Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Direct Testimony of Ann E. Bulkley

March 2023

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

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

Q. On whose behalf are you submitting this direct testimony?

A. I am submitting this direct testimony before the Wyoming Public Service Commission ("Commission") on behalf of PacifiCorp d/b/a Rocky Mountain Power ("RMP" or the "Company"), which is an indirect wholly owned subsidiary of Berkshire Hathaway Energy ("BHE").

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 over 25 years of experience consulting to the energy industry. I have advised numerous energy and utility clients on a wide range of financial and economic issues with primary concentrations in valuation and utility rate matters. Many of these assignments have included the determination of the cost of capital for valuation and ratemaking purposes. My resume and a summary of testimony that I have filed in other proceedings is attached as RMP Exhibit 4.1 to this testimony.

Q. Have you previously testified before the Commission or other regulatory authorities?

A. Yes. A list of proceedings in which I have provided testimony is provided in RMP Exhibit 4.1 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") for RMP's electric utility operations in Wyoming and to provide an assessment of its proposed capital structure to be used for ratemaking purposes.

Q. Are you sponsoring any exhibits in support of your direct testimony?

A. Yes. My analyses and recommendations are supported by the data presented in RMP Exhibit 4.2 through RMP Exhibit 4.11, 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 more in Section VII in developing my ROE recommendation, I estimated the Company's cost of equity by applying several traditional estimation methodologies to a proxy group of comparable utilities, including the Constant Growth Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the Empirical Capital Asset Pricing Model ("ECAPM"), and the Bond Yield Risk Premium ("BYRP" or "Risk Premium") approach. My recommendation also takes into consideration: (1) RMP's capital expenditure requirements; (2) the regulatory environment in which RMP operates; and (3) RMP's planned investments in renewable generation assets compared to its current generation portfolio. Finally, I considered RMP's proposed capital structure as compared to the capital structures of the proxy companies.[1] While I did not make any specific adjustments to my ROE estimates for any of these factors, I did take them into

[1] The selection and purpose of developing a group of comparable companies will be discussed in detail in Section VI of my direct testimony.

consideration in aggregate when determining where the RMP'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 RMP's cost of equity. Section VI explains my selection of the proxy group of electric utilities. Section VII describes my analyses and the analytical basis for the recommendation of the appropriate ROE for RMP. Section VIII provides a discussion of specific regulatory, business, and financial risks that have a direct bearing on the ROE to be authorized for the Company in this case. Section IX discusses the capital structure of the Company as compared with the proxy group. Section X presents my conclusions and recommendations for the market cost of equity.

III. SUMMARY OF ANALYSES AND CONCLUSIONS

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

A. Considering the analytical results presented in Figure 1, current and prospective capital market conditions, as well as the level of regulatory, business, and financial risk faced by RMP's electric operations in Wyoming relative to the proxy group, I believe a range from 9.90 to 11.00 percent is reasonable. Within that range, the Company is requesting a return of 10.30 percent, which is reasonable.

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

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

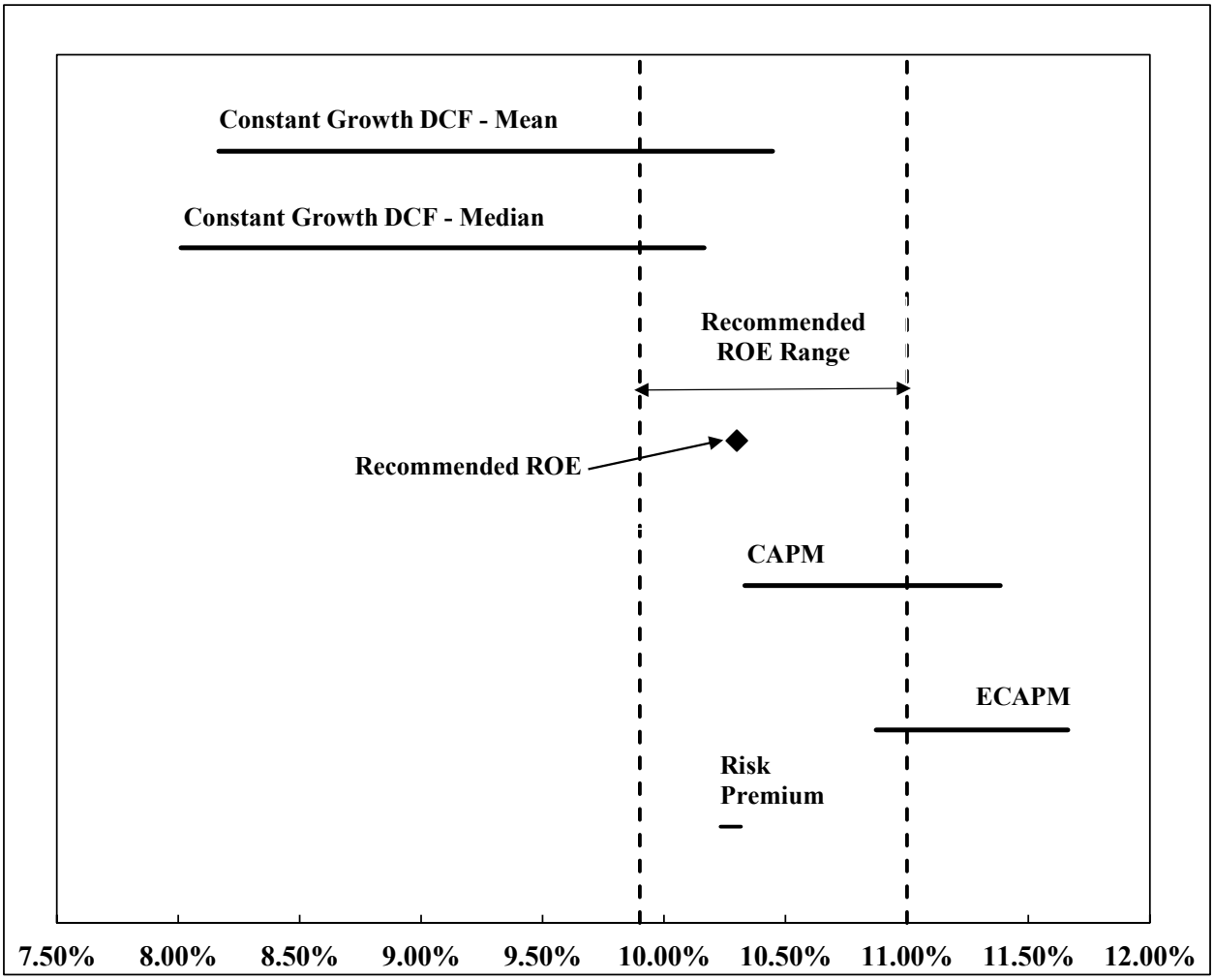
- The United States Supreme Court's *Hope* and *Bluefield* decisions[2] established the standards for determining a fair and reasonable authorized ROE for public utilities, including consistency of the allowed return with the returns of other businesses having similar risk, adequacy of the return to provide access to capital and support credit quality, and the requirement that the result lead to just and reasonable rates.
- The effect of current and prospective capital market conditions on the cost of equity estimation models and on investors' return requirements.
- The results of several analytical approaches that provide estimates of the Company's cost of equity. Because the Company's authorized ROE should be a forward-looking estimate over the period during which the rates will be in effect, these analyses rely on forward-looking inputs and assumptions (*e.g.*, projected analyst growth rates in the DCF model, forecasted risk-free rate and market risk premium in the CAPM analysis).
- Although the companies in my proxy group are generally comparable to RMP, each company is unique, and no two companies have the exact same business and financial risk profiles. Accordingly, I considered the Company's regulatory, business, and financial risks relative to the proxy group of comparable companies in determining where the Company's ROE should fall within the reasonable range of analytical results to appropriately account for any residual differences in risk.

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

A. Figure 1 summarizes the range of results produced by the DCF, CAPM, ECAPM, and Risk Premium analyses based on data through the end of January 2023.

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

Figure 1: Summary of Cost of Equity Analytical Results



As shown in Figure 1 (and in RMP Exhibit 4.2), the range of results produced by the models used to estimate the cost of equity is wide. While it is common to consider multiple models to estimate the cost of equity, it is particularly important when the range of results varies considerably across methodologies. As a result, my ROE recommendation considers the range of results of the Constant Growth DCF model, as well as the results of the CAPM, ECAPM, and Bond Yield Plus Risk Premium analyses. My ROE recommendation also considers RMP's company-specific risk factors and current and prospective capital market conditions.

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

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

- Inflation is expected to persist over the near-term, which increases the operating risk of the utility during the period in which rates will be in effect.
- Long-term interest rates have increased substantially in the past year and are expected to remain relatively high at least over the next year in response to inflation.
- Since utility dividend yields are now less attractive than the risk-free rates of government bonds, and interest rates are expected to remain near current levels over the next year, and since utility stock prices are inversely related to changes in interest rates, it is likely that utility share prices will decline.
- Rating agencies have responded to the risks of the utility sector, with Moody's Investors Service ("Moody's") most recently indicating its outlook for the industry in 2023 is "negative", citing increasing interest rates, inflation and high natural gas prices, all of which create pressure for customer affordability and prompt rate recovery.
- Similarly, equity analysts have noted the increased risk for the utility sector as a result of rising interest rates and expect the sector to underperform over the near-term.
- Consequently, the results of the DCF model, which relies on current utility share prices, is likely to understate the cost of equity during the period that the Company's rates will be in effect.

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

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

A. Yes. Comparing the Company's proposed equity ratio of 51.27 percent to the proxy group demonstrates that the Company's requested equity ratio is well within the range of equity

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

IV. REGULATORY PRINCIPLES

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

A. The United States ("U.S.") Supreme Court's precedent-setting *Hope* and *Bluefield* cases established the standards for determining the fairness or reasonableness of a utility's authorized ROE. Among the standards established by the 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 specific means of arriving at a fair return are not important, only that the end result leads to just and reasonable rates.[3]

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

A. Yes. In Docket No. 20000-ER-03-198, RMP's 2003 rate case, the Commission stated that:

> Consistent with the discretion given to the Commission in examining cases and reaching a just result (discussed generally, infra), there are no precise bases in Wyoming law to guide the Commission in determining a utility's rate of return on equity. Therefore, the Commission must apply its informed judgment to all of the evidence in the case. In this traditional rate-base rate-of-return case, the Commission must determine the cost of capital, and we are guided by the earnings and

[3] *Bluefield*, 262 U.S. at 692-93; *Hope*, 320 U.S. at 603.

> capital attraction standards of Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia, 262 U. S. 679 (1923); and Federal Power Comm'n v. Hope Natural Gas Co., 320 U. S. 391 (1944); accepted in Wyoming in In re Northern Utilities, 70 Wyo. 275, 249 P.2d 769 (Wyo. 1952). A public utility remains entitled to rates which will permit it a reasonable opportunity to earn a return on its investment properly reflecting the risk of the business and which will reasonably preserve the financial soundness of the company and allow it to raise the capital needed to provide service in the public interest. Having said that, we also acknowledge that the measurement of the required level of return is not a matter of simple mathematics but is a matter requiring judgment and the employment of discretion. The United States Supreme Court, in Hope, supra, noted that a "just and reasonable end result" is the desired outcome and that it is the end reached, rather than the method employed in achieving it, that should control.[4]

This guidance is in accordance with the *Hope* and *Bluefield* decisions and the principles that I employed to estimate the ROE for RMP, including the principle that an allowed rate of return must be sufficient to enable regulated companies like RMP 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. A return that is adequate to attract capital at reasonable terms enables the utility to continue to provide safe, reliable electric service while maintaining its financial integrity. That return should be commensurate with returns required by investors elsewhere in the market for investments of comparable risk. If it is not, debt and equity investors will seek alternative investment opportunities for which the expected return reflects the perceived risks, thereby inhibiting the Company's ability to attract capital at reasonable cost. To the

[4] *In the Application of PacifiCorp for a Retail Electric Utility Rate Increase of $41.8 Million Per Year,* Docket No. 20000-ER-03-198 (Record No. 8310), Order at 13 (Feb. 28, 2004).

extent the Company has the opportunity to earn its market-based cost of capital, a reasonable balance will be achieved between customers' and shareholders' interests.

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

A. Yes. Utilities compete directly for capital with other investments of similar risk, which include other electric and natural gas utilities. Therefore, the ROE authorized for a utility sends an important signal to investors regarding whether there is regulatory support for financial integrity, dividends, growth, and fair compensation for business and financial risk. The cost of capital represents an opportunity cost to investors. If higher returns are available for other investments of comparable risk, over the same time period, investors have an incentive to direct their capital to those alternative investments. Thus, an authorized ROE significantly below authorized ROEs for other electric and natural gas utilities can inhibit the utility's ability to attract capital for investment.

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

A. Yes. The regulatory framework is one of the most important factors in debt and equity investors' assessments of risk. Specifically, regarding debt investors, credit rating agencies consider the authorized ROE and equity ratio for regulated utilities to be very important for two reasons: (1) they help determine the cash flows and credit metrics of the regulated utility; and (2) they provide an indication of the degree of regulatory support for credit quality in the jurisdiction. To the extent that the authorized returns in a jurisdiction are lower than the returns that have been authorized more broadly, credit rating agencies will consider this in the overall risk assessment of the regulatory jurisdiction in which the

company operates. Not only do credit ratings affect the overall cost of borrowing, they also act as a signal to equity investors about the risk of investing in the equity of a company.

Q. What are your conclusions regarding regulatory guidelines?

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

V. CAPITAL MARKET CONDITIONS

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

A. The models used to estimate the cost of equity rely on market data that are either specific to the proxy group, in the case of the DCF model, or to the expectations of market risk, in the case of the CAPM. The results of the cost of equity estimation models can be affected by prevailing market conditions at the time the analysis is performed. While the ROE

established in a rate proceeding is intended to be forward-looking, the analyst uses current and projected market data, specifically stock prices, dividends, growth rates and interest rates, in the cost of equity estimation models to estimate the investor-required return for the subject company.

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

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

A. The cost of equity for regulated utility companies is being affected by several factors in the current and prospective capital markets, including: (1) changes in monetary policy; (2) high inflation; and (3) increased interest rates that are expected to remain relatively high over the next few years. These factors affect the assumptions used in the cost of equity estimation models.

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

A. As is discussed in more detail in the remainder of this section, the combination of persistently high inflation, and the Federal Reserve's changes in monetary policy contribute to an expectation of increased market risk and an increase in the cost of the

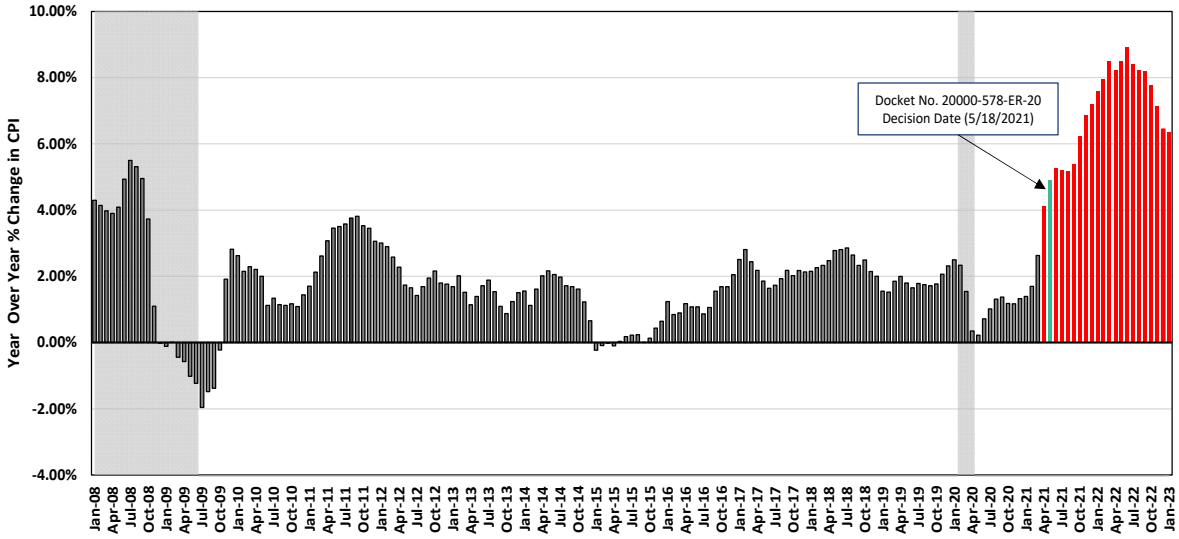
investor-required return. It is essential that these factors be considered in setting the forward-looking ROE. Inflation has recently been at some of the highest levels seen in approximately 40 years, and while inflation has declined from these recent peaks, it remains relatively high. Interest rates, which have increased significantly from pandemic-related lows seen in 2020, are expected to continue to remain relatively high in direct response to the Federal Reserve's use of monetary policy to combat inflation. Since there is a strong historical inverse correlation between interest rates and the share prices of utility stocks, it is reasonable to expect that utility investors' cost of equity is increasing (*i.e.*, as utility share prices decline, utility dividend yields increase). Because the cost of equity in this proceeding is being estimated for the future period that the Company's rates will be in effect, and because the cost of equity is expected to increase over the near term for utilities, cost of equity estimates based in whole or in part on historical or current market conditions, as opposed to projected market conditions, will likely understate the cost of equity during the future period that the Company's rates will be in effect.

A. Inflationary Expectations in Current and Projected Capital Market Conditions

Q. Has inflation increased significantly over the past year?

A. Yes. As shown in Figure 2, the year-over-year ("YOY") change in the Consumer Price Index ("CPI") published by the Bureau of Labor Statistics has increased steadily since the beginning of 2021, rising from 1.37 percent in January 2021 to reaching a YOY change high of 9.0 percent in June 2022, which was the largest 12-month increase since 1981 and significantly greater than any level seen since January 2008. As shown in Figure 2, since that time, while inflation has declined in response to the Federal Reserve's monetary policy, inflation continues to remain elevated.

Figure 2: YOY Percent Change in the Consumer Price Index, January 2008 – January 2023[5]



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

A. The Federal Reserve has indicated that it expects inflation will remain elevated above its target level over at least the next year and that it will continue to increase short-term interest rates to reduce inflation. For example, Federal Reserve Chair Powell at the Federal Open Market Committee ("FOMC") meeting in February 2023 anticipated further increases in the federal funds rate, and observed that while inflation is off of its recent highs, it remains significantly above the Federal Reserve's long-term target:

> We continue to anticipate that ongoing increases will be appropriate in order to attain a stance of monetary policy that is sufficiently restrictive to return inflation to 2 percent over time.
>
> …..
>
> Inflation remains well above our longer-run goal of 2 percent. Over the 12 months ending in December, total PCE prices rose 5.0 percent; excluding the volatile food and energy categories, core PCE prices rose 4.4 percent. The inflation data received over the past three months show a welcome reduction in the monthly pace of increases. And while recent developments are encouraging, we will need substantially more evidence to be confident that inflation is on a sustained downward path.
>
> …..

[5] Bureau of Labor Statistics, shaded area indicates a recession.

> With today's action, we have raised interest rates by 4-1/2 percentage points over the past year. We continue to anticipate that ongoing increases in the target range for the federal funds rate will be appropriate in order to attain a stance of monetary policy that is sufficiently restrictive to return inflation to 2 percent over time.
>
> …..
>
> At the December meeting, we all wrote down our best estimates of what we thought the ultimate level would be [of the federal funds rate], and that's obviously back in December. And the median for that was between five and five and a quarter percent. At the March meeting, we're going to update those assessments. We did not update them today. We did, however, continue to say that we believe ongoing rate hikes will be appropriate to attain a sufficiently restrictive stance of policy to bring inflation back down to 2 percent. We think we've covered a lot of ground, and financial conditions have certainly tightened. I would say we still think there's work to do there. We haven't made a decision on exactly where that will be. I think, you know, we're going to be looking carefully at the incoming data between now and the March meeting and then the May meeting. I don't feel a lot of certainty about where that will be. It could certainly be higher than we're writing down right now. If we come to the view that we need to write down to -- you know, to move rates up beyond what we said in December we would certainly do that. At the same time, if the data come in, in the other direction then we'll -- you know, we'll make data-dependent decisions at coming meetings, of course.[6]

B. The Use of Monetary Policy to Address Inflation

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

A. The dramatic increase in inflation has prompted the Federal Reserve to pursue an aggressive normalization of monetary policy, removing the accommodative policy programs used to mitigate the economic effects of COVID-19. As of the FOMC meeting on January 31 and February 1, 2023, the Federal Reserve has taken the following actions:

- Completed its taper of Treasury bond and mortgage-backed securities purchases;[7]

[6] Transcript, Chair Powell Press Conference, Feb. 1, 2023; clarification added.

[7] Federal Reserve Bank of New York, https://www.newyorkfed.org/markets/domestic-market-operations/monetary-policy-implementation/treasury-securities/treasury-securities-operational-details#monthly-details.

- Increased the target federal funds rate beginning in March 2022 through a series of increases from a target range of 0.00 to 0.25 percent to a target range of 4.50 percent to 4.75 percent;[8]
- Anticipates ongoing increases in the target range will be appropriate to achieve its goals of maximum employment at the inflation rate of 2.00 percent over the long-run;[9]
- Began reducing its holdings of Treasury and mortgage-backed securities on June 1, 2022.[10] The Federal Reserve is reducing the size of its balance sheet by only reinvesting principal payments on owned securities after the total amount of payments received exceeds a defined cap. For Treasury securities, the cap is currently set at $60 billion per month. The cap for mortgage-backed securities is currently set at $35 billion per month.[11]

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

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

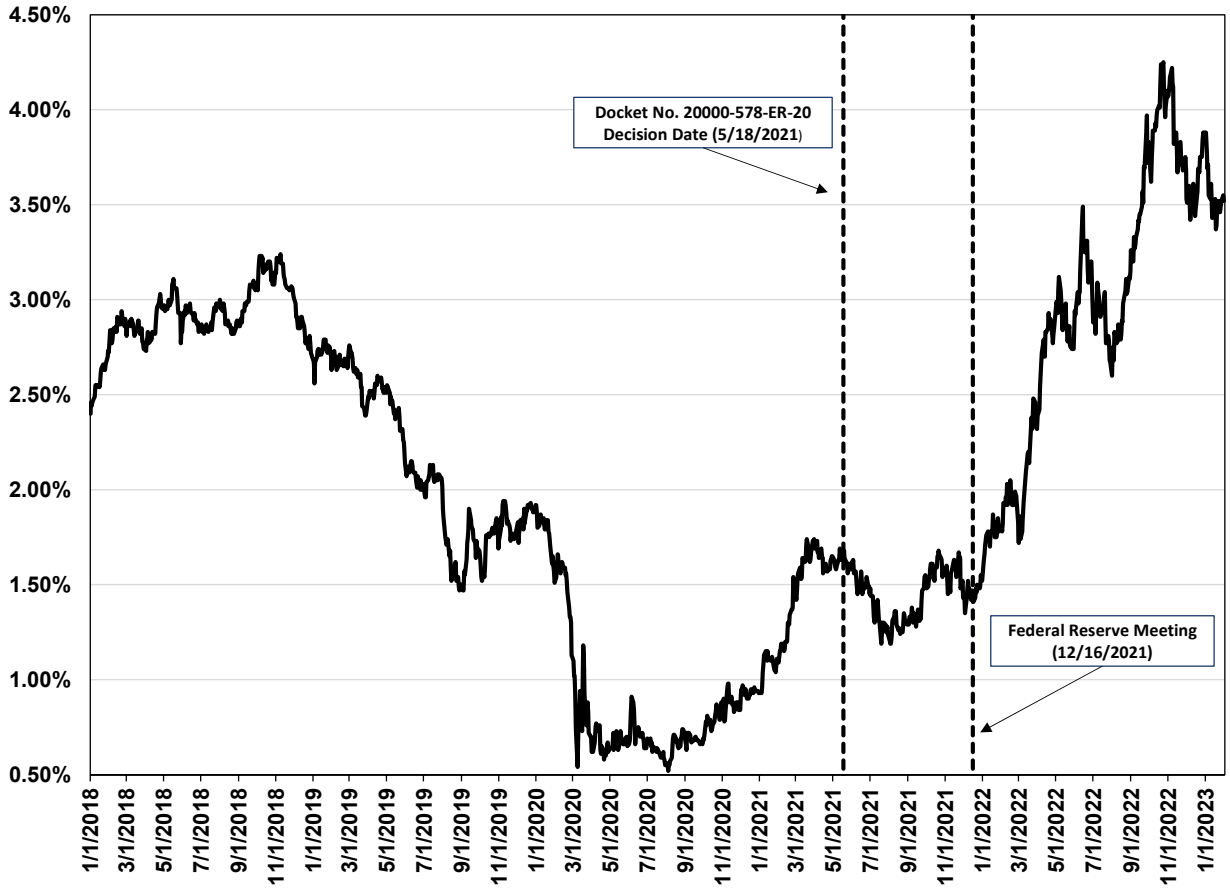
A. Inflation and the Federal Reserve's normalization of monetary policy are expected to result in long-term interest rates remaining relatively high over at least the next year. Specifically, inflation reduces the purchasing power of the future interest payments an investor expects to receive over the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

[8] Press Releases, Federal Reserve (Mar. 16, 2022); Transcript, Chair Powell Press Conference, Feb. 1, 2023.
[9] Transcript, Chair Powell Press Conference, Feb. 1, 2023.
[10] Press Release, Federal Reserve (May 4, 2022).
[11] Press Release, Federal Reserve, Plans for Reducing the Size of the Federal Reserve's Balance Sheet (May 4, 2022).

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

A. Yes. At the FOMC meetings throughout 2022 and thus far into 2023, the Federal Reserve has continued to note its concerns over the sustained increased levels of inflation and has continued to accelerate the process of normalizing monetary policy to combat inflation. As shown in Figure 3, since the Federal Reserve's December 2021 meeting, the yield on 10-year Treasury bond has more than doubled, increasing from 1.47 percent on December 15, 2021 to 3.52 percent on January 31, 2023. Further, interest rates have increased nearly 200 bps since the Company's last rate determination. The increase is due to the Federal Reserve's announcements at each of the meetings since December 2021 and the continued elevated levels of inflation.

Figure 3: 10-Year Treasury Bond Yield, January 2021 – January 2023[12]



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

A. Leading equity analysts have noted that they expect the yields on long-term government bonds to remain elevated through at least the end of 2023. According to the most recent *Blue Chip Financial Forecasts* report, the consensus estimate of the average yield on the 10-year Treasury bond is approximately 3.50 percent through the first quarter of 2024.[13]

[12] S&P Capital IQ Pro.
[13] Blue Chip Financial Forecasts, Vol. 42, No. 2, Feb. 1, 2023.

Q. Do recent changes in the Gross Domestic Product ("GDP") affect the current outlook for inflation and interest rates?

A. No. While FOMC participants have recently reduced their projections for economic activity for real GDP growth to 0.5 percent in 2023,[14] which is well below the median estimate for the longer-run normal GDP growth rate, the Federal Reserve has highlighted that the labor market continues to be extremely tight, and in fact, the unemployment rate reached 3.4 percent in January 2023, the lowest it has been in over 50 years.[15] Therefore, with a tight labor market and persistently high inflation, the Federal Reserve has indicated its need to continue a restrictive monetary policy to moderate demand to better align it with supply.[16]

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

A. As shown in Figure 4, when the Commission authorized an ROE of 9.50 percent in the Company's 2020 rate proceeding, interest rates (as measured by the 30-year Treasury bond yield) were 2.30 percent and inflation was 4.94 percent. However, since the Company's last rate proceeding, long-term interest rates have increased 1.5 times, and, as discussed, inflation is also substantially higher.

[14] FOMC, Summary of Economic Projections, Dec. 14, 2022.
[15] Lucia Mutikani, *U.S. reports blowout job growth; unemployment lowest since 1969.* Reuters (Feb. 3, 2023).
[16] Transcript, Chair Powell, Press Conference, Dec. 14, 2022.

Figure 4: Change in Market Conditions Since RMP's Last Rate Case[17]

Docket	Decision Date	Federal Funds Rate	30-Day Average Of 30-Year Treasury Bond Yield	Inflation Rate	Authorized ROE
20000-578-ER-20	5/18/2021	0.06%	2.30%	4.94%	9.50%
Current	1/31/2023	4.33%	3.70%	6.35%	

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

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

A. Yes. Interest rates and utility share prices are inversely correlated, which means that increases in interest rates result in declines in the share prices of utilities and vice versa. For example, Goldman Sachs and Deutsche Bank examined the sensitivity of share prices of different industries to changes in interest rates over the past five years. Both Goldman Sachs and Deutsche Bank found that utilities had one of the strongest negative relationships with bond yields (*i.e.*, increases in bond yields resulted in the decline of utility share prices).[18]

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

A. Equity analysts project that utilities will underperform the broader market given the increases in interest rates. Fidelity classifies the utility sector as underweight,[19] and *Morningstar* recently noted that many of the market conditions that supported the premium

[17] St. Louis Federal Reserve Bank; Bureau of Labor Statistics.
[18] Justina Lee, *Wall Street Is Rethinking the Treasury Threat to Big Tech Stocks.* Bloomberg.com (Mar. 11, 2021).
[19] Fidelity, *First Quarter 2023 Investment Research Update.* (Feb. 8, 2023).

valuation of utilities over the last decade mainly low inflation, interest rates and energy prices are currently reversing:

> Utilities' relative outperformance in 2022 while the market frets about the economy suggests that utilities remain a defensive haven. Utilities also outperformed ahead of the 2001 and the 2007-09 recessions. However, we think utilities' weak total returns in 2022 should concern investors. For the first time in a decade, the tailwinds supporting utilities' earnings growth and premium valuations (low inflation, low interest rates, and low energy price) are reversing

> Utilities' growth prospects are our biggest concern going into 2023. Utilities no longer offer a yield premium as bond yields climbed to their highest level in 15 years. Without that yield premium, the only advantage utilities offer investors is earnings growth. This is why high inflation and rising interest rates loom large for utilities in 2023. Inflation, including higher energy prices, will raise customer bills and could force utilities to re-evaluate their growth plans. Higher interest costs will sap cash flow and make infrastructure investments more expensive.[20]

Additionally, the *Wall Street Journal* noted that the S&P Utilities Index was down 14 percent between September and October 2022, attributing the decline to the recent increase in long-term treasury yields:

> A big draw of utility stocks has become less attractive as interest rates have climbed. Utility stocks are known for their sizable dividends, offering investors a regular stream of income. Companies in the S&P 500 utilities sector offer a dividend yield of 3.3%, among the highest payout percentages in the index, according to FactSet.
>
> But the outsize dividends of utility stocks are no match for climbing bond yields. The yield on the benchmark 10-year Treasury note finished above 4% on Monday for a second consecutive session. Friday marked the 10-year yield's first close above the 4% level since 2008 and 11 straight weeks of gains. Treasurys are viewed as essentially risk-free if held to maturity.
>
> "The 10-year is repricing everything. I've got something that's even safer and yields even more," said Kevin Barry, chief investment officer at Summit Financial, comparing Treasurys and utility stocks.[21]

[20] Travis Miller, *Can Utilities Maintain Growth Against Macroeconomic Headwinds?* Morningstar (Jan. 3, 2023).
[21] Hannah Miao, *Utility Stock stumble as treasury yields climb.* The Wall Street Journal (Oct. 18, 2022).

Similarly, Barron's noted that the decline in share prices can be attributed to the relatively high valuations and low dividend yields of utilities as compared to other asset classes such as Treasuries.[22] According to Barron's, even after the recent decline in share prices, the Utilities Select ETF was yielding 2.85 percent, which is a yield that will not "lure in buyers when the ultrasafe 10-year Treasury note yields close to 4%."[23] Therefore, Barron's currently recommends not buying utility stocks.

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

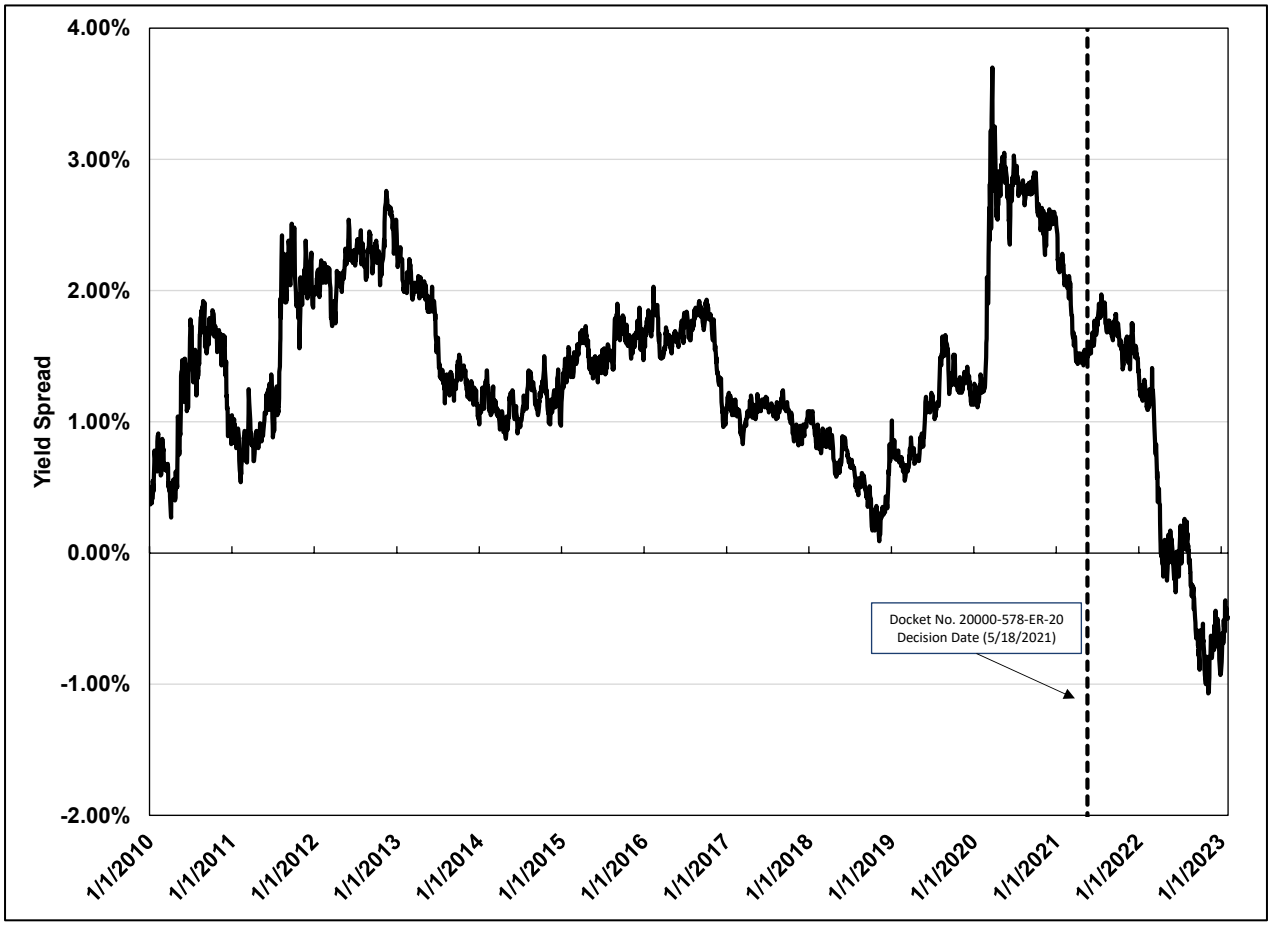
A. While interest rates have increased substantially over the past year, the valuations of utilities have remained elevated and have not fully reflected the effect of the recent increase in interest rates. To illustrate this point, I examined the difference between the dividend yields of utility stocks and the yields on long-term government bonds from January 2010 through January 2023 ("yield spread"). I selected the dividend yield on the S&P Utilities Index as the measure of the dividend yields for the utility sector and the yield on the 10-year Treasury bond as the estimate of the yield on long-term government bonds. As shown in Figure 5, the recent significant increase in long-term government bonds yields has resulted in the yield on long-term government bonds exceeding the dividend yields of utilities. The yield spread as of January 31, 2023 is -0.49 percent. However, the long-term average yield spread from 2010 to 2023 is 1.36 percent. Therefore, the current yield spread is well below the long-term average, and well below the yield spread at the time of the Company's last rate proceding. This means that investors can earn higher yields on

[22] Jacob Sonenshine, *Utilities Stocks Have Fallen off a Cliff. They Just Got Downgraded, Too.* Barron's (Oct. 17, 2022).
[23] *Id.*

Treasury bonds than on the S&P Utility Index, which is a higher risk investment in equities. It is rational to expect that investors will rotate into Treasuries from utilities if they can achive higher yields at lower risk. This suggests that using historical prices in the DCF model may understate the COE over the period that RMP's rates will be in effect.

For further context as to how unlikely it is to have a yield spread of -0.49 percent, I calculated the z-score for the current yield spread, which measures the number of standard deviations from the mean. The current yield spread of -0.49 percent has a z-score of -2.51, indicating that a yield spread of -0.49 percent is over 2 standard deviations from the mean of 1.36 percent. In other words, 95 percent of the daily yield spread observations from 2010 to 2023 fall between -0.11 percent and 2.83 percent and the current yield spread of -0.49 percent is outside of that range. Thus, the current yield spread could be considered an outlier, which is why equity analysts do not expect this current level to hold. Since long-term bond yields are expected to remain elevated at current levels over the near-term, equity analysts expect utilities to underperform, and thus the dividend yields for utilities will increase. This is because investors that purchased utility stocks as an alternative to the lower yields on long-term government bonds would otherwise be inclined to rotate back into government bonds, particularly as the yields on long-term government bonds remain elevated, thus resulting in a decrease in the share prices of utilities.

Figure 5: Spread between the S&P Utilities Index Dividend Yield and the 10-year Treasury Bond Yield, January 2010 – January 2023[24]



Q. What is the significance of the inverse relationship between interest rates and utility share prices in the current market?

A. If interest rates remain relatively high as expected, then the share prices of utilities, which have been strong in 2022 relative to the market, would be expected to decline. If the prices of utility stocks decline, then the DCF model, which relies on historical averages of share prices to calculate the dividend yield, is likely to understate the dividend yield and thus the cost of equity.

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

Q. Have regulatory commissions acknowledged that the DCF model might understate the COE given current capital market conditions?

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

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

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

…..

> We have previously determined, above, that we shall utilize I&E's DCF and CAPM methodologies. I&E's DCF and CAPM produce a range of reasonableness for the ROE in this proceeding from 8.90% [DCF] to 9.89% [CAPM]. Based upon our informed judgment, which includes consideration of a variety of factors, including increasing inflation leading to increases in interest rates and capital costs since the rate filing, we determine that a base ROE of 9.75% is reasonable and appropriate for Aqua.[26]

E. Conclusion

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

A. Through 2023, investors expect long-term interest rates to remain relatively high in response to continued elevated levels of inflation and the Federal Reserve's normalization of monetary policy. Because the share prices of utilities are inversely correlated to interest rates, and government bond yields are already substantially greater than utility stock dividend yields, the share prices of utilities will likely decline, which is the reason a number of equity analysts have classified the utility sector as either underperform or underweight. The expected underperformance of utilities means that DCF models using recent historical data likely underestimate investors' required return over the period that rates will be in effect. Therefore, this expected change in market conditions supports consideration of the higher end of the range of cost of equity results produced by the DCF models. Moreover, prospective market conditions warrant consideration of forward-looking cost of equity estimation models such as the CAPM and ECAPM, which better reflect expected market conditions.

[26] *Id.*, at 177–178.

VI. PROXY GROUP SELECTION

Q. Please provide a brief profile of RMP.

A. RMP is an electric utility, which is an indirect, wholly owned subsidiary of BHE. PacifiCorp provides electric utility service to approximately 2.0 million residential, commercial and industrial customers in California, Idaho, Oregon, Utah, Washington and Wyoming.[27] In Wyoming, RMP provides electric service to approximately 150,000 residential, commercial, and industrial customers.[28] As of December 31, 2021, RMP owned net utility electric plant in Wyoming of approximately $2.76 billion.[29] RMP's electric operations in Wyoming represented 15 percent of PacifiCorp's electric sales in 2021.[30] PacifiCorp currently has a long-term rating of A (Outlook: Stable) from S&P and A3 (Outlook: Stable) from Moody's.[31]

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

A. One of the purposes of this proceeding is to estimate 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 because RMP's operations do not make up the entirety of a publicly traded entity, it is necessary to establish a group of companies that are both publicly traded and comparable to the Company in certain fundamental business and financial respects to serve as its "proxy" in the cost of equity estimation process.

Even if the Company 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

[27] Berkshire Hathaway Energy Co, 2021 Form 10-K at 3.
[28] Direct Testimony of Gary W. Hoogeveen.
[29] Rocky Mountain Power Company, 2021 Annual Report to the Wyoming Public Service Commission, at 6 & 8.
[30] Berkshire Hathaway Energy Co., 2021 (Annual Report Form 10-K) at 3 (Dec. 31, 2021).
[31] PacifiCorp local currency LT issuer rating, S&P Global and Moody's.

proxy group is that it moderates the effects of unusual events that may be associated with any one company. The companies included in the proxy group all possess a set of operating and risk characteristics that are substantially comparable to the Company, and thus provide a reasonable basis to derive and estimate the appropriate cost of equity for RMP.

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

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

- pay consistent quarterly cash dividends because such companies cannot be analyzed using the constant growth DCF model;
- have investment grade long-term issuer ratings from both S&P and Moody's;
- are covered by more than one utility industry analyst;
- have positive long-term earnings growth forecasts from at least two equity analysts;
- own regulated generation assets;
- derive at least 40 percent of generation from owned generation;
- derive at least 60 percent of the Company's regulated operating income from regulated electric operations;
- derive at least 60 percent of the Company's operating income from regulated operations; and
- were not party to a merger or transformative transaction during the analytical period considered.

Q. Did you exclude any other companies from the proxy group?

A. Yes. I excluded Hawaiian Electric Industries, Inc. ("HE") on the basis that its operations are concentrated on the islands of Hawaii, and therefore, the company faces geographic concentration risk for both its regulated and substantial unregulated operations not applicable to the other utilities considered. As HE noted in its 2021 Form10-K:

> The Company is subject to the risks associated with the geographic concentration of its businesses and current lack of interconnections that

> could result in service interruptions at the Utilities or higher default rates on loans held by ASB [American Savings Bank].[32]

The increased risk of service interruptions resulting from HE's geographic location that could result in revenue loss and increased costs is a risk unique to HE and would not apply to utilities located on the U.S. mainland. Furthermore, HE's unregulated operations, which represent approximately 33 percent of the company's operation income in 2021 are concentrated in the banking sector through the ownership of American Savings Bank ("ASB").[33] ASB also only operates on Hawaii; thus, all of the company's consumer and commercial loans are to customers on Hawaii. If Hawaii were to face an adverse economic or political event, ASB could face severe financial effects given the company's geographic concentration in Hawaii.[34] As a result, I have excluded HE from my proxy