>
> Utilities recently hit new all-time highs, and are still trading significantly above their average price-to-earnings ratio over the past decade. The premium valuation continues to reflect not only the low interest rate environment, but also the stable and predominantly regulated earnings growth we foresee.[21]

As noted by Value Line and Edward Jones, over the last few years, utility stocks have experienced high valuations and low dividend yields, driven by investors moving into dividend paying stocks from bonds due to the low interest rates in the bond market. Value Line and Edward Jones recognize that if interest rates increase, bonds become a substitute for utility stocks, which results in an increase in dividend yields. This change in market conditions that is expected over the long-term

[20] Value Line Investment Survey, Electric Utility (East) Industry, August 16, 2019, at 135.

[21] Andy Pusateri and Andy Smith. Edward Jones, Utilities Sector Outlook (August 19, 2019), at 2-3. [Reference to figure omitted.]

implies that the ROE calculated using historical market data in the DCF model may understate the forward-looking cost of equity.

Furthermore, recently, Bank of America Merrill Lynch recently commented on the risks of underperformance for certain utilities based on concerns about the valuation of the sector, in particular the concern that the current premium on share prices may be largely unwarranted.[22]

Q. What is the effect of high valuations on utility stocks on the DCF model?

A. High valuations have the effect of depressing the dividend yields, which results in overall lower estimates of the cost of equity resulting from the DCF model.

Q. How do the valuations of public utilities compare to the historical average?

A. Figure 3 summarizes the average historical and projected P/E ratios for the proxy companies calculated using data from Bloomberg Professional and Value Line.[23] As shown in Figure 3, the average P/E ratio for the proxy companies increased from 2018 to 2019 as a result of uncertainty in the market surrounding the trade dispute between the U.S, and China. The uncertainty has resulted in investors shifting to defensive sectors such as utilities and consumer staples. This has driven the prices of utility stocks and thus the P/E ratios to unsustainable levels. Currently, the P/E ratio for the proxy companies is 20.26 for 2019 which is well above the average for the period of 2000-2019 of 15.29. It is not reasonable to expect the proxy

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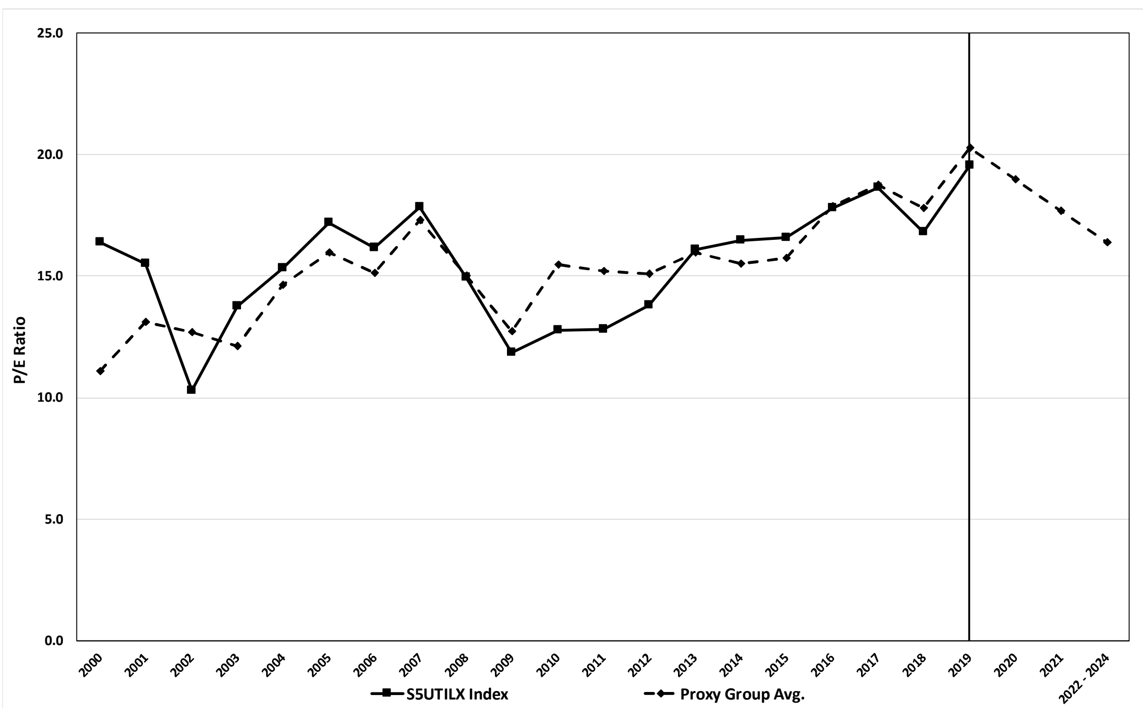
22 BofAML, American Water Works AWKward valuation: Downgrading premium utility to underperform, July 15, 2019. BofAML, Eversource Energy, Reiterating our Underperform: Shares pricey relative to few updates, July 15, 2019.

23 Selection of the Proxy Companies is discussed in detail in Section VII of my Direct Testimony.

companies to maintain P/E ratios that are well above long-term averages over the long-term. As shown in Figure 3, Value Line is projecting that P/E ratios will decline over the period of 2019 through 2022. All else equal, if P/E ratios for the proxy companies decline, as Value Line projects, the ROE results from the DCF model would be higher. Therefore, the DCF model using historical market data is likely understating the forward-looking cost of equity for the proxy group companies.

Figure 3: Average Historical Proxy Group P/E Ratios[24]



[24] Bloomberg Professional, Data through August 30, 2019 and Value Line Investment Survey, June 14, 2019 and August 16, 2019.

Q. Have you reviewed any other market indicators that compare the current valuation of utilities to the historical average?

A. Yes. To further assess how the currently low interest rate environment has affected the valuations of the companies in my proxy group, I reviewed the price/earnings to growth ("PEG") ratio for the S&P Utilities Index. The PEG ratio is commonly used by investors to determine if a company is considered over- or under-valued. The ratio compares the P/E ratio of a company to the expected growth rate of future earnings. This allows investors to compare companies with similar P/E ratios but different earnings growth projections. If two companies have a P/E ratio of 20, but Company A is growing at a rate of 6 percent and Company B is growing at a rate of 15 percent, then on a relative valuation basis Company B is the better investment.

As shown on page 7 of Exhibit __(AEB), Schedule 12, which is a report published by Yardeni Research, Inc., the PEG ratio for the S&P Utilities Index is significantly higher than it has historically been because of the accommodative monetary policy pursued by the Federal Reserve following the Great Recession of 2008/09.[25] While the PEG ratio has declined in recent years due to the Federal Reserve's shift to normalize monetary policy, the PEG ratio for the S&P Utilities Index is still above the historical average. In general, stocks with lower long-term PEG ratios are considered better values. As the PEG ratio increases above the long-term historical average, as has been the case with the S&P Utilities Index, then the stocks are

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25 Yardeni Research, Inc. "S&P 500 Industry Briefing: Utilities." September 3, 2019, https://www.yardeni.com/pub/if-sut.pdf, p. 5.

considered relatively over-valued unless the growth rate increases to support the higher valuation. The PEG ratio for the S&P Utilities Index as of August 2019 is close to 4.2, which indicates that many of the stocks contained in the index are currently trading at levels well above the historical average. This analysis supports the P/E Ratio projections produced by Value Line, which as noted above, are projecting the P/E ratios of utilities to decline over the near-term.

Q. How do equity investors view the utilities sector based on these recent market conditions?

A. Investment advisors have suggested that utility stocks may underperform as a result of market conditions. Bloomberg recently noted that the valuations of defensive sector stocks such as utilities have reached record levels which could result in sector rotation as investors question the sustainability of the high valuations. Specifically, Bloomberg explained that:

> The prospect of easier monetary policy is adding fuel to a mammoth rally in bond proxy shares like real estate companies and utilities. Investors betting on a growth slowdown are ramping up premiums for U.S. defensive stocks to the most in six years, as high-quality equities in Europe also notch fresh records. Companies that post reliable earnings -- growth stocks -- are at a two-decade high versus value shares.
>
> In other words, the late-cycle conundrum is spurring some of the biggest equity market schisms across Europe and the U.S. in decades, and it's prompting warnings a rotation is nigh. Now signs are emerging that the smart money and key-name funds are cutting exposures to expensive defensives.[26]

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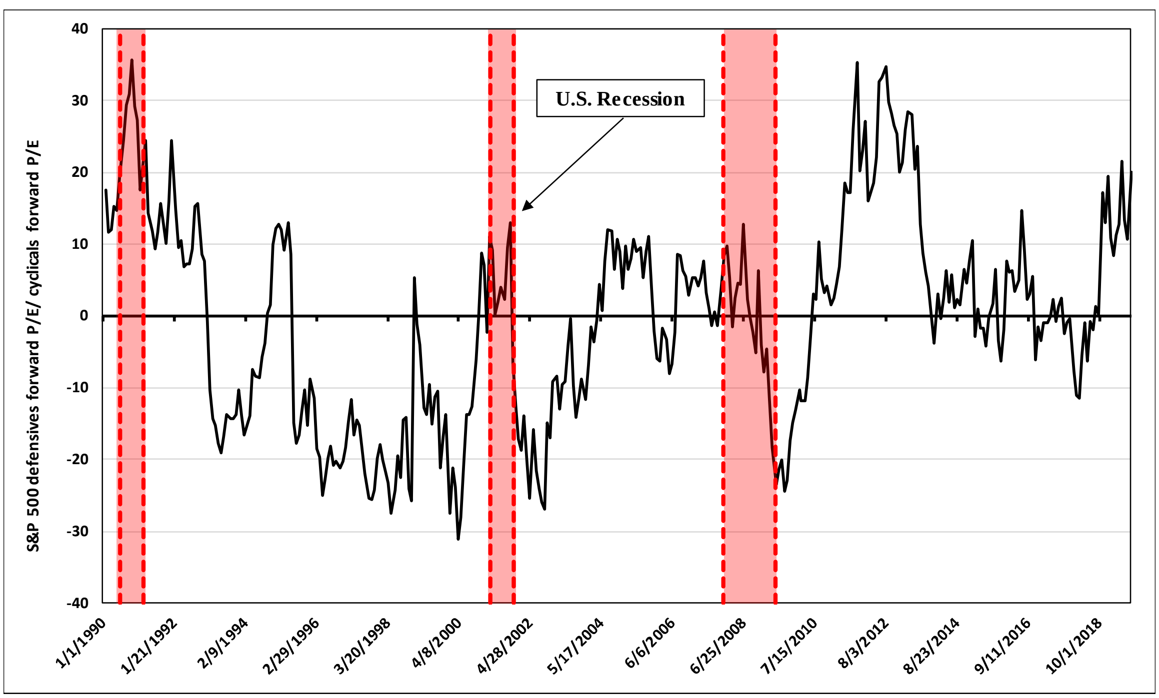
[26] Lee, Justina. "Stock Investors Torn as Defensive Bets Go `Absolutely Parabolic'." Bloomberg.com, Bloomberg, 24 June 2019, www.bloomberg.com/news/articles/2019-06-24/stock-investors-torn-as-defensive-bets-go-absolutely-parabolic.

Moreover, Bloomberg highlighted the high valuations of defensive sector stocks by comparing the forward P/E ratio of defensive sector stocks in the S&P 500 to the forward P/E ratio of cyclical sector stocks in the S&P 500. This comparison is shown in Figure 4 below. As shown in this figure, the ratio of the forward P/E of S&P 500 defensive sector stocks to S&P 500 cyclical sector stocks is currently approximately 20.00, well above the average from 1990 to 2019 of -0.40. Thus, defensive sector stocks are currently trading at a very high premium over cyclical sectors stocks indicating that the valuations of defensive sectors such as utilities are currently too high.

Figure 4: Forward P/E Ratio Comparison of the S&P 500 defensive sector to the S&P 500 cyclical sector[27]



[27] Bloomberg Professional, Data through August 30, 2019.

Q. Have regulators recently responded to the historically low dividend yields for utility companies and the corresponding effect on the DCF model?

A. Yes. As I discuss in more detail later in my testimony, the Federal Energy Regulatory Commission ("FERC") recently proposed a methodology that reflects their current view that investors rely on multiple ROE estimation models. The FERC's proposed methodology includes an equal weighting of the DCF, CAPM, Expected Earnings and Risk Premium models to better reflect investor behavior and capital market conditions.[28]

In addition, the Illinois Commerce Commission ("ICC"), the Pennsylvania Public Utility Commission ("PPUC") and the Missouri Public Service Commission ("Missouri PSC") have all considered the effect of low dividend yields on the DCF results in recent decisions.

B. The Current and Expected Interest Rate Environment

Q. Please provide a brief summary of the recent monetary policy actions of the Federal Reserve.

A. At its September 2019 meeting, the Federal Reserve recently acknowledged the implications of global developments on the U.S. economic outlook and therefore, lowered the federal funds rate by 25 basis points which resulted in a range of 1.75 percent to 2.00 percent.[29] Thus, the Federal Reserve has reduced the federal funds

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[28] Federal Energy Regulatory Commission, Docket No. EL 11-66-001, et al., Order Directing Briefs, issued October 16, 2018, at para. 32.

[29] FOMC, Federal Reserve press release, September 18, 2019.

rate twice in 2019. However, it is important to view the recent Fed policy decisions in the context of the reactions to the trade dispute between the U.S. and China and longer-term fundamentals. Prior to the Federal Reserve recently lowering the federal funds rate in July and September of 2019, the Fed raised the short-term borrowing rate in 25-basis-point increments on four occasions in 2018 based on stronger conditions in employment markets, a relatively stable inflation rate, steady economic growth, and increased household spending. Since December 2015, the Federal Reserve increased interest rates nine times, bringing the federal funds rate to the range of 2.25 percent to 2.50 percent, before the recent two reductions.

The ongoing trade dispute has affected the global economy and caused a rise in volatility in the financial markets. As a result, the Federal Reserve is continuing to examine and evaluate the effect the trade dispute is having on economic growth and will pursue a monetary policy agenda that sustains the economic expansion and satisfies the Federal's Reserve's goals of price stability and full employment. As Chairman Powell noted in his press conference following the September 2019 meeting:

> Today's decision to lower the federal funds rate target by ¼ percent to 1¾ to 2 percent is appropriate in light of the global developments I mentioned, as well as muted inflation pressures. Since our last meeting, we have seen additional signs of weakness abroad and a resurgence of trade policy tensions, including the imposition of additional tariffs. The Fed has no role in the formulation of trade policy, but we do take into account anything that could materially affect the economy relative to our employment and inflation goals.

> The future course of monetary policy will depend on how the economy evolves and what developments imply for the economic outlook and risks to the outlook. We have often said that policy is not on a preset course, and that is certainly the case today. As I have noted, the baseline economic outlook remains positive. The projections of appropriate policy show that participants generally anticipate only modest changes in the federal funds rate over the next couple of years. Of course, those views are merely forecasts and, as always, will evolve with the arrival of new information.[30]

In regard to the trade dispute with the U.S. and China, Chairman Powell acknowledged the volatility that the dispute has caused in the market:

> Well, what we do going forward is very much going to depend, Rich, on the flow of data and information. We've seen, you know, if you look at the things we're monitoring, particularly global growth and trade develops, global growth has continued to weaken. I think it's weakened since our last meeting. Trade developments have been up and down and then up, I guess, or back up perhaps, over the course of this intervening period. In any case, they've been quite volatile. So, we do see those risks as actually more heightened now. We're going to be watching that carefully. We're also going to be watching the U.S. data quite carefully, and we'll have to make an assessment as we go.[31]

Q. Have you reviewed any market indicators that measure uncertainty in the market related to U.S. Trade Policy?

A. Yes, I have. I reviewed the U.S. trade policy uncertainty index developed by economists Scott Baker, Nicholas Bloom and Steven Davis. The index measures the frequency that articles in U.S. publications discuss economic policy uncertainty and reference trade policy.[32] As shown in Figure 5, uncertainty regarding U.S.

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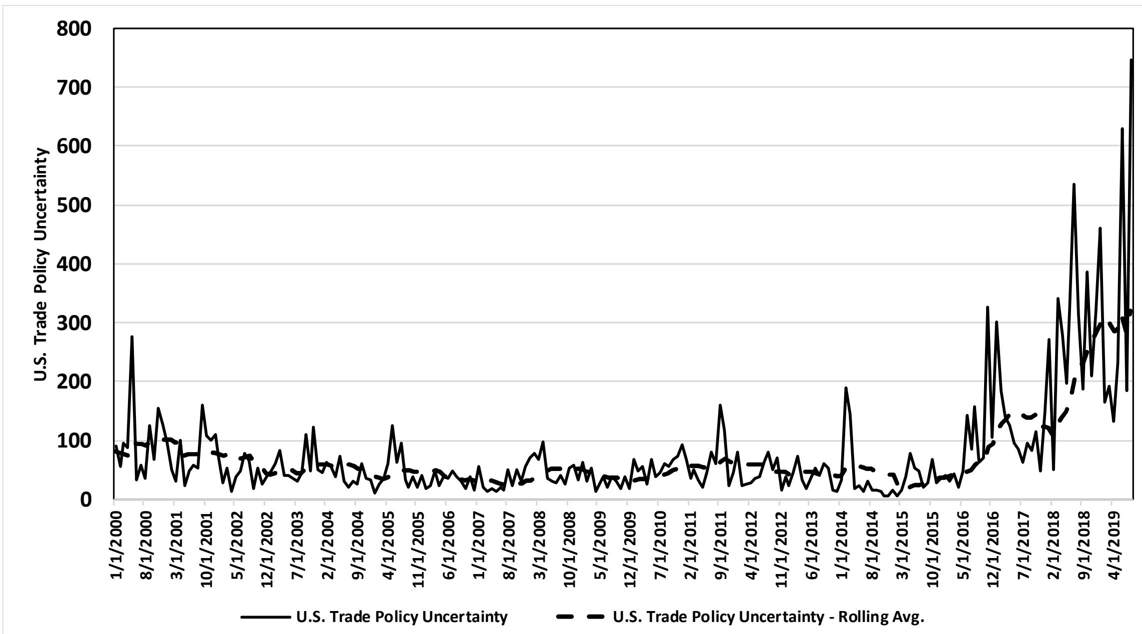
[30] FOMC, Transcript of Chairmen Powell's Press Conference, September 18, 2019, at 3.
[31] *Id.*, at 6
[32] Source: Economic Policy Uncertainty: https://www.policyuncertainty.com/index.html.

trade policy is at its highest level since at least 2000, with the largest increase occurring in the last two years as a result of the escalating trade dispute between the U.S. and China.

Figure 5: U.S. Trade Policy Uncertainty Index



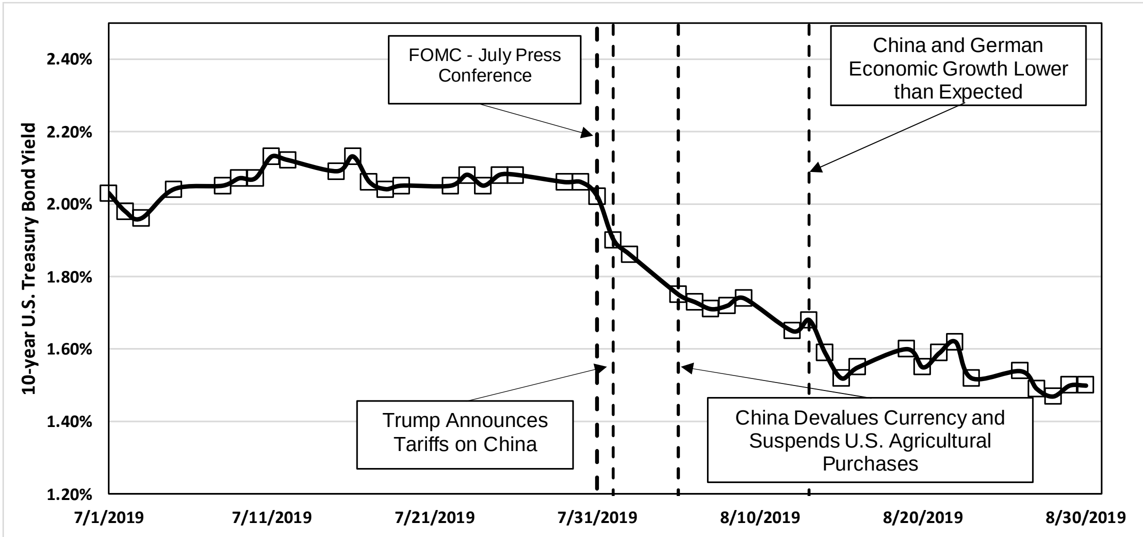
Q. How have the trade dispute with China and the recent uncertainty in the market affected the yields on long-term government bonds?

A. The uncertainty surrounding the trade dispute between the U.S. and China has resulted in a flight-to-quality as investors have purchased safer assets such as U.S. Treasuries due to increased fears of a possible recession. This has been increasingly evident over the past few months as investors responded to news of increases in tariffs by both China and the U.S.

To illustrate the recent reactions of investors, I have conducted an event study of the yield on the 10-year U.S. Treasury bond since July 1, 2019. As shown in Figure 6, the yield on the 10-year U.S. Treasury Bond was relatively stable for the month of July; however, the yield decreased by approximately 50 basis points from the end of July to the middle of August. The recent decline was due to investors responding to events associated with the trade dispute. For example, the market reacted negatively to Chairmen Powell's comments following the FOMC meeting at the end of July and President Trump's announcement that the U.S. was going to impose tariffs on the remaining set of goods imported from China. The two events accounted for an approximately 25 basis point decrease in the yield on the 10-year Treasury between July 30, 2019 and August 5, 2019. This led Bloomberg to note in a recent article that the volatility in the market on any given day is being determined more and more by the words and actions of Chairmen Powell, President Trump and the President of China, Xi Jinping.[33]

[33] Regan, Michael P. "Powell Speaks, Trump Tweets, China Reacts, Markets Freak. Repeat." Bloomberg.com, Bloomberg, 8 Aug. 2019, www.bloomberg.com/news/articles/2019-08-08/powell-speaks-trump-tweets-china-reacts-markets-freak-repeat.

Figure 6: 10-year U.S. Treasury Bond Yield

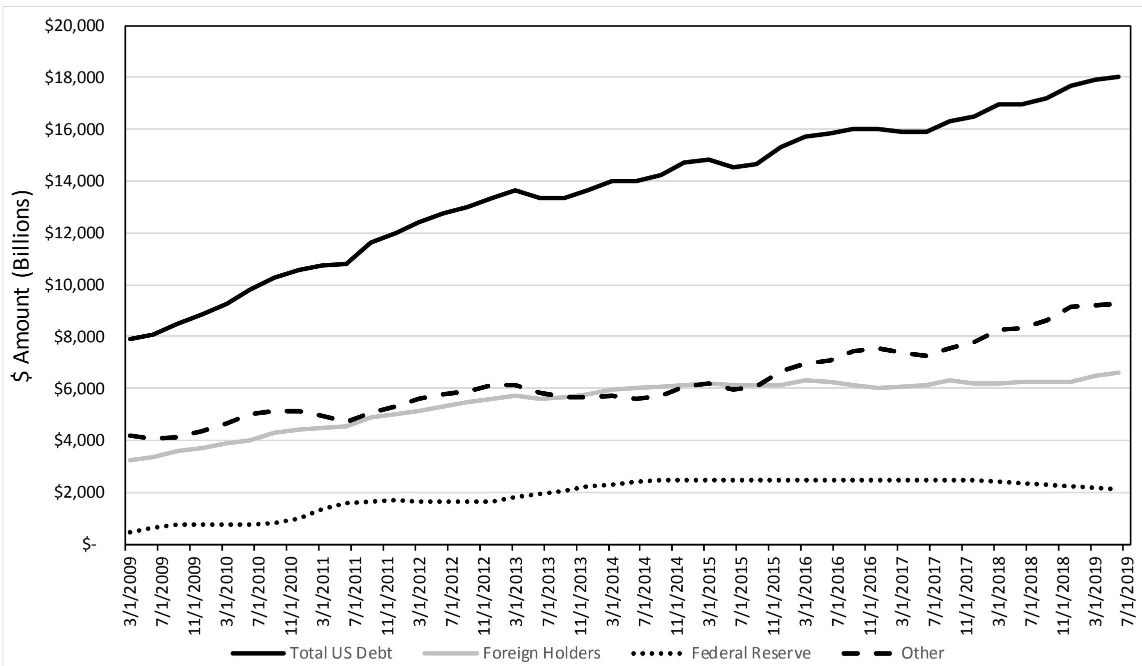


Q. Is the recent decline in long-term government bond yields as a result of U.S. trade policy uncertainty indicative of the long-term outlook for the yields on long-term government bonds?

A. No, it is not. While the yields on long-term government bonds have decreased recently, this is not indicative of a long-term trend. It is more indicative of a shift in the type of investors purchasing the long-term government bonds. As shown in Figure 7, the total amount of debt owned by the Federal Reserve and Foreign Holders has been relatively stable or slightly declining over the past few years while the demand from private sector investors has been increasing. This is important because private sector investors are more price-sensitive and more likely to respond quickly to changes that occur in the market. This explains the decline in long-term government bond yields in the recent months as investors react to the uncertain economic conditions due to the trade dispute between the U.S. and China. As a result, long-term yields could increase quickly if an agreement is reached between the U.S. and China. For example, Kiplinger recently noted:

> Long rates [sic] are likely to stay in the low 2% range for now but may pick back up if the trade war relents. We expect that 10-year Treasury notes could rise to the mid-to-upper 2% range from today's 2.1%.[34]

Figure 7: Ownership of U.S. Debt – 2009 - 2019[35]



Q. What are your conclusions regarding the current interest rate environment and its effect on the cost of equity for Minnesota Power?

A. As discussed above, investors have responded to the recent escalation in the trade war between the U.S. and China by divesting higher-risk assets and purchasing

[34] Payne, David. "Short-Term Rates Falling in Anticipation of Fed Rate Cut." www.kiplinger.com, Kiplingers Personal Finance, 13 June 2019, www.kiplinger.com/article/business/T019-C000-S010-interest-rate-forecast.html.

[35] Bloomberg Professional, Data through August 30, 2019.

lower-risk assets such as U.S. Treasury bonds. However, the trade dispute between the U.S. and China is not expected to continue over the long-term. In fact, given the increase in price-sensitive investors purchasing U.S. Treasury bonds, if a trade deal were to be reached, it is likely the yields on long-term government bonds would increase substantially. As interest rates increase, the cost of equity for the proxy companies using the DCF model is likely to be an overly-conservative estimate of investors' required returns because the proxy group average dividend yield reflects the increase in stock prices that resulted from substantially lower interest rates. As such, rising interest rates support the selection of a return well above the mean ROE estimate resulting from the DCF analysis. Alternatively, my CAPM and Bond Yield Plus Risk Premium analyses include estimated returns based on near-term projected interest rates, reflecting investors' expectations of market conditions over the period that the rates established in this proceeding will be in effect.

C. Effect of Tax Reform on the ROE and Capital Structure

Q. Are there other factors that should be considered in determining the cost of equity for Minnesota Power?

A. Yes. The effect of the Tax Cuts and Jobs Act ("TCJA") should also be considered in the determination of the cost of equity. The credit rating agencies have commented on the effect of the TCJA on regulated utilities. In summary, the TCJA has reduced utility revenues due to the lower federal income taxes, the end of bonus depreciation, and the requirement to return excess Accumulated Deferred Income

Taxes ("ADIT") to customers. This change in revenue has reduced Funds From Operations ("FFO") metrics across the sector, and absent regulatory mitigation strategies, has led to weaker credit metrics and negative ratings actions for some utilities.[36]

Q. Have credit or equity analysts commented on the effect of the TCJA on utilities?

A. Yes. Each of the credit rating agencies has indicated that the TCJA would have an overall negative credit impact on regulated operating companies of utilities and their holding companies due to the reduction in cash flow that results from the change in the federal tax rate and the loss of bonus depreciation.

Moody's noted the rates that regulators allow utilities to charge customers is based on a cost-plus model, with tax expense being one of the pass-through items. Utilities will collect less taxes at the lower rate, reducing revenue and FFO.[37] In the near term, FFO and FFO-based credit metrics will be negatively impacted for the many utilities that do not currently pay cash taxes. In addition, with the loss of bonus depreciation, the timing of future cash tax payments will be accelerated, all else being equal, which will have a negative effect on utility cash flows and will

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[36] FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector", January 24, 2018.

[37] In the June 2018 report, Moody's noted that the cash flow analysis consists of three primary measures, including: cash flow from operations (CFO), funds from operations (FFO) and CFO before changes in working capital. For purposes of the June 2018 report, Moody's references FFO due to the forecast scenarios' focus on Net Income, Depreciation and Deferred Taxes (including regulatory liabilities associated with deferred taxes).

ultimately negatively impact the utilities' ability to fund ongoing operations and capital improvement programs.

In Standard & Poor's ("S&P") 2019 trends report, the rating agency notes that the utility industry's financial measures weakened in 2018 and attributed that to tax reform, capital spending and negative load growth. In addition, S&P expects that weaker credit metrics will continue into 2019 for those utilities operating with minimal financial cushion. S&P further expects that these utilities will look to offset the revenue reductions from tax reform with equity issuances. The rating agency reported that in 2018 regulated utilities issued nearly $35 billion in equity, which is more than twice the equity issuances in either 2016 or 2017.[38]

FitchRatings ("Fitch") also indicated that any ratings actions will be guided by the response of regulators and the management of the utilities. Fitch notes that the solution will depend on the ability of utility management to manage the cash flow implications of the TCJA. Fitch offered several solutions to provide rate stability and to moderate changes to cash flow in the near term, including increasing the authorized ROE and/or equity ratio.[39]

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[38] Standard & Poor's Ratings, "Industry Top Trends 2019, North America Regulated Utilities", November 8, 2018.

[39] FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector", January 24, 2018.

Q. How has Moody's responded to the increased risk for utilities resulting from the TCJA?

A. In January 2018, Moody's issued a report changing the rating outlook for several regulated utilities from Stable to Negative.[40] Moody's noted that the rating change affected companies with limited cushion in their ratings for deterioration in financial performance. In June 2018, Moody's issued a report in which the rating agency downgraded the outlook for the entire regulated utility industry from Stable to Negative for the first time ever, citing ongoing concerns about the negative effect of the TCJA on cash flows of regulated utilities. While noting that "[r]egulatory commissions and utility management teams are taking important first steps"[41] and that "we have seen some credit positive developments in some states in response to tax reform,"[42] Moody's concludes that "we believe that it will take longer than 12-18 months for the majority of the sector to show any material financial improvement from such efforts."[43] Beginning in mid-2018, Moody's began downgrading several utilities. Figure 8 summarizes credit rating downgrades for utilities that have at least partially resulted from tax reform.

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40 Moody's Investor Service, Global Credit Research, Rating Action: Moody's changes outlooks on 25 US regulated utilities primarily impacted by tax reform, January 19, 2018.

41 Moody's Investors Service, "Regulated utilities – US: 2019 outlook shifts to negative due to weaker cash flows, continued high leverage", June 18, 2018, at 3.

42 *Ibid.*

43 *Ibid.*

Figure 8: Credit Rating Downgrades with TCJA as Noted Factor

Utility	Rating Agency	Credit Rating before TCJA	Credit Rating after TCJA	Downgrade Date
DTE Gas Company	Moody's	A2	A3	7/22/2019
South Jersey Gas Company	Moody's	A2	A3	7/17/2019
Central Hudson Gas & Electric	Moody's	A2	A3	7/12/2019
Oklahoma Gas & Electric Company	Moody's	A2	A3	5/31/2019
American Water Works	Moody's	A3	Baa1	4/1/2019
Niagara Mohawk Power Corporation	Moody's	A2	A3	3/29/2019
KeySpan Gas East Corporation (KEDLI)	Moody's	A2	A3	3/29/2019
Xcel Energy	Moody's	A3	Baa1	3/28/2019
ALLETE, Inc.	Moody's	A3	Baa1	3/26/2019
Brooklyn Union Gas Company (KEDNY)	Moody's	A2	A3	2/22/2019
Avista Corp.	Moody's	Baa1	Baa2	12/30/2018
Consolidated Edison Company of New York	Moody's	A2	A3	10/30/2018
Consolidated Edison, Inc.	Moody's	A3	Baa1	10/30/2018
Orange and Rockland Utilities	Moody's	A3	Baa1	10/30/2018
Southwestern Public Service Company	Moody's	Baa1	Baa2	10/19/2018
Dominion Energy Gas Holdings	Moody's	A2	A3	9/20/2018
Piedmont Natural Gas Company, Inc.	Moody's	A2	A3	8/1/2018
WEC Energy Group, Inc.	Moody's	A3	Baa1	7/12/2018
Integrys Holdings Inc.	Moody's	A3	Baa1	7/12/2018
OGE Energy Corp.	Moody's	A3	Baa1	7/5/2018
Oklahoma Gas & Electric Company	Moody's	A1	A2	7/5/2018

Q. Has the Company experienced a downgrade related to cash flow metrics resulting from tax reform?

A. Yes. As shown in Figure 8 above, ALLETE was downgraded in March of 2019. Moody's downgrade of ALLETE was due mainly to the financial impact of the decision in Minnesota Power's last rate case and in part to the cash flow effects of the passage of tax reform in December 2017.[44] Specifically, Moody's noted:

[44] Moody's Investors Service, Rating Action: Moody's downgrades ALLETE to Baa1 and affirms Superior Water and Power at A3, outlooks stable, March 26, 2019.

> In January 2018, Minnesota Power (MP) completed its first general rate case in seven years. The regulatory order approved a $12.6 million rate increase that was materially lower than the company's original $55 million original request. It was also well below the $35 million interim rate increase levied on rate payers shortly after the case was filed, leading to a net reduction in customer rates. The order also denied MP certain credit supportive cost recovery mechanisms which are available to other utilities in Minnesota, and a rate true-up mechanism that would have mitigated MP's exposure to the earnings volatility associated with its large industrial customer base.
>
> Although ALLETE has taken actions to reduce its operating and maintenance expenses to mitigate the lower approved revenues, we don't expect the cost containment measures to be sufficient to offset the negative cash flow impact of both the rate case outcome and the passage of federal tax reform in December 2017. Our forecasts project cash flow pre-working capital to debt falling to about 20%, below the 22% downgrade threshold we had previously indicated for the maintenance of an A3 rating, for the foreseeable future.[45]

The downgrade of ALLETE by Moody's highlights the fact that the financial performance of ALLETE is heavily reliant on the financial performance of its operating division Minnesota Power. As Moody's noted in its recent credit option on ALLETE, Minnesota Power accounts for approximately 75 percent of ALLETE's consolidated net income.[46] Thus, it is important that Commission authorize an ROE and equity ratio for Minnesota Power in this proceeding that is considered credit supportive so as to avoid the possibility of future credit downgrades for ALLETE.

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[45] Ibid.

[46] Moody's Investors Service, Credit Opinion: ALLETE, Inc. Update following downgrade, April 3, 2019, at 3.

Q. Is it reasonable to expect that investors have included the negative effects of the TCJA on the cash flows of utilities in their valuation models?

A. Not entirely. It is reasonable to expect that investors have reviewed the reports published by the credit rating agencies such as Moody's, S&P and Fitch and are therefore considering the effects of the TCJA. However, utilities are still managing the negative effects of the TCJA and are working with regulators to determine appropriate solutions to mitigate the effect of the TCJA on cash flows. As Moody's noted in its November 2018 report, the TCJA is expected to continue to have a near-term effect on the cash flows of utilities, which resulted in Moody's negative outlook on the industry for 2019.[47] Furthermore, as shown in Figure 8, Moody's is continuing to evaluate the effect of the TCJA on the cash flows of individual utilities. As part of the credit evaluation, rating agencies are specifically considering the recent rate case decisions of utilities to determine if the results of these cases help to mitigate the effect of the TCJA on cash flows. Therefore, the credit rating agencies appear to be continuing to monitor the effects of the TCJA on utilities.

Q. Have state regulatory commissions considered market events and the utility's ability to attract capital in determining the equity return?

A. Yes. In a recent rate case for Consumers Energy Company in Michigan, Case No. U-18322, Staff recommended a 9.80 percent ROE based on the results of the DCF,

[47] Moody's Investors Service, Research Announcement: Moody's: US regulated utilities sector outlook for 2019 remains negative, November 8, 2018.

CAPM and Risk Premium approaches, which was supported by the Administrative Law Judge ("ALJ").[48] However, in its Order issued on March 29, 2018, the Michigan Public Service Commission ("Michigan PSC") partly disagreed with the ALJ and Staff regarding expected market conditions and authorized a 10.00 percent ROE for Consumers Energy Company. The Michigan PSC noted that:

> [i]n setting the ROE at 10.00%, the Commission believes there is an opportunity for the company to earn a fair return during this period of atypical market conditions. This decision also reinforces the Commission's belief that customers do not benefit from a lower ROE if it means the utility has difficulty accessing capital at attractive terms and in a timely manner. The fact that other utilities have been able to access capital despite lower ROEs, as argued by many intervenors, is also a relevant consideration. It is also important to consider how extreme market reactions to singular events, as have occurred in the recent past, may impact how easily capital will be able to be accessed during the future test period should an unforeseen market shock occur. The Commission will continue to monitor a variety of market factors in future rate cases to gauge whether volatility and uncertainty continue to be prevalent issues that merit more consideration in setting the ROE.[49]

The Michigan PSC references "singular events" and the overall effect the events could have on the ability of a utility to access capital. Consistent with the Michigan PSC's views, it is important to consider that the TCJA has had a negative effect on the cash flows of utilities. In addition, it is important to consider this reduced cash flow in the context of overall market conditions when determining the appropriate ROE and equity ratio to enable Minnesota Power the ability to attract capital. As a

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[48] Michigan Public Service Commission Order, Cause No. U-18322, Consumers Energy Company, March 29, 2018, at 37.

[49] *Id.*, at 43.

result, it is important that the Commission authorize an ROE that will allow Minnesota Power to attract capital at reasonable terms during the period that rates will be in effect.

Q. What conclusions do you draw from your analysis of capital market conditions?

A. The important conclusions resulting from capital market conditions are:

- The assumptions used in the ROE estimation models have been affected by recent historical market conditions.
- Recent market conditions are not expected to persist as yields on long-term bonds are expected to increase. As a result, the recent historical market conditions do not reflect the market conditions that will be present when the rates for Minnesota Power will be in effect.
- It is important to consider the results of a variety of ROE estimation models, using forward-looking assumptions to estimate the cost of equity.
- Without adequate regulatory support, the TCJA will have a negative effect on utility cash flows, which increases investor risk expectations for utilities.

VI. MINNESOTA REGULATORY ENVIRONMENT

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 the opportunity to recover the return of, and the market-required return on, invested capital. Regulatory authorities recognize that because utility operations are capital intensive, regulatory decisions should enable the utility to attract capital at reasonable terms; doing so balances the long-term interests of investors and customers. Utilities must finance their operations and require the opportunity to earn a reasonable return on their invested capital to maintain their financial profiles. Minnesota Power is no exception. 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 their near-term financial obligations, make the capital investments needed to maintain and expand their 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 the ability to attract capital under a variety of economic and financial market conditions.

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. Please explain how 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.[50]

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."[51] S&P identifies four specific factors that it uses to assess the credit implications of the regulatory jurisdictions of investor-owned regulated

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

[51] Standard & Poor's Global Ratings, Ratings Direct, U.S. and Canadian Regulatory Jurisdictions Support Utilities' Credit Quality—But Some More So Than Others, June 25, 2018, at 2.

utilities: (1) regulatory stability; (2) tariff-setting procedures and design; (3) financial stability; and (4) regulatory independence and insulation.[52]

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."[53] Moody's further highlighted the relevance of a stable and predictable regulatory environment to a utility's credit quality, noting: "[b]roadly speaking, the Regulatory Framework is the foundation for how all the decisions that affect utilities are made (including the setting of rates), as well as the predictability and consistency of decision-making provided by that foundation."[54]

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52 *Id.*, at 1.

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

54 *Ibid*.

Q. Have you conducted any analysis of the regulatory framework in Minnesota relative to the jurisdictions in which the companies in your proxy group operate?

A. Yes. I have evaluated the regulatory framework in Minnesota on four 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) method for determining rate base (i.e., average vs. year-end); 3) use of revenue decoupling mechanisms or other clauses that mitigate volumetric risk; and 4) prevalence of capital cost recovery between rate cases. The results of this regulatory risk assessment are shown in Exhibit___(AEB), Schedule 2 and are summarized below.

Test year convention: Minnesota Power uses a forecast test year in Minnesota which is similar to the proxy group. As shown in Exhibit___(AEB), Schedule 2 approximately 62.50 percent of the companies in the proxy group use forecast or partially forecast test year.

Rate Base: The Company's rate base in Minnesota is determined based on the average of the beginning and ending test year rate base balances, while 68.75 percent of the operating companies held by proxy group are allowed to use year-end rate base, meaning that the rate base includes capital additions that occurred throughout the test year and is more reflective of net utility plant going forward.

Volumetric Risk: Minnesota Power does not have protection against volumetric risk in Minnesota, either through a revenue decoupling mechanism or a weather normalization clause. By comparison, 46.88 percent of the operating companies held by the proxy group have some form of protection against volumetric risk.

Capital Cost Recovery: Minnesota Power does have a capital tracking mechanism to recover certain transmission and renewable investments and expenditures between rate cases. However, the capital cost recovery mechanisms only account for a small portion of total projected capital expenditures for 2020-2024. Moreover, 65.63 percent of the operating subsidiaries held by the proxy group companies have some form of capital cost recovery mechanism in place.

Q. Do you have any additional observations regarding the volumetric risk associated with a Company's rate design?

A. Yes. The majority of an electric utility's costs are fixed costs that were incurred to construct the system of transporting and delivering electricity to customers. As such, most of a utility's costs are fixed and do not vary with energy consumption. However, most rates especially for the residential rate class are designed to recover a large portion of a utility's fixed costs in the energy charge. Since a customer's usage varies from year to year, the more fixed costs recovered in the energy charge, the higher the volatility of annual cost recovery. Therefore, cost recovery for utilities that have higher customer charges are less susceptible to fluctuations in usage and are more likely to recover their cost to serve.

Furthermore, the design of an energy charge can also directly affect the volatility of fixed cost recovery. For example, for the residential rate class, an energy change can be designed as an inclining, declining or flat block rate structure. A block rate structure is considered: (a) inclining if the energy charge increases as the amount of energy consumed increases; (b) flat if the energy charge is the same for all levels of energy usage; and (c) declining if the energy charges decreases as the amount of energy consumed decreases. A utility with an inclining block rate design would be more susceptible to variability in earnings associated with year-to-year fluctuations in usage since a larger portion of fixed costs would be recovered from the higher usage blocks.

Q. Have you developed any additional analyses to evaluate the effect of rate design on the volumetric risk of Minnesota Power?

A. Yes. As discussed above, it is important to also review the size of the customer charges and structure of the energy charges when assessing the volumetric risk of Minnesota Power as compared to the proxy group. Therefore, for the residential rate class, I have compared the level of the customer charge and the design of the energy charge (i.e., inclining, declining and flat) of Minnesota Power and the operating subsidiaries of the companies in the proxy group. As shown in Exhibit___(AEB), Schedule 3, Minnesota Power has a residential customer charge of $8.00 while the average customer charge for the utility operating companies of the proxy group range from $2.78 to $20.00 with an average of $10.48. Moreover, approximately 80.00 percent of the operating subsidiaries held by the proxy group companies have either a flat or declining block rate structure for the residential energy charge. Therefore, Minnesota Power has much greater volumetric risk as compared to the proxy group as a result of the Company's inclining block structure for residential rate design.

Q. Have any credit rating agencies commented on the regulatory environment in Minnesota?

A. Yes. As discussed in Section V above, Moody's downgraded ALLETE from A3 to Baa1 for reasons that included the less than favorable outcome in the Company's last rate case in Minnesota. Moody's viewed Minnesota Power's recent rate case decision as credit negative for reasons which included: (1) the below average authorized ROE of 9.25 percent which resulted in a reduction of approximately $20 million between the requested and approved revenue requirement; (2) the disallowance of certain expenses such as prepaid pension expenses; and (3) the decision to not adopt the annual rate review mechanism ("ARRM") which if adopted would have mitigated the effect of industrial customers scaling back production in response to changes in economic conditions.[55] Furthermore, Moody's noted that the disallowance of expenses already incurred resulted in Minnesota Power cutting operating expenses in order to earn the Company's

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[55] Moody's Investors Service, Credit Opinion: ALLETE, Inc. Update following downgrade, April 3, 2019, at 3.

authorized ROE.[56] For these reasons, Moody's concluded that while the Company has access to ratemaking mechanisms such as a forward test year and various riders, the ratemaking mechanisms are offset by the rate case outcome which indicates a less than supportive regulatory relationship between Minnesota Power and the Commission.[57]

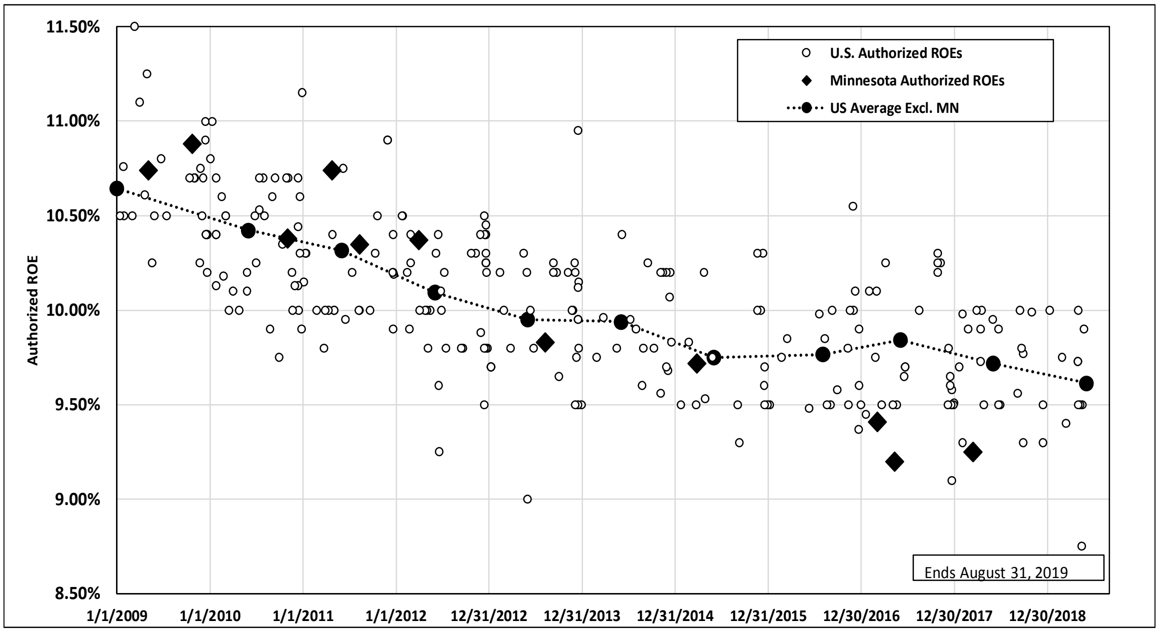
Q. How do recent returns in Minnesota compare to the authorized returns in other jurisdictions?

A. Figure 9 below shows the authorized returns for vertically integrated electric utilities in other jurisdictions since January 2009, and the returns authorized in Minnesota for electric companies. As shown in Figure 9, the authorized returns for electric companies in Minnesota were consistent with the national average for vertically integrated electric utilities between 2009 and 2012; however, between 2013 and 2018, the authorized returns for electric utilities in Minnesota were consistently below the national average and at the bottom of the range produced by the authorized ROEs from other state jurisdictions. Although, it is important to note, in the Commission's most recent decision for MERC in Docket No. G011/GR-17-563, the Commission authorized a ROE of 9.70 percent.[58] While the authorized ROE was for a natural gas case, the 9.70 percent ROE authorized for

56 *Ibid*.
57 *Ibid*.
58 Docket No. G011/GR-17-563, Findings of Fact, Conclusions and Order, at 27 (Dec. 26, 2018).

MERC is relatively consistent with the average authorized ROE for vertically integrated electric utilities in other jurisdictions in 2018.

Figure 9: Comparison of Minnesota and U.S. Authorized Electric Returns



Q. Do you have any additional comments regarding the authorized ROEs for vertically integrated electric utilities in other jurisdictions?

A. Yes. As shown in Figure 9, there were only four instances between January 1, 2009 and August 31, 2019 where a utility has been authorized an ROE less than the 9.25 percent ROE that Minnesota Power was authorized in the Company's last rate proceeding. However, it is important to note the following regarding the rate case decisions for each of the four companies:

- In May 2013, the Hawaii Public Utilities Commission ("Hawaii PUC") issued an order in Docket No. 2011-0092 where the Hawaii PUC authorized Maui Electric Company an ROE of 9.00 percent; however, the 9.00 percent ROE included a 50 basis point reduction for system inefficiencies that negatively affected customers.[59]

- In June 2017, the Commission issued an order in Docket No. E-002/GR-15-826 for Northern States Power Company Minnesota where the Commission adopted a partial settlement that included an authorized ROE of 9.20 percent.[60]
- In December 2017, the Vermont Public Utility Commission ("Vermont PUC") issued an order in Docket No. 17-3112-INV for Green Mountain Power where the Vermont PUC approved a settlement in the rate case which included an ROE of 9.10 percent.[61]
- In May 2019, the South Dakota Public Utilities Commission ("SDPUC") issued an order in Docket No. EL18-021 for Otter Tail Power Company where the SDPUC authorized Otter Tail Power Company an ROE of 8.75 percent.[62] However, it is important to note that the SDPUC approved a partial settlement where all of the issues except ROE had been settled in the rate case so the ROE was the only fully litigated issue.[63]

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59 Maui Electric Company, Docket No. 2011-0092, Order No. 31288, at 97-112 (May 31, 2013).
60 Docket No. E002/GR-15-826, Findings of Fact, Conclusions and Order, at 10-11 (June 12, 2017).
61 Green Mountain Power, Case No. 17-3112-INV, Order, December 21, 2017, at 14-16 (Dec. 21, 2017).
62 Otter Tail Power Company, Docket No. EL 18-021, Final Decision and Order, at 8 (May 30, 2019).
63 Otter Tail Power Company, Docket No. EL 18-021, Direct Testimony and Schedules of Bruce Gerhardson, at 10 (April 20, 2018).

Therefore, of the four cases where the company's authorized ROE was lower than the authorized ROE of Minnesota Power, one included a penalty to the ROE for performance and the remaining three were the result of either full or partial settlements. Settled rate cases are the result of a give-and-take among negotiating parties regarding multiple complex issues; therefore, a settlement must be analyzed in its entirety. As a result, the authorized ROE of a settled rate case does not provide an appropriate comparison point for the fully litigated authorized ROE of 9.25 percent for Minnesota Power.

Q. What does this information indicate regarding the level of allowed ROEs for electric utilities in Minnesota versus the returns authorized in other jurisdictions?

A. From 2013 to 2018, the Commission's authorized ROEs for electric utilities were below the average authorized return on equity for the U.S. This is likely to be the result of the Commission's primary reliance on the results of the DCF analysis to determine a company's authorized ROE. The recently authorized ROE of 9.70 percent for MERC in Docket No. G011/GR-17-563 was consistent with the average authorized ROE for both electric and natural gas utilities in the U.S.; however, it is important to note that while the Commission placed primary weight on the results of the Two-Growth DCF model, the Commission noted that the authorized return was supported by (a) the Two-Growth DCF results developed by each of the parties in the case; (b) the results of the other analytical approaches; and (c) other contextual data that was contained in the record.[64] Therefore, the Commission considered all of the data presented in the case in arriving at the authorized ROE for MERC. The consideration of multiple approaches and additional data resulted in an authorized ROE that was consistent with the returns authorized for utilities in other jurisdictions.

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, Minnesota operating divisions must compete for capital within their own corporate structure, which must in turn compete for capital with other utilities and businesses. 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 in Sections V and IX, the historically low interest rates on Treasury bonds have resulted in high valuations of utility stocks which has reduced dividend yields and therefore the ROE results produced by the DCF model. However, given that the valuations of utilities are expected to decline over the period in which Minnesota Power's rates will be in effect, the results of the DCF model will underestimate an investor's expected ROE. As a result, it is important that the Commission consider, as it did in Docket No. G011/GR-17-563, the results

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64 *Ibid.*

of alternative methods such as the forward looking CAPM, Bond Yield Plus Risk Premium and Expected Earnings analyses and the returns that have been authorized by other electric utilities across the U.S.

Q. How should the Commission use the information regarding authorized ROEs in other jurisdictions in determining the ROE for Minnesota Power?

A. As discussed above, the companies in the proxy group operate in multiple jurisdictions across the U.S. Since Minnesota Power must compete directly for capital with investments of similar risk, it is appropriate to review the authorized ROEs in other jurisdictions. The comparison is important because investors are considering the authorized returns across the U.S. and are likely to invest equity in those utilities with the highest returns. Furthermore, investors are also likely to consider business and financial risks for a company like Minnesota Power which faces increased risk as a result of the composition of the Company's customer base. Therefore, authorizing an ROE for Minnesota Power that is equivalent to the average authorized ROE for other vertically integrated electric utilities is not sufficient to compensate investors for the added risk of Minnesota Power. As such, it is important that the Commission consider, as I have in my recommendation, the additional risk of Minnesota Power and place the authorized ROE for Minnesota Power towards the high end of authorized ROEs for other vertically integrated electric utilities.

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 slightly more timely cost recovery through forecasted test years, year-end rate base, cost recovery trackers and revenue stabilization mechanisms than Minnesota Power has in Minnesota. While Minnesota Power utilizes a forecasted test year, the Company has substantial volumetric risk given the rate design of the residential rate class and the fact that the Company does not have a revenue decoupling mechanism. In addition, as discussed above, the returns authorized in Minnesota for electric utilities have generally been below the average authorized returns for vertically integrated electric utilities in other jurisdictions across the U.S. Thus, 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 well above the proxy group mean.

VII. PROXY GROUP SELECTION

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

A. In this proceeding, we are focused on estimating the cost of equity for an electric utility company that is not itself publicly traded. Because the cost of equity is a market-based concept and given that 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 Minnesota Power in certain fundamental business and financial respects to serve as its "proxy" in the ROE estimation process.

Even if Minnesota Power was a publicly-traded entity, it is possible that transitory events could bias its market value over a given period. A significant benefit of using a proxy group is that it moderates the effects of unusual events that may be associated with any one company. The proxy companies used in my analyses all possess a set of operating and risk characteristics that are generally comparable to the Company, and thus provide a reasonable basis to derive and estimate the appropriate ROE for Minnesota Power.

Q. Please provide a brief profile of Minnesota Power.

A. Minnesota Power is an electric utility that is an operating division of ALLETE. The Company provides electric utility service to approximately 145,000 retail customers in Minnesota.[65] As of December 31, 2018, Minnesota Power's net utility electric plant was approximately $3.1 billion.[66] In addition, Minnesota Power had 2018 electric operating revenues of $1.02 billion, made up of 11.40 percent residential, 12.85 percent commercial, 42.13 percent industrial and mining, 26.87

[65] ALLETE, Inc., 2018 SEC Form 10-K, at 8.
[66] FERC Form 1, 2018 Q4 at 110, line 14.

percent sales for resale, and 6.75 percent other which includes provisions for rate refunds.[67] Furthermore, Minnesota Power's electric operations represented approximately 68 percent of ALLETE's total operating revenues in 2018.[68] Minnesota Power's electric operations are a part of ALLETE's integrated electric system in Minnesota. In 2018, approximately 58 percent of Minnesota Power's net generation needs were satisfied by its owned and joint owned facilities while the remaining 42 percent was purchased power.[69] Additionally, approximately 75 percent of the energy generated by Minnesota Power came from coal-fired power plants in 2018.[70] ALLETE currently has an investment grade long-term rating of BBB+ (Outlook: Negative) from S&P and Baa1 (Outlook: Stable) from Moody's.[71]

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

A. I began with the group of 39 companies that Value Line classifies as Electric Utilities and applied the following screening criteria to select companies that:

- pay consistent quarterly cash dividends, because companies that do not pay a dividend cannot be analyzed using the Constant Growth DCF model;
- have positive long-term earnings growth forecasts from at least two utility industry equity analysts;

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67 Electric Jurisdictional Annual Report, Minnesota Power, 2018.
68 FERC Form 1, 2018 Q4 at 114, line 2 and at 123.69.
69 FERC Form 1, 2018 Q4 at 401a, lines 9-10.
70 FERC Form 1, 2018 Q4 at 401a, lines 3, 9.
71 SNL Financial, September 26, 2019.

- have investment grade long-term issuer ratings from both S&P and Moody's;
- own regulated generation assets that are included in rate base;
- have more than 35 percent of owned regulated generation capacity come from regulated coal-fired power plants;
- derive more than 70 percent of their total operating income from regulated operations;
- derive more than 80 percent of their total regulated operating income from regulated electric operations; and
- were not parties to a merger or transformative transaction during the analytical periods relied on.

Q. What is the composition of your proxy group?

A. The screening criteria discussed above is shown in Exhibit___(AEB), Schedule 4 and resulted in a proxy group consisting of the companies shown in Figure 10 below.

Figure 10: Proxy Group

Company	Ticker
Ameren Corporation	AEE
American Electric Power Company, Inc.	AEP
DTE Energy Company	DTE
FirstEnergy Corporation	FE
Evergy, Inc.	EVRG
OGE Energy Corporation	OGE
Otter Tail Corporation	OTTR
PPL Corporation	PPL

VIII. BUSINESS RISKS

Q. Do the mean DCF, CAPM, Risk Premium and Expected Earnings results for the proxy group, taken alone, provide an appropriate estimate of the cost of equity for Minnesota Power?

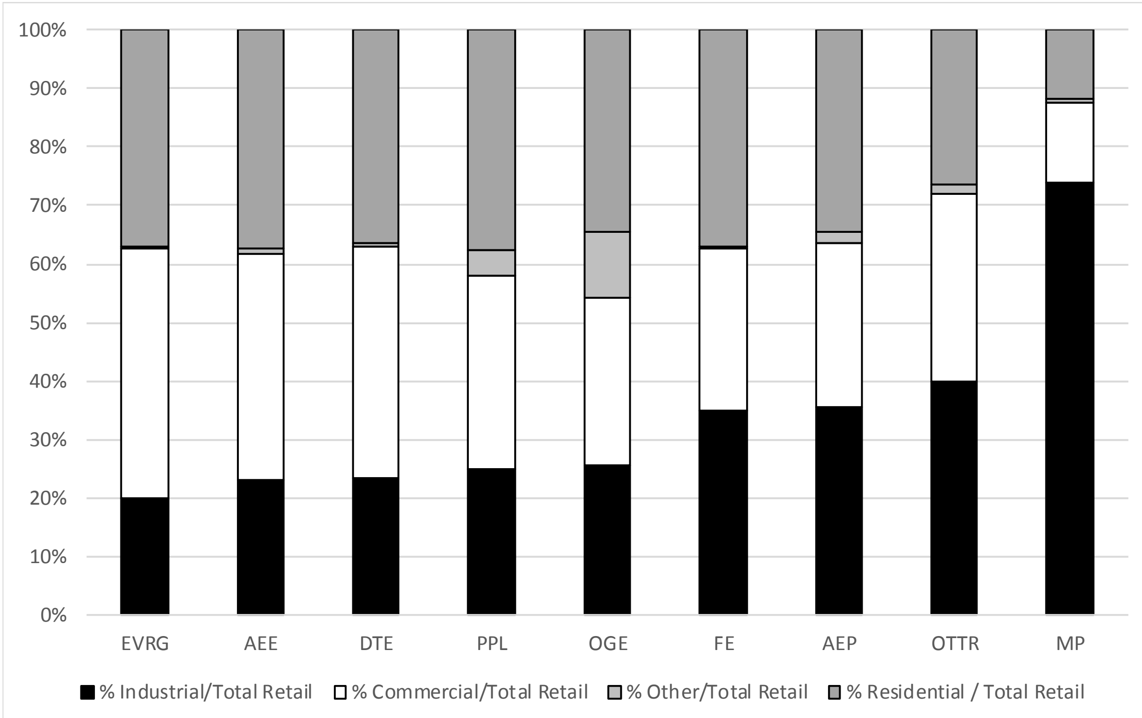
A. No. While the companies in the proxy group are generally comparable to Minnesota Power, it is important to consider the specific business and financial risk profiles of the proxy group companies and the subject. Therefore, I use the results of the ROE estimation models to provide a range of the appropriate estimate of the Company's cost of equity and then adjust the range of results to reflect any differences in risk between the Company and the proxy group. For Minnesota Power, it is particularly important to consider the Company's high degree of customer concentration and its overall effect on the Company's risk profile and ROE.

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

A. Approximately 73.97 percent of Minnesota Power's 2018 total retail electric sales in Minnesota were derived from industrial customers. As shown in Figure 11, 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.[72]

[72] Does not include "other" or residential customers.

Figure 11: Customer Concentration[73]



Q. How does customer concentration affect business risk?

A. An extremely high concentration of industrial customers, operating in two industries, each with the independent ability to create large swings in utility revenues, results in higher business risk. Since the customers are large, they can represent a significant portion of a company's sales which could be lost if a customer goes out of business or switches suppliers. As noted by Dhaliwal, Judd, Serfling and Shaikh in their article, *Customer Concentration Risk and the Cost of Equity Capital*:

> Depending on a major customer for a large portion of sales can be risky for a supplier for two primary reasons. First, a supplier

[73] Source: SNL Financial - Other sales includes: Total Public Street and Highway Lighting, Other Sales to Public Authorities, Sales to Railroad and Railways, and Interdepartmental Sales.

> 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).[74]

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.[75]

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 and paper manufacturing. Taconite processing is highly dependent on economic conditions and the business cycle as taconite is an input into steel which is used in durable consumer goods. Paper manufacturing

[74] Dhaliwal, Dan S., 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.

[75] *Id.,* at 4.

companies (i.e., paper mills) are also facing decreased demand as companies are moving away from printed materials and instead providing information electronically.

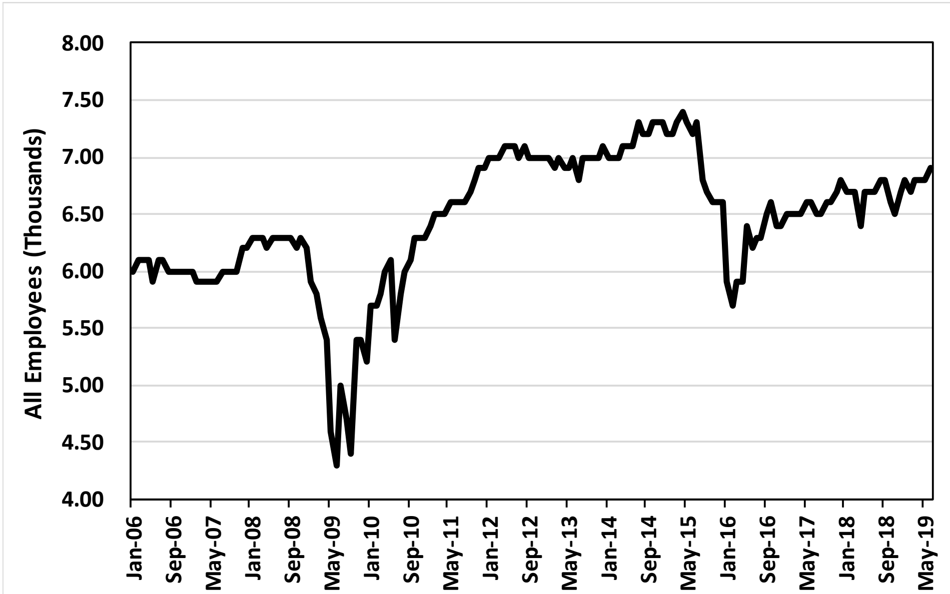
Q. How has mining and logging employment faired in recent economic conditions?

A. As shown in Figure 12, total mining and logging employment in Minnesota has been volatile, decreasing 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 in the Large Power Customer Outlook and Case Overview Direct Testimonies of Company witness Frank L. Frederickson, Minnesota Power provides service to all 6 of Minnesota's taconite plants and 4 pulp and paper mills, which produce a variety of graphic paper and pulp to serve U.S. and global markets. These 10 large industrial customers represent approximately 56 percent of the Company's total energy sales and approximately 50 percent of the Company's coincident peak demand. As a result, fluctuations in the business cycle could have a large impact on Minnesota Power's retail electric sales. Furthermore, if taconite processing firms and paper mills reduce output due to weak economic conditions, the effect could be compounded if local employment declined, reducing the electric sales for Minnesota Power.

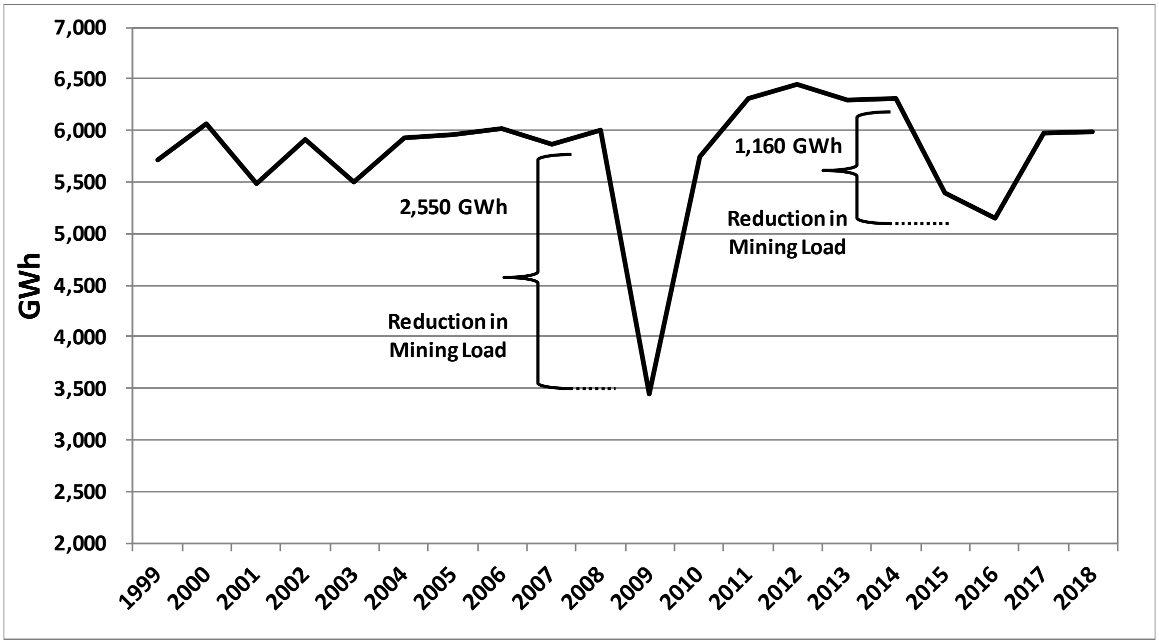
Figure 12: Minnesota Mining and Logging Employment (Thous.)



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 13, 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. More recently, there was a downturn that occurred in 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. The volatility in the mining industry coupled with the decline in production at the pulp and paper mills as discussed in the Large Power Customer Outlook and Case Overview Direct Testimonies of Mr. Frederickson will have a direct effect on the electric sales of Minnesota Power.

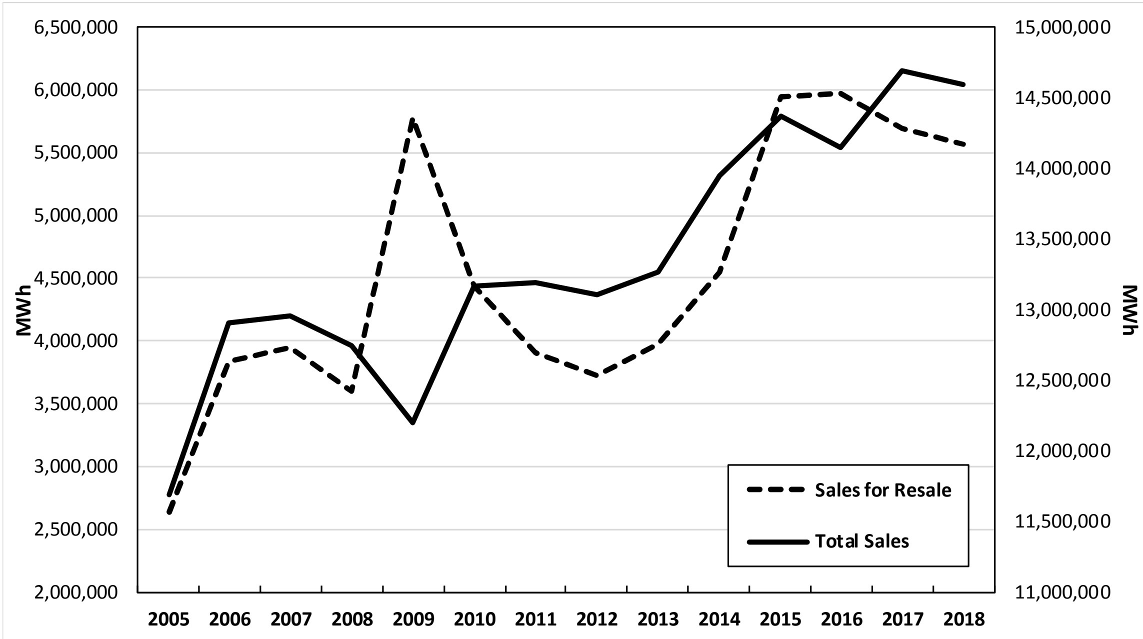
Figure 13: Minnesota Power Sales to LP Customers



Q. Is it reasonable to expect that Minnesota Power can make up lost system sales by selling at market?

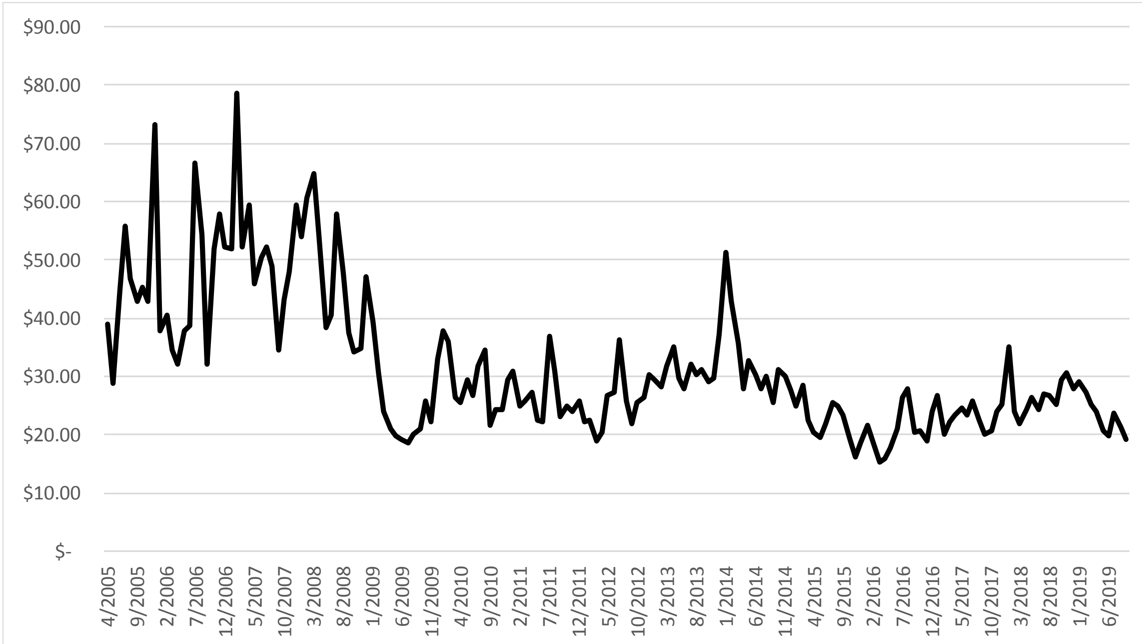
A. Not entirely. As shown in Figure 14, while the Company was able to sell some energy in the Midcontinent Independent System Operator ("MISO") market and recover some amount of the lost sales between 2015 and 2016, energy sales still decreased in 2016 as the Company was not able to fully offset the reduction in revenue that resulted from the decline in usage at the taconite mines by selling generation at market.

Figure 14: Minnesota Power Total Sales and Sales for Resale



Furthermore, it is important to note that the ability to resell in the market to recover the revenue from energy sales is entirely dependent on the relative prices in the market and under contract with existing customers. As shown in Figure 15, Locational Marginal Prices ("LMPs") in MISO have been declining over the past ten years as new lower variable cost resources have come online. Therefore, even if the energy could be sold in the market, it is unlikely that energy sold would replace all of the lost revenue since the price differential between the market prices and the Company's Large Power Service Rate Schedule, which is the rate class for the taconite mines and pulp and paper mills, has been increasing over time. For example, as discussed in the Direct Testimony of Company witness Ms. Julie I. Pierce, Minnesota Power expects to recover only 4.00 percent of the lost large industrial customer retail margin today compared to the approximately 56 percent of lost retail margin that the Company recovered in 2016.

Figure 15: MISO Day Ahead Around The Clock LMPs – Minnesota Hub



Q. Have any credit rating agencies commented on the effect of Minnesota Power's customer concentration on the Company's business risk profile?

A. Yes. In its credit opinion issued in April 2019, Moody's noted ALLETE's reliance on industrial customers for a large portion of annual sales which Moody's indicates is the highest in the Moody's US regulated utility universe.[76] As discussed above, the types of industrial customers that ALLETE and Minnesota Power rely on such as taconite mines and pulp and paper mills are very cyclical. The cyclicality of the customer base is credit negative according to Moody's, since fluctuations in sales will have significant impact on ALLETE's cash flows.[77] Thus, it is important that

[76] Moody's Investors Service, Credit Opinion: ALLETE, Inc. Update following downgrade, April 3, 2019, at 4.

[77] *Ibid.*

the Commission consider the effect of the Company's customer concentration in the determination of the ROE for Minnesota Power.

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, 73.97 percent of Minnesota Power's total retail electric sales in Minnesota were to industrial customers. This concentration is higher than all of the proxy group companies. A high degree of customer concentration increases Minnesota Power's risk related to customer migration, economic conditions or competition. Increased customer diversity decreases the effect that any one customer can have on a company's sales. Furthermore, as discussed above, the recent decline in LMPs in the MISO market significantly reduces the likelihood that the Company will be able to offset any reduction in industrial electric sales. Thus, Minnesota Power's heavy customer concentration in a small number of customers within the industrial rate classes implies that Minnesota Power has an above average risk profile when compared to the companies in the proxy group.

IX. COST OF EQUITY ESTIMATION

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

A. The ROE is the cost rate applied to the equity capital in the rate of return ("ROR"). The ROR 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. 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 determine Minnesota Power's ROE?

A. I considered the results of the Constant Growth DCF model, the Two-Growth DCF model, the CAPM model, the Bond Yield Plus Risk Premium methodology and an Expected Earnings analysis. 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. Why is it important to use more than one analytical approach?

A. 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 I use multiple approaches to estimate the cost of equity. As a practical matter, however, all of 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[78] suggest using the CAPM and Arbitrage Pricing Theory model, while Brigham and Gapenski[79] recommend the CAPM, DCF, and Bond Yield Plus Risk Premium approaches.

Q. Is it important given the current market conditions to use more than one analytical approach?

A. Yes. Low interest rates and the effects of the investor "flight to quality" can be seen in high utility share valuations, relative to historical levels and relative to the broader market. Higher utility stock valuations produce lower dividend yields and

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

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

result in lower cost of equity estimates from a DCF analysis. Low interest rates also affect the CAPM in two ways: (1) the risk-free rate is lower, and (2) because the market risk premium is a function of interest rates, (i.e., it is the return on the broad stock market less the risk-free interest rate), the risk premium should move higher when interest rates are lower. Therefore, it is important to use multiple analytical approaches to moderate the impact that the current low interest rate environment is having on the ROE estimates for the proxy group and, where possible, consider using projected market data in the models to estimate the return for the forward-looking period.

Q. Are you aware of any regulatory commissions that have recognized that recent conditions in capital markets are causing ROE recommendations based on DCF models to be unreasonable?

A. Yes, several regulatory commissions have addressed the effect of capital market conditions on the DCF model, including FERC, the ICC, the PPUC and the Missouri PSC.

Q. Please summarize how the FERC has responded to the effect of market conditions on the DCF.

A. Understanding the important role that dividend yields play in the DCF model, the FERC determined that capital market conditions have caused the DCF model to understate equity costs for regulated utilities. In Opinion No. 531, the FERC noted:

> There is 'model risk' associated with the excessive reliance or mechanical application of a model when the surrounding

> conditions are outside of the normal range. 'Model risk' is the risk that a theoretical model that is used to value real world transactions fails to predict or represent the real phenomenon that is being modeled.[80]

In Opinion No. 531, the FERC also noted that the low interest rates and bond yields that persisted throughout the analytical period that was relied on (study period) had affected the results of the DCF model, and therefore the FERC recognized the need to move away from the midpoint of the DCF analysis. In that case, the FERC relied on the CAPM and other risk premium methodologies to inform its judgment to set the return above the midpoint of the DCF results. These positions were affirmed by the FERC in Opinion No. 551 in September 2016.[81]

Finally, in October 2018, the FERC issued an Order in response to the remand from the U.S. Court of Appeals for the District of Columbia, and in that Order the FERC indicated plans to establish ROEs based on an equal weighting of the results of four financial models: the DCF, CAPM, Expected Earnings and Risk Premium. FERC explains its reasons for moving away from sole reliance on the DCF model as follows:

> Our decision to rely on multiple methodologies in these four complaint proceedings is based on our conclusion that the DCF methodology may no longer singularly reflect how investors make their decisions. We believe that, since we adopted the DCF methodology as our sole method for determining utility ROEs in the 1980s, investors have increasingly used a diverse set of data sources and models to inform their investment decisions. Investors appear to base their decisions on numerous data points and models, including

[80] FERC Docket No. EL11-66-001, Opinion No. 531 (June 19, 2014), fn 286.
[81] FERC Docket No. EL14-12-002, Opinion No. 551 (Sept. 28, 2016), at para. 121.

> the DCF, CAPM, Risk Premium, and Expected Earnings methodologies. As demonstrated in Figure 2 below, which shows the ROE results from the four models over the four test periods at issue in this proceeding, these models do not correlate such that the DCF methodology captures the other methodologies. In fact, in some instances, their cost of equity estimates may move in opposite directions over time. Although we recognize the greater administrative burden on parties and the Commission to evaluate multiple models, we believe that the DCF methodology alone no longer captures how investors view utility returns because investors do not rely on the DCF alone and the other methods used by investors do not necessarily produce the same results as the DCF. Consequently, it is appropriate for our analysis to consider a combination of the DCF, CAPM, Risk Premium, and Expected Earnings approaches.[82]

Q. How have the PPUC, the ICC and the Missouri PSC addressed the effect of market conditions on the DCF?

A. In a 2012 decision for PPL Electric Utilities, the PPUC noted that it had traditionally relied primarily on the DCF method to estimate the cost of equity for regulated utilities, but the PPUC recognized that market conditions were causing the DCF model to produce results that were much lower than other models such as the CAPM and Bond Yield Plus Risk Premium. The PPUC's Order supported the consideration of multiple ROE estimation methodologies.[83]

The PPUC ultimately concluded:

> As such, where evidence based on the CAPM and RP [Risk Premium] methods suggest that the DCF-only results may understate the utility's current cost of equity capital, we will

[82] Federal Energy Regulatory Commission, Docket No. EL 11-66-001, et al., Order Directing Briefs, issued October 16, 2018, at para. 40. [Figure 2 was omitted]

[83] Pennsylvania Public Utility Commission, PPL Electric Utilities, R-2012-2290597, meeting held December 5, 2012, at 80.

> give consideration to those other methods, to some degree, in determining the appropriate range of reasonableness for our equity return determination.[84]

In a recent ICC case, Docket No. 16-0093, Staff relied on a DCF analysis that resulted in average returns for their proxy groups of 7.24 percent to 7.51 percent. The company demonstrated that these results were uncharacteristically low, by comparing the results of Staff's models to recently authorized ROEs for regulated utilities and the return on the S&P 500.[85] In Order No. 16-0093, the ICC agreed with the company that Staff's proposed ROE of 8.04 percent was anomalous and recognized that a return that is not competitive will deter investment in Illinois.[86] In setting the return in that proceeding, the ICC recognized that it was necessary to consider other factors beyond the outputs of the financial models, particularly whether or not the return is sufficient to attract capital, to maintain financial integrity, and to produce returns commensurate with returns for companies of comparable risk, while balancing the interests of customers and shareholders.[87]

Finally, in February 2018, the Missouri PSC issued a decision in Spire's 2017 gas rate case, in which the allowed ROE was set at 9.80 percent. In explaining the rationale for its decision, the Missouri PSC cited the importance of considering multiple methodologies to estimate the cost of equity and the need for the

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84 *Id.*, at 81.

85 State of Illinois Commerce Commission, Docket No. 16-0093, Illinois-American Water Company Initial Brief, August 31, 2016, at 10.

86 Illinois Staff's analysis and recommendation in that proceeding were based on its application of the multi-stage DCF model and the CAPM to a proxy group of water utilities.

87 State of Illinois Commerce Commission Decision, Docket No. 16-0093, Illinois-American Water Company, 2016 WL 7325212 (2016), at 55.

authorized ROE to be consistent with returns in other jurisdictions and to reflect the growing economy and investor expectations for higher interest rates.

> Based on the competent and substantial evidence in the record, on its analysis of the expert testimony offered by the parties, and on its balancing of the interests of the company's ratepayers and shareholders, as fully explained in its findings of fact and conclusions of law, the Commission finds that 9.8 percent is a fair and reasonable return on equity for Spire Missouri. That rate is nearly the midpoint of all the experts' recommendations and is consistent with the national average, the growing economy, and the anticipated increasing interest rates. The Commission finds that this rate of return will allow Spire Missouri to compete in the capital market for the funds needed to maintain its financial health.[88]

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

A. Yes. In its recent order for MERC, the Commission emphasized the importance of considering the results of each model submitted by the witnesses in the case. Specifically, the Commission noted that

> [n]ot 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.[89]

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[88] File No. GR-2017-0215 and File No. GR-2017-0216, Missouri Public Service Commission, Report and Order, Issue Date February 21, 2018, at 34.

[89] Docket No. G011/GR-17-563, Findings of Fact, Conclusions and Order, at 27 (Dec. 26, 2018).

In the decision for MERC, 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.[90] Similarly, in the most recent case for Minnesota Power, the Commission explained that:

> [t]he 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.[91]

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.[92] 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.

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

A. Recent market data that is used as the basis for the assumptions for both models have been affected by market conditions. As a result, relying exclusively on historical assumptions in these models, without considering whether these assumptions are consistent with investors' future expectations, will underestimate the cost of equity that investors would require over the period that the rates in this

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90 *Ibid.*

91 Docket No. E015/GR-16-664, Findings of Fact, Conclusions and Order, at 60 (Mar. 12, 2018).

92 *Id.*, at 61.

case are to be in effect. In this instance, relying on the historically low dividend yields that are not expected to continue over the period that the new rates will be in effect will underestimate the ROE for Minnesota Power.

The use of recent historical Treasury bond yields in the CAPM also tends to underestimate the projected cost of equity. Recent experience indicates that interest rates will increase over the near-term. The expectation that bond yields will not remain at currently low levels means that the expected cost of equity would be higher than is suggested by the CAPM using historical average yields. The use of projected yields on Treasury bonds results in CAPM estimates that are more reflective of the market conditions that investors expect during the period that the Company's rates will be in effect.

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:

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

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:

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

Equation [2] is often referred to as the Constant Growth DCF model in which the first term is the expected dividend yield and the second term is the expected long-term growth rate.

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

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

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

A. The dividend yield in my Constant Growth DCF model is based on the proxy companies' current annualized dividend and average closing stock prices over the 30-, 90-, and 180-trading days ended August 30, 2019.

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

A. In my Constant Growth DCF model, I use an average of recent trading days to calculate the term P_0 in the DCF model to ensure that the ROE is not skewed by anomalous events that may affect stock prices on any given trading day. The averaging period should also be reasonably representative of expected capital market conditions over the long-term. However, the averaging periods that I use rely on historical prices which, as discussed above, are currently at unsustainably high levels that are not expected to continue during the period that Minnesota Power's rates will be in effect. The use of current prices in the Constant Growth DCF model is not consistent with the forward-looking market expectations. Therefore, the results of my Constant Growth DCF model using historical data may underestimate the forward-looking cost of equity. As a result, I place more weight on the mean to mean-high results produced by my Constant Growth DCF model.

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

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

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

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

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

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

C. Two-Growth DCF Model

Q. What other forms of the DCF model have you considered?

A. 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 Constant Growth DCF 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 Constant Growth DCF model, the Two-Growth DCF model removes the effect of earnings growth rates that are considered either too high or too low to be sustainable over the long-term.

Q. Has the Commission previously relied on the result of the Two-Growth DCF model?

A. Yes. As discussed previously, the Commission has historically placed greater weight on the results of the Two-Growth DCF 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 Two-Growth DCF results.

Q. Please generally describe your Two-Growth DCF model.

A. As discussed in the Section above, the Constant Growth DCF model assumes a single growth estimate in perpetuity which for my Constant Growth DCF model was the long-term earnings growth rates from First Call, Zacks and Value Line. The earnings growth rates used in my Constant Growth DCF model are developed by analysts for a five-year period and therefore, may not reflect the long-term growth rate of a company. As a result, I developed a Two-Growth DCF model to reduce the effect of low or high earnings growth rates on the calculated ROE of a company by utilizing one growth rate to reflect short-term growth and a separate growth rate for long-term growth.

Q. How did you apply the Two-Growth DCF to the companies in your proxy group?

A. I applied the Two-Growth DCF approach to companies that had an earnings growth rate that could be considered unsustainable for the long-term as compared to the proxy group. An earnings growth rate was considered to be abnormally high or low if the earnings growth rate was outside of the range determined by the average growth rate of the proxy group plus or minus one standard deviation. For the companies with a high or low growth rate, I estimated the companies' ROE by applying the earnings growth rate used in the Constant Growth DCF model for the first five-years (i.e., short-term) and then for the long-term, I used the proxy group average growth rate minus one standard deviation in the case of companies with a low growth rate and the proxy group average growth rate plus one standard deviation in the case of companies with a high growth rate. This approach is consistent with the approach applied by the Minnesota Department of Commerce, Division of Energy Resources ("Department") and adopted by the Commission in many proceedings.

D. Flotation Cost

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 allowed 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. 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 Minnesota Power the opportunity to earn its required ROR 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 Exhibit___(AEB), Schedule 5, ALLETE had an equity issuance with two delayed draws in 2014 and 2015 and at-market-issuances of common stock for each year between 2008 and 2017. 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 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 ROR. 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.[93]

[93] Shannon P. Pratt, Cost of Capital Estimation and Applications, Second Edition, at 220-221.

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.[94] My examination concludes that flotation costs are properly included in Minnesota Power's ROE determination.

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 2019. Those issuance costs were applied to my proxy group. Based on the issuance costs provided in Exhibit___(AEB), Schedule 5, flotation costs for Minnesota Power are approximately 0.07 percent (i.e., 7 basis points) for the proxy group.

Q. Do your final 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 DCF analyses to include flotation costs.

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94 Docket No. E-001/GR-10-276, Findings of Fact, Conclusions, and Order, at 9 (Aug. 12, 2011); Docket No. E002/GR-10-971, Findings of Fact, Conclusions, and Order, at 8 (May 14, 2012); Docket No. E002/GR-08-1065, Findings of Fact, Conclusions of Law, and Order, at 10-11 (Oct. 23, 2009); Docket No. E017/GR-07-1178, Findings of Fact, Conclusions of Law, and Order, at 57-58 (Aug. 1, 2008); Docket No. G004/GR-04-1487, Findings of Fact, Conclusions of Law and Order, at 11 (Nov. 8, 2005).

E. Discounted Cash Flow Model Results

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

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

Q. Have you excluded any of the DCF results for individual companies in your proxy group?

A. Yes, I have. It is appropriate to exclude Constant Growth and Two-Growth DCF results below a specified threshold at which equity investors would consider such returns to provide an insufficient return increment above long-term debt costs. The average credit rating for the companies in my proxy group is BBB+ from S&P and Baa2 from Moody's. The average yield on Moody's Baa-rated utility bonds for the 30 trading days ending August 30, 2019, was 3.74 percent.[95] As shown in Exhibit___(AEB), Schedule 6 and Schedule 7, I have eliminated Constant Growth and Two-Growth DCF results lower than 7.00 percent because such returns would

95 Source: Bloomberg Professional.

provide equity investors a risk premium only 326 basis points above Baa-rated utility bonds.

Q. Has the Department previously recognized the importance of excluding the ROE results for individual companies that are unreasonably low?

A. Yes. In Docket No. E017/GR-15-1033 for Otter Tail Power Company, Mr. Kundert of the Department reasoned that:

> Any method of estimating the required rate of return, including DCF analysis, must survive the test of reasonableness based on well-established financial principles. In a DCF analysis, the results should not be mechanically accepted if they violate well-accepted financial principles. For example, it is important for companies in the DOC proxy group to be financially viable because it is in the public interest, including the interest of ratepayers, for the utility to have a reasonable opportunity to recover its costs; setting the return on equity (ROE) too low would not give the utility a reasonable opportunity to finance the necessary capital improvements to its system.[96]

In that case, the Department determined the proxy group using a screening criterion that eliminated companies that had a constant growth DCF result below a certain threshold. The ROE threshold used was based on then-current market conditions using the results of the CAPM model, which supported an ROE threshold of 7 percent.[97]

In addition, I am aware that the Department also recognized the importance of excluding the low ROE results of individual companies in Northern States Power

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96 Docket No. E017/GR-15-1033, Direct Testimony of John P. Kundert, at 11 (Aug. 16, 2016).
97 *Id.*, at 13.

Minnesota's Docket Nos. E002/GR-13-868 and E002/GR-15-826. In those proceedings, the ROE thresholds used were 8 percent and 7 percent, respectively.[98]

Q. Is your approach for excluding the DCF results for individual companies in your proxy group consistent with the approach applied by the Department?

A. Yes. The Department eliminates a company from the proxy group if the company's ROE does not exceed a certain threshold. While I do not exclude the company from the proxy group, I remove the specific DCF result for the company that is below the ROE threshold, which as discussed above is 7 percent. For example, in Exhibit___(AEB), Schedule 7, column 10, the low-end Two-Growth DCF result for OGE Energy Corporation was 6.57 percent, which was below the 7 percent ROE threshold; therefore, the result was excluded from the proxy group average. While the low-end for OGE Energy Corporation was excluded, the mean and high-end results for the company exceed the 7 percent threshold and were included in proxy group average. Thus, both approaches achieve the goal of excluding the results of companies who have a DCF result that is below the threshold that equity investors would consider a reasonable return to compensate for the risk of holding equity.

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[98] Docket No. E002/GR-15-826, Direct Testimony of Craig Addonizio, at 12-13 (June 14, 2016); Docket No. E002/GR-13-868, Direct Testimony of Eilon Amit, at 17 (June 5, 2014).

Q. Has the Commission considered a low-end threshold for ROE results?

A. Yes. In Docket No. E-002/GR-15-826 for Northern States Power Minnesota, the Commission concluded that:

> The Settlement's ROE is significantly higher than the OAG's recommended range of 7.07–8.14 percent. However, the OAG fails to explain how its recommendation is reasonable or supportable in light of the overwhelming evidence of the range of reasonable ROEs in the record. The Commission finds that an ROE in the OAG's recommended range would not permit Xcel to earn a return sufficient to induce investors to purchase company stock, given the risk associated with investing in an electric utility.[99]

Thus, the Commission determined that an ROE in the range of 7.07 percent to 8.14 percent would not provide a sufficient risk premium to compensate investors for the additional risk of an equity investment. As shown in Exhibit__(AEB), Schedule 7, the 30-day average mean ROE result using the low growth rate scenario for the Two-Growth DCF model would have been 7.83 percent, or 7.90 percent including flotation costs, prior to my exclusion of the low-end outliers and would have been eliminated based on the Commission's criterion. Therefore, the low-end screen of 7.00 percent that I have applied to the individual results of my Constant Growth DCF and Two-Growth DCF analyses is consistent with the Commission's past decisions.

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[99] Docket No. E002/GR-15-826, Findings of Fact, Conclusions and Order, at 21 (June 12, 2017).

Q. What were the results of your DCF analyses?

A. Figure 16 summarizes the results of my DCF analyses. As shown in Figure 16, the mean DCF results range from 9.07 percent to 9.28 percent and the mean high results are in the range of 9.78 percent to 10.31 percent. While I also summarize the mean low DCF results, I do not believe that the low DCF results provide a reasonable spread over the expected yields on Treasury bonds to compensate investors for the incremental risk related to an equity investment.

Figure 16: Discounted Cash Flow Results

	Mean Low	**Mean**	**Mean High**
Constant Growth DCF (including flotation cost)[100]			
30-Day Average	8.20%	9.13%	9.78%
90-Day Average	8.25%	9.17%	10.20%
180-Day Average	8.36%	9.28%	10.31%
Two-Stage Growth DCF (including flotation cost)[101]			
30-Day Average	8.08%	9.07%	9.99%
90-Day Average	8.10%	9.09%	10.01%
180-Day Average	8.19%	9.18%	10.10%

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 P/E ratio. That assumption is heavily influenced by the market price of utility stocks. To the extent that utility valuations are high and may not be sustainable, it is important to consider the results of the DCF models with caution. The dividend yield on the 30-day average DCF analysis was 3.32 percent, lower than the average dividend yield for electric utilities over the last 10 years. These data points

[100] *See* Exhibit___(AEB), Schedule 6.
[101] *See* Exhibit___(AEB), Schedule 7.

demonstrate that the results of the current DCF models are significantly below more normal market conditions.

Therefore, while I relied primarily on the range of results produced by the Constant Growth and Two-Growth DCF models, I considered the results of the CAPM, Bond Yield Plus Risk Premium and Expected Earnings analyses when determining where Minnesota Power's ROE falls. This approach mitigates the effect the current high valuations of utilities are having on the DCF model.

F. CAPM Analysis

Q. Please briefly describe the Capital Asset Pricing Model.

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. This second component is the product of the market risk premium and the Beta coefficient, which measures the relative riskiness of the security being evaluated.

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

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

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, 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 relied on three sources for my estimate of the risk-free rate: (1) the current 30-day average yield on 30-year U.S. Treasury bonds of 2.24 percent;[102] (2) the average projected 30-year U.S. Treasury bond yield for Q4 2019 through Q4 2020 of 2.40

102 Bloomberg Professional, as of August 30, 2019.

percent;[103] and (3) the average projected 30-year U.S. Treasury bond yield for 2021 through 2025 of 3.60 percent.[104]

Q. Would you place more weight on one of these scenarios?

A. Yes. Based on current market conditions, I place more weight on the results of the projected yields on the 30-year Treasury bonds. As discussed previously, the estimation of the cost of equity in this case should be forward-looking because it is the return that investors would receive over the future rate period. Therefore, the inputs and assumptions used in the CAPM analysis should reflect the expectations of the market at that time. As discussed above, leading economists surveyed by Blue Chip are expecting an increase in long-term interest rates over the next five years. This is an important consideration for equity investors as they assess their return requirements. While I have included the results of a CAPM analysis that relies on the current average risk-free rate, this analysis fails to take into consideration the effect of the market's expectations for interest rate increases on the cost of equity.

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

A. As shown on Exhibit___(AEB), Schedule 8, I used the Beta coefficients for the proxy group companies as reported by Bloomberg and Value Line. The Beta coefficients reported by Bloomberg were calculated using ten years of weekly

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103 Blue Chip Financial Forecasts, Vol. 38, No. 9, September 1, 2019, at 2.

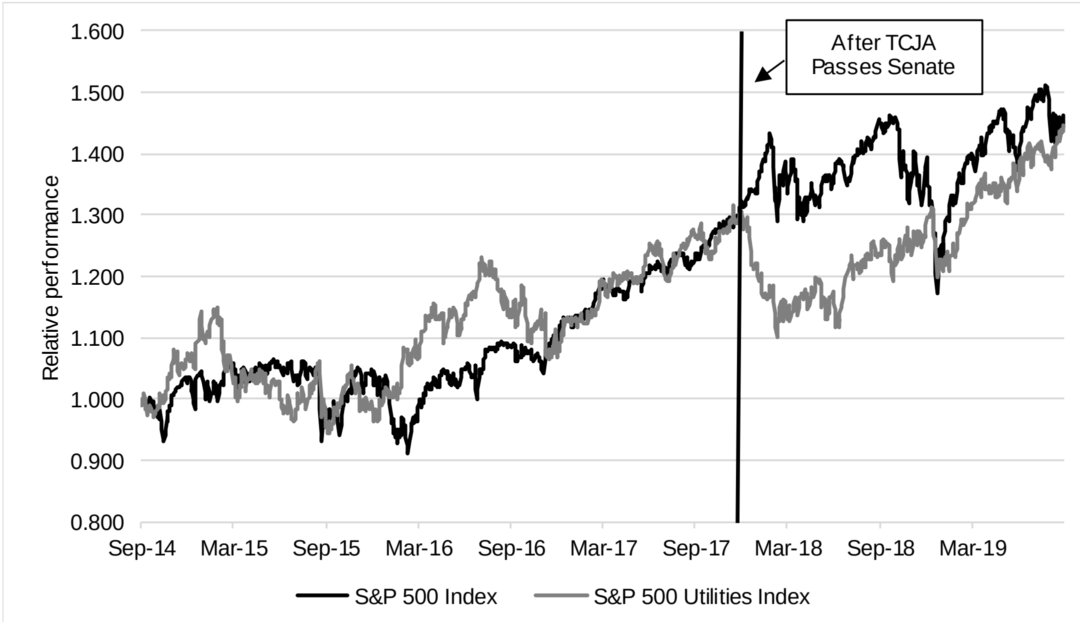
104 Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14.

returns relative to the S&P 500 Index. Value Line's calculation is based on five years of weekly returns relative to the New York Stock Exchange Composite Index.

Q. Why did you select a ten-year period to calculate the Beta coefficients from Bloomberg?

A. As I discussed in Section V, the TCJA has had a significant effect on utility companies. While other industries are able to retain the benefits of a reduced corporate income tax rate, this benefit has largely been passed through to customers by utility companies. This fundamental difference affected investors' view of the utility industry relative to other industries. As shown in Figure 17, after the Senate passed the TCJA on December 2, 2017, utilities significantly deviated from the broader market.

Figure 17: Performance of the Utility Industry Relative to the S&P 500[105]



As shown in Figure 17, following the TCJA the performance of the utility industry deviated significantly from the broader market, understating the Beta for utility companies as compared with historical averages. To reflect the long-term relationship, which has been that utility stocks are less volatile than the broader market (i.e., the relative volatility for utility companies has been lower than the S&P 500 over the ten-year measure[106]), I selected a ten-year period to calculate the Beta coefficients from Bloomberg.

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

A. I estimated the market risk premium based on the expected return on the S&P 500 Index less the yield on the 30-year Treasury bond. I calculate the expected return

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105 Bloomberg Professional. Data through August 30, 2019.

106 *Ibid.*

on the S&P 500 Index companies for which dividend yields and long-term earnings projections are available using the Constant Growth DCF model discussed earlier in my Direct Testimony. Based on an estimated market capitalization-weighted dividend yield of 1.99 percent and a weighted long-term growth rate of 11.85 percent, the estimated required market return for the S&P 500 Index is 13.95 percent. As shown in Exhibit___(AEB), Schedule 8, the implied market risk premium over the current 30-day average of the 30-year U.S. Treasury bond yield, and projected yields on the 30-year U.S. Treasury bond, range from 10.35 percent to 11.71 percent.

Q. Have other regulators endorsed the use of a forward-looking market risk premium?

A. Yes. The FERC and the Staff in the Maine Public Utilities Commission ("Maine PUC") have supported the forward-looking market risk premium. In Opinion No. 531-B, the FERC specifically endorsed a method that is similar to the method I have used to calculate the forward-looking market risk premium (i.e., applying a Constant Growth DCF analysis to the S&P 500 and using the 30-year Treasury bond yields).[107]

In response to arguments against this methodology, the FERC stated:

> We are also unpersuaded that the growth rate projection in the NETOs' [New England Transmission Owners] CAPM study was skewed by the NETOs' reliance on analysts' projections

[107] 150 FERC ¶ 61,165, Docket Nos. EL11-66-002, Opinion No. 531-B (Mar. 3, 2015), at para. 109-111.

> of non-utility companies' medium-term earnings growth, or that the study failed to consider that those analysts' estimates reflect unsustainable short-term stock repurchase programs and are not long-term projections. As explained above, the NETOs based their growth rate input on data from IBES, which the Commission has found to be a reliable source of such data. Thus, the time periods used for the growth rate projections in the NETOs' CAPM study are the time periods over which IBES forecasts earnings growth. Petitioners' arguments against the time period on which the NETOs' CAPM analysis is based are, in effect, arguments that IBES data are insufficient in a CAPM study.[108]
>
> ***
>
> While an individual company cannot be expected to sustain high short term growth rates in perpetuity, the same cannot be said for a stock index like the S&P 500 that is regularly updated to contain only companies with high market capitalization, and the record in this proceeding does not indicate that the growth rate of the S&P 500 stock index is unsustainable.[109]

In the Bench Analysis in Docket No. 2018-00194 for Central Maine Power Company, Docket No. 2017-00198 for Emera Maine and Docket No. 2017-00065 for Northern Utilities, the Staff accepted the forward-looking methodology for calculating the market return that was proposed by the companies.[110] In each case, the market return was the expected return for the S&P 500 which was calculated

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108 *Id.*, at para. 112.

109 *Id.*, at para. 113.

110 Central Maine Power Company, Investigation into Rates and Revenue Requirements of Central Maine Power Company, Docket No. 2018-00194, Bench Analysis at 52 (Feb. 22, 2019); Emera Maine, Request for Approval of a Proposed Rate Increase, Docket No. 2017-00198, Bench Analysis at 71-72 (Dec. 21, 2017); Northern Utilities, Inc. d/b/a UNITIL, Request for Approval of Rate Change Pursuant to Section 307, Docket No. 2017-00065, Bench Analysis, at 15-16 (Oct. 6, 2017).

using a Constant Growth DCF model. In Docket No. 2017-00198, Staff noted the following:

> Staff has no issue with the methodology used by Mr. Perkins in calculating market parameters based on the S&P 500 and used the model provided by Mr. Perkins with the revised risk free rate to re-calculate the market risk premiums.[111]

Furthermore, the Maine PUC in Docket No. 2017-0198 used the CAPM results calculated by Staff and Emera Maine as a check on the reasonableness of the DCF results in the case and did not dispute the use of the forward-looking market risk premium by the parties (i.e., Staff and Emera Maine).[112]

Q. What are the results of your CAPM analyses?

A. As shown in Figure 18 (*see* also Exhibit___(AEB), Schedule 8), my CAPM analysis produces a range of returns from 9.69 percent to 10.68 percent. The mean returns using Bloomberg's Beta coefficients and three measures of the risk-free rate is 10.41 percent. Using the Value Line Beta coefficients and three measures of the risk-free rate, the mean result is 9.87 percent.

Figure 18: CAPM Results

	Bloomberg Beta	**Value Line Beta**
Current Risk-Free Rate (2.24%)	10.25%	9.69%
Q4 2019-Q4 2020 Projected Risk-Free Rate (2.40%)	10.30%	9.74%
2021-2025 Projected Risk-Free Rate (3.60%)	10.68%	10.18%
Mean Result	10.41%	9.87%

111 Emera Maine, Request for Approval of a Proposed Rate Increase, Docket No. 2017-00198, Bench Analysis, at 71-72 (Dec. 21, 2017).

112 Emera Maine, Request for Approval of Proposed Rate Increase, Docket No. 2017-00198, Order, at 41 (June 28, 2018).

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 a bondholder. That is, because returns to equity holders have greater risk than returns to bondholders, equity investors must be compensated to bear that risk. Risk premium approaches, therefore, estimate the cost of equity as the sum of the equity risk premium and the yield on a particular class of bonds. In my analysis, I used actual authorized returns for electric utility 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. That is, as interest rates increase (decrease), the equity risk premium decreases (increases). Consequently, it is important to develop an analysis that: (1) reflects the inverse relationship between interest rates and the equity risk premium; and (2) relies on recent and expected market conditions. Such an analysis can be developed based on a regression of the risk premium as a function of U.S. Treasury bond yields. If we let authorized ROEs for electric utilities serve as the measure of required equity returns and define the yield on the long-term U.S. Treasury bond as the relevant measure of interest rates, the risk premium simply would be the difference between those two points.[113]

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

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

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

A. As shown in Figure 19 below, from 1992 through August 2019, 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:

$$RP = a + b(T) \quad [5]$$

Where:

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

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

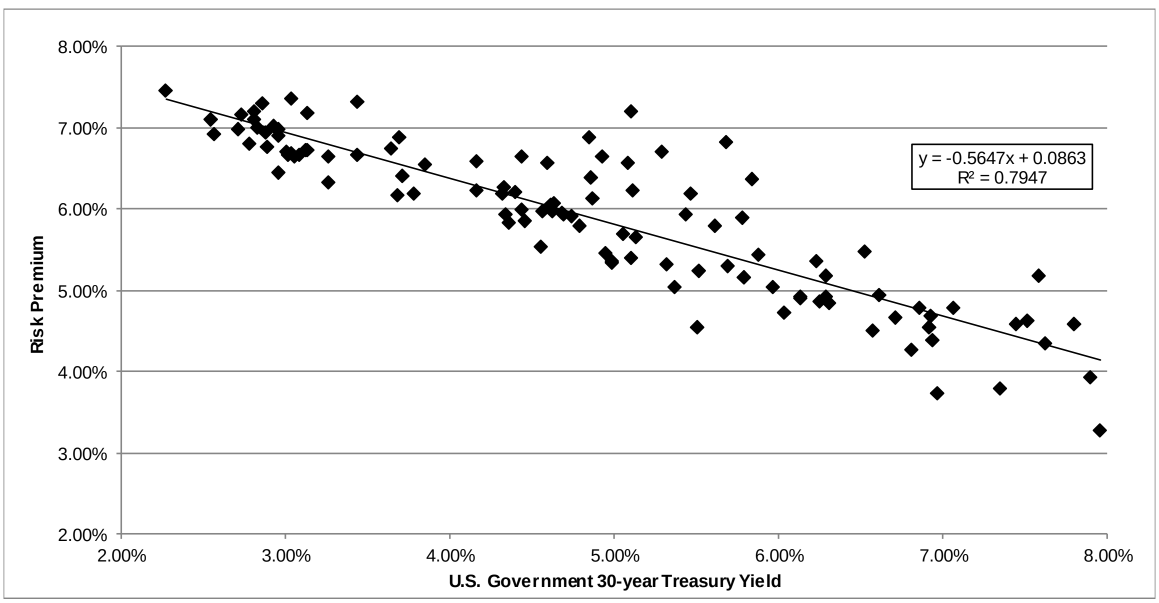
a = intercept term

b = slope term

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

Data regarding allowed ROEs were derived from 611 integrated electric utility rate cases from 1992 through August 2019 as reported by Regulatory Research Associates ("RRA").[114] This equation's coefficients were statistically significant at the 99.00 percent level.

Figure 19: Risk Premium Results



As shown on Exhibit___(AEB), Schedule 9, based on the current 30-day average of the 30-year U.S. Treasury bond yield (i.e., 2.24 percent), the risk premium would

[114] This analysis began with a total of 1,172 cases and was screened to eliminate limited issue rider cases, transmission-only cases, distribution cases and cases that were silent with respect to the authorized ROE. After applying those screening criteria, the analysis was based on data for 611 cases.

be 7.37 percent, resulting in an estimated ROE of 9.61 percent. Based on the near-term (Q4 2019 – Q4 2020) projections of the 30-year U.S. Treasury bond yield (i.e., 2.40 percent), the risk premium would be 7.28 percent, resulting in an estimated ROE of 9.68 percent. Based on longer-term (2021-2025) projections of the 30-year U.S. Treasury bond yield (i.e., 3.60 percent), the risk premium would be 6.60 percent, resulting in an estimated ROE of 10.20 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 setting my recommended ROE for Minnesota Power. The results of both my CAPM and Bond Yield Risk Premium analyses provide support for my view that the DCF model is understating investors' return requirements under current market conditions. Also, as noted above, investors will consider the ROE award of a company when assessing the risk of that company as compared to utilities of comparable risk operating in other jurisdictions. The risk premium analysis takes into account this comparison by estimating the return expectations of investors based on the current and past ROE awards of electric utilities across the U.S.

H. Expected Earnings Analysis

Q. Have you considered any additional analysis to estimate the cost of equity for Minnesota Power?

A. Yes. I have considered an Expected Earnings analysis based on the projected ROEs for each of the proxy group companies.

Q. What is an Expected Earnings Analysis?

A. The Expected Earnings methodology is a comparable earnings analysis that calculates the earnings that an investor expects to receive on the book value of a stock. The expected earnings analysis is a forward-looking estimate of investors' expected returns. The use of an Expected Earnings approach based on the proxy companies provides a range of the expected returns on a group of risk comparable companies to the subject company. This range is useful in helping to determine the opportunity cost of investing in the subject company, which is relevant in determining a company's ROE.

Q. Have regulators endorsed the use of an Expected Earnings Analysis?

A. Yes. As discussed above, the FERC issued an Order in October 2018 indicating plans to establish ROEs based on an equal weighting of the results of four financial models: the DCF, CAPM, Expected Earnings and Risk Premium. In regard to the expected earnings analysis, FERC noted the following:

> A comparable earnings analysis is a method of calculating the earnings an investor expects to receive on the book value of a particular stock. The analysis can be either backward looking using the company's historical earnings on book value, as reflected on the company's accounting statements, or forward-looking using estimates of earnings on book value, as reflected in analysts' earnings forecasts for the company. The latter approach is often referred to as an "Expected Earnings analysis." The returns on book equity that investors expect to receive from a group of companies with risks comparable to those of a particular utility are relevant to determining that utility's cost of equity, because those returns on book equity help investors determine the opportunity cost of investing in that particular utility instead of other companies of comparable risk. Because investors rely on Expected Earnings analyses to

> help estimate the opportunity cost of investing in a particular utility, we find this type of analysis useful in determining a utility's ROE.[115]

Q. Have any other regulators considered the use of an Expected Earnings Analysis?

A. Yes. The Washington Utilities & Transportation Commission ("Washington UTC"), in its order in Dockets UE-170485 and UG-170486, considered the results of the Comparable Earnings analysis[116] in establishing the authorized ROE for Avista Corporation. The Washington UTC noted that it tends to place more weight on the results of the DCF, CAPM and Risk Premium analyses; however, given the wide range of CAPM results presented by the ROE witnesses in the case, the Washington UTC decided to apply weight to the results of the Comparable Earnings analysis.[117] Specifically, the Washington UTC stated the following:

> Finally, as additional data points for our consideration of establishing Avista's ROE, we note that two witness, Mr. McKenzie for Avista and Mr. Parcell for Staff, employ the CE approach to two proxy groups of companies. The respective mid-points of each witnesses' CE analysis are 10.5 and 9.5 percent, respectively, with an average of 10.0 percent. Although we generally do not apply material weight to the CE method, having stronger reliance on the DCF, CAPM and RP methods, we are inclined to include the CE method here given the anomalous CAPM results described previously.[118]

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115 Federal Energy Regulatory Commission, Docket No. EL 11-66-001, et al., Order Directing Briefs, issued October 16, 2018, at 42.

116 The Expected Earnings analysis is a form of the Comparable Earnings analysis that relies exclusively on forward-looking projections.

117 *Wash. Utils. & Transp. Comm'n v. Avista Corp.*, Docket Nos. UE-170485 and UG-170486, Order 07, ¶ 65 (Apr. 26, 2018).

118 *Ibid*.

Q. How did you develop the Expected Earnings Approach?

A. I relied primarily on the projected ROE capital for the proxy companies as reported by Value Line for the period from 2022-2024. The projected ROEs are adjusted to account for the fact that the ROEs reported by Value Line are calculated on the basis of common shares outstanding at the end of the period, as opposed to average shares outstanding over the period. This adjustment is consistent with FERC's methodology for the Expected Earnings analysis that was included in its October 2018 order. As shown in Exhibit___(AEB), Schedule 10, the Expected Earnings analysis results in a mean of 11.70 percent and a median of 10.85 percent.

Q. What are your conclusions regarding the results of the ROE estimation models?

A. As discussed above and consistent with the approach employed by the Commission in recent decisions, I relied primarily on the range of results produced by the Constant Growth and Two-Growth forms of the DCF model. I then used the other analytical approaches such as the CAPM, Risk Premium and Expected Earnings analyses as a check on the reasonableness of the results of the DCF models and to inform my decision as to where Minnesota Power's ROE falls.

The results of the Constant Growth and Two-Growth DCF models are currently understated as a result of the unsustainably high stock prices for the utility sector. This is confirmed by my review of current market conditions conducted in Section V above and the results of the CAPM, Risk Premium and Expected Earnings analyses. Therefore, the results of the ROE estimation models suggest that the ROE for Minnesota Power should be towards the high-end of the range set by the mean and mean-high Two-Growth DCF results.

X. CAPITAL STRUCTURE

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

A. Yes, it is. Assuming other factors equal, a higher debt ratio increases the risk to 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, who are the residual claimants on the cash flow of the Company. Therefore, the greater the debt service requirement, the less cash flow is available for common equity holders.

Q. What is Minnesota Power's proposed capital structure?

A. As described by Company witness Mr. Patrick L. Cutshall, the Company's proposal is to establish a capital structure consisting of 53.81 percent common equity and 46.19 percent long-term debt for the year ending June 30, 2020.

Q. How does the business risk of vertically-integrated electric utilities compare to the business risk of other regulated utilities?

A. According to Moody's, generation ownership causes vertically-integrated electric utilities to have higher business risk than either electric transmission and distribution companies, or natural gas distribution or transportation companies.[119] As a result of this higher business risk, integrated electric utilities typically require a higher percentage of equity in the capital structure than other electric or gas utilities.

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

A. Yes, I did. I reviewed the Company's proposed capital structure and the capital structures of the utility operating subsidiaries of the proxy companies. Because the ROE is set based on the return that is derived from the risk-comparable proxy group, it is reasonable to look to the proxy group average capital structure to benchmark the equity ratio for the Company.

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

A. I calculated the mean proportions of common equity, long-term debt, short-term debt and preferred equity over the most recent eight quarters[120] for each of the companies in my proxy group at the operating subsidiary level. My analysis of the capital structures of the companies in the proxy group is provided in Exhibit___(AEB), Schedule 11. As shown in that Schedule, the mean equity ratio for the proxy group at the operating utility company level is 52.63. The average

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119 Moody's, Rating Methodology: Electric and Gas Utilities, December 23, 2013, at 23-24.

120 The source data for this analysis is the operating company data provided in FERC Form 1 reports. Due to the timing of those filings, my average capital structure analysis uses the quarterly capital structures reported for the proxy group companies for the period from the second quarter of 2017 through the first quarter of 2019.

equity ratios for the utility operating companies held by the proxy group range from a low of 47.29 percent to a high of 56.81 percent. Minnesota Power's proposed equity ratio of 53.81 percent is well within the range of equity ratios for the utility operating subsidiaries of the proxy group companies and is therefore reasonable.

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

A. Yes. The credit rating agencies' response to the TCJA must also be considered when determining the equity ratio. As discussed previously in my testimony, all three rating agencies have noted that the TCJA has negative implications for utility cash flows. S&P and FitchRatings have specifically identified increasing the equity ratio as one approach to ensure that utilities have sufficient cash flows following the tax cuts and the loss of bonus depreciation. Furthermore, Moody's unprecedented downgrade of the rating outlook for the entire utilities sector in June 2018 stresses the importance of maintaining adequate cash flow metrics for the industry as a whole. This is also particularly important for Minnesota Power since the Company was recently downgraded by Moody's due, in part, to the effect of the TCJA on the Company's cash flows.

Q. Is there a relationship between the equity ratio and the authorized ROE?

A. Yes. The equity ratio is the primary indicator of financial risk for a regulated utility such as Minnesota Power. 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 your conclusion regarding an appropriate capital structure for Minnesota Power?

A. Considering the actual capital structures of the proxy group operating companies, I believe that Minnesota Power's proposed common equity ratio of 53.81 percent is reasonable. The proposed equity ratio is well within the range established by the capital structures of the utility operating subsidiaries of the proxy companies. In addition, it is reasonable to rely on a higher equity ratio than the Company may have relied on in prior cases as a result of: (a) the cash flow concerns raised by credit rating agencies as a result of the TCJA; and (b) the Company's above average business risk profile as compared to the proxy group due to Minnesota Power's high degree of customer concentration.

XI. 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, the range of ROE results is from 9.75 to 10.10 percent. The high end of this range is bounded by the results of the Two-Growth DCF model. However, in light of the business and financial risks of Minnesota Power compared to the proxy group, and the effects of Federal tax reform on the cash flow metrics of utilities, it is reasonable to place the requested ROE for Minnesota Power at the very high end of this range. Therefore, it is my view that the Company's requested ROE of 10.05 percent is reasonable if not conservative and would fairly balance the interests of customers and shareholders. This ROE would enable the Company to maintain its financial integrity and therefore its ability to attract capital at reasonable rates under a variety of economic and financial market conditions, while continuing to provide safe, reliable and affordable electric utility service to customers in Minnesota.

Figure 20: Summary of Analytical Results[121]

Constant Growth DCF (including flotation cost)			
	Mean Low	Mean	Mean High
30-Day Average Price	8.20%	9.13%	9.78%
90-Day Average Price	8.25%	9.17%	10.20%
180-Day Average Price	8.36%	9.28%	10.31%
Two-Stage Growth DCF (including flotation cost)			
	Mean Low	Mean	Mean High
30-Day Average Price	8.08%	9.07%	9.99%
90-Day Average Price	8.10%	9.09%	10.01%
180-Day Average Price	8.19%	9.18%	10.10%
Capital Asset Pricing Model			
	Current Risk-Free Rate (2.24%)	Q4 2019 – Q4 2020 Projected Risk-Free Rate (2.40%)	2021-2025 Projected Risk-Free Rate (3.60%)
Value Line Beta	9.69%	9.74%	10.18%
Bloomberg Beta	10.25%	10.30%	10.68%
Bond Yield Plus Risk Premium			
	Current Risk-Free Rate (2.24%)	Q4 2019 – Q4 2020 Projected Risk-Free Rate (2.40%)	2021-2025 Projected Risk-Free Rate (3.60%)
Risk Premium Results	9.61%	9.68%	10.20%
Expected Earnings Analysis			
	Mean		Median
Expected Earnings Results	11.70%		10.85%

121 The analytical results included in Figure 20 reflect the results of the Constant Growth DCF and the Two-Growth DCF analyses excluding the results for individual companies that did not meet the minimum threshold of 7.00 percent.

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

A. My conclusion is that Minnesota Power's proposal to establish a capital structure consisting of 53.81 percent common equity and 46.19 percent long-term debt is reasonable taking into consideration the range set by the proxy companies, the elevated business risk of the Company as compared to the proxy group and the effect of the TCJA on the cash flows.

Q. Does this conclude your Direct Testimony?

A. Yes, it does.

SUMMARY OF ROE ANALYSES RESULTS[1]

Constant Growth DCF (Includes flotation cost adj.)			
	Mean Low	Mean	Mean High
30-Day Average	8.20%	9.13%	9.78%
90-Day Average	8.25%	9.17%	10.20%
180-Day Average	8.36%	9.28%	10.31%
Constant Growth Average	8.27%	9.19%	10.10%
Average of All Constant Growth DCF-- with Exclusion			9.19%
Two-Stage Growth DCF (Includes flotation cost adj.)			
	Mean Low	Mean	Mean High
30-Day Average	8.08%	9.07%	9.99%
90-Day Average	8.10%	9.09%	10.01%
180-Day Average	8.19%	9.18%	10.10%
Two-Stage Average	8.12%	9.11%	10.04%
Average of All Two-Stage DCF-- with Exclusion			9.09%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	9.69%	9.74%	10.18%
Bloomberg Beta	10.25%	10.30%	10.68%
Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	9.61%	9.68%	10.20%
Expected Earnings			
	Mean		Median
Expected Earnings Results	11.70%		10.85%

Notes:
[1] The analytical results included in the table reflect the results of the Constant Growth, and the Two-Stage Growth analyses excluding the results for individual companies that did not meet the minimum threshold of 7 percent.

COMPARISON OF MINNESOTA POWER AND PROXY GROUP COMPANIES
RISK ASSESSMENT

			[1]	[2]	[3]	[4]
Proxy Group Company	**Operation State**	**Operation**	**Test Year**	**Rate Base**	**Revenue Decoupling**	**Capital Cost Recovery Mechanism**
Ameren Corporation	Illinois	Electric	Historical	Year End	No	No
	Illinois	Gas	Fully Forecast	Average	Full	Yes
	Missouri	Electric	Historical	Year End	Partial	Yes
	Missouri	Gas	Historical	Year End	No	Yes
American Electric Power Company, Inc.	Arkansas	Electric	Partially Forecast	Year End	Partial	Yes
	Indiana	Electric	Fully Forecast	Year End	Partial	Yes
	Kentucky	Electric	Fully Forecast	Year End	Partial	No
	Louisiana	Electric	Historical	Year End	Partial	No
	Michigan	Electric	Fully Forecast	Average	No	No
	Ohio	Electric	Partially Forecast	Year End	Partial	Yes
	Oklahoma	Electric	Historical	Year End	Partial	Yes
	Tennessee	Electric	Fully Forecast	Average	No	No
	Texas	Electric	Historical	Year End	No	Yes
	Virginia	Electric	Historical	Year End	No	Yes
	West Virginia	Electric	Historical	Average	No	Yes
DTE Energy Company	Michigan	Electric	Fully Forecast	Average	No	No
	Michigan	Gas	Fully Forecast	Average	Partial	Yes
FirstEnergy Corp.	Maryland	Electric	Partially Forecast	Average	No	No
	New Jersey	Electric	Partially Forecast	Year End	No	No
	Ohio	Electric	Partially Forecast	Year End	Partial	Yes
	Pennsylvania	Electric	Fully Forecast	Year End	No	Yes
	West Virginia	Electric	Historical	Average	No	Yes
Evergy, Inc.	Kansas	Electric	Historical	Year End	No	Yes
	Missouri	Electric	Historical	Year End	Partial	Yes
OGE Energy Corporation	Arkansas	Electric	Fully Forecast	Year End	Partial	Yes
	Oklahoma	Electric	Partially Forecast	Year End	Partial	Yes
Otter Tail Corporation	Minnesota	Electric	Fully Forecast	Average	No	No
	North Dakota	Electric	Fully Forecast	Average	No	Yes
PPL Corporation	Kentucky	Electric	Fully Forecast	Year End	Partial	No
	Kentucky	Gas	Fully Forecast	Year End	Partial	Yes
	Pennsylvania	Electric	Fully Forecast	Year End	No	Yes
	Virginia	Electric	Historical	Year End	No	No

						Revenue Decoupling		Capital Cost Recovery	
Proxy Group Average		Fully Forecast	14	Year End	22	Full	1	Yes	21
		Partially Forecast	6	Average	10	Partial	14	No	11
		Historical	12			No	17		
		Forecast	62.50%	Year End	68.75%	RDM	46.88%	CCRM	65.63%

Minnesota Power [5]	Minnesota	Electric	Fully Forecast	Average	No	Yes

Notes:
[1] Source: "Alternative Regulation for Evolving Utility Challenges," Prepared by Pacific Economics Group Research for Edison Electric Institute, Table 6, November 2015; S&P RRA Research; Company Investor Presentations.
[2] Source: Regulatory Research Associates, effective as of September 26, 2019.
[3] - [4] Source: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated September 28, 2018. Operating subsidiaries not covered in this report were excluded from this exhibit.
[5] Data provided by Minnesota Power

COMPARISON OF MINNESOTA POWER AND PROXY GROUP COMPANIES
FIXED COST RECOVERY - RESIDENTIAL RATE CLASS

Proxy Group Company	Operating Subsidiary	Operation State	Operation			Customer Charge (per month) [1]	Block Structure [2]	Source
Ameren Corporation	Ameren Illinois Company	Illinois	Electric	1	[3]	$ 13.54	Flat	DS-1 (Residential)
	Ameren Illinois Company	Illinois	Gas	1		$ 19.70	Flat	Rate GDS-1 - Residential Gas Delivery Service
	Union Electric Company	Missouri	Electric	1		$ 9.00	Flat	Residential Service Rate, 3rd Revised Sheet No. 54
	Union Electric Company	Missouri	Gas	1		$ 15.00	Flat	Residential Service Rate
American Electric Power Company, Inc.	Southwestern Electric Power Company	Arkansas	Electric	1		$ 7.75	Inclining	Residential Service, Sheet No. R-2.1
	Indiana Michigan Power Company	Indiana	Electric	1		$ 10.50	Flat	Tariff R.S., Original Sheet No. 4
	Kentucky Power Company	Kentucky	Electric	1		$ 14.00	Flat	Tariff R.S., 2nd Revised Sheet No. 6-1
	Southwestern Electric Power Company	Louisiana	Electric	1		$ 5.49	Flat	Residential Service, Sheet No. A-1
	Indiana Michigan Power Company	Michigan	Electric	1		$ 7.25	Flat	Tariff RS, Original Sheet No. D-2.00
	Ohio Power Company	Ohio	Electric	1		$ 8.40	Flat	Schedule RS, 6th Revised Sheet No. 210-1
	Public Service Company of Oklahoma	Oklahoma	Electric	1		$ 20.00	Inclining	Schedule RS, 6th Revised Sheet No. 3-2
	Kingsport Power Company	Tennessee	Electric	1		$ 12.63	Flat	Tariff R.S., Original Sheet No. 3
	AEP Texas Central Company	Texas	Electric	1	[3]	$ 6.74	Flat	6.1.1.1.1 Residential Service, pp. 114
	AEP Texas North Company	Texas	Electric	1	[3]	$ 8.18	Flat	6.1.1.1.1 Residential Service, pp. 111
	Southwestern Electric Power Company	Texas	Electric	1		$ 8.00	Flat	RS, pp. 11 (Sheet No. IV-1)
	Appalachian Power Company	Virginia	Electric	1		$ 7.96	Flat	Schedule R.S., First Revision Sheet No. 4-1
	Appalachian Power Company	West Virginia	Electric	1		$ 12.00	Declining	Schedule R.S., Original Sheet No. 5-1
DTE Energy Company	DTE Electric Company	Michigan	Electric	1		$ 7.50	Inclining	Residential Service Rate, Seventh Revised Sheet No. D-1.00
	Citizens Gas Fuel Company	Michigan	Gas	1		$ 10.50	Flat	Residential Service, Sixteenth Revised Sheet No. 6
	DTE Gas Company	Michigan	Gas	1		$ 11.25	Flat	Residential Service Rate A, Second Revised Sheet No. D-9.00
FirstEnergy Corp.	Potomac Edison Company	Maryland	Electric	1		$ 5.70	Flat	Schedule "R", First Revision of Page No. 6
	Jersey Central Power & Light Company	New Jersey	Electric	1		$ 2.78	Inclining	Service Classification RS, 7th Rev. Sheet No. 3
	Pennsylvania Electric Company	New York	Electric	1		$ 7.49	Flat	Residential Service, Eighth Revised Leaf No. 101
	Cleveland Electric Illuminating Company	Ohio	Electric	1		$ 4.00	Flat	Rate RS, Original Sheet 10
	Ohio Edison Company	Ohio	Electric	1		$ 4.00	Flat	Rate RS, Original Sheet 10
	Toledo Edison Company	Ohio	Electric	1		$ 4.00	Flat	Rate RS, Original Sheet 10
	Metropolitan Edison Company	Pennsylvania	Electric	1		$ 11.25	Flat	Rate RS, Fourth Revised Page 58
	Pennsylvania Electric Company	Pennsylvania	Electric	1		$ 11.25	Flat	Rate RS, Fourth Revised Page 63
	West Penn Power Company	Pennsylvania	Electric	1		$ 7.44	Flat	Schedule 10: Domestic Service, Fourth Revised Page 64
	Pennsylvania Power Company	Pennsylvania	Electric	1		$ 11.00	Flat	Rate RS, Fourth Revised Page 57
	Monongahela Power Company	West Virginia	Electric	1		$ 5.00	Flat	Residential Service Rate, Eighth Revision of Original Sheet No. 7-1
	Potomac Edison Company	West Virginia	Electric	1		$ 5.00	Flat	Schedule "R", Eighth Revision of Original Sheet No. 8-1
Evergy, Inc.	Kansas City Power & Light Company	Kansas	Electric	1		$ 14.25	Flat	Schedule R, Schedule 11 Sheet 2
	Kansas City Power & Light Company	Missouri	Electric	1		$ 11.47	Inclining	Schedule R, P.S.C. MO. No. 7, Tenth Revised Sheet No. 5A
	KCP&L Greater Missouri Operations Company	Missouri	Electric	1		$ 11.47	Inclining	RS Electric; P.S.C. MO. No. 1, 1st Revised Sheet No. 146.1
	Westar Energy, Inc. d.b.a Westar Energy	Kansas	Electric	1		$ 14.50	Inclining	Schedule RS, Sheet 2
OGE Energy Corporation	Oklahoma Gas and Electric Company	Arkansas	Electric	1		$ 9.75	Inclining	Schedule R-1 Residential Service, Sheet No. 3.0
	Oklahoma Gas and Electric Company	Oklahoma	Electric	1		$ 13.00	Inclining	Schedule R-1 Residential Service, 3rd Revised Sheet No. 3.00
Otter Tail Corporation	Otter Tail Power Company	Minnesota	Electric	1		$ 9.75	Flat	Residential Service (29th Revision)
	Otter Tail Power Company	North Dakota	Electric	1		$ 14.00	Flat	Residential Service (19th Revision)
	Otter Tail Power Company	South Dakota	Electric	1		$ 10.00	Flat	Residential Service (4th Revised Sheet No. 1)
PPL Corporation	Kentucky Utilities Company	Kentucky	Electric	1	[4]	$ 16.12	Flat	RS, P.S.C. No. 19, Original Sheet No. 5
	Louisville Gas and Electric Company	Kentucky	Electric	1	[4]	$ 13.69	Flat	RS, P.S.C. No. 12, Original Sheet No. 5
	Louisville Gas and Electric Company	Kentucky	Gas	1	[4]	$ 19.77	Flat	Residential Gas Service, P.S.C. Gas No. 12, First Revision of Original Sheet No. 5
	PPL Electric Utilities Corporation	Pennsylvania	Electric	1		$ 17.78	Flat	Rate Schedule RS, Eightieth Revised Page No. 20
	Old Dominion Power Company	Virginia	Electric	1		$ 12.00	Flat	RS, S.C.C. No. 17, Original Sheet No. 5
							Declining: 1	
					Min	$ 2.78	Flat: 36	
Total Jurisdictions				46	Mean	$ 10.48	Proxy Company Totals Inclining: 9	
					Max	$ 20.00	Inclining: 19.57%	
ALLETE, Inc.	Minnesota Power	Minnesota	Electric			$ 8.00	Inclining	Rate RS

Notes:
[1] Source: Company Tariffs.
[2] Source: Company Tariffs. For seasonal rate design, the peak period rates were used which resulted in summer month rates for electric operations and winter month rates for gas operations.
[3] Customer Charge calculated as the sum of the customer charge and meter charge.
[4] Average Number of Days in a Month = 30.42

PROXY GROUP SCREENING DATA AND RESULTS

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Company		Dividends	S&P Credit Rating Between BBB- and AAA	Covered by More Than 1 Analyst	Positive Growth Rates from at least two sources (Value Line, Yahoo! First Call, and Zacks)	Generation Assets Included in Rate Base	% Regulated Coal Generation Capacity > 35%	% Regulated Operating Income > 70%	% Regulated Electric Operating Income > 80%	Announced Merger
Ameren Corporation	AEE	Yes	BBB+	Yes	Yes	Yes	49.97%	100.00%	88.30%	No
American Electric Power Company, Inc.	AEP	Yes	A-	Yes	Yes	Yes	51.92%	95.59%	100.00%	No
DTE Energy Company	DTE	Yes	BBB+	Yes	Yes	Yes	50.70%	92.77%	80.55%	No
FirstEnergy Corporation	FE	Yes	BBB	Yes	Yes	Yes	88.89%	100.00%	100.00%	No
Evergy, Inc.	EVRG	Yes	A-	Yes	Yes	Yes	50.00%	100.00%	100.00%	No
OGE Energy Corporation	OGE	Yes	BBB+	Yes	Yes	Yes	37.97%	99.55%	100.00%	No
Otter Tail Corporation	OTTR	Yes	BBB	Yes	Yes	Yes	66.95%	73.45%	100.00%	No
PPL Corporation	PPL	Yes	A-	Yes	Yes	Yes	61.74%	100.00%	95.79%	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: SNL Financial
[7] to [8] Source: Form 10-Ks for 2018, 2017 & 2016
[9] 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	2008-2017	10,678.17	$ 45.48	n/a	n/a	$ 45.40	$ 842.39	$ 485,620.04	$ 484,777.65	0.173%
Mean							$ 2,451.53	$ 126,182.26	$ 123,730.73	
							WEIGHTED AVERAGE FLOTATION COSTS			1.943% [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 0.9806, 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
Ameren Corporation	AEE	$1.90	$76.21	2.49%	2.57%	2.62%	6.50%	4.70%	6.40%	5.87%	8.43%	8.48%
American Electric Power Company, Inc.	AEP	$2.68	$89.78	2.99%	3.06%	3.12%	4.00%	6.10%	5.70%	5.27%	8.33%	8.39%
DTE Energy Company	DTE	$3.78	$128.83	2.93%	3.01%	3.07%	5.50%	4.45%	6.00%	5.32%	8.33%	8.39%
FirstEnergy Corporation	FE	$1.52	$44.48	3.42%	3.54%	3.61%	8.00%	Negative	6.00%	7.00%	10.54%	10.61%
Evergy, Inc.	EVRG	$1.90	$62.78	3.03%	3.13%	3.19%	NMF	6.80%	6.60%	6.70%	9.83%	9.89%
OGE Energy Corporation	OGE	$1.46	$42.74	3.42%	3.50%	3.56%	6.50%	3.10%	4.40%	4.67%	8.16%	8.23%
Otter Tail Corporation	OTTR	$1.40	$51.60	2.71%	2.81%	2.86%	5.00%	9.00%	7.00%	7.00%	9.81%	9.86%
PPL Corporation	PPL	$1.65	$29.63	5.57%	5.60%	5.71%	1.50%	0.59%	NA%	1.05%	6.64%	6.75%
Mean											8.76%	8.83%
Flotation Cost Adjustment											[12]	0.07%

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 August 30, 2019
[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])

Minnesota Power
Docket No. E015/GR-19-442

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

										All Proxy Group			With Exclusions		
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
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	Low ROE	Mean ROE	High ROE
Ameren Corporation	AEE	$1.90	$76.21	2.49%	2.57%	6.50%	4.70%	6.40%	5.87%	7.25%	8.43%	9.07%	7.25%	8.43%	9.07%
American Electric Power Company, Inc.	AEP	$2.68	$89.78	2.99%	3.06%	4.00%	6.10%	5.70%	5.27%	7.04%	8.33%	9.18%	7.04%	8.33%	9.18%
DTE Energy Company	DTE	$3.78	$128.83	2.93%	3.01%	5.50%	4.45%	6.00%	5.32%	7.45%	8.33%	9.02%	7.45%	8.33%	9.02%
FirstEnergy Corporation	FE	$1.52	$44.48	3.42%	3.54%	8.00%	Negative	6.00%	7.00%	9.52%	10.54%	11.55%	9.52%	10.54%	11.55%
Evergy, Inc.	EVRG	$1.90	$62.78	3.03%	3.13%	NMF	6.80%	6.60%	6.70%	9.73%	9.83%	9.93%	9.73%	9.83%	9.93%
OGE Energy Corporation	OGE	$1.46	$42.74	3.42%	3.50%	6.50%	3.10%	4.40%	4.67%	6.57%	8.16%	10.03%		8.16%	10.03%
Otter Tail Corporation	OTTR	$1.40	$51.60	2.71%	2.81%	5.00%	9.00%	7.00%	7.00%	7.78%	9.81%	11.84%	7.78%	9.81%	11.84%
PPL Corporation	PPL	$1.65	$29.63	5.57%	5.60%	1.50%	0.59%	NA%	1.05%	6.18%	6.64%	7.11%			7.11%
Mean				3.32%	3.40%	5.29%	4.96%	6.01%	5.36%	7.69%	8.76%	9.72%	8.13%	9.06%	9.72%
Flotation Cost										0.07%	0.07%	0.07%	0.07%	0.07%	0.07%
Flotation Cost-Adjusted Result										7.76%	8.83%	9.78%	8.20%	9.13%	9.78%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 30-day average as of August 30, 2019.
[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])
[12] - [14] 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 CONSTANT GROWTH DCF -- MINNESOTA POWER PROXY GROUP

										All Proxy Group			With Exclusions		
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
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	Low ROE	Mean ROE	High ROE
Ameren Corporation	AEE	$1.90	$75.37	2.52%	2.59%	6.50%	4.70%	6.40%	5.87%	7.28%	8.46%	9.10%	7.28%	8.46%	9.10%
American Electric Power Company, Inc.	AEP	$2.68	$88.56	3.03%	3.11%	4.00%	6.10%	5.70%	5.27%	7.09%	8.37%	9.22%	7.09%	8.37%	9.22%
DTE Energy Company	DTE	$3.78	$128.21	2.95%	3.03%	5.50%	4.45%	6.00%	5.32%	7.46%	8.34%	9.04%	7.46%	8.34%	9.04%
FirstEnergy Corporation	FE	$1.52	$43.31	3.51%	3.63%	8.00%	Negative	6.00%	7.00%	9.62%	10.63%	11.65%	9.62%	10.63%	11.65%
Evergy, Inc.	EVRG	$1.90	$60.60	3.14%	3.24%	NMF	6.80%	6.60%	6.70%	9.84%	9.94%	10.04%	9.84%	9.94%	10.04%
OGE Energy Corporation	OGE	$1.46	$42.64	3.42%	3.50%	6.50%	3.10%	4.40%	4.67%	6.58%	8.17%	10.03%		8.17%	10.03%
Otter Tail Corporation	OTTR	$1.40	$51.58	2.71%	2.81%	5.00%	9.00%	7.00%	7.00%	7.78%	9.81%	11.84%	7.78%	9.81%	11.84%
PPL Corporation	PPL	$1.65	$30.37	5.43%	5.46%	1.50%	0.59%	NA%	1.05%	6.04%	6.51%	6.97%			
Mean				3.34%	3.42%	5.29%	4.96%	6.01%	5.36%	7.71%	8.78%	9.74%	8.18%	9.10%	10.13%
Flotation Cost										0.07%	0.07%	0.07%	0.07%	0.07%	0.07%
Flotation Cost-Adjusted Result										7.78%	8.85%	9.80%	8.25%	9.17%	10.20%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 90-day average as of August 30, 2019.
[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])
[12] - [14] Excludes companies with ROEs less than the a 7.00% return, consistent with the Department position in Docket No. E-002/GR-15-826

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

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	All Proxy Group [9]	All Proxy Group [10]	All Proxy Group [11]	With Exclusions [12]	With Exclusions [13]	With Exclusions [14]
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	Low ROE	Mean ROE	High ROE
Ameren Corporation	AEE	$1.90	$72.50	2.62%	2.70%	6.50%	4.70%	6.40%	5.87%	7.38%	8.56%	9.21%	7.38%	8.56%	9.21%
American Electric Power Company, Inc.	AEP	$2.68	$84.21	3.18%	3.27%	4.00%	6.10%	5.70%	5.27%	7.25%	8.53%	9.38%	7.25%	8.53%	9.38%
DTE Energy Company	DTE	$3.78	$123.52	3.06%	3.14%	5.50%	4.45%	6.00%	5.32%	7.58%	8.46%	9.15%	7.58%	8.46%	9.15%
FirstEnergy Corporation	FE	$1.52	$41.47	3.67%	3.79%	8.00%	Negative	6.00%	7.00%	9.78%	10.79%	11.81%	9.78%	10.79%	11.81%
Evergy, Inc.	EVRG	$1.90	$58.84	3.23%	3.34%	NMF	6.80%	6.60%	6.70%	9.94%	10.04%	10.14%	9.94%	10.04%	10.14%
OGE Energy Corporation	OGE	$1.46	$41.99	3.48%	3.56%	6.50%	3.10%	4.40%	4.67%	6.63%	8.22%	10.09%		8.22%	10.09%
Otter Tail Corporation	OTTR	$1.40	$50.45	2.78%	2.87%	5.00%	9.00%	7.00%	7.00%	7.84%	9.87%	11.90%	7.84%	9.87%	11.90%
PPL Corporation	PPL	$1.65	$30.62	5.39%	5.42%	1.50%	0.59%	NA%	1.05%	5.99%	6.46%	6.93%			
Mean				3.42%	3.51%	5.29%	4.96%	6.01%	5.36%	7.80%	8.87%	9.83%	8.29%	9.21%	10.24%
Flotation Cost										0.07%	0.07%	0.07%	0.07%	0.07%	0.07%
Flotation Cost-Adjusted Result										7.87%	8.94%	9.89%	8.36%	9.28%	10.31%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 180-day average as of August 30, 2019.
[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])
[12] - [14] Excludes companies with ROEs less than the a 7.00% return, consistent with the Department position in Docket No. E-002/GR-15-826

Minnesota Power
Docket No. E015/GR-19-442

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

		[1]	[2]	[3]	[4]	[5]	[9]	[10]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Average Growth Rate	Second Growth Rate	Mean ROE
Ameren Corporation	AEE	$1.90	$76.21	2.49%	2.57%	5.87%	5.87%	8.43%
American Electric Power Company, Inc.	AEP	$2.68	$89.78	2.99%	3.06%	5.27%	5.27%	8.33%
DTE Energy Company	DTE	$3.78	$128.83	2.93%	3.01%	5.32%	5.32%	8.33%
FirstEnergy Corporation	FE	$1.52	$44.48	3.42%	3.54%	7.00%	7.00%	10.54%
Evergy, Inc.	EVRG	$1.90	$62.78	3.03%	3.13%	6.70%	6.70%	9.83%
OGE Energy Corporation	OGE	$1.46	$42.74	3.42%	3.50%	4.67%	4.67%	8.16%
Otter Tail Corporation	OTTR	$1.40	$51.60	2.71%	2.81%	7.00%	7.00%	9.81%
PPL Corporation	PPL	$1.65	$29.63	5.57%	5.60%	1.05%	3.41%	8.57%
Mean				3.32%	3.40%	5.36%	5.65%	9.00%
Mean (excluding ROE < 7%) [30]								9.00%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								9.07%

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.96	1.08	1.80	$2.07	1.18	1.76	$2.19	1.27	1.72	$2.32	1.38	1.68	$2.46	1.50	1.64	$2.60	$101.35	$67.61	$76.21
American Electric Power Company, Inc.	$2.75	1.08	2.54	$2.90	1.17	2.47	$3.05	1.27	2.40	$3.21	1.38	2.33	$3.38	1.49	2.26	$3.56	$116.05	$77.78	$89.78
DTE Energy Company	$3.88	1.08	3.58	$4.09	1.17	3.48	$4.30	1.27	3.39	$4.53	1.38	3.29	$4.77	1.49	3.20	$5.03	$166.92	$111.89	$128.83
FirstEnergy Corporation	$1.57	1.11	1.42	$1.68	1.22	1.38	$1.80	1.35	1.33	$1.93	1.49	1.29	$2.06	1.65	1.25	$2.21	$62.39	$37.81	$44.48
Evergy, Inc.	$1.96	1.10	1.79	$2.10	1.21	1.74	$2.24	1.32	1.69	$2.39	1.45	1.64	$2.55	1.60	1.59	$2.72	$86.82	$54.33	$62.78
OGE Energy Corporation	$1.49	1.08	1.38	$1.56	1.17	1.34	$1.64	1.27	1.29	$1.71	1.37	1.25	$1.79	1.48	1.21	$1.88	$53.69	$36.27	$42.74
Otter Tail Corporation	$1.45	1.10	1.32	$1.55	1.21	1.29	$1.66	1.32	1.25	$1.78	1.45	1.22	$1.90	1.60	1.19	$2.03	$72.38	$45.34	$51.60
PPL Corporation	$1.66	1.09	1.53	$1.68	1.18	1.42	$1.69	1.28	1.32	$1.71	1.39	1.23	$1.73	1.51	1.15	$1.79	$34.66	$22.98	$29.63

Standard Deviation [6]	1.95%
Avg. less Standard Dev [7]	3.41%
Avg. plus Standard Dev [8]	7.30%

Notes:
[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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-STAGE GROWTH DCF -- MEAN GROWTH RATE

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Average Growth Rate	[9] Second Growth Rate	[10] Mean ROE
Ameren Corporation	AEE	$1.90	$75.37	2.52%	2.59%	5.87%	5.87%	8.46%
American Electric Power Company, Inc.	AEP	$2.68	$88.56	3.03%	3.11%	5.27%	5.27%	8.37%
DTE Energy Company	DTE	$3.78	$128.21	2.95%	3.03%	5.32%	5.32%	8.34%
FirstEnergy Corporation	FE	$1.52	$43.31	3.51%	3.63%	7.00%	7.00%	10.63%
Evergy, Inc.	EVRG	$1.90	$60.60	3.14%	3.24%	6.70%	6.70%	9.94%
OGE Energy Corporation	OGE	$1.46	$42.64	3.42%	3.50%	4.67%	4.67%	8.17%
Otter Tail Corporation	OTTR	$1.40	$51.58	2.71%	2.81%	7.00%	7.00%	9.81%
PPL Corporation	PPL	$1.65	$30.37	5.43%	5.46%	1.05%	3.41%	8.44%
Mean				3.34%	3.42%	5.36%	5.65%	9.02%
Mean (excluding ROE < 7%) [30]								9.02%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								9.09%

Standard Deviation [6]	1.95%
Avg. less Standard Dev [7]	3.41%
Avg. plus Standard Dev [8]	7.30%

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.96	1.08	1.80	$2.07	1.18	1.76	$2.19	1.28	1.72	$2.32	1.38	1.68	$2.46	1.50	1.64	$2.60	$100.23	$66.77	$75.37
American Electric Power Company, Inc.	$2.75	1.08	2.54	$2.90	1.17	2.47	$3.05	1.27	2.39	$3.21	1.38	2.33	$3.38	1.49	2.26	$3.56	$114.47	$76.58	$88.56
DTE Energy Company	$3.88	1.08	3.58	$4.09	1.17	3.48	$4.30	1.27	3.38	$4.53	1.38	3.29	$4.77	1.49	3.20	$5.03	$166.11	$111.27	$128.21
FirstEnergy Corporation	$1.57	1.11	1.42	$1.68	1.22	1.38	$1.80	1.35	1.33	$1.93	1.50	1.29	$2.06	1.66	1.24	$2.21	$60.74	$36.65	$43.31
Evergy, Inc.	$1.96	1.10	1.79	$2.10	1.21	1.73	$2.24	1.33	1.68	$2.39	1.46	1.63	$2.55	1.61	1.58	$2.72	$83.81	$52.18	$60.60
OGE Energy Corporation	$1.49	1.08	1.38	$1.56	1.17	1.34	$1.64	1.27	1.29	$1.71	1.37	1.25	$1.79	1.48	1.21	$1.88	$53.57	$36.17	$42.64
Otter Tail Corporation	$1.45	1.10	1.32	$1.55	1.21	1.29	$1.66	1.32	1.25	$1.78	1.45	1.22	$1.90	1.60	1.19	$2.03	$72.35	$45.31	$51.58
PPL Corporation	$1.66	1.08	1.53	$1.68	1.18	1.43	$1.69	1.28	1.33	$1.71	1.38	1.24	$1.73	1.50	1.15	$1.79	$35.54	$23.70	$30.38

Notes:
[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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

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

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Average Growth Rate	[9] Second Growth Rate	[10] Mean ROE
Ameren Corporation	AEE	$1.90	$72.50	2.62%	2.70%	5.87%	5.87%	8.56%
American Electric Power Company, Inc.	AEP	$2.68	$84.21	3.18%	3.27%	5.27%	5.27%	8.53%
DTE Energy Company	DTE	$3.78	$123.52	3.06%	3.14%	5.32%	5.32%	8.46%
FirstEnergy Corporation	FE	$1.52	$41.47	3.67%	3.79%	7.00%	7.00%	10.79%
Evergy, Inc.	EVRG	$1.90	$58.84	3.23%	3.34%	6.70%	6.70%	10.04%
OGE Energy Corporation	OGE	$1.46	$41.99	3.48%	3.56%	4.67%	4.67%	8.22%
Otter Tail Corporation	OTTR	$1.40	$50.45	2.78%	2.87%	7.00%	7.00%	9.87%
PPL Corporation	PPL	$1.65	$30.62	5.39%	5.42%	1.05%	3.41%	8.40%
Mean				3.42%	3.51%	5.36%	5.65%	9.11%
Mean (excluding ROE < 7%) [30]								9.11%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								9.18%
				Standard Deviation [6]		1.95%		
				Avg. less Standard Dev [7]		3.41%		
				Avg. plus Standard Dev [8]		7.30%		

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.96	1.09	1.80	$2.07	1.18	1.76	$2.19	1.28	1.71	$2.32	1.39	1.67	$2.46	1.51	1.63	$2.60	$96.42	$63.93	$72.50
American Electric Power Company, Inc.	$2.75	1.09	2.53	$2.90	1.18	2.46	$3.05	1.28	2.38	$3.21	1.39	2.31	$3.38	1.51	2.24	$3.56	$108.85	$72.28	$84.21
DTE Energy Company	$3.88	1.08	3.58	$4.09	1.18	3.47	$4.30	1.28	3.37	$4.53	1.38	3.28	$4.77	1.50	3.18	$5.03	$160.04	$106.64	$123.52
FirstEnergy Corporation	$1.57	1.11	1.42	$1.68	1.23	1.37	$1.80	1.36	1.32	$1.93	1.51	1.28	$2.06	1.67	1.24	$2.21	$58.17	$34.84	$41.47
Evergy, Inc.	$1.96	1.10	1.78	$2.10	1.21	1.73	$2.24	1.33	1.68	$2.39	1.47	1.63	$2.55	1.61	1.58	$2.72	$81.37	$50.44	$58.84
OGE Energy Corporation	$1.49	1.08	1.38	$1.56	1.17	1.34	$1.64	1.27	1.29	$1.71	1.37	1.25	$1.79	1.48	1.21	$1.88	$52.75	$35.53	$41.99
Otter Tail Corporation	$1.45	1.10	1.32	$1.55	1.21	1.28	$1.66	1.33	1.25	$1.78	1.46	1.22	$1.90	1.60	1.19	$2.03	$70.76	$44.19	$50.45
PPL Corporation	$1.66	1.08	1.53	$1.68	1.18	1.43	$1.69	1.27	1.33	$1.71	1.38	1.24	$1.73	1.50	1.16	$1.79	$35.84	$23.94	$30.62

Notes:
[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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

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

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Low Growth Rate	[9] Second Growth Rate	[10] Mean ROE
Ameren Corporation	AEE	$1.90	$76.21	2.49%	2.55%	4.70%	4.70%	7.25%
American Electric Power Company, Inc.	AEP	$2.68	$89.78	2.99%	3.04%	4.00%	4.00%	7.04%
DTE Energy Company	DTE	$3.78	$128.83	2.93%	3.00%	4.45%	4.45%	7.45%
FirstEnergy Corporation	FE	$1.52	$44.48	3.42%	3.52%	6.00%	6.00%	9.52%
Evergy, Inc.	EVRG	$1.90	$62.78	3.03%	3.13%	6.60%	6.16%	9.34%
OGE Energy Corporation	OGE	$1.46	$42.74	3.42%	3.47%	3.10%	3.10%	6.57%
Otter Tail Corporation	OTTR	$1.40	$51.60	2.71%	2.78%	5.00%	5.00%	7.78%
PPL Corporation	PPL	$1.65	$29.63	5.57%	5.59%	0.59%	2.45%	7.68%
Mean				3.32%	3.38%	4.31%	4.48%	7.83%
Mean (excluding ROE < 7%) [30]								8.01%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								8.08%

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.94	1.07	1.81	$2.04	1.15	1.77	$2.13	1.23	1.73	$2.23	1.32	1.69	$2.34	1.42	1.65	$2.45	$95.89	$67.57	$76.21
American Electric Power Company, Inc.	$2.73	1.07	2.55	$2.84	1.15	2.48	$2.96	1.23	2.41	$3.07	1.31	2.34	$3.20	1.41	2.28	$3.33	$109.23	$77.72	$89.78
DTE Energy Company	$3.86	1.07	3.60	$4.04	1.15	3.50	$4.22	1.24	3.40	$4.40	1.33	3.30	$4.60	1.43	3.21	$4.80	$160.16	$111.82	$128.83
FirstEnergy Corporation	$1.57	1.10	1.43	$1.66	1.20	1.38	$1.76	1.31	1.34	$1.86	1.44	1.30	$1.98	1.58	1.25	$2.10	$59.53	$37.78	$44.48
Evergy, Inc.	$1.96	1.09	1.80	$2.09	1.20	1.75	$2.23	1.31	1.71	$2.38	1.43	1.66	$2.53	1.56	1.62	$2.69	$84.75	$54.24	$62.77
OGE Energy Corporation	$1.48	1.07	1.39	$1.53	1.14	1.35	$1.58	1.21	1.30	$1.62	1.29	1.26	$1.68	1.37	1.22	$1.73	$49.79	$36.22	$42.74
Otter Tail Corporation	$1.44	1.08	1.33	$1.51	1.16	1.30	$1.58	1.25	1.26	$1.66	1.35	1.23	$1.74	1.45	1.20	$1.83	$65.86	$45.28	$51.60
PPL Corporation	$1.65	1.08	1.54	$1.66	1.16	1.44	$1.67	1.25	1.34	$1.68	1.34	1.25	$1.69	1.45	1.17	$1.74	$33.15	$22.89	$29.63

Standard Deviation [6]	1.86%
Avg. less Standard Dev [7]	2.45%
Avg. plus Standard Dev [8]	6.16%

Notes:
[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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

Minnesota Power
Docket No. E015/GR-19-442

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

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Low Growth Rate	[9] Second Growth Rate	[10] Mean ROE
Ameren Corporation	AEE	$1.90	$75.37	2.52%	2.58%	4.70%	4.70%	7.28%
American Electric Power Company, Inc.	AEP	$2.68	$88.56	3.03%	3.09%	4.00%	4.00%	7.09%
DTE Energy Company	DTE	$3.78	$128.21	2.95%	3.01%	4.45%	4.45%	7.46%
FirstEnergy Corporation	FE	$1.52	$43.31	3.51%	3.62%	6.00%	6.00%	9.62%
Evergy, Inc.	EVRG	$1.90	$60.60	3.14%	3.24%	6.60%	6.16%	9.45%
OGE Energy Corporation	OGE	$1.46	$42.64	3.42%	3.48%	3.10%	3.10%	6.58%
Otter Tail Corporation	OTTR	$1.40	$51.58	2.71%	2.78%	5.00%	5.00%	7.78%
PPL Corporation	PPL	$1.65	$30.37	5.43%	5.45%	0.59%	2.45%	7.55%
Mean				3.34%	3.41%	4.31%	4.48%	7.85%
Mean (excluding ROE < 7%) [30]								8.03%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								8.10%

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.94	1.07	1.81	$2.04	1.15	1.77	$2.13	1.23	1.73	$2.23	1.32	1.69	$2.34	1.42	1.64	$2.45	$94.83	$66.73	$75.37
American Electric Power Company, Inc.	$2.73	1.07	2.55	$2.84	1.15	2.48	$2.96	1.23	2.41	$3.07	1.32	2.34	$3.20	1.41	2.27	$3.33	$107.75	$76.51	$88.56
DTE Energy Company	$3.86	1.07	3.60	$4.04	1.15	3.49	$4.22	1.24	3.40	$4.40	1.33	3.30	$4.60	1.43	3.21	$4.80	$159.39	$111.21	$128.21
FirstEnergy Corporation	$1.57	1.10	1.43	$1.66	1.20	1.38	$1.76	1.32	1.34	$1.86	1.44	1.29	$1.98	1.58	1.25	$2.10	$57.95	$36.62	$43.31
Evergy, Inc.	$1.96	1.09	1.79	$2.09	1.20	1.75	$2.23	1.31	1.70	$2.38	1.44	1.66	$2.53	1.57	1.61	$2.69	$81.81	$52.09	$60.60
OGE Energy Corporation	$1.48	1.07	1.39	$1.53	1.14	1.35	$1.58	1.21	1.30	$1.62	1.29	1.26	$1.68	1.38	1.22	$1.73	$49.68	$36.13	$42.64
Otter Tail Corporation	$1.44	1.08	1.33	$1.51	1.16	1.30	$1.58	1.25	1.26	$1.66	1.35	1.23	$1.74	1.45	1.20	$1.83	$65.83	$45.26	$51.58
PPL Corporation	$1.65	1.08	1.54	$1.66	1.16	1.44	$1.67	1.24	1.35	$1.68	1.34	1.26	$1.69	1.44	1.18	$1.74	$33.99	$23.62	$30.38

Standard Deviation [6]	1.86%
Avg. less Standard Dev [7]	2.45%
Avg. plus Standard Dev [8]	6.16%

Notes:
[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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

Minnesota Power
Docket No. E015/GR-19-442

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

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Low Growth Rate	[9] Second Growth Rate	[10] Mean ROE
Ameren Corporation	AEE	$1.90	$72.50	2.62%	2.68%	4.70%	4.70%	7.38%
American Electric Power Company, Inc.	AEP	$2.68	$84.21	3.18%	3.25%	4.00%	4.00%	7.25%
DTE Energy Company	DTE	$3.78	$123.52	3.06%	3.13%	4.45%	4.45%	7.58%
FirstEnergy Corporation	FE	$1.52	$41.47	3.67%	3.78%	6.00%	6.00%	9.78%
Evergy, Inc.	EVRG	$1.90	$58.84	3.23%	3.34%	6.60%	6.16%	9.55%
OGE Energy Corporation	OGE	$1.46	$41.99	3.48%	3.53%	3.10%	3.10%	6.63%
Otter Tail Corporation	OTTR	$1.40	$50.45	2.78%	2.84%	5.00%	5.00%	7.84%
PPL Corporation	PPL	$1.65	$30.62	5.39%	5.40%	0.59%	2.45%	7.51%
Mean				3.42%	3.49%	4.31%	4.48%	7.94%
Mean (excluding ROE < 7%) [30]								8.13%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								8.19%

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.94	1.07	1.81	$2.04	1.15	1.77	$2.13	1.24	1.72	$2.23	1.33	1.68	$2.34	1.43	1.64	$2.45	$91.22	$63.89	$72.50
American Electric Power Company, Inc.	$2.73	1.07	2.55	$2.84	1.15	2.47	$2.96	1.23	2.40	$3.07	1.32	2.32	$3.20	1.42	2.25	$3.33	$102.45	$72.21	$84.21
DTE Energy Company	$3.86	1.08	3.59	$4.04	1.16	3.49	$4.22	1.25	3.39	$4.40	1.34	3.29	$4.60	1.44	3.19	$4.80	$153.56	$106.57	$123.52
FirstEnergy Corporation	$1.57	1.10	1.43	$1.66	1.21	1.38	$1.76	1.32	1.33	$1.86	1.45	1.28	$1.98	1.59	1.24	$2.10	$55.50	$34.81	$41.47
Evergy, Inc.	$1.96	1.10	1.79	$2.09	1.20	1.74	$2.23	1.31	1.70	$2.38	1.44	1.65	$2.53	1.58	1.61	$2.69	$79.44	$50.35	$58.84
OGE Energy Corporation	$1.48	1.07	1.39	$1.53	1.14	1.34	$1.58	1.21	1.30	$1.62	1.29	1.26	$1.68	1.38	1.22	$1.73	$48.92	$35.48	$41.99
Otter Tail Corporation	$1.44	1.08	1.33	$1.51	1.16	1.30	$1.58	1.25	1.26	$1.66	1.35	1.23	$1.74	1.46	1.20	$1.83	$64.39	$44.14	$50.45
PPL Corporation	$1.65	1.08	1.54	$1.66	1.16	1.44	$1.67	1.24	1.35	$1.68	1.34	1.26	$1.69	1.44	1.18	$1.74	$34.27	$23.86	$30.62

Standard Deviation [6]	1.86%
Avg. less Standard Dev [7]	2.45%
Avg. plus Standard Dev [8]	6.16%

Notes:

[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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

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

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] High Growth Rate	[9] Second Growth Rate	[10] Mean ROE
Ameren Corporation	AEE	$1.90	$76.21	2.49%	2.57%	6.50%	6.50%	9.07%
American Electric Power Company, Inc.	AEP	$2.68	$89.78	2.99%	3.08%	6.10%	6.10%	9.18%
DTE Energy Company	DTE	$3.78	$128.83	2.93%	3.02%	6.00%	6.00%	9.02%
FirstEnergy Corporation	FE	$1.52	$44.48	3.42%	3.55%	8.00%	8.00%	11.55%
Evergy, Inc.	EVRG	$1.90	$62.78	3.03%	3.13%	6.80%	6.80%	9.93%
OGE Energy Corporation	OGE	$1.46	$42.74	3.42%	3.53%	6.50%	6.50%	10.03%
Otter Tail Corporation	OTTR	$1.40	$51.60	2.71%	2.84%	9.00%	8.49%	11.38%
PPL Corporation	PPL	$1.65	$29.63	5.57%	5.61%	1.50%	4.11%	9.24%
Mean				3.32%	3.42%	6.30%	6.56%	9.92%
Mean (excluding ROE < 7%) [30]								9.92%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								9.99%

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.96	1.09	1.80	$2.09	1.19	1.76	$2.23	1.30	1.71	$2.37	1.42	1.67	$2.52	1.54	1.63	$2.69	$104.42	$67.63	$76.21
American Electric Power Company, Inc.	$2.76	1.09	2.53	$2.93	1.19	2.46	$3.11	1.30	2.39	$3.30	1.42	2.32	$3.50	1.55	2.26	$3.71	$120.71	$77.82	$89.78
DTE Energy Company	$3.89	1.09	3.57	$4.13	1.19	3.47	$4.37	1.30	3.38	$4.64	1.41	3.28	$4.92	1.54	3.19	$5.21	$172.40	$111.94	$128.83
FirstEnergy Corporation	$1.58	1.12	1.42	$1.71	1.24	1.37	$1.84	1.39	1.33	$1.99	1.55	1.29	$2.15	1.73	1.24	$2.32	$65.36	$37.83	$44.48
Evergy, Inc.	$1.96	1.10	1.79	$2.10	1.21	1.74	$2.24	1.33	1.69	$2.39	1.46	1.64	$2.56	1.61	1.59	$2.73	$87.23	$54.33	$62.78
OGE Energy Corporation	$1.51	1.10	1.37	$1.61	1.21	1.33	$1.71	1.33	1.28	$1.82	1.47	1.24	$1.94	1.61	1.20	$2.07	$58.56	$36.32	$42.74
Otter Tail Corporation	$1.46	1.11	1.31	$1.59	1.24	1.29	$1.74	1.38	1.26	$1.89	1.54	1.23	$2.07	1.71	1.20	$2.24	$77.66	$45.31	$51.60
PPL Corporation	$1.66	1.09	1.52	$1.69	1.19	1.41	$1.71	1.30	1.31	$1.74	1.42	1.22	$1.76	1.56	1.13	$1.84	$35.81	$23.02	$29.63

Standard Deviation [6]	2.19%
Avg. less Standard Dev [7]	4.11%
Avg. plus Standard Dev [8]	8.49%

Notes:
[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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-STAGE GROWTH DCF -- HIGH GROWTH RATE

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] High Growth Rate	[9] Second Growth Rate	[10] Mean ROE
Ameren Corporation	AEE	$1.90	$75.37	2.52%	2.60%	6.50%	6.50%	9.10%
American Electric Power Company, Inc.	AEP	$2.68	$88.56	3.03%	3.12%	6.10%	6.10%	9.22%
DTE Energy Company	DTE	$3.78	$128.21	2.95%	3.04%	6.00%	6.00%	9.04%
FirstEnergy Corporation	FE	$1.52	$43.31	3.51%	3.65%	8.00%	8.00%	11.65%
Evergy, Inc.	EVRG	$1.90	$60.60	3.14%	3.24%	6.80%	6.80%	10.04%
OGE Energy Corporation	OGE	$1.46	$42.64	3.42%	3.53%	6.50%	6.50%	10.03%
Otter Tail Corporation	OTTR	$1.40	$51.58	2.71%	2.84%	9.00%	8.49%	11.38%
PPL Corporation	PPL	$1.65	$30.37	5.43%	5.47%	1.50%	4.11%	9.11%
Mean				3.34%	3.44%	6.30%	6.56%	9.95%
Mean (excluding ROE < 7%) [30]								9.95%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								10.01%

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.96	1.09	1.80	$2.09	1.19	1.76	$2.23	1.30	1.71	$2.37	1.42	1.67	$2.52	1.55	1.63	$2.69	$103.26	$66.80	$75.37
American Electric Power Company, Inc.	$2.76	1.09	2.53	$2.93	1.19	2.46	$3.11	1.30	2.39	$3.30	1.42	2.32	$3.50	1.55	2.25	$3.71	$119.08	$76.62	$88.56
DTE Energy Company	$3.89	1.09	3.57	$4.13	1.19	3.47	$4.37	1.30	3.37	$4.64	1.41	3.28	$4.92	1.54	3.19	$5.21	$171.57	$111.32	$128.21
FirstEnergy Corporation	$1.58	1.12	1.42	$1.71	1.25	1.37	$1.84	1.39	1.32	$1.99	1.55	1.28	$2.15	1.73	1.24	$2.32	$63.63	$36.68	$43.31
Evergy, Inc.	$1.96	1.10	1.79	$2.10	1.21	1.73	$2.24	1.33	1.68	$2.39	1.47	1.63	$2.56	1.61	1.58	$2.73	$84.20	$52.18	$60.60
OGE Energy Corporation	$1.51	1.10	1.37	$1.61	1.21	1.33	$1.71	1.33	1.28	$1.82	1.47	1.24	$1.94	1.61	1.20	$2.07	$58.43	$36.22	$42.64
Otter Tail Corporation	$1.46	1.11	1.31	$1.59	1.24	1.29	$1.74	1.38	1.26	$1.89	1.54	1.23	$2.07	1.71	1.20	$2.24	$77.63	$45.29	$51.58
PPL Corporation	$1.66	1.09	1.52	$1.69	1.19	1.42	$1.71	1.30	1.32	$1.74	1.42	1.23	$1.76	1.55	1.14	$1.84	$36.72	$23.75	$30.37

Standard Deviation [6]	2.19%
Avg. less Standard Dev [7]	4.11%
Avg. plus Standard Dev [8]	8.49%

Notes:
[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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

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

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] High Growth Rate	[9] Second Growth Rate	[10] Mean ROE
Ameren Corporation	AEE	$1.90	$72.50	2.62%	2.71%	6.50%	6.50%	9.21%
American Electric Power Company, Inc.	AEP	$2.68	$84.21	3.18%	3.28%	6.10%	6.10%	9.38%
DTE Energy Company	DTE	$3.78	$123.52	3.06%	3.15%	6.00%	6.00%	9.15%
FirstEnergy Corporation	FE	$1.52	$41.47	3.67%	3.81%	8.00%	8.00%	11.81%
Evergy, Inc.	EVRG	$1.90	$58.84	3.23%	3.34%	6.80%	6.80%	10.14%
OGE Energy Corporation	OGE	$1.46	$41.99	3.48%	3.59%	6.50%	6.50%	10.09%
Otter Tail Corporation	OTTR	$1.40	$50.45	2.78%	2.90%	9.00%	8.49%	11.44%
PPL Corporation	PPL	$1.65	$30.62	5.39%	5.43%	1.50%	4.11%	9.07%
Mean				3.42%	3.53%	6.30%	6.56%	10.04%
Mean (excluding ROE < 7%) [30]								10.04%
Flotation Cost								0.07%
Flotation Cost-Adjusted Result								10.10%

Company	[11] Year 1 Div.	[12] (1+k)^1	[13] PV of Year 1 Div.	[14] Year 2 Div.	[15] (1+k)^2	[16] PV of Year 2 Div.	[17] Year 3 Div.	[18] (1+k)^3	[19] PV of Year 3 Div.	[20] Year 4 Div.	[21] (1+k)^4	[22] PV of Year 4 Div.	[23] Year 5 Div.	[24] (1+k)^5	[25] PV of Year 5 Div.	[26] Year 6 Div.	[27] Year 5 Stock Price	[28] PV of Year 5 Stock Price	[29] Current Stock Price
Ameren Corporation	$1.96	1.09	1.80	$2.09	1.19	1.75	$2.23	1.30	1.71	$2.37	1.42	1.67	$2.52	1.55	1.62	$2.69	$99.34	$63.96	$72.50
American Electric Power Company, Inc.	$2.76	1.09	2.52	$2.93	1.20	2.45	$3.11	1.31	2.38	$3.30	1.43	2.30	$3.50	1.57	2.24	$3.71	$113.22	$72.32	$84.21
DTE Energy Company	$3.89	1.09	3.57	$4.13	1.19	3.46	$4.37	1.30	3.36	$4.64	1.42	3.27	$4.92	1.55	3.17	$5.21	$165.30	$106.68	$123.52
FirstEnergy Corporation	$1.58	1.12	1.41	$1.71	1.25	1.37	$1.84	1.40	1.32	$1.99	1.56	1.27	$2.15	1.75	1.23	$2.32	$60.94	$34.87	$41.47
Evergy, Inc.	$1.96	1.10	1.78	$2.10	1.21	1.73	$2.24	1.34	1.68	$2.39	1.47	1.63	$2.56	1.62	1.58	$2.73	$81.76	$50.44	$58.84
OGE Energy Corporation	$1.51	1.10	1.37	$1.61	1.21	1.32	$1.71	1.33	1.28	$1.82	1.47	1.24	$1.94	1.62	1.20	$2.07	$57.53	$35.58	$41.99
Otter Tail Corporation	$1.46	1.11	1.31	$1.59	1.24	1.28	$1.74	1.38	1.26	$1.89	1.54	1.23	$2.07	1.72	1.20	$2.24	$75.93	$44.17	$50.45
PPL Corporation	$1.66	1.09	1.52	$1.69	1.19	1.42	$1.71	1.30	1.32	$1.74	1.42	1.23	$1.76	1.54	1.14	$1.84	$37.02	$23.99	$30.62

Standard Deviation [6]	2.19%
Avg. less Standard Dev [7]	4.11%
Avg. plus Standard Dev [8]	8.49%

Notes:
[1] Source: Schedule 6
[2] Source: Schedule 6
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [5])
[5] Source: Schedule 6
[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

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

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

Company	Ticker	[1] Current 30-day average of 30-year U.S. Treasury bond yield	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)
Ameren Corporation	AEE	2.24%	0.60	13.95%	11.71%	9.27%
American Electric Power Company, Inc.	AEP	2.24%	0.55	13.95%	11.71%	8.68%
DTE Energy Company	DTE	2.24%	0.55	13.95%	11.71%	8.68%
FirstEnergy Corporation	FE	2.24%	0.60	13.95%	11.71%	9.27%
Evergy, Inc.	EVRG	2.24%	NA	13.95%	11.71%	
OGE Energy Corporation	OGE	2.24%	0.80	13.95%	11.71%	11.61%
Otter Tail Corporation	OTTR	2.24%	0.70	13.95%	11.71%	10.44%
PPL Corporation	PPL	2.24%	0.65	13.95%	11.71%	9.85%
Mean						9.69%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Value Line
[3] Source: Schedule 8, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]

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

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

Company	Ticker	[1] Near-term projected 30-year U.S. Treasury bond yield (Q4 2019 - Q4 2020)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)
Ameren Corporation	AEE	2.40%	0.60	13.95%	11.55%	9.33%
American Electric Power Company, Inc.	AEP	2.40%	0.55	13.95%	11.55%	8.75%
DTE Energy Company	DTE	2.40%	0.55	13.95%	11.55%	8.75%
FirstEnergy Corporation	FE	2.40%	0.60	13.95%	11.55%	9.33%
Evergy, Inc.	EVRG	2.40%	NA	13.95%	11.55%	
OGE Energy Corporation	OGE	2.40%	0.80	13.95%	11.55%	11.64%
Otter Tail Corporation	OTTR	2.40%	0.70	13.95%	11.55%	10.49%
PPL Corporation	PPL	2.40%	0.65	13.95%	11.55%	9.91%
Mean						9.74%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 38, No. 9, September 1, 2019, at 2
[2] Source: Value Line
[3] Source: Schedule 8, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]

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

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

Company	Ticker	[1] Projected 30-year U.S. Treasury bond yield (2021 - 2025)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)
Ameren Corporation	AEE	3.60%	0.60	13.95%	10.35%	9.81%
American Electric Power Company, Inc.	AEP	3.60%	0.55	13.95%	10.35%	9.29%
DTE Energy Company	DTE	3.60%	0.55	13.95%	10.35%	9.29%
FirstEnergy Corporation	FE	3.60%	0.60	13.95%	10.35%	9.81%
Evergy, Inc.	EVRG	3.60%	NA	13.95%	10.35%	
OGE Energy Corporation	OGE	3.60%	0.80	13.95%	10.35%	11.88%
Otter Tail Corporation	OTTR	3.60%	0.70	13.95%	10.35%	10.85%
PPL Corporation	PPL	3.60%	0.65	13.95%	10.35%	10.33%
Mean						10.18%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14
[2] Source: Value Line
[3] Source: Schedule 8, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]

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

$K = Rf + \beta\,(Rm - Rf)$

		[1]	[2]	[3]	[4]	[5]
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)
Ameren Corporation	AEE	2.24%	0.66	13.95%	11.71%	9.96%
American Electric Power Company, Inc.	AEP	2.24%	0.63	13.95%	11.71%	9.67%
DTE Energy Company	DTE	2.24%	0.67	13.95%	11.71%	10.09%
FirstEnergy Corporation	FE	2.24%	0.69	13.95%	11.71%	10.27%
Evergy, Inc.	EVRG	2.24%	0.64	13.95%	11.71%	9.75%
OGE Energy Corporation	OGE	2.24%	0.74	13.95%	11.71%	10.93%
Otter Tail Corporation	OTTR	2.24%	0.80	13.95%	11.71%	11.66%
PPL Corporation	PPL	2.24%	0.63	13.95%	11.71%	9.67%
Mean						10.25%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional
[3] Source: Schedule 8, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]

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

$K = Rf + \beta\,(Rm - Rf)$

		[1]	[2]	[3]	[4]	[5]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q4 2019 - Q4 2020)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)
Ameren Corporation	AEE	2.40%	0.66	13.95%	11.55%	10.01%
American Electric Power Company, Inc.	AEP	2.40%	0.63	13.95%	11.55%	9.73%
DTE Energy Company	DTE	2.40%	0.67	13.95%	11.55%	10.14%
FirstEnergy Corporation	FE	2.40%	0.69	13.95%	11.55%	10.31%
Evergy, Inc.	EVRG	2.40%	0.64	13.95%	11.55%	9.81%
OGE Energy Corporation	OGE	2.40%	0.74	13.95%	11.55%	10.97%
Otter Tail Corporation	OTTR	2.40%	0.80	13.95%	11.55%	11.69%
PPL Corporation	PPL	2.40%	0.63	13.95%	11.55%	9.72%
Mean						10.30%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 38, No. 9, September 1, 2019, at 2
[2] Source: Bloomberg Professional
[3] Source: Schedule 8, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]

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

$K = Rf + \beta\,(Rm - Rf)$

		[1]	[2]	[3]	[4]	[5]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2021 - 2025)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)
Ameren Corporation	AEE	3.60%	0.66	13.95%	10.35%	10.42%
American Electric Power Company, Inc.	AEP	3.60%	0.63	13.95%	10.35%	10.17%
DTE Energy Company	DTE	3.60%	0.67	13.95%	10.35%	10.54%
FirstEnergy Corporation	FE	3.60%	0.69	13.95%	10.35%	10.69%
Evergy, Inc.	EVRG	3.60%	0.64	13.95%	10.35%	10.24%
OGE Energy Corporation	OGE	3.60%	0.74	13.95%	10.35%	11.28%
Otter Tail Corporation	OTTR	3.60%	0.80	13.95%	10.35%	11.92%
PPL Corporation	PPL	3.60%	0.63	13.95%	10.35%	10.16%
Mean						10.68%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14
[2] Source: Bloomberg Professional
[3] Source: Schedule 8, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]

MARKET RISK PREMIUM DERIVED FROM ANALYSTS LONG-TERM GROWTH ESTIMATES

[6] Estimated Weighted Average Dividend Yield	1.99%
[7] Estimated Weighted Average Long-Term Growth Rate	11.85%
[8] S&P 500 Estimated Required Market Return	13.95%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[9] Weight in Index	[10] Estimated Dividend Yield	[11] Cap-Weighted Dividend Yield	[12] Long-Term Growth Est.	[13] Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	0.10%	5.43%	0.56%	8.00%	0.82%
American Express Co	AXP	0.40%	1.30%	0.51%	9.16%	3.62%
Verizon Communications Inc	VZ	0.95%	4.14%	3.94%	2.56%	2.44%
Broadcom Inc	AVGO	0.45%	3.75%	1.67%	13.51%	6.01%
Boeing Co/The	BA	0.81%	2.26%	1.83%	7.93%	6.43%
Caterpillar Inc	CAT	0.26%	3.46%	0.92%	13.15%	3.48%
JPMorgan Chase & Co	JPM	1.39%	2.91%	4.05%	4.65%	6.46%
Chevron Corp	CVX	0.88%	4.04%	3.58%	1.60%	1.41%
Coca-Cola Co/The	KO	0.93%	2.91%	2.71%	7.09%	6.60%
AbbVie Inc	ABBV	0.38%	6.51%	2.50%	5.10%	1.96%
Walt Disney Co/The	DIS	0.98%	1.28%	1.25%	2.85%	2.79%
FleetCor Technologies Inc	FLT	0.10%	n/a	n/a	15.58%	1.59%
Extra Space Storage Inc	EXR	0.06%	2.95%	0.18%	4.72%	0.29%
Exxon Mobil Corp	XOM	1.15%	5.08%	5.83%	8.27%	9.49%
Phillips 66	PSX	0.18%	3.65%	0.64%	2.20%	0.39%
General Electric Co	GE	0.28%	0.48%	0.14%	5.70%	1.62%
HP Inc	HPQ	0.11%	3.50%	0.38%	1.66%	0.18%
Home Depot Inc/The	HD	0.99%	2.39%	2.36%	9.37%	9.26%
International Business Machines Corp	IBM	0.48%	4.78%	2.27%	1.92%	0.91%
Concho Resources Inc	CXO	0.06%	0.68%	0.04%	9.20%	0.54%
Johnson & Johnson	JNJ	1.34%	2.96%	3.97%	6.09%	8.17%
McDonald's Corp	MCD	0.66%	2.13%	1.39%	8.67%	5.68%
Merck & Co Inc	MRK	0.88%	2.54%	2.23%	11.52%	10.09%
3M Co	MMM	0.37%	3.56%	1.31%	6.95%	2.56%
American Water Works Co Inc	AWK	0.09%	1.57%	0.14%	8.58%	0.78%
Bank of America Corp	BAC	1.01%	2.62%	2.65%	9.90%	10.03%
Baker Hughes a GE Co	BHGE	0.04%	3.32%	0.15%	39.42%	1.75%
Pfizer Inc	PFE	0.78%	4.05%	3.15%	3.88%	3.02%
Procter & Gamble Co/The	PG	1.19%	2.48%	2.96%	7.42%	8.83%
AT&T Inc	T	1.02%	5.79%	5.90%	5.59%	5.69%
Travelers Cos Inc/The	TRV	0.15%	2.23%	0.34%	12.58%	1.90%
United Technologies Corp	UTX	0.44%	2.26%	1.00%	9.75%	4.34%
Analog Devices Inc	ADI	0.16%	1.97%	0.32%	9.72%	1.56%
Walmart Inc	WMT	1.29%	1.86%	2.40%	4.98%	6.43%
Cisco Systems Inc	CSCO	0.79%	2.99%	2.37%	6.48%	5.14%
Intel Corp	INTC	0.83%	2.66%	2.21%	5.98%	4.97%
General Motors Co	GM	0.21%	4.10%	0.86%	10.46%	2.19%
Microsoft Corp	MSFT	4.17%	1.33%	5.56%	9.92%	41.33%
Dollar General Corp	DG	0.16%	0.82%	0.13%	10.58%	1.68%
Cigna Corp	CI	0.23%	0.03%	0.01%	11.12%	2.56%
Kinder Morgan Inc/DE	KMI	0.18%	4.93%	0.90%	11.90%	2.16%
Citigroup Inc	C	0.58%	3.17%	1.82%	12.43%	7.15%
American International Group Inc	AIG	0.18%	2.46%	0.44%	11.00%	1.97%
Honeywell International Inc	HON	0.47%	1.99%	0.93%	7.70%	3.61%
Altria Group Inc	MO	0.32%	7.68%	2.48%	6.70%	2.17%
HCA Healthcare Inc	HCA	0.16%	1.33%	0.22%	10.78%	1.75%
Under Armour Inc	UAA	0.01%	n/a	n/a	30.97%	0.43%
International Paper Co	IP	0.06%	5.12%	0.31%	4.55%	0.28%
Hewlett Packard Enterprise Co	HPE	0.07%	3.26%	0.23%	5.90%	0.42%
Abbott Laboratories	ABT	0.60%	1.50%	0.90%	9.58%	5.72%
Aflac Inc	AFL	0.15%	2.15%	0.32%	4.15%	0.61%
Air Products & Chemicals Inc	APD	0.20%	2.05%	0.40%	12.71%	2.50%
Royal Caribbean Cruises Ltd	RCL	0.09%	2.69%	0.23%	11.11%	0.96%
American Electric Power Co Inc	AEP	0.18%	2.94%	0.52%	5.82%	1.04%
Hess Corp	HES	0.08%	1.59%	0.12%	-5.43%	-0.41%
Aon PLC	AON	0.18%	0.90%	0.16%	10.90%	1.98%
Apache Corp	APA	0.03%	4.64%	0.15%	-8.57%	-0.28%
Archer-Daniels-Midland Co	ADM	0.08%	3.68%	0.31%	0.10%	0.01%
Automatic Data Processing Inc	ADP	0.29%	1.86%	0.54%	12.55%	3.66%
Verisk Analytics Inc	VRSK	0.10%	0.62%	0.06%	9.21%	0.96%
AutoZone Inc	AZO	0.11%	n/a	n/a	12.58%	1.35%
Avery Dennison Corp	AVY	0.04%	2.01%	0.08%	4.95%	0.19%
MSCI Inc	MSCI	0.08%	1.16%	0.09%	8.55%	0.67%
Ball Corp	BLL	0.11%	0.75%	0.08%	6.70%	0.71%
Bank of New York Mellon Corp/The	BK	0.16%	2.95%	0.46%	6.47%	1.01%
Baxter International Inc	BAX	0.18%	1.00%	0.18%	11.96%	2.13%
Becton Dickinson and Co	BDX	0.27%	1.21%	0.33%	12.19%	3.31%
Berkshire Hathaway Inc	BRK/B	1.12%	n/a	n/a	61.80%	68.97%
Best Buy Co Inc	BBY	0.07%	3.14%	0.21%	6.80%	0.46%
H&R Block Inc	HRB	0.02%	4.29%	0.08%	10.00%	0.19%
Boston Scientific Corp	BSX	0.24%	n/a	n/a	8.88%	2.09%
Bristol-Myers Squibb Co	BMY	0.31%	3.41%	1.06%	7.96%	2.48%
Fortune Brands Home & Security Inc	FBHS	0.03%	1.72%	0.05%	10.11%	0.29%
Brown-Forman Corp	BF/B	0.07%	1.13%	0.08%	7.56%	0.54%
Cabot Oil & Gas Corp	COG	0.03%	2.10%	0.06%	34.52%	0.98%
Campbell Soup Co	CPB	0.05%	3.11%	0.17%	2.62%	0.14%
Kansas City Southern	KSU	0.05%	1.14%	0.06%	12.73%	0.63%
Hilton Worldwide Holdings Inc	HLT	0.10%	0.65%	0.07%	12.28%	1.29%
Carnival Corp	CCL	0.09%	4.54%	0.42%	8.47%	0.78%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[9] Weight in Index	[10] Estimated Dividend Yield	[11] Cap-Weighted Dividend Yield	[12] Long-Term Growth Est.	[13] Cap-Weighted Long-Term Growth Est.
Qorvo Inc	QRVO	0.03%	n/a	n/a	10.76%	0.36%
CenturyLink Inc	CTL	0.05%	8.79%	0.43%	3.39%	0.17%
UDR Inc	UDR	0.06%	2.84%	0.16%	6.77%	0.38%
Clorox Co/The	CLX	0.08%	2.68%	0.21%	3.91%	0.31%
CMS Energy Corp	CMS	0.07%	2.43%	0.17%	7.20%	0.51%
Newell Brands Inc	NWL	0.03%	5.54%	0.15%	-3.42%	-0.10%
Colgate-Palmolive Co	CL	0.25%	2.32%	0.58%	4.52%	1.14%
Comerica Inc	CMA	0.04%	4.35%	0.16%	12.93%	0.47%
IPG Photonics Corp	IPGP	0.03%	n/a	n/a	6.13%	0.16%
Conagra Brands Inc	CAG	0.05%	3.00%	0.16%	7.60%	0.42%
Consolidated Edison Inc	ED	0.12%	3.33%	0.39%	4.18%	0.49%
SL Green Realty Corp	SLG	0.03%	4.24%	0.11%	6.78%	0.18%
Corning Inc	GLW	0.09%	2.87%	0.25%	11.20%	0.96%
Cummins Inc	CMI	0.09%	3.51%	0.33%	6.70%	0.62%
Danaher Corp	DHR	0.40%	0.48%	0.19%	14.25%	5.75%
Target Corp	TGT	0.22%	2.47%	0.53%	8.23%	1.78%
Deere & Co	DE	0.19%	1.96%	0.38%	6.51%	1.26%
Dominion Energy Inc	D	0.25%	4.73%	1.17%	4.84%	1.19%
Dover Corp	DOV	0.05%	2.09%	0.11%	10.97%	0.59%
Alliant Energy Corp	LNT	0.05%	2.71%	0.13%	5.61%	0.28%
Duke Energy Corp	DUK	0.27%	4.08%	1.09%	5.08%	1.36%
Regency Centers Corp	REG	0.04%	3.63%	0.16%	4.62%	0.20%
Eaton Corp PLC	ETN	0.13%	3.52%	0.47%	8.60%	1.15%
Ecolab Inc	ECL	0.23%	0.89%	0.21%	13.13%	3.09%
PerkinElmer Inc	PKI	0.04%	0.34%	0.01%	16.84%	0.61%
Emerson Electric Co	EMR	0.15%	3.29%	0.48%	8.19%	1.19%
EOG Resources Inc	EOG	0.17%	1.55%	0.26%	6.50%	1.11%
Entergy Corp	ETR	0.09%	3.23%	0.29%	1.90%	0.17%
Equifax Inc	EFX	0.07%	1.07%	0.07%	8.74%	0.61%
IQVIA Holdings Inc	IQV	0.12%	n/a	n/a	17.75%	2.14%
Gartner Inc	IT	0.05%	n/a	n/a	13.08%	0.62%
FedEx Corp	FDX	0.16%	1.64%	0.27%	20.72%	3.39%
Macy's Inc	M	0.02%	10.23%	0.18%	3.50%	0.06%
FMC Corp	FMC	0.04%	1.85%	0.08%	9.00%	0.40%
Ford Motor Co	F	0.14%	6.54%	0.93%	2.58%	0.37%
NextEra Energy Inc	NEE	0.42%	2.28%	0.95%	5.33%	2.22%
Franklin Resources Inc	BEN	0.05%	3.96%	0.21%	10.00%	0.52%
Freeport-McMoRan Inc	FCX	0.05%	2.18%	0.11%	3.81%	0.20%
Gap Inc/The	GPS	0.02%	6.14%	0.14%	5.83%	0.14%
General Dynamics Corp	GD	0.22%	2.13%	0.47%	8.54%	1.87%
General Mills Inc	GIS	0.13%	3.64%	0.47%	6.17%	0.79%
Genuine Parts Co	GPC	0.05%	3.38%	0.18%	5.35%	0.28%
Atmos Energy Corp	ATO	0.05%	1.91%	0.10%	7.00%	0.36%
WW Grainger Inc	GWW	0.06%	2.10%	0.12%	12.33%	0.73%
Halliburton Co	HAL	0.07%	3.82%	0.25%	7.11%	0.46%
Harley-Davidson Inc	HOG	0.02%	4.70%	0.09%	5.90%	0.12%
L3Harris Technologies Inc	LHX	0.19%	1.42%	0.27%	n/a	n/a
HCP Inc	HCP	0.07%	4.26%	0.29%	2.94%	0.20%
Helmerich & Payne Inc	HP	0.02%	7.56%	0.12%	7.70%	0.13%
Fortive Corp	FTV	0.09%	0.39%	0.04%	9.40%	0.88%
Hershey Co/The	HSY	0.09%	1.95%	0.18%	7.07%	0.66%
Synchrony Financial	SYF	0.08%	2.75%	0.23%	6.57%	0.55%
Hormel Foods Corp	HRL	0.09%	1.97%	0.18%	5.70%	0.51%
Arthur J Gallagher & Co	AJG	0.07%	1.90%	0.13%	9.83%	0.66%
Mondelez International Inc	MDLZ	0.32%	2.06%	0.65%	7.86%	2.48%
CenterPoint Energy Inc	CNP	0.05%	4.15%	0.23%	5.75%	0.32%
Humana Inc	HUM	0.15%	0.78%	0.12%	12.83%	1.94%
Willis Towers Watson PLC	WLTW	0.10%	1.31%	0.13%	13.97%	1.41%
Illinois Tool Works Inc	ITW	0.19%	2.86%	0.55%	6.52%	1.25%
Ingersoll-Rand PLC	IR	0.12%	1.75%	0.20%	7.74%	0.90%
Interpublic Group of Cos Inc/The	IPG	0.03%	4.73%	0.14%	12.35%	0.38%
International Flavors & Fragrances Inc	IFF	0.05%	2.73%	0.13%	7.80%	0.36%
Jacobs Engineering Group Inc	JEC	0.05%	0.77%	0.04%	15.62%	0.74%
Hanesbrands Inc	HBI	0.02%	4.39%	0.09%	5.08%	0.10%
Kellogg Co	K	0.08%	3.63%	0.31%	2.09%	0.18%
Broadridge Financial Solutions Inc	BR	0.06%	1.67%	0.10%	n/a	n/a
Perrigo Co PLC	PRGO	0.03%	1.80%	0.05%	0.25%	0.01%
Kimberly-Clark Corp	KMB	0.19%	2.92%	0.56%	4.63%	0.89%
Kimco Realty Corp	KIM	0.03%	6.09%	0.19%	3.92%	0.12%
Kohl's Corp	KSS	0.03%	5.67%	0.17%	6.17%	0.19%
Oracle Corp	ORCL	0.69%	1.84%	1.27%	7.63%	5.25%
Kroger Co/The	KR	0.07%	2.70%	0.20%	5.68%	0.43%
Leggett & Platt Inc	LEG	0.02%	4.30%	0.08%	n/a	n/a
Lennar Corp	LEN	0.06%	0.31%	0.02%	9.42%	0.54%
Jefferies Financial Group Inc	JEF	0.02%	2.68%	0.06%	n/a	n/a
Eli Lilly & Co	LLY	0.43%	2.28%	0.99%	9.75%	4.21%
L Brands Inc	LB	0.02%	7.27%	0.13%	9.23%	0.17%
Charter Communications Inc	CHTR	0.36%	n/a	n/a	33.91%	12.17%
Lincoln National Corp	LNC	0.04%	2.80%	0.12%	9.00%	0.38%
Loews Corp	L	0.06%	0.52%	0.03%	n/a	n/a
Lowe's Cos Inc	LOW	0.35%	1.96%	0.68%	14.66%	5.10%
Host Hotels & Resorts Inc	HST	0.05%	4.99%	0.23%	13.84%	0.64%
Xerox Holdings Corp	XRX	0.03%	3.45%	0.09%	6.20%	0.16%
IDEX Corp	IEX	0.05%	1.21%	0.06%	11.20%	0.55%
Marsh & McLennan Cos Inc	MMC	0.20%	1.82%	0.36%	12.22%	2.44%
Masco Corp	MAS	0.05%	1.18%	0.05%	10.51%	0.49%
S&P Global Inc	SPGI	0.25%	0.88%	0.22%	10.47%	2.65%
Medtronic PLC	MDT	0.57%	2.00%	1.15%	7.26%	4.16%
CVS Health Corp	CVS	0.31%	3.28%	1.03%	6.20%	1.94%
DuPont de Nemours Inc	DD	0.20%	1.77%	0.35%	6.55%	1.31%

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Name	Ticker	[9] Weight in Index	[10] Estimated Dividend Yield	[11] Cap-Weighted Dividend Yield	[12] Long-Term Growth Est.	[13] Cap-Weighted Long-Term Growth Est.
Micron Technology Inc	MU	0.20%	n/a	n/a	-0.69%	-0.14%
Motorola Solutions Inc	MSI	0.12%	1.26%	0.15%	7.05%	0.84%
Cboe Global Markets Inc	CBOE	0.05%	1.21%	0.06%	5.35%	0.28%
Mylan NV	MYL	0.04%	n/a	n/a	-5.72%	-0.23%
Laboratory Corp of America Holdings	LH	0.06%	n/a	n/a	7.36%	0.48%
Newmont Goldcorp Corp	NEM	0.13%	1.40%	0.18%	5.75%	0.74%
NIKE Inc	NKE	0.42%	1.04%	0.44%	13.76%	5.76%
NiSource Inc	NI	0.04%	2.71%	0.12%	5.28%	0.23%
Noble Energy Inc	NBL	0.04%	2.13%	0.09%	16.58%	0.71%
Norfolk Southern Corp	NSC	0.18%	2.16%	0.39%	13.82%	2.51%
Principal Financial Group Inc	PFG	0.06%	4.13%	0.24%	6.87%	0.40%
Eversource Energy	ES	0.10%	2.67%	0.27%	6.31%	0.65%
Northrop Grumman Corp	NOC	0.25%	1.44%	0.35%	6.84%	1.68%
Wells Fargo & Co	WFC	0.81%	4.38%	3.56%	9.86%	8.00%
Nucor Corp	NUE	0.06%	3.27%	0.19%	0.35%	0.02%
PVH Corp	PVH	0.02%	0.20%	0.00%	6.64%	0.15%
Occidental Petroleum Corp	OXY	0.15%	7.27%	1.12%	12.20%	1.88%
Omnicom Group Inc	OMC	0.07%	3.42%	0.22%	3.87%	0.25%
ONEOK Inc	OKE	0.12%	4.99%	0.58%	13.11%	1.53%
Raymond James Financial Inc	RJF	0.04%	1.73%	0.07%	17.00%	0.73%
Parker-Hannifin Corp	PH	0.08%	2.12%	0.18%	8.24%	0.69%
Rollins Inc	ROL	0.04%	1.28%	0.05%	n/a	n/a
PPL Corp	PPL	0.08%	5.58%	0.47%	-0.30%	-0.03%
Exelon Corp	EXC	0.18%	3.07%	0.56%	2.63%	0.48%
ConocoPhillips	COP	0.23%	2.34%	0.54%	3.45%	0.79%
PulteGroup Inc	PHM	0.04%	1.30%	0.05%	8.25%	0.30%
Pinnacle West Capital Corp	PNW	0.04%	3.10%	0.13%	5.41%	0.23%
PNC Financial Services Group Inc/The	PNC	0.23%	3.57%	0.81%	7.64%	1.74%
PPG Industries Inc	PPG	0.10%	1.84%	0.19%	6.82%	0.71%
Progressive Corp/The	PGR	0.18%	0.53%	0.09%	6.23%	1.09%
Public Service Enterprise Group Inc	PEG	0.12%	3.11%	0.38%	5.32%	0.64%
Raytheon Co	RTN	0.20%	2.03%	0.42%	8.83%	1.80%
Robert Half International Inc	RHI	0.02%	2.32%	0.06%	-1.99%	-0.05%
Edison International	EIX	0.10%	3.39%	0.35%	5.05%	0.52%
Schlumberger Ltd	SLB	0.18%	6.17%	1.09%	28.50%	5.06%
Charles Schwab Corp/The	SCHW	0.20%	1.78%	0.35%	4.21%	0.83%
Sherwin-Williams Co/The	SHW	0.19%	0.86%	0.17%	11.33%	2.18%
JM Smucker Co/The	SJM	0.05%	3.35%	0.16%	2.97%	0.14%
Snap-on Inc	SNA	0.03%	2.56%	0.08%	6.91%	0.22%
AMETEK Inc	AME	0.08%	0.65%	0.05%	9.84%	0.76%
Southern Co/The	SO	0.25%	4.26%	1.06%	3.75%	0.93%
BB&T Corp	BBT	0.14%	3.78%	0.55%	7.24%	1.05%
Southwest Airlines Co	LUV	0.11%	1.38%	0.15%	8.25%	0.92%
Stanley Black & Decker Inc	SWK	0.08%	2.08%	0.17%	8.92%	0.71%
Public Storage	PSA	0.18%	3.02%	0.55%	4.10%	0.75%
Arista Networks Inc	ANET	0.07%	n/a	n/a	21.39%	1.47%
SunTrust Banks Inc	STI	0.11%	3.64%	0.39%	2.37%	0.26%
Sysco Corp	SYY	0.15%	2.10%	0.32%	11.13%	1.68%
Corteva Inc	CTVA	0.09%	1.77%	0.15%	61.81%	5.37%
Texas Instruments Inc	TXN	0.46%	2.49%	1.14%	8.35%	3.82%
Textron Inc	TXT	0.04%	0.18%	0.01%	11.86%	0.49%
Thermo Fisher Scientific Inc	TMO	0.45%	0.26%	0.12%	11.43%	5.20%
Tiffany & Co	TIF	0.04%	2.73%	0.11%	8.42%	0.34%
TJX Cos Inc/The	TJX	0.26%	1.67%	0.44%	11.07%	2.91%
Globe Life Inc	GL	0.04%	0.77%	0.03%	7.60%	0.29%
Total System Services Inc	TSS	0.09%	0.39%	0.04%	10.00%	0.94%
Johnson Controls International plc	JCI	0.13%	2.44%	0.33%	7.57%	1.02%
Ulta Beauty Inc	ULTA	0.06%	n/a	n/a	19.25%	1.07%
Union Pacific Corp	UNP	0.45%	2.40%	1.08%	12.90%	5.83%
Keysight Technologies Inc	KEYS	0.07%	n/a	n/a	n/a	n/a
UnitedHealth Group Inc	UNH	0.88%	1.85%	1.62%	12.28%	10.78%
Unum Group	UNM	0.02%	4.49%	0.09%	9.00%	0.19%
Marathon Oil Corp	MRO	0.04%	1.69%	0.06%	1.55%	0.06%
Varian Medical Systems Inc	VAR	0.04%	n/a	n/a	8.00%	0.31%
Ventas Inc	VTR	0.11%	4.32%	0.47%	5.00%	0.54%
VF Corp	VFC	0.13%	2.10%	0.27%	10.74%	1.39%
Vornado Realty Trust	VNO	0.05%	4.37%	0.20%	5.46%	0.25%
Vulcan Materials Co	VMC	0.07%	0.88%	0.06%	18.12%	1.34%
Weyerhaeuser Co	WY	0.08%	5.17%	0.40%	4.50%	0.35%
Whirlpool Corp	WHR	0.03%	3.45%	0.12%	4.61%	0.16%
Williams Cos Inc/The	WMB	0.11%	6.44%	0.73%	8.00%	0.91%
WEC Energy Group Inc	WEC	0.12%	2.46%	0.29%	6.33%	0.76%
Adobe Inc	ADBE	0.55%	n/a	n/a	17.16%	9.38%
AES Corp/VA	AES	0.04%	3.56%	0.14%	8.33%	0.34%
Amgen Inc	AMGN	0.50%	2.78%	1.38%	5.88%	2.91%
Apple Inc	AAPL	3.73%	1.48%	5.51%	10.50%	39.20%
Autodesk Inc	ADSK	0.12%	n/a	n/a	47.95%	5.95%
Cintas Corp	CTAS	0.11%	0.78%	0.08%	12.23%	1.31%
Comcast Corp	CMCSA	0.79%	1.90%	1.51%	9.88%	7.85%
Molson Coors Brewing Co	TAP	0.04%	4.44%	0.18%	-1.51%	-0.06%
KLA Corp	KLAC	0.09%	2.03%	0.19%	12.94%	1.21%
Marriott International Inc/MD	MAR	0.16%	1.52%	0.25%	7.34%	1.21%
McCormick & Co Inc/MD	MKC	0.08%	1.40%	0.11%	6.20%	0.49%
Nordstrom Inc	JWN	0.02%	5.11%	0.09%	5.75%	0.10%
PACCAR Inc	PCAR	0.09%	1.95%	0.18%	4.90%	0.44%
Costco Wholesale Corp	COST	0.51%	0.88%	0.45%	10.51%	5.39%
First Republic Bank/CA	FRC	0.06%	0.85%	0.05%	6.99%	0.41%
Stryker Corp	SYK	0.33%	0.94%	0.31%	9.55%	3.12%
Tyson Foods Inc	TSN	0.11%	1.61%	0.17%	5.00%	0.54%
Lamb Weston Holdings Inc	LW	0.04%	1.14%	0.05%	7.50%	0.30%

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Applied Materials Inc	AMAT	0.18%	1.75%	0.31%	5.55%	0.97%
American Airlines Group Inc	AAL	0.05%	1.52%	0.07%	11.75%	0.54%
Cardinal Health Inc	CAH	0.05%	4.46%	0.23%	2.49%	0.13%
Celgene Corp	CELG	0.27%	n/a	n/a	16.10%	4.37%
Cerner Corp	CERN	0.09%	1.04%	0.09%	13.55%	1.18%
Cincinnati Financial Corp	CINF	0.07%	1.99%	0.14%	n/a	n/a
DR Horton Inc	DHI	0.07%	1.21%	0.09%	12.60%	0.91%
Flowserve Corp	FLS	0.02%	1.78%	0.04%	15.19%	0.34%
Electronic Arts Inc	EA	0.11%	n/a	n/a	8.54%	0.93%
Expeditors International of Washington Inc	EXPD	0.05%	1.41%	0.07%	9.73%	0.47%
Fastenal Co	FAST	0.07%	2.87%	0.20%	7.15%	0.50%
M&T Bank Corp	MTB	0.08%	2.74%	0.21%	5.33%	0.41%
Xcel Energy Inc	XEL	0.13%	2.52%	0.33%	5.59%	0.73%
Fiserv Inc	FISV	0.29%	n/a	n/a	15.60%	4.49%
Fifth Third Bancorp	FITB	0.08%	3.63%	0.28%	4.65%	0.36%
Gilead Sciences Inc	GILD	0.32%	3.97%	1.26%	7.60%	2.42%
Hasbro Inc	HAS	0.06%	2.46%	0.14%	9.30%	0.51%
Huntington Bancshares Inc/OH	HBAN	0.05%	4.53%	0.25%	4.99%	0.27%
Welltower Inc	WELL	0.14%	3.89%	0.56%	6.32%	0.91%
Biogen Inc	BIIB	0.16%	n/a	n/a	5.50%	0.88%
Northern Trust Corp	NTRS	0.07%	3.18%	0.24%	7.25%	0.54%
Packaging Corp of America	PKG	0.04%	3.14%	0.12%	10.00%	0.38%
Paychex Inc	PAYX	0.12%	3.04%	0.35%	7.15%	0.83%
People's United Financial Inc	PBCT	0.02%	4.94%	0.11%	2.00%	0.05%
QUALCOMM Inc	QCOM	0.37%	3.19%	1.19%	14.37%	5.38%
Roper Technologies Inc	ROP	0.15%	0.50%	0.08%	13.03%	1.97%
Ross Stores Inc	ROST	0.15%	0.96%	0.15%	9.38%	1.43%
IDEXX Laboratories Inc	IDXX	0.10%	n/a	n/a	18.85%	1.86%
Starbucks Corp	SBUX	0.46%	1.49%	0.68%	13.27%	6.07%
KeyCorp	KEY	0.07%	4.46%	0.29%	4.83%	0.32%
Fox Corp	FOXA	0.05%	1.39%	0.06%	-1.59%	-0.07%
Fox Corp	FOX	0.03%	1.40%	0.05%	-7.23%	-0.25%
State Street Corp	STT	0.08%	3.66%	0.28%	3.98%	0.30%
Norwegian Cruise Line Holdings Ltd	NCLH	0.04%	n/a	n/a	8.27%	0.36%
US Bancorp	USB	0.33%	2.81%	0.92%	6.33%	2.08%
AO Smith Corp	AOS	0.03%	1.89%	0.05%	8.00%	0.20%
Symantec Corp	SYMC	0.06%	1.29%	0.07%	2.13%	0.12%
T Rowe Price Group Inc	TROW	0.10%	2.75%	0.28%	8.20%	0.85%
Waste Management Inc	WM	0.20%	1.72%	0.34%	7.74%	1.55%
CBS Corp	CBS	0.06%	1.71%	0.10%	9.95%	0.58%
Allergan PLC	AGN	0.21%	1.85%	0.38%	5.18%	1.07%
Constellation Brands Inc	STZ	0.14%	1.47%	0.20%	7.74%	1.05%
Xilinx Inc	XLNX	0.10%	1.42%	0.15%	9.45%	0.98%
DENTSPLY SIRONA Inc	XRAY	0.05%	0.77%	0.04%	13.14%	0.61%
Zions Bancorp NA	ZION	0.03%	3.31%	0.10%	6.24%	0.18%
Alaska Air Group Inc	ALK	0.03%	2.34%	0.07%	21.55%	0.63%
Invesco Ltd	IVZ	0.03%	7.90%	0.23%	7.00%	0.20%
Linde PLC	LIN	0.40%	1.85%	0.75%	13.95%	5.64%
Intuit Inc	INTU	0.30%	0.74%	0.22%	15.69%	4.66%
Morgan Stanley	MS	0.27%	3.37%	0.92%	8.26%	2.24%
Microchip Technology Inc	MCHP	0.08%	1.70%	0.14%	7.65%	0.62%
Chubb Ltd	CB	0.28%	1.92%	0.54%	10.60%	2.99%
Hologic Inc	HOLX	0.05%	n/a	n/a	8.58%	0.45%
Citizens Financial Group Inc	CFG	0.06%	4.27%	0.25%	5.42%	0.32%
O'Reilly Automotive Inc	ORLY	0.12%	n/a	n/a	13.64%	1.59%
Allstate Corp/The	ALL	0.13%	1.95%	0.26%	9.00%	1.20%
FLIR Systems Inc	FLIR	0.03%	1.38%	0.04%	n/a	n/a
Equity Residential	EQR	0.12%	2.68%	0.33%	8.47%	1.05%
BorgWarner Inc	BWA	0.03%	2.08%	0.06%	1.93%	0.05%
Incyte Corp	INCY	0.07%	n/a	n/a	43.15%	3.00%
Simon Property Group Inc	SPG	0.18%	5.64%	1.02%	5.27%	0.96%
Eastman Chemical Co	EMN	0.04%	3.79%	0.13%	7.93%	0.28%
Twitter Inc	TWTR	0.13%	n/a	n/a	31.80%	4.15%
AvalonBay Communities Inc	AVB	0.12%	2.86%	0.34%	6.72%	0.79%
Prudential Financial Inc	PRU	0.13%	4.99%	0.64%	11.43%	1.46%
United Parcel Service Inc	UPS	0.33%	3.24%	1.06%	8.93%	2.93%
Apartment Investment & Management Co	AIV	0.03%	3.06%	0.09%	3.26%	0.10%
Walgreens Boots Alliance Inc	WBA	0.18%	3.57%	0.65%	5.47%	1.00%
McKesson Corp	MCK	0.10%	1.19%	0.12%	2.39%	0.24%
Lockheed Martin Corp	LMT	0.43%	2.29%	0.98%	10.10%	4.34%
AmerisourceBergen Corp	ABC	0.07%	1.94%	0.13%	14.01%	0.95%
Capital One Financial Corp	COF	0.16%	1.85%	0.30%	5.13%	0.83%
Waters Corp	WAT	0.06%	n/a	n/a	11.26%	0.63%
Dollar Tree Inc	DLTR	0.10%	n/a	n/a	8.42%	0.80%
Darden Restaurants Inc	DRI	0.06%	2.91%	0.17%	10.76%	0.63%
NetApp Inc	NTAP	0.05%	4.00%	0.18%	5.85%	0.26%
Citrix Systems Inc	CTXS	0.05%	1.51%	0.07%	9.00%	0.43%
DXC Technology Co	DXC	0.03%	2.53%	0.09%	3.77%	0.13%
DaVita Inc	DVA	0.03%	n/a	n/a	18.65%	0.58%
Hartford Financial Services Group Inc/The	HIG	0.08%	2.06%	0.17%	9.50%	0.79%
Iron Mountain Inc	IRM	0.04%	7.67%	0.28%	3.81%	0.14%
Estee Lauder Cos Inc/The	EL	0.17%	0.87%	0.15%	11.25%	1.95%
Cadence Design Systems Inc	CDNS	0.08%	n/a	n/a	10.75%	0.82%
Universal Health Services Inc	UHS	0.05%	0.55%	0.03%	8.08%	0.38%
E*TRADE Financial Corp	ETFC	0.04%	1.34%	0.05%	6.07%	0.24%
Skyworks Solutions Inc	SWKS	0.05%	2.34%	0.12%	12.93%	0.66%
National Oilwell Varco Inc	NOV	0.03%	0.98%	0.03%	67.95%	2.12%
Quest Diagnostics Inc	DGX	0.05%	2.07%	0.11%	7.86%	0.43%
Activision Blizzard Inc	ATVI	0.15%	0.73%	0.11%	6.67%	1.02%
Rockwell Automation Inc	ROK	0.07%	2.54%	0.18%	11.90%	0.84%

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Kraft Heinz Co/The	KHC	0.12%	6.27%	0.77%	-3.09%	-0.38%
American Tower Corp	AMT	0.40%	1.60%	0.64%	19.95%	8.05%
HollyFrontier Corp	HFC	0.03%	2.98%	0.09%	-0.31%	-0.01%
Regeneron Pharmaceuticals Inc	REGN	0.12%	n/a	n/a	11.88%	1.47%
Amazon.com Inc	AMZN	3.48%	n/a	n/a	44.33%	154.16%
Jack Henry & Associates Inc	JKHY	0.04%	1.10%	0.05%	9.20%	0.41%
Ralph Lauren Corp	RL	0.02%	3.11%	0.06%	6.35%	0.12%
Boston Properties Inc	BXP	0.08%	2.96%	0.23%	4.22%	0.33%
Amphenol Corp	APH	0.10%	1.14%	0.12%	7.87%	0.81%
Arconic Inc	ARNC	0.05%	0.31%	0.01%	10.90%	0.49%
Pioneer Natural Resources Co	PXD	0.08%	1.43%	0.12%	23.85%	1.95%
Valero Energy Corp	VLO	0.12%	4.78%	0.59%	9.75%	1.20%
Synopsys Inc	SNPS	0.08%	n/a	n/a	14.75%	1.24%
Western Union Co/The	WU	0.04%	3.62%	0.13%	2.57%	0.10%
CH Robinson Worldwide Inc	CHRW	0.05%	2.37%	0.11%	8.63%	0.39%
Accenture PLC	ACN	0.50%	1.47%	0.74%	10.43%	5.21%
TransDigm Group Inc	TDG	0.11%	n/a	n/a	14.40%	1.64%
Yum! Brands Inc	YUM	0.14%	1.44%	0.20%	12.50%	1.76%
Prologis Inc	PLD	0.21%	2.54%	0.53%	7.34%	1.53%
FirstEnergy Corp	FE	0.10%	3.30%	0.32%	1.29%	0.12%
VeriSign Inc	VRSN	0.10%	n/a	n/a	9.70%	0.93%
Quanta Services Inc	PWR	0.02%	0.47%	0.01%	22.00%	0.42%
Henry Schein Inc	HSIC	0.04%	n/a	n/a	2.27%	0.08%
Ameren Corp	AEE	0.08%	2.46%	0.19%	5.74%	0.44%
ANSYS Inc	ANSS	0.07%	n/a	n/a	10.83%	0.74%
NVIDIA Corp	NVDA	0.40%	0.38%	0.15%	11.15%	4.50%
Sealed Air Corp	SEE	0.02%	1.61%	0.04%	5.72%	0.14%
Cognizant Technology Solutions Corp	CTSH	0.13%	1.30%	0.17%	11.05%	1.48%
SVB Financial Group	SIVB	0.04%	n/a	n/a	11.00%	0.44%
Intuitive Surgical Inc	ISRG	0.23%	n/a	n/a	14.30%	3.34%
Affiliated Managers Group Inc	AMG	0.02%	1.67%	0.03%	5.86%	0.09%
Take-Two Interactive Software Inc	TTWO	0.06%	n/a	n/a	9.86%	0.58%
Republic Services Inc	RSG	0.11%	1.82%	0.21%	12.96%	1.47%
eBay Inc	EBAY	0.13%	1.39%	0.19%	12.07%	1.61%
Goldman Sachs Group Inc/The	GS	0.29%	2.45%	0.71%	0.64%	0.19%
Sempra Energy	SRE	0.15%	2.73%	0.42%	9.43%	1.45%
SBA Communications Corp	SBAC	0.12%	0.56%	0.07%	46.90%	5.51%
Moody's Corp	MCO	0.16%	0.93%	0.15%	11.70%	1.89%
Booking Holdings Inc	BKNG	0.33%	n/a	n/a	19.03%	6.30%
F5 Networks Inc	FFIV	0.03%	n/a	n/a	10.29%	0.32%
Akamai Technologies Inc	AKAM	0.06%	n/a	n/a	12.80%	0.74%
MarketAxess Holdings Inc	MKTX	0.06%	0.51%	0.03%	n/a	n/a
Devon Energy Corp	DVN	0.04%	1.64%	0.06%	6.63%	0.23%
Alphabet Inc	GOOGL	1.41%	n/a	n/a	12.87%	18.16%
Teleflex Inc	TFX	0.07%	0.37%	0.02%	12.90%	0.86%
Netflix Inc	NFLX	0.51%	n/a	n/a	43.20%	21.99%
Allegion PLC	ALLE	0.04%	1.12%	0.04%	10.38%	0.37%
Agilent Technologies Inc	A	0.09%	0.92%	0.08%	13.53%	1.18%
Anthem Inc	ANTM	0.26%	1.22%	0.32%	14.13%	3.74%
CME Group Inc	CME	0.31%	1.38%	0.43%	7.90%	2.43%
Juniper Networks Inc	JNPR	0.03%	3.28%	0.10%	7.74%	0.25%
BlackRock Inc	BLK	0.26%	3.12%	0.81%	8.82%	2.28%
DTE Energy Co	DTE	0.09%	2.92%	0.27%	5.53%	0.52%
Nasdaq Inc	NDAQ	0.07%	1.88%	0.12%	13.00%	0.85%
Celanese Corp	CE	0.06%	2.19%	0.12%	7.15%	0.40%
Philip Morris International Inc	PM	0.44%	6.33%	2.81%	7.81%	3.47%
salesforce.com Inc	CRM	0.54%	n/a	n/a	22.14%	11.99%
Huntington Ingalls Industries Inc	HII	0.03%	1.65%	0.06%	40.00%	1.37%
MetLife Inc	MET	0.16%	3.97%	0.65%	8.39%	1.38%
Under Armour Inc	UA	0.02%	n/a	n/a	27.23%	0.42%
Tapestry Inc	TPR	0.02%	6.54%	0.15%	8.83%	0.21%
CSX Corp	CSX	0.21%	1.43%	0.30%	12.17%	2.58%
Edwards Lifesciences Corp	EW	0.18%	n/a	n/a	14.75%	2.69%
Ameriprise Financial Inc	AMP	0.07%	3.01%	0.20%	n/a	n/a
TechnipFMC PLC	FTI	0.04%	2.09%	0.09%	16.49%	0.72%
Zimmer Biomet Holdings Inc	ZBH	0.11%	0.69%	0.08%	6.22%	0.70%
CBRE Group Inc	CBRE	0.07%	n/a	n/a	7.80%	0.54%
Mastercard Inc	MA	1.12%	0.47%	0.52%	17.01%	19.00%
CarMax Inc	KMX	0.05%	n/a	n/a	10.61%	0.58%
Intercontinental Exchange Inc	ICE	0.21%	1.18%	0.24%	9.35%	1.94%
Fidelity National Information Services Inc	FIS	0.33%	1.03%	0.34%	8.97%	2.97%
Chipotle Mexican Grill Inc	CMG	0.09%	n/a	n/a	21.64%	1.99%
Wynn Resorts Ltd	WYNN	0.05%	3.63%	0.17%	13.50%	0.63%
Assurant Inc	AIZ	0.03%	1.95%	0.06%	n/a	n/a
NRG Energy Inc	NRG	0.04%	0.33%	0.01%	35.23%	1.28%
Regions Financial Corp	RF	0.06%	4.24%	0.24%	8.21%	0.47%
Monster Beverage Corp	MNST	0.13%	n/a	n/a	14.30%	1.81%
Mosaic Co/The	MOS	0.03%	1.09%	0.03%	12.63%	0.35%
Expedia Group Inc	EXPE	0.07%	1.05%	0.08%	21.16%	1.54%
Evergy Inc	EVRG	0.06%	2.92%	0.18%	7.62%	0.46%
Discovery Inc	DISCA	0.02%	n/a	n/a	13.35%	0.23%
CF Industries Holdings Inc	CF	0.04%	2.49%	0.10%	19.80%	0.82%
Viacom Inc	VIAB	0.03%	3.20%	0.11%	3.36%	0.12%
Leidos Holdings Inc	LDOS	0.05%	1.56%	0.08%	10.00%	0.50%
Alphabet Inc	GOOG	1.63%	n/a	n/a	12.87%	21.02%
Cooper Cos Inc/The	COO	0.06%	0.02%	0.00%	6.18%	0.38%
TE Connectivity Ltd	TEL	0.12%	2.02%	0.24%	9.21%	1.12%
Discover Financial Services	DFS	0.10%	2.20%	0.22%	8.70%	0.88%
TripAdvisor Inc	TRIP	0.02%	n/a	n/a	14.28%	0.27%
Visa Inc	V	1.24%	0.55%	0.68%	15.71%	19.41%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[9] Weight in Index	[10] Estimated Dividend Yield	[11] Cap-Weighted Dividend Yield	[12] Long-Term Growth Est.	[13] Cap-Weighted Long-Term Growth Est.
Mid-America Apartment Communities Inc	MAA	0.06%	3.03%	0.17%	n/a	n/a
Xylem Inc/NY	XYL	0.05%	1.25%	0.07%	14.65%	0.80%
Marathon Petroleum Corp	MPC	0.13%	4.31%	0.55%	10.23%	1.31%
Tractor Supply Co	TSCO	0.05%	1.37%	0.07%	10.82%	0.52%
Advanced Micro Devices Inc	AMD	0.14%	n/a	n/a	20.03%	2.71%
ResMed Inc	RMD	0.08%	1.12%	0.09%	11.37%	0.90%
Mettler-Toledo International Inc	MTD	0.06%	n/a	n/a	13.47%	0.86%
Copart Inc	CPRT	0.07%	n/a	n/a	n/a	n/a
Albemarle Corp	ALB	0.03%	2.38%	0.06%	9.93%	0.26%
Fortinet Inc	FTNT	0.05%	n/a	n/a	16.10%	0.86%
Essex Property Trust Inc	ESS	0.08%	2.43%	0.20%	8.17%	0.68%
Realty Income Corp	O	0.09%	3.68%	0.34%	4.01%	0.37%
Seagate Technology PLC	STX	0.05%	5.02%	0.27%	5.74%	0.31%
Westrock Co	WRK	0.03%	5.32%	0.19%	1.80%	0.06%
IHS Markit Ltd	INFO	0.10%	n/a	n/a	11.08%	1.15%
Wabtec Corp	WAB	0.05%	0.69%	0.04%	76.00%	3.99%
Western Digital Corp	WDC	0.07%	3.49%	0.23%	3.07%	0.21%
PepsiCo Inc	PEP	0.76%	2.79%	2.11%	5.45%	4.13%
Diamondback Energy Inc	FANG	0.06%	0.76%	0.05%	17.36%	1.10%
Nektar Therapeutics	NKTR	0.01%	n/a	n/a	-8.60%	-0.10%
Maxim Integrated Products Inc	MXIM	0.06%	3.52%	0.21%	6.95%	0.41%
Church & Dwight Co Inc	CHD	0.08%	1.14%	0.09%	8.13%	0.63%
Duke Realty Corp	DRE	0.05%	2.58%	0.12%	4.74%	0.23%
Federal Realty Investment Trust	FRT	0.04%	3.25%	0.12%	5.54%	0.21%
MGM Resorts International	MGM	0.06%	1.85%	0.11%	12.42%	0.72%
JB Hunt Transport Services Inc	JBHT	0.05%	0.96%	0.04%	12.13%	0.55%
Lam Research Corp	LRCX	0.12%	2.19%	0.26%	15.80%	1.90%
Mohawk Industries Inc	MHK	0.03%	n/a	n/a	5.28%	0.18%
Pentair PLC	PNR	0.02%	2.00%	0.05%	6.66%	0.16%
Vertex Pharmaceuticals Inc	VRTX	0.18%	n/a	n/a	43.73%	8.01%
Amcor PLC	AMCR	0.06%	4.89%	0.31%	5.92%	0.37%
Facebook Inc	FB	1.77%	n/a	n/a	19.37%	34.23%
T-Mobile US Inc	TMUS	0.26%	n/a	n/a	11.27%	2.97%
United Rentals Inc	URI	0.03%	n/a	n/a	12.00%	0.41%
ABIOMED Inc	ABMD	0.03%	n/a	n/a	29.00%	1.01%
Alexandria Real Estate Equities Inc	ARE	0.07%	2.67%	0.18%	4.77%	0.32%
Delta Air Lines Inc	DAL	0.15%	2.78%	0.41%	14.33%	2.13%
United Airlines Holdings Inc	UAL	0.09%	n/a	n/a	12.80%	1.10%
News Corp	NWS	0.01%	1.41%	0.02%	-14.23%	-0.16%
Centene Corp	CNC	0.08%	n/a	n/a	14.93%	1.14%
Macerich Co/The	MAC	0.02%	10.52%	0.17%	-0.17%	0.00%
Martin Marietta Materials Inc	MLM	0.06%	0.87%	0.05%	15.99%	1.00%
PayPal Holdings Inc	PYPL	0.51%	n/a	n/a	19.76%	10.03%
Coty Inc	COTY	0.03%	5.24%	0.15%	5.83%	0.17%
DISH Network Corp	DISH	0.03%	n/a	n/a	-8.61%	-0.26%
Dow Inc	DOW	0.13%	6.57%	0.82%	14.41%	1.81%
Alexion Pharmaceuticals Inc	ALXN	0.09%	n/a	n/a	15.93%	1.42%
Everest Re Group Ltd	RE	0.04%	2.37%	0.09%	10.00%	0.38%
WellCare Health Plans Inc	WCG	0.05%	n/a	n/a	15.83%	0.85%
News Corp	NWSA	0.02%	1.45%	0.03%	-14.23%	-0.30%
Global Payments Inc	GPN	0.10%	0.02%	0.00%	17.13%	1.76%
Crown Castle International Corp	CCI	0.24%	3.10%	0.74%	17.07%	4.08%
Aptiv PLC	APTV	0.08%	1.06%	0.09%	6.00%	0.51%
Advance Auto Parts Inc	AAP	0.04%	0.17%	0.01%	15.31%	0.60%
Capri Holdings Ltd	CPRI	0.02%	n/a	n/a	5.52%	0.09%
Align Technology Inc	ALGN	0.06%	n/a	n/a	20.51%	1.19%
Illumina Inc	ILMN	0.16%	n/a	n/a	23.74%	3.89%
Alliance Data Systems Corp	ADS	0.02%	2.05%	0.05%	9.13%	0.23%
LKQ Corp	LKQ	0.03%	n/a	n/a	12.80%	0.41%
Nielsen Holdings PLC	NLSN	0.03%	6.74%	0.20%	12.00%	0.35%
Garmin Ltd	GRMN	0.06%	2.80%	0.17%	7.03%	0.43%
Cimarex Energy Co	XEC	0.02%	1.87%	0.03%	26.17%	0.45%
Zoetis Inc	ZTS	0.24%	0.52%	0.12%	10.23%	2.44%
Equinix Inc	EQIX	0.19%	1.77%	0.33%	19.24%	3.59%
Digital Realty Trust Inc	DLR	0.10%	3.49%	0.36%	17.20%	1.75%
Discovery Inc	DISCK	0.04%	n/a	n/a	13.35%	0.51%

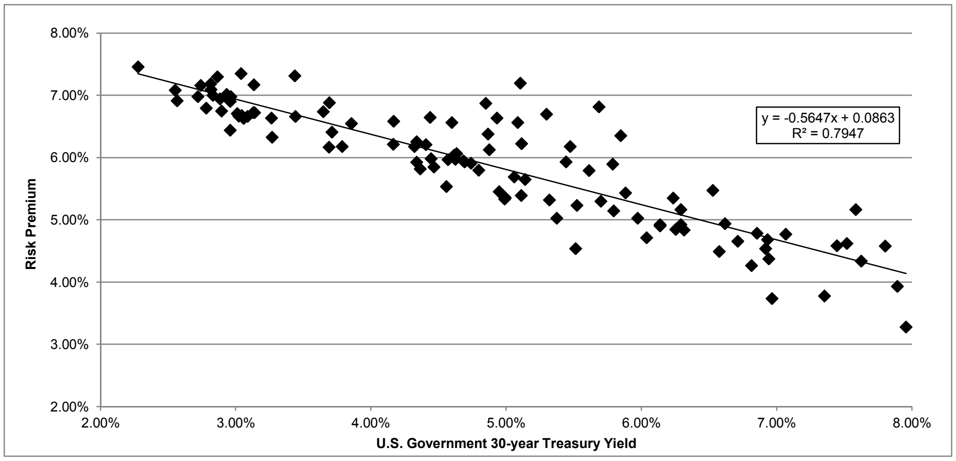
Notes:
[6] Equals sum of Col. [11]
[7] Equals sum of Col. [13]
[8] Equals ([6] x (1 + (0.5 x [7]))) + [7]
[9] Equals weight in S&P 500 based on market capitalization
[10] Source: Bloomberg Professional, as of August 30, 2019.
[11] Equals [9] x [10]
[12] Source: Bloomberg Professional, as of August 30, 2019.
[13] Equals [9] x [12]

BOND YIELD PLUS RISK PREMIUM

	[1] Average Authorized Electric ROE	[2] U.S. Govt. 30-year Treasury	[3] Risk Premium
1992.1	12.38%	7.80%	4.58%
1992.2	11.83%	7.89%	3.93%
1992.3	12.03%	7.45%	4.59%
1992.4	12.14%	7.52%	4.62%
1993.1	11.84%	7.07%	4.77%
1993.2	11.64%	6.86%	4.79%
1993.3	11.15%	6.31%	4.84%
1993.4	11.04%	6.14%	4.90%
1994.1	11.07%	6.57%	4.49%
1994.2	11.13%	7.35%	3.78%
1994.3	12.75%	7.58%	5.17%
1994.4	11.24%	7.96%	3.28%
1995.1	11.96%	7.63%	4.34%
1995.2	11.32%	6.94%	4.37%
1995.3	11.37%	6.71%	4.66%
1995.4	11.58%	6.23%	5.35%
1996.1	11.46%	6.29%	5.17%
1996.2	11.46%	6.92%	4.54%
1996.3	10.70%	6.96%	3.74%
1996.4	11.56%	6.62%	4.94%
1997.1	11.08%	6.81%	4.27%
1997.2	11.62%	6.93%	4.68%
1997.3	12.00%	6.53%	5.47%
1997.4	11.06%	6.14%	4.92%
1998.1	11.31%	5.88%	5.43%
1998.2	12.20%	5.85%	6.35%
1998.3	11.65%	5.47%	6.18%
1998.4	12.30%	5.10%	7.20%
1999.1	10.40%	5.37%	5.03%
1999.2	10.94%	5.79%	5.15%
1993.3	10.75%	6.04%	4.71%
1999.4	11.10%	6.25%	4.85%
2000.1	11.21%	6.29%	4.92%
2000.2	11.00%	5.97%	5.03%
2000.3	11.68%	5.79%	5.89%
2000.4	12.50%	5.69%	6.81%
2001.1	11.38%	5.44%	5.93%
2001.2	11.00%	5.70%	5.30%
2001.3	10.76%	5.52%	5.23%
2001.4	11.99%	5.30%	6.70%
2002.1	10.05%	5.51%	4.54%
2002.2	11.41%	5.61%	5.79%
2002.3	11.65%	5.08%	6.57%
2002.4	11.57%	4.93%	6.64%
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%	5.32%	5.32%
2004.3	10.75%	5.06%	5.69%
2004.4	11.24%	4.86%	6.38%
2005.1	10.63%	4.69%	5.93%
2005.2	10.31%	4.47%	5.85%
2005.3	11.08%	4.44%	6.65%
2005.4	10.63%	4.68%	5.95%
2006.1	10.70%	4.63%	6.06%
2006.2	10.79%	5.14%	5.65%
2006.3	10.35%	4.99%	5.35%
2006.4	10.65%	4.74%	5.91%
2007.1	10.59%	4.80%	5.80%
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%	5.97%
2008.3	10.43%	4.44%	5.98%
2008.4	10.39%	3.65%	6.74%
2009.1	10.75%	3.44%	7.31%
2009.2	10.75%	4.17%	6.58%

BOND YIELD PLUS RISK PREMIUM

	[1] Average Authorized Electric ROE	[2] U.S. Govt. 30-year Treasury	[3] Risk Premium
2009.3	10.50%	4.32%	6.18%
2009.4	10.59%	4.34%	6.26%
2010.1	10.59%	4.62%	5.97%
2010.2	10.18%	4.36%	5.82%
2010.3	10.40%	3.86%	6.55%
2010.4	10.38%	4.17%	6.21%
2011.1	10.09%	4.56%	5.53%
2011.2	10.26%	4.34%	5.92%
2011.3	10.57%	3.69%	6.88%
2011.4	10.39%	3.04%	7.35%
2012.1	10.30%	3.14%	7.17%
2012.2	9.95%	2.93%	7.02%
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%	6.17%
2014.2	10.10%	3.44%	6.66%
2014.3	9.90%	3.26%	6.64%
2014.4	9.94%	2.96%	6.98%
2015.1	9.64%	2.55%	7.08%
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%	3.04%	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	9.60%	3.27%	6.33%
2019.1	9.72%	3.01%	6.71%
2019.2	9.58%	2.78%	6.79%
AVERAGE	10.74%	4.85%	5.90%
MEDIAN	10.64%	4.82%	6.01%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.89148
R Square	0.79474
Adjusted R Square	0.79284
Standard Error	0.00434
Observations	110

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.007879	0.007879	418.152981	0.000000
Residual	108	0.002035	0.000019		
Total	109	0.009914			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0863	0.00140	61.64	0.000000	0.083562	0.089115	0.083562	0.089115
U.S. Govt. 30-year Treasury	(0.5647)	0.02761	(20.45)	0.000000	(0.619398)	(0.509928)	(0.619398)	(0.509928)

	[7]	[8]	[9]
	U.S. Govt. 30-year Treasury	Risk Premium	ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	2.24%	7.37%	9.61%
Blue Chip Consensus Forecast (Q4 2019 - Q4 2020) [5]	2.40%	7.28%	9.68%
Blue Chip Consensus Forecast (2021-2025) [6]	3.60%	6.60%	10.20%
AVERAGE			9.83%

Notes:
[1] Source: Regulatory Research Associates, includes rate cases through August 31, 2019
[2] Source: Bloomberg Professional, quarterly bond yields are the average of each trading day in the quarter
[3] Equals Column [1] − Column [2]
[4] Source: Bloomberg Professional
[5] Source: Blue Chip Financial Forecasts, Vol. 38, No. 9, September 1, 2019, at 2
[6] Source: Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14
[7] See notes [4], [5] & [6]
[8] Equals 0.086338 + (-0.564663 x Column [7])
[9] Equals Column [7] + Column [8]

EXPECTED EARNINGS ANALYSIS

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Company	Ticker	Value Line ROE 2022-2024	Value Line Total Capital 2018	Value Line Common Equity Ratio 2018	Total Equity 2018	Value Line Total Capital 2022-2024	Value Line Common Equity Ratio 2022-2024	Total Equity 2022-2024	Compound Annual Growth Rate	Adjustment Factor	Adjusted Return on Common Equity
Ameren Corporation	AEE	10.50%	15,632.00	48.80%	7,628	20,700	50.00%	10,350	6.29%	1.031	10.82%
American Electric Power Company, Inc.	AEP	10.50%	40,677.00	46.80%	19,037	53,100	46.50%	24,692	5.34%	1.026	10.77%
DTE Energy Company	DTE	10.50%	22,371.00	45.80%	10,246	31,600	46.50%	14,694	7.48%	1.036	10.88%
FirstEnergy Corporation	FE	16.00%	24,565.00	27.40%	6,731	34,100	32.00%	10,912	10.15%	1.048	16.77%
Evergy, Inc.	EVRG	8.50%	16,716.00	60.00%	10,030	18,600	47.50%	8,835	-2.50%	0.987	8.39%
OGE Energy Corporation	OGE	11.50%	6,902.00	58.00%	4,003	8,625	54.00%	4,658	3.07%	1.015	11.67%
Otter Tail Corporation	OTTR	10.50%	1,318.90	55.30%	729	1,950	49.50%	965	5.76%	1.028	10.79%
PPL Corporation	PPL	13.00%	31,726.00	36.70%	11,643	37,200	45.00%	16,740	7.53%	1.036	13.47%
Mean											11.70%
Median											10.85%

Notes:
[1] Source: Value Line
[2] Source: Value Line
[3] Source: Value Line
[4] Equals [2] x [3]
[5] Source: Value Line
[6] Source: Value Line
[7] Equals [5] x [6]
[8] Equals ([7] / [4]) ^ (1/5) - 1
[9] Equals 2 x (1 + [8]) / (2 + [8])
[10] Equals [1] x [9]

CAPITAL STRUCTURE ANALYSIS

COMMON EQUITY RATIO [1]

Proxy Group Company	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Ameren Corporation	AEE	51.14%	51.66%	51.74%	52.17%	51.33%	50.55%	51.65%	52.11%	51.54%
American Electric Power Company, Inc.	AEP	47.28%	47.70%	47.56%	46.86%	46.98%	46.83%	47.70%	47.44%	47.29%
DTE Energy Company	DTE	47.96%	48.65%	50.29%	49.41%	48.68%	49.27%	49.98%	49.23%	49.18%
FirstEnergy Corporation	FE	56.36%	56.90%	57.42%	58.23%	57.00%	55.81%	56.81%	55.99%	56.81%
Evergy, Inc.	EVRG	56.58%	55.72%	57.11%	57.43%	55.41%	56.16%	56.54%	57.60%	56.57%
OGE Energy Corporation	OGE	53.47%	55.07%	53.20%	53.05%	54.25%	53.59%	53.36%	53.05%	53.63%
Otter Tail Corporation	OTTR	52.67%	53.14%	53.13%	53.49%	52.39%	51.52%	51.37%	51.75%	52.43%
PPL Corporation	PPL	53.02%	53.47%	53.35%	53.91%	53.53%	53.22%	53.79%	54.08%	53.55%
MEAN		52.31%	52.79%	52.97%	53.07%	52.45%	52.12%	52.65%	52.66%	52.63%
LOW		47.28%	47.70%	47.56%	46.86%	46.98%	46.83%	47.70%	47.44%	47.29%
HIGH		56.58%	56.90%	57.42%	58.23%	57.00%	56.16%	56.81%	57.60%	56.81%

COMMON EQUITY RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Ameren Illinois Company	AEE	52.17%	52.28%	51.87%	51.52%	52.00%	51.85%	52.31%	52.77%	52.10%
Union Electric Company	AEE	50.22%	51.10%	51.63%	52.73%	50.77%	49.51%	51.12%	51.61%	51.09%
AEP Texas, Inc.	AEP	44.61%	45.46%	43.71%	43.19%	43.20%	44.66%	45.14%	42.81%	44.10%
Appalachian Power Company	AEP	48.04%	47.77%	48.28%	48.70%	47.90%	47.85%	47.59%	47.87%	48.00%
Indiana Michigan Power Company	AEP	45.04%	45.14%	44.62%	44.53%	44.15%	43.78%	44.37%	44.96%	44.57%
Kentucky Power Company	AEP	44.54%	45.44%	44.94%	44.93%	44.46%	43.85%	43.25%	42.88%	44.29%
Kingsport Power Company	AEP	43.05%	41.79%	44.27%	46.09%	43.76%	43.57%	46.53%	44.13%	44.15%
Ohio Power Company	AEP	52.92%	55.75%	56.19%	53.50%	54.15%	52.91%	57.36%	55.24%	54.75%
Public Service Company of Oklahoma	AEP	47.62%	46.23%	47.20%	49.12%	46.40%	44.86%	45.76%	46.66%	46.73%
Southwestern Electric Power Company	AEP	46.92%	46.88%	46.97%	43.43%	46.72%	46.24%	47.30%	48.15%	46.58%
Wheeling Power Company	AEP	52.01%	54.27%	54.62%	54.70%	54.19%	54.27%	54.26%	54.13%	54.06%
DTE Electric Company	DTE	47.96%	48.65%	50.29%	49.41%	48.68%	49.27%	49.98%	49.23%	49.18%
Cleveland Electric Illuminating Company	FE	53.49%	54.32%	55.19%	56.50%	56.27%	55.45%	55.23%	51.93%	54.80%
Jersey Central Power & Light Company	FE	66.58%	67.05%	67.54%	66.41%	64.90%	62.05%	65.30%	65.26%	65.64%
Metropolitan Edison Company	FE	48.46%	47.78%	50.71%	52.40%	50.43%	49.22%	52.33%	52.00%	50.42%
Monongahela Power Company	FE	46.55%	47.19%	46.68%	50.71%	49.50%	50.57%	49.15%	48.18%	48.57%
Ohio Edison Company	FE	71.42%	70.82%	69.93%	69.14%	67.33%	66.89%	64.91%	62.27%	67.84%
Pennsylvania Electric Company	FE	50.93%	51.73%	52.81%	52.71%	52.77%	51.43%	51.56%	53.29%	52.15%
Pennsylvania Power Company	FE	51.71%	50.69%	49.03%	57.01%	54.79%	52.23%	52.41%	55.74%	52.95%
Potomac Edison Company	FE	52.61%	53.29%	52.35%	52.92%	52.65%	52.64%	51.59%	51.27%	52.42%
Toledo Edison Company	FE	59.71%	60.78%	60.39%	62.25%	60.71%	59.04%	58.47%	55.49%	59.60%
West Penn Power Company	FE	46.25%	48.64%	49.75%	50.13%	48.01%	47.15%	52.82%	52.10%	49.36%
Great Plains Energy Incorporated	EVRG	47.44%	46.06%	48.71%	48.77%	46.25%	46.77%	47.57%	49.39%	47.62%
Westar Energy, Inc.	EVRG	62.88%	62.73%	62.81%	63.41%	61.88%	62.98%	62.99%	63.59%	62.91%
Oklahoma Gas and Electric Company	OGE	53.47%	55.07%	53.20%	53.05%	54.25%	53.59%	53.36%	53.05%	53.63%
Otter Tail Power Company	OTTR	52.67%	53.14%	53.13%	53.49%	52.39%	51.52%	51.37%	51.75%	52.43%
Kentucky Utilities Company	PPL	52.81%	53.08%	52.46%	53.43%	53.13%	53.26%	53.53%	53.93%	53.20%
Louisville Gas and Electric Company	PPL	52.73%	52.75%	52.26%	53.06%	52.59%	52.66%	52.71%	53.42%	52.77%
PPL Electric Utilities Corporation	PPL	53.31%	54.13%	54.52%	54.65%	54.28%	53.50%	54.57%	54.54%	54.19%

Notes:
[1] Ratios are weighted by actual common capital, preferred capital, long-term debt and short-term debt of Operating Subsidiaries.
[2] Natural Gas and Electric Operating Subsidiaries with data listed as N/A from SNL Financial have been excluded from the analysis.

CAPITAL STRUCTURE ANALYSIS

LONG-TERM DEBT RATIO [1]

Proxy Group Company	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Ameren Corporation	AEE	45.41%	46.26%	46.48%	45.85%	47.51%	44.99%	46.61%	45.56%	46.08%
American Electric Power Company, Inc.	AEP	51.15%	50.22%	50.40%	51.76%	51.05%	49.65%	49.89%	50.65%	50.59%
DTE Energy Company	DTE	50.39%	51.26%	48.39%	49.48%	50.20%	47.12%	47.98%	48.26%	49.14%
FirstEnergy Corporation	FE	41.13%	40.59%	40.06%	39.67%	39.61%	41.18%	42.90%	43.24%	41.05%
Evergy, Inc.	EVRG	37.22%	40.43%	38.82%	38.74%	38.99%	39.33%	39.83%	39.85%	39.15%
OGE Energy Corporation	OGE	46.53%	44.37%	46.80%	46.95%	45.75%	46.41%	46.64%	46.95%	46.30%
Otter Tail Corporation	OTTR	45.31%	45.45%	46.02%	46.51%	46.26%	46.29%	38.21%	38.66%	44.09%
PPL Corporation	PPL	45.46%	43.43%	43.79%	44.38%	44.67%	44.25%	44.73%	44.70%	44.43%
MEAN		45.32%	45.25%	45.10%	45.42%	45.51%	44.90%	44.60%	44.73%	45.10%
LOW		37.22%	40.43%	38.82%	38.74%	38.99%	39.33%	38.21%	38.66%	39.15%
HIGH		51.15%	51.26%	50.40%	51.76%	51.05%	49.65%	49.89%	50.65%	50.59%

LONG-TERM DEBT RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Ameren Illinois Company	AEE	44.34%	45.16%	46.26%	45.35%	46.61%	43.74%	45.69%	43.21%	45.05%
Union Electric Company	AEE	46.36%	47.24%	46.68%	46.27%	48.24%	45.99%	47.35%	47.36%	46.94%
AEP Texas, Inc.	AEP	51.71%	50.16%	52.63%	55.42%	56.80%	50.86%	54.86%	57.19%	53.70%
Appalachian Power Company	AEP	51.65%	52.23%	49.24%	50.09%	49.99%	49.12%	50.09%	51.24%	50.46%
Indiana Michigan Power Company	AEP	53.23%	54.22%	55.36%	55.47%	55.85%	50.09%	51.40%	51.41%	53.38%
Kentucky Power Company	AEP	51.25%	52.46%	53.35%	54.31%	54.57%	54.91%	56.13%	56.33%	54.16%
Kingsport Power Company	AEP	42.74%	39.28%	42.90%	44.79%	48.00%	48.59%	53.47%	52.06%	46.48%
Ohio Power Company	AEP	47.08%	38.96%	41.02%	40.62%	40.66%	47.09%	40.46%	40.59%	42.06%
Public Service Company of Oklahoma	AEP	51.55%	51.72%	48.81%	50.02%	49.09%	48.42%	48.60%	48.87%	49.64%
Southwestern Electric Power Company	AEP	51.96%	51.63%	53.03%	56.57%	50.79%	50.67%	50.19%	50.81%	51.95%
Wheeling Power Company	AEP	44.60%	45.73%	45.38%	45.30%	45.81%	45.73%	45.74%	45.87%	45.52%
DTE Electric Company	DTE	50.39%	51.26%	48.39%	49.48%	50.20%	47.12%	47.98%	48.26%	49.14%
Cleveland Electric Illuminating Company	FE	42.90%	43.47%	44.36%	43.50%	43.67%	44.49%	44.70%	44.13%	43.90%
Jersey Central Power & Light Company	FE	30.99%	31.43%	29.70%	29.37%	29.42%	32.66%	34.70%	34.74%	31.63%
Metropolitan Edison Company	FE	51.54%	52.22%	44.59%	44.18%	44.54%	45.12%	47.67%	47.42%	47.16%
Monongahela Power Company	FE	48.32%	49.02%	48.85%	49.29%	46.55%	49.43%	50.85%	51.82%	49.27%
Ohio Edison Company	FE	28.58%	29.18%	30.07%	30.86%	32.67%	33.11%	35.09%	37.73%	32.16%
Pennsylvania Electric Company	FE	49.07%	44.33%	45.19%	44.88%	45.13%	45.45%	47.47%	46.71%	46.03%
Pennsylvania Power Company	FE	48.29%	49.31%	50.97%	40.83%	41.53%	41.55%	44.97%	44.26%	45.21%
Potomac Edison Company	FE	46.67%	46.71%	47.65%	47.08%	47.35%	47.36%	48.41%	48.73%	47.49%
Toledo Edison Company	FE	38.87%	39.22%	39.55%	37.75%	36.82%	38.39%	38.92%	40.50%	38.75%
West Penn Power Company	FE	45.10%	40.31%	43.23%	44.20%	44.16%	45.14%	47.18%	47.90%	44.65%
Great Plains Energy Incorporated	EVRG	46.93%	49.92%	46.70%	46.14%	46.50%	46.20%	47.29%	46.99%	47.08%
Westar Energy, Inc.	EVRG	30.53%	33.54%	33.48%	33.64%	33.69%	34.35%	34.45%	34.65%	33.54%
Oklahoma Gas and Electric Company	OGE	46.53%	44.37%	46.80%	46.95%	45.75%	46.41%	46.64%	46.95%	46.30%
Otter Tail Power Company	OTTR	45.31%	45.45%	46.02%	46.51%	46.26%	46.29%	38.21%	38.66%	44.09%
Kentucky Utilities Company	PPL	47.19%	42.66%	43.19%	44.15%	44.34%	45.23%	45.60%	46.07%	44.80%
Louisville Gas and Electric Company	PPL	45.13%	41.17%	41.39%	42.80%	43.08%	44.04%	42.39%	41.49%	42.69%
PPL Electric Utilities Corporation	PPL	44.48%	45.15%	45.48%	45.35%	45.72%	43.70%	45.43%	45.46%	45.10%

Notes:

[1] Ratios are weighted by actual common capital, preferred capital, long-term debt and short-term debt of Operating Subsidiaries.

[2] Natural Gas and Electric Operating Subsidiaries with data listed as N/A from SNL Financial have been excluded from the analysis.

CAPITAL STRUCTURE ANALYSIS

PREFERRED EQUITY RATIO [1]

Proxy Group Company	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Ameren Corporation	AEE	0.90%	0.92%	0.94%	0.95%	0.96%	0.98%	1.01%	1.03%	0.96%
American Electric Power Company, Inc.	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DTE Energy Company	DTE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
FirstEnergy Corporation	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Evergy, Inc.	EVRG	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
OGE Energy Corporation	OGE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Otter Tail Corporation	OTTR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PPL Corporation	PPL	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MEAN		0.11%	0.11%	0.12%	0.12%	0.12%	0.12%	0.13%	0.13%	0.12%
LOW		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
HIGH		0.90%	0.92%	0.94%	0.95%	0.96%	0.98%	1.01%	1.03%	0.96%

PREFERRED EQUITY RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Ameren Illinois Company	AEE	0.83%	0.84%	0.86%	0.89%	0.92%	0.95%	0.99%	1.03%	0.91%
Union Electric Company	AEE	0.97%	0.99%	1.00%	1.00%	0.99%	1.00%	1.03%	1.03%	1.00%
AEP Texas, Inc.	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Appalachian Power Company	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Indiana Michigan Power Company	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Kentucky Power Company	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Kingsport Power Company	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ohio Power Company	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Public Service Company of Oklahoma	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Southwestern Electric Power Company	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Wheeling Power Company	AEP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DTE Electric Company	DTE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cleveland Electric Illuminating Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Jersey Central Power & Light Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Metropolitan Edison Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Monongahela Power Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ohio Edison Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pennsylvania Electric Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pennsylvania Power Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Potomac Edison Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Toledo Edison Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
West Penn Power Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Great Plains Energy Incorporated	EVRG	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Westar Energy, Inc.	EVRG	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Oklahoma Gas and Electric Company	OGE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Otter Tail Power Company	OTTR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Kentucky Utilities Company	PPL	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Louisville Gas and Electric Company	PPL	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PPL Electric Utilities Corporation	PPL	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Notes:

[1] Ratios are weighted by actual common capital, preferred capital, long-term debt and short-term debt of Operating Subsidiaries.
[2] Natural Gas and Electric Operating Subsidiaries with data listed as N/A from SNL Financial have been excluded from the analysis.

CAPITAL STRUCTURE ANALYSIS

SHORT-TERM DEBT RATIO [1]

Proxy Group Company	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Ameren Corporation	AEE	2.56%	1.16%	0.84%	1.02%	0.21%	3.48%	0.72%	1.30%	1.41%
American Electric Power Company, Inc.	AEP	1.57%	2.08%	2.04%	1.38%	1.97%	3.51%	2.41%	1.92%	2.11%
DTE Energy Company	DTE	1.66%	0.08%	1.32%	1.10%	1.12%	3.61%	2.04%	2.51%	1.68%
FirstEnergy Corporation	FE	2.51%	2.51%	2.52%	2.11%	3.40%	3.02%	0.28%	0.77%	2.14%
Evergy, Inc.	EVRG	6.20%	3.85%	4.07%	3.83%	5.59%	4.51%	3.64%	2.55%	4.28%
OGE Energy Corporation	OGE	0.00%	0.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.07%
Otter Tail Corporation	OTTR	2.02%	1.41%	0.84%	0.00%	1.34%	2.18%	10.42%	9.59%	3.48%
PPL Corporation	PPL	1.52%	3.10%	2.86%	1.71%	1.79%	2.53%	1.48%	1.22%	2.03%
MEAN		2.25%	1.85%	1.81%	1.39%	1.93%	2.86%	2.62%	2.48%	2.15%
LOW		0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.07%
HIGH		6.20%	3.85%	4.07%	3.83%	5.59%	4.51%	10.42%	9.59%	4.28%

SHORT-TERM DEBT RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Ameren Illinois Company	AEE	2.67%	1.72%	1.01%	2.23%	0.47%	3.46%	1.00%	3.00%	1.94%
Union Electric Company	AEE	2.46%	0.67%	0.68%	0.00%	0.00%	3.50%	0.50%	0.00%	0.98%
AEP Texas, Inc.	AEP	3.68%	4.38%	3.66%	1.39%	0.00%	4.49%	0.00%	0.00%	2.20%
Appalachian Power Company	AEP	0.31%	0.00%	2.48%	1.21%	2.11%	3.03%	2.33%	0.89%	1.54%
Indiana Michigan Power Company	AEP	1.73%	0.64%	0.02%	0.00%	0.00%	6.12%	4.23%	3.62%	2.05%
Kentucky Power Company	AEP	4.21%	2.10%	1.71%	0.75%	0.97%	1.25%	0.62%	0.79%	1.55%
Kingsport Power Company	AEP	14.21%	18.93%	12.83%	9.12%	8.24%	7.83%	0.00%	3.81%	9.37%
Ohio Power Company	AEP	0.00%	5.29%	2.79%	5.88%	5.19%	0.00%	2.18%	4.18%	3.19%
Public Service Company of Oklahoma	AEP	0.84%	2.05%	3.99%	0.85%	4.51%	6.72%	5.63%	4.47%	3.63%
Southwestern Electric Power Company	AEP	1.12%	1.49%	0.00%	0.00%	2.50%	3.09%	2.51%	1.04%	1.47%
Wheeling Power Company	AEP	3.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.42%
DTE Electric Company	DTE	1.66%	0.08%	1.32%	1.10%	1.12%	3.61%	2.04%	2.51%	1.68%
Cleveland Electric Illuminating Company	FE	3.60%	2.21%	0.44%	0.00%	0.06%	0.06%	0.06%	3.94%	1.30%
Jersey Central Power & Light Company	FE	2.43%	1.52%	2.75%	4.22%	5.67%	5.30%	0.00%	0.00%	2.74%
Metropolitan Edison Company	FE	0.00%	0.00%	4.69%	3.43%	5.03%	5.66%	0.00%	0.58%	2.42%
Monongahela Power Company	FE	5.13%	3.78%	4.47%	0.00%	3.95%	0.00%	0.00%	0.00%	2.17%
Ohio Edison Company	FE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pennsylvania Electric Company	FE	0.00%	3.94%	2.01%	2.41%	2.10%	3.12%	0.96%	0.00%	1.82%
Pennsylvania Power Company	FE	0.00%	0.00%	0.00%	2.16%	3.68%	6.22%	2.62%	0.00%	1.84%
Potomac Edison Company	FE	0.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%
Toledo Edison Company	FE	1.42%	0.00%	0.06%	0.00%	2.47%	2.58%	2.61%	4.01%	1.64%
West Penn Power Company	FE	8.65%	11.05%	7.02%	5.66%	7.83%	7.72%	0.00%	0.00%	5.99%
Great Plains Energy Incorporated	EVRG	5.64%	4.02%	4.59%	5.09%	7.24%	7.03%	5.14%	3.62%	5.30%
Westar Energy, Inc.	EVRG	6.59%	3.73%	3.71%	2.95%	4.43%	2.68%	2.56%	1.76%	3.55%
Oklahoma Gas and Electric Company	OGE	0.00%	0.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.07%
Otter Tail Power Company	OTTR	2.02%	1.41%	0.84%	0.00%	1.34%	2.18%	10.42%	9.59%	3.48%
Kentucky Utilities Company	PPL	0.00%	4.26%	4.35%	2.42%	2.53%	1.51%	0.88%	0.00%	1.99%
Louisville Gas and Electric Company	PPL	2.14%	6.08%	6.35%	4.14%	4.33%	3.31%	4.90%	5.08%	4.54%
PPL Electric Utilities Corporation	PPL	2.21%	0.73%	0.00%	0.00%	0.00%	2.80%	0.00%	0.00%	0.72%

Notes:

[1] Ratios are weighted by actual common capital, preferred capital, long-term debt and short-term debt of Operating Subsidiaries.

[2] Natural Gas and Electric Operating Subsidiaries with data listed as N/A from SNL Financial have been excluded from the analysis.

S&P 500 Industry Briefing: Utilities

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September 3, 2019

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thinking outside the box

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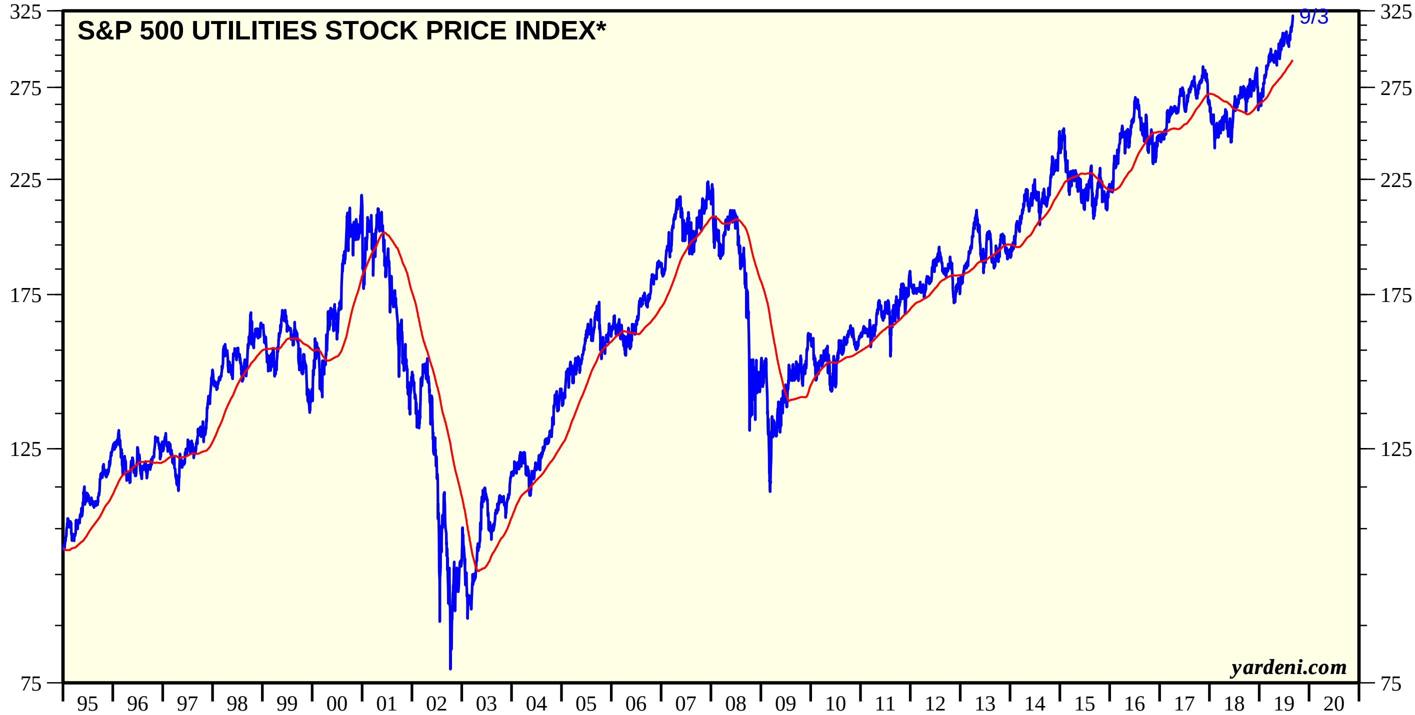
Stock Price Index

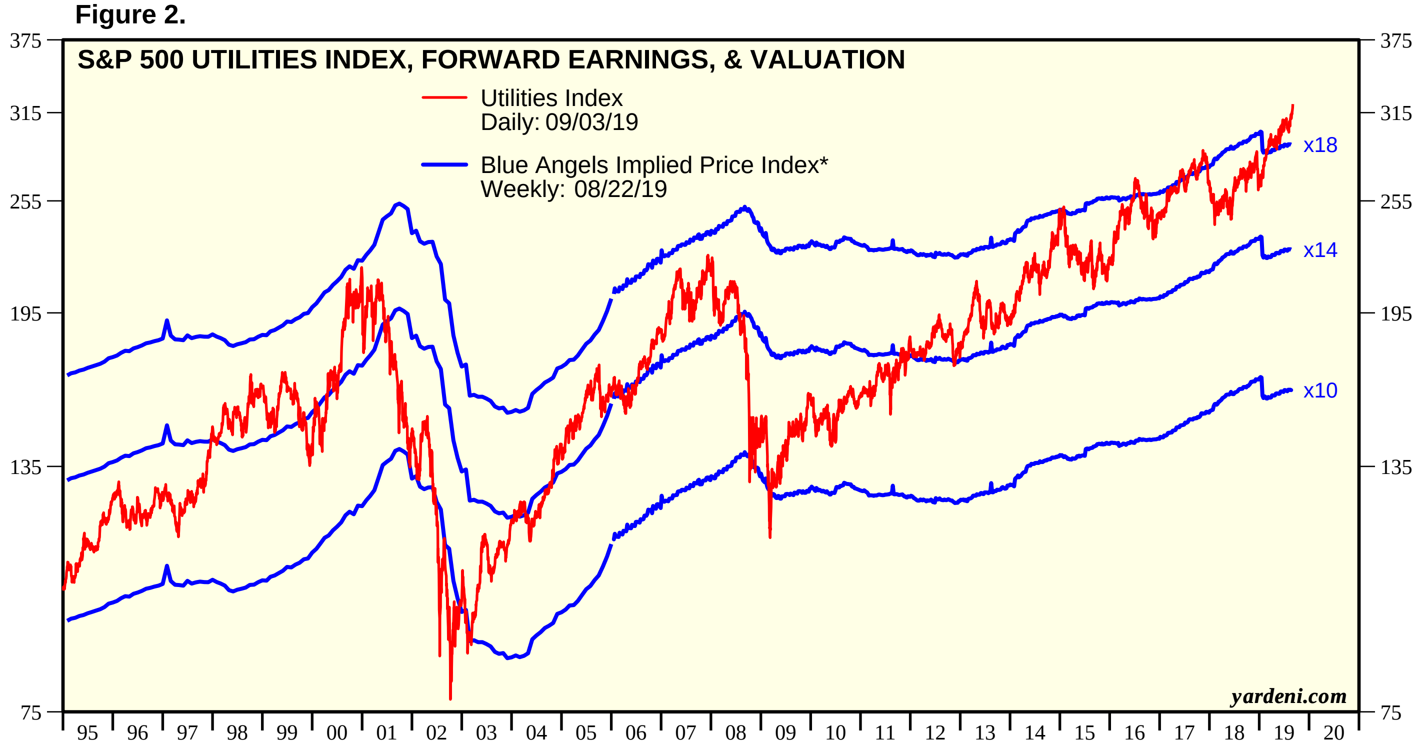
Figure 1.



200-day moving average.

* Ratio scale.
Source: Standard & Poor's and Haver Analytics.

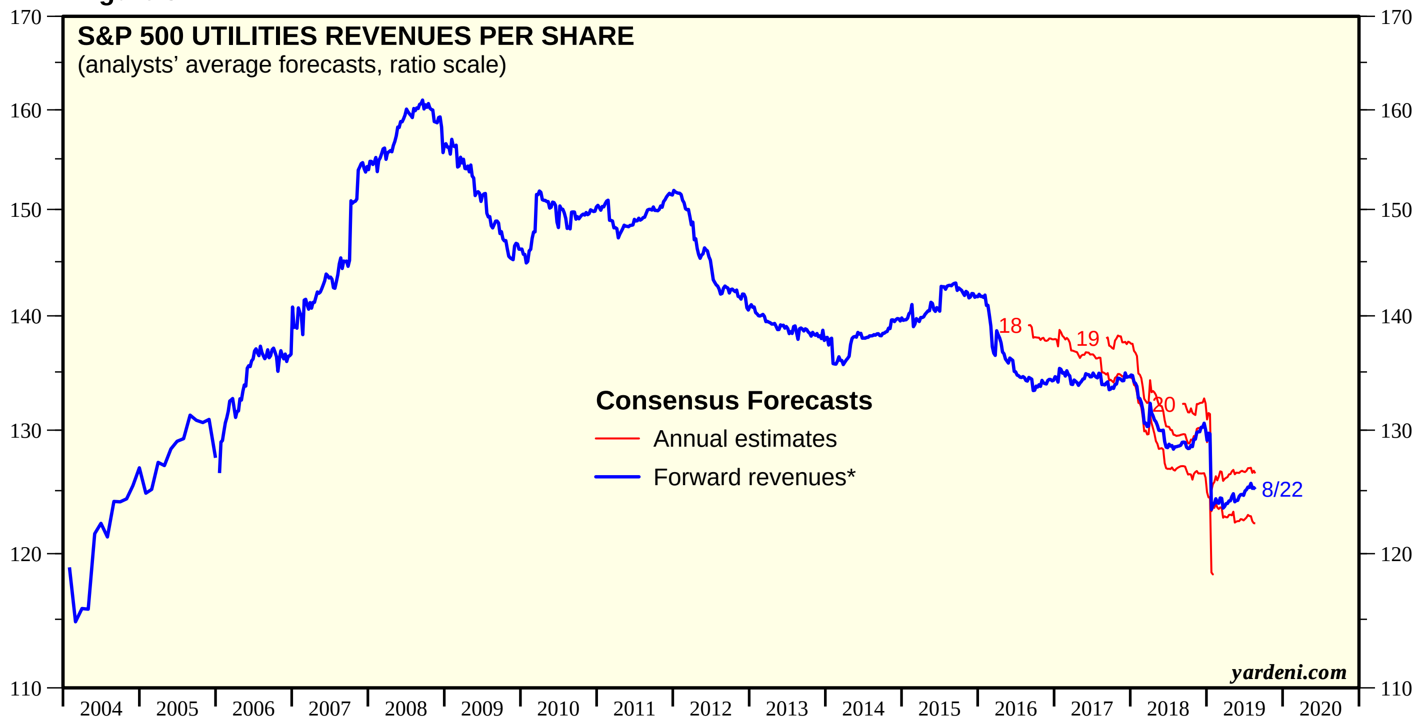
Figure 2.



* Implied price index calculated using forward earnings times forward P/Es.
Source: Standard & Poor's and I/B/E/S data by Refinitiv.

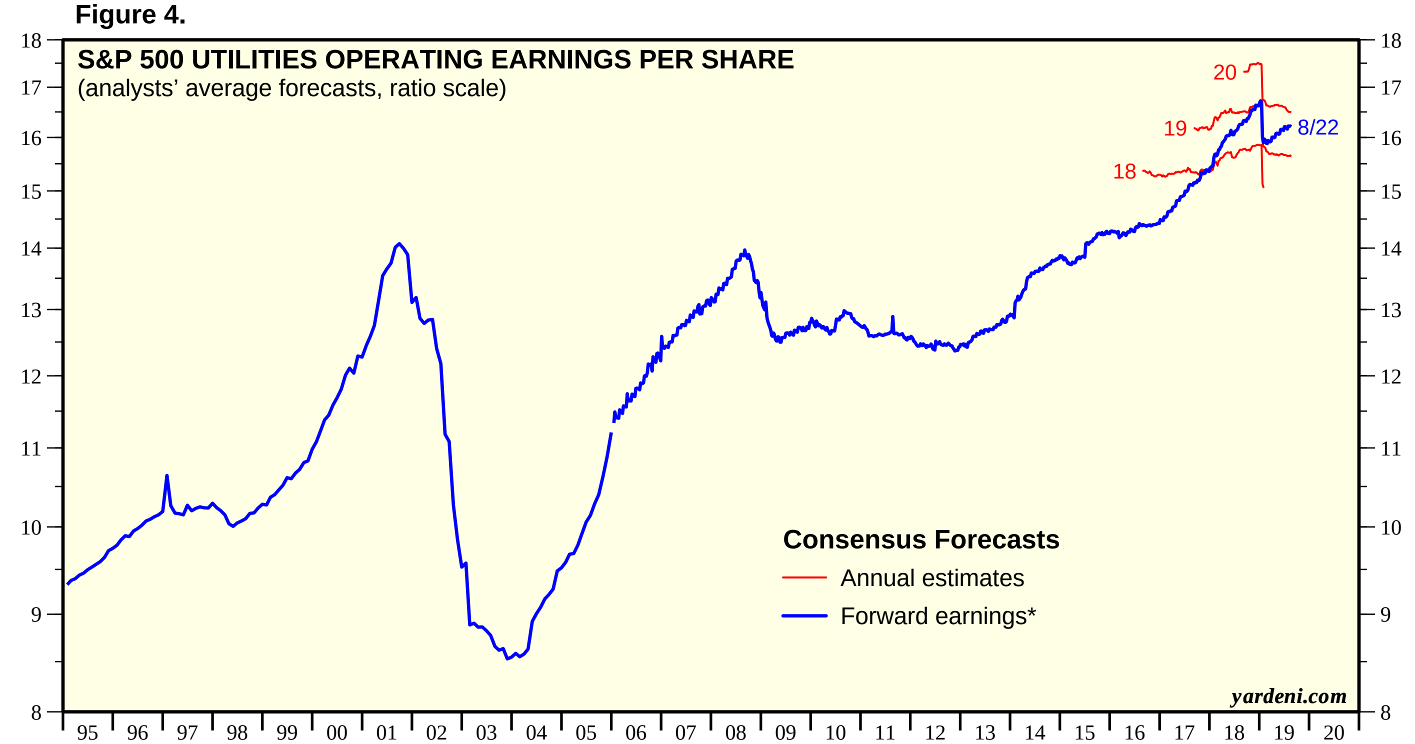
Forward Revenues & Earnings with Annual Squiggles

Figure 3.



* Time-weighted average of consensus estimates for current year and next year. Monthly through December 2005, then weekly.
Source: I/B/E/S data by Refinitiv.

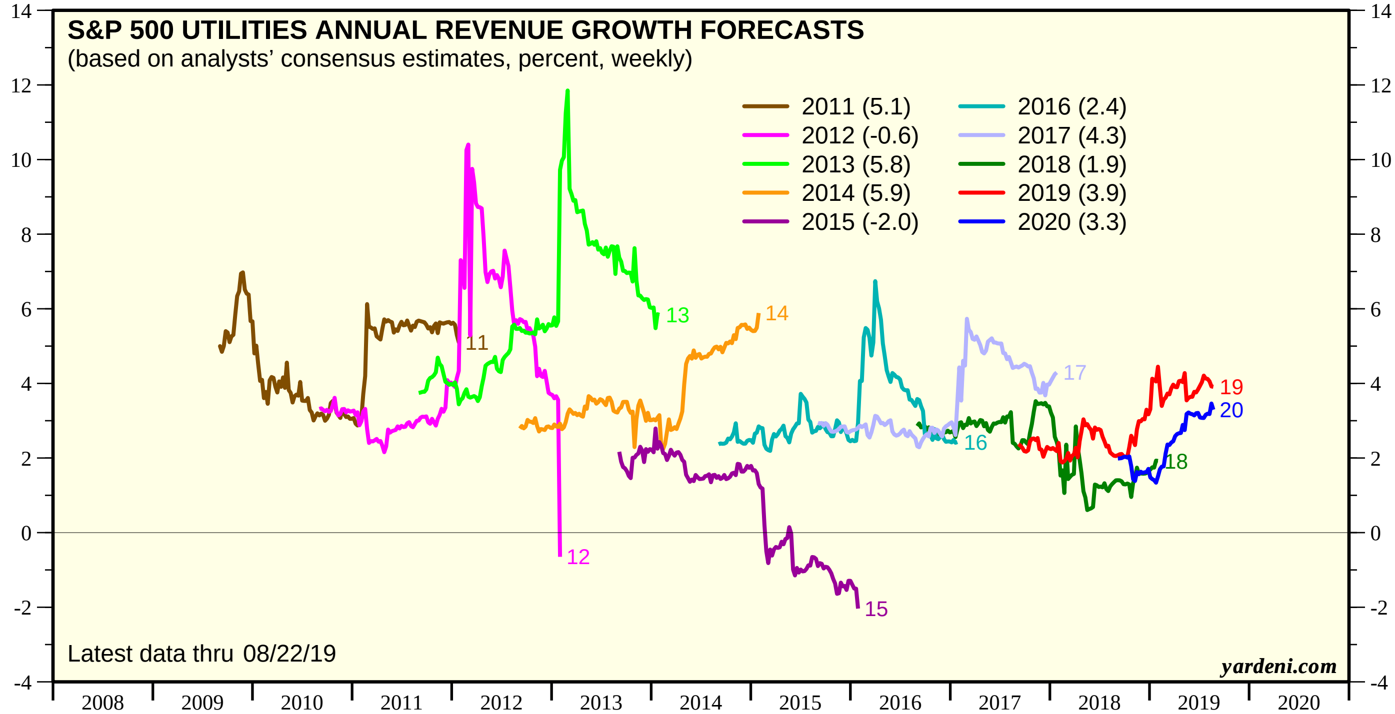
Figure 4.



* Time-weighted average of consensus estimates for current year and next year. Monthly through December 2005, then weekly.
Source: I/B/E/S data by Refinitiv.

Annual Growth Squiggles

Figure 5.



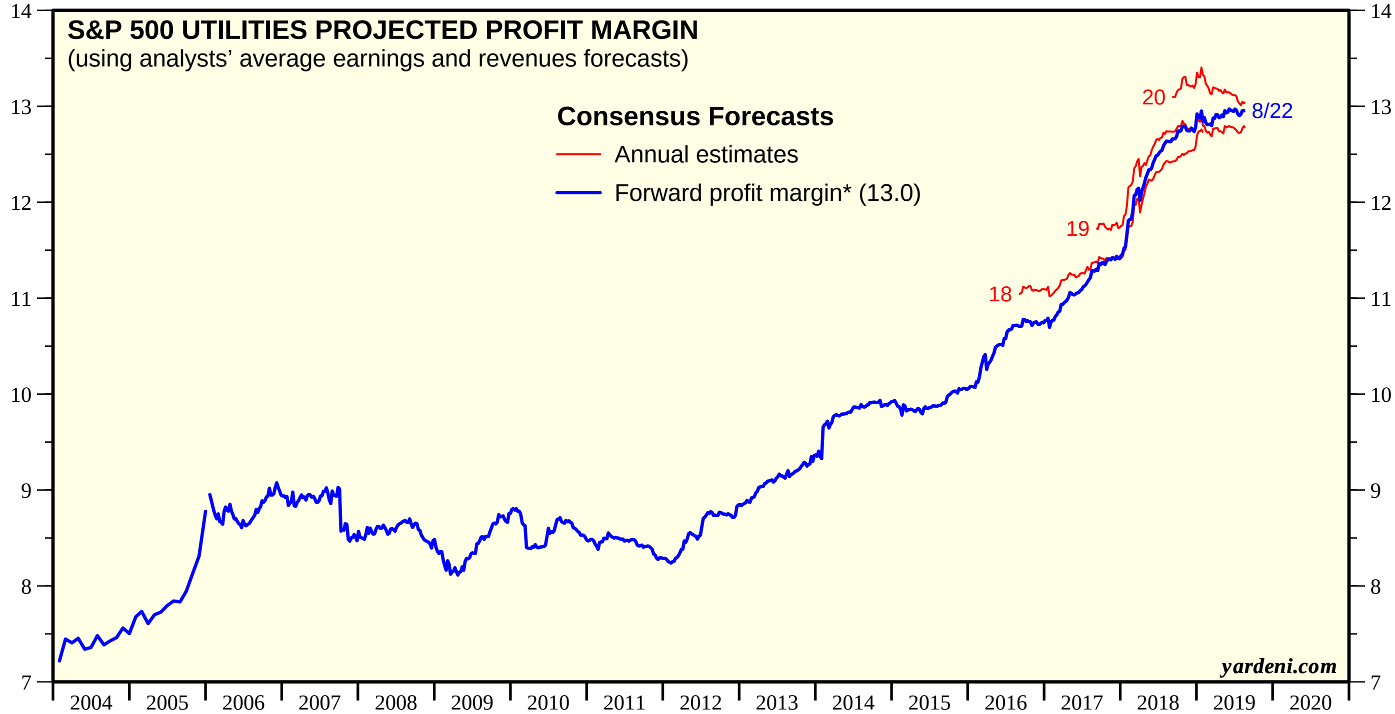
Source: I/B/E/S data by Refinitiv.

Figure 6.

Source: I/B/E/S data by Refinitiv.

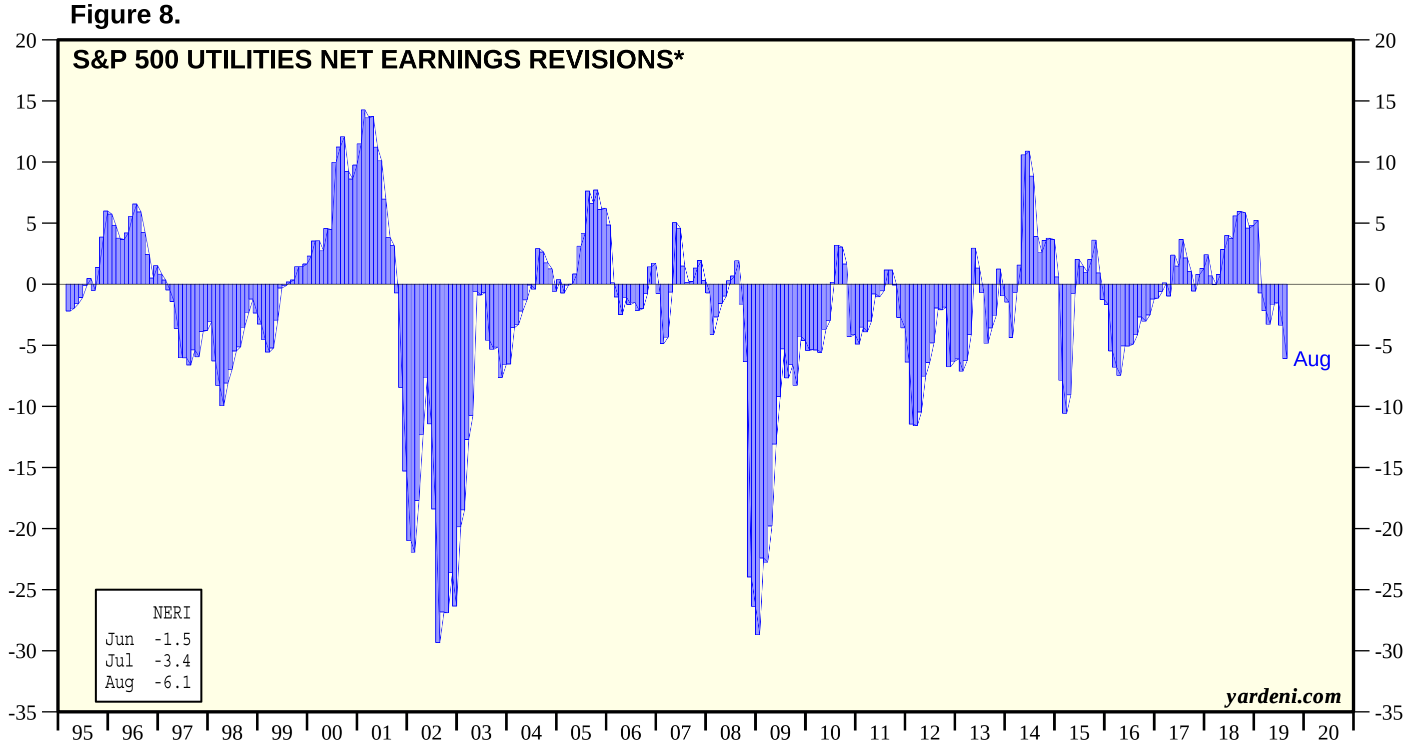
Margins & NERI

Figure 7.



* Time-weighted average of the consensus estimates for current year and next year. Monthly through December 2005, weekly thereafter.
Source: I/B/E/S data by Refinitiv.

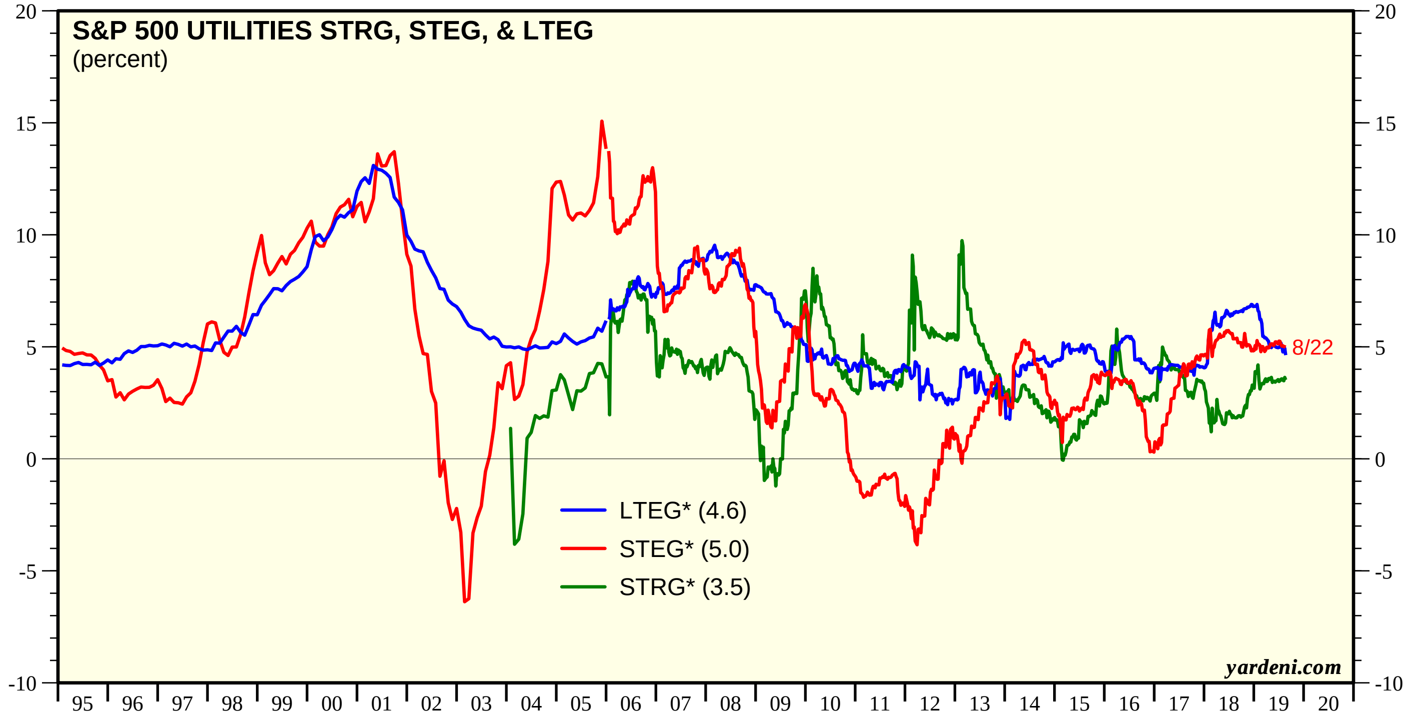
Figure 8.



* Three-month moving average of the number of forward earnings estimates up less number of estimates down, expressed as a percentage of the total number of forward earnings estimates.
Source: I/B/E/S data by Refinitiv.

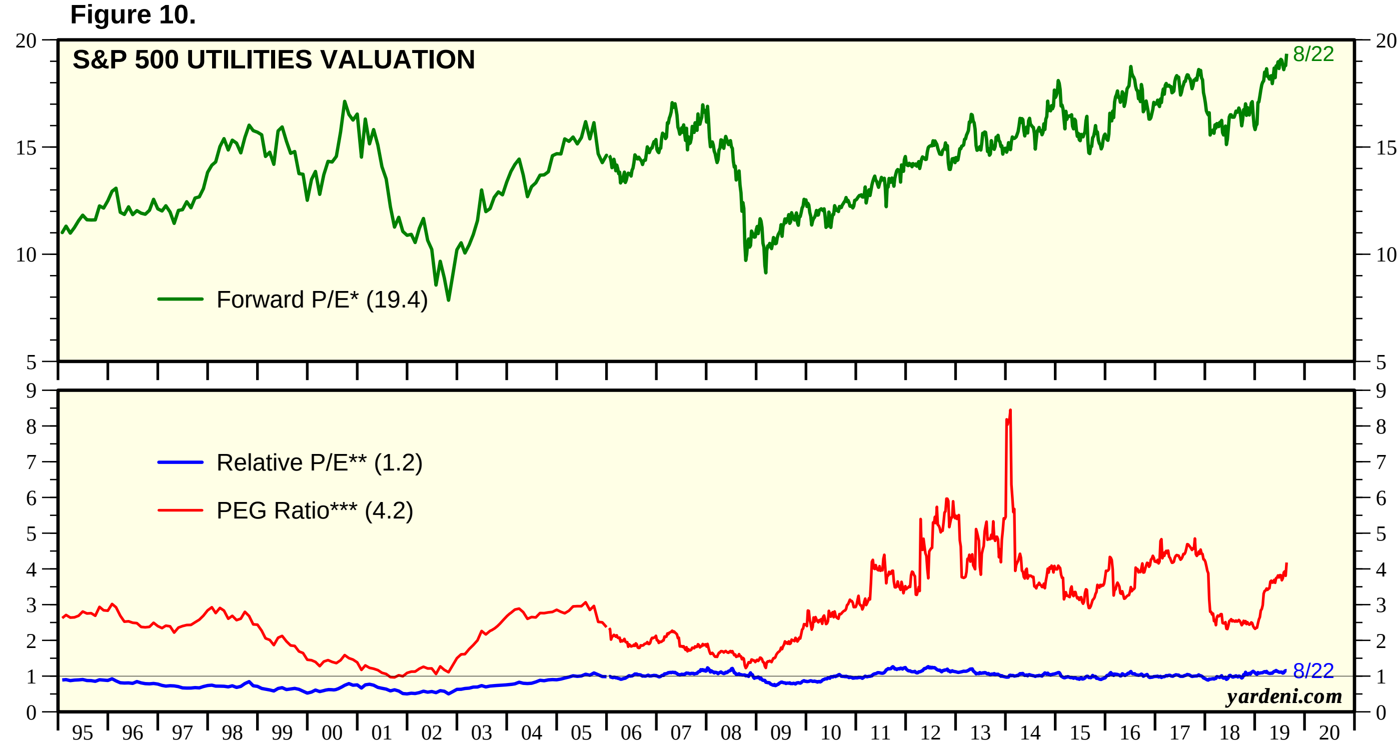
Forward Growth & Valuation

Figure 9.



* STEG is year-ahead forward consensus expected short-term earnings growth. STRG is year-ahead forward consensus expected short-term revenue growth. LTEG is five-year consensus expected long-term earnings growth.
Monthly data through 2005, weekly thereafter.
Source: I/B/E/S data by Refinitiv.

Figure 10.



* Price divided by 12-month forward consensus expected operating earnings per share.
** Sector or industry forward P/E relative to S&P 500 forward P/E.
*** Sector or industry forward P/E relative to sector or industry consensus 5-year LTEG forecast.
Source: I/B/E/S data by Refinitiv.

ANN E. BULKLEY

Senior Vice President

Ms. Bulkley has more than two decades of management and economic consulting experience in the energy industry. Ms. Bulkley has extensive state and federal regulatory experience on both electric and natural gas issues including rate of return, cost of equity and capital structure issues. Ms. Bulkley has provided expert testimony on the cost of capital in more than 30 regulatory proceedings before regulatory commissions in Arizona, Arkansas, Colorado, Connecticut, Kansas, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New Mexico, New York, North Dakota, Oklahoma, Pennsylvania, Texas, South Dakota, West Virginia, and the Federal Energy Regulatory Commission. In addition, Ms. Bulkley has prepared and provided supporting analysis for at least forty Federal and State regulatory proceedings. In addition, Ms. Bulkley has worked on acquisition teams with investors seeking to acquire utility assets, providing valuation services including an understanding of regulation, market expected returns, and the assessment of utility risk factors. Ms. Bulkley has assisted clients with valuations of public utility and industrial properties for ratemaking, purchase and sale considerations, ad valorem tax assessments, and accounting and financial purposes. In addition, Ms. Bulkley has experience in the areas of contract and business unit valuation, strategic alliances, market restructuring and regulatory and litigation support. Prior to joining Concentric, Ms. Bulkley held senior expertise-based consulting positions at several firms, including Reed Consulting Group and Navigant Consulting, Inc. where she specialized in valuation. Ms. Bulkley holds an M.A. in economics from Boston University and a B.A. in economics and finance from Simmons College. Ms. Bulkley is a Certified General Appraiser licensed in the Commonwealth of Massachusetts and the State of New Hampshire.

REPRESENTATIVE PROJECT EXPERIENCE

Regulatory Analysis and Ratemaking

Ms. Bulkley has provided a range of advisory services relating to regulatory policy analysis and many aspects of utility ratemaking. Specific services have included: 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; and many aspects of traditional utility ratemaking (e.g., rate design, rate base valuation).

Cost of Capital

Ms. Bulkley has provided expert testimony on the cost of capital in more than 30 regulatory proceedings before regulatory commissions in Arizona, Arkansas, Colorado, Connecticut, Kansas, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New Mexico, New York, North Dakota, Oklahoma, Pennsylvania, Texas, South Dakota, West Virginia, and the Federal Energy Regulatory Commission. In addition, Ms. Bulkley has prepared and provided supporting analysis for at least forty Federal and State regulatory proceedings in which she did not testify.

Valuation

Ms. Bulkley has 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. Ms. Bulkley's appraisal practices are consistent with the national standards established by the Uniform Standards of Professional Appraisal Practice. In addition, Ms. Bulkley has relied on other simulation based valuation methodologies.

Representative projects/clients have included:

- Northern Indiana Fuel and Light: Provided expert testimony regarding the fair value of the company's natural gas distribution system assets. Valuation relied on cost approach.
- Kokomo Gas: Provided expert testimony regarding the fair value of the company's natural gas distribution system assets. Valuation relied on cost approach.
- Prepared fair value rate base analyses for Northern Indiana Public Service Company for several electric rate proceedings. Valuation approaches used in this project included income, cost and comparable sales approaches.
- Confidential Utility Client: Prepared valuation of fossil and nuclear generation assets for financing purposes for regulated utility client.
- Prepared a valuation of a portfolio of generation assets for a large energy utility to be used for strategic planning purposes. Valuation approach included an income approach, a real options analysis and a risk analysis.
- Assisted clients in the restructuring of NUG contracts through the valuation of the underlying assets. Performed analysis to determine the option value of a plant in a competitively priced electricity market following the settlement of the NUG contract.
- Prepared market valuations of several purchase power contracts for large electric utilities in the sale of purchase power contracts. Assignment included an assessment of the regional power market, analysis of the underlying purchase power contracts, a traditional discounted cash flow valuation approach, as well as a risk analysis. Analyzed bids from potential acquirers using income and risk analysis approached. Prepared an assessment of the credit issues and value at risk for the selling utility.
- Prepared appraisal of a portfolio of generating facilities for a large electric utility to be used for financing purposes.
- Prepared an appraisal of a fleet of fossil generating assets for a large electric utility to establish the value of assets transferred from utility property.
- Conducted due diligence on an electric transmission and distribution system as part of a buy-side due diligence team.
- Provided analytical support for and prepared appraisal reports of generation assets to be used in ad valorem tax disputes.
- Provided analytical support and prepared testimony regarding the valuation of electric distribution system assets in five communities in a condemnation proceeding.

- Valued purchase power agreements in the transfer of assets to a deregulated electric market.

Ratemaking

Ms. Bulkley has 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. Analyzed and evaluated rate application. Attended hearings and conducted investigation of rate application for regulatory staff. Prepared, supported and defended recommendations for revenue requirements and rates for the company. Developed rates for gas utility for transportation program and ancillary services.

Strategic and Financial Advisory Services

Ms. Bulkley has 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.

PROFESSIONAL HISTORY

Concentric Energy Advisors, Inc. (2002 – Present)
Senior Vice President
Vice President
Assistant Vice President
Project Manager

Navigant Consulting, Inc. (1995 – 2002)
Project Manager

Cahners Publishing Company (1995)
Economist

EDUCATION

Boston University
M.A., Economics, 1995

Simmons College
B.A., Economics and Finance, 1991

CERTIFICATIONS

Certified General Appraiser licensed in the Commonwealth of Massachusetts and the States of Michigan and New Hampshire

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arizona Corporation Commission				
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				
Arkansas Oklahoma Gas Corporation	10/13	Arkansas Oklahoma Gas Corporation	Docket No. 13-078-U	Return on Equity
Colorado Public Utilities Commission				
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				
Connecticut Natural Gas Corporation	06/18	Connecticut Natural Gas Corporation	Docket No. 18-05-16	Return on Equity
Yankee Gas Services Co. d/b/a Eversource Energy	06/18	Yankee Gas Services Co. d/b/a Eversource Energy	Docket No. 18-05-10	Return on Equity
The Southern Connecticut Gas Company	06/17	The Southern Connecticut Gas Company	Docket No. 17-05-42	Return on Equity
The United Illuminating Company	07/16	The United Illuminating Company	Docket No. 16-06-04	Return on Equity
Federal Energy Regulatory Commission				
Sea Robin Pipeline Company LLC	11/18	Sea Robin Pipeline Company LLC	Docket# RP19-___-000	Return on Equity
Tallgrass Interstate Gas Transmission	10/15	Tallgrass Interstate Gas Transmission	RP16-137	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Indiana Utility Regulatory Commission				
Indiana and Michigan American Water Company	09/18	Indiana and Michigan American Water Company	IURC Cause No. 45142	Return on Equity
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
Kansas Corporation Commission				
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	11/18	Kentucky American Water Company	Docket No. 2018-00358	Return on Equity
Maine Public Utilities Commission				
Central Maine Power	10/18	Central Maine Power	Docket No. 2018-00194	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				
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				
Berkshire Gas Company	05/18	Berkshire Gas Company	DPU 18-40	Rate Case
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
Michigan Public Service Commission				
Wisconsin Electric Power Company	12/11	Wisconsin Electric Power Company	Case No. U-16830	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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	10/17	Minnesota Energy Resources Corporation	Docket No. G011/GR-17-563	Return on Equity
Missouri Public Service Commission				
Missouri American Water Company	06/17	Missouri American Water Company	Case No. WR-17-2085 Case No. SR-17-2086	Return on Equity
Montana Public Service Commission				
Montana-Dakota Utilities Co.	09/18	Montana-Dakota Utilities Co.	D2018.9.60	Return on Equity
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				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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				
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	Gas 17-G-0460 Electric 17-E-0459	Return on Equity
Niagara Mohawk Power Corporation	04/17	National Grid USA	Case No. C-17-E-0238	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-G-0284 Case No. 15-E-0285 Case No. 15-G-0286	Return on Equity
North Dakota Public Service Commission				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Oklahoma Corporation Commission				
Arkansas Oklahoma Gas Corporation	01/13	Arkansas Oklahoma Gas Corporation	Cause No. PUD 201200236	Return on Equity
Pennsylvania Public Utility Commission				
American Water Works Company Inc.	04/17	Pennsylvania-American Water Company	Docket No. R-2017-2595853	Return on Equity
South Dakota Public Utilities Commission				
Northern States Power Company	06/14	Northern States Power Company	Docket No. EL14-058	Return on Equity
Texas Public Utility Commission				
Southwestern Public Service Commission	08/19	Southwestern Public Service Commission		Return on Equity
Southwestern Public Service Company	01/14	Southwestern Public Service Company	Docket No. 42004	Return on Equity
Virginia State Corporation Commission				
Virginia American Water Company, Inc.	11/18	Virginia American Water Company, Inc.	Docket No. PUR-2018-00175	Return on Equity
Washington Utilities Transportation Commission				
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	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 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 Corporation	03/19	Wisconsin Public Service Corporation	6690-UR-126	Return on Equity
Wyoming Public Service Commission				
Montana-Dakota Utilities Co.	5/2019	Montana-Dakota Utilities Co.	30013-351-GR-19	Return on Equity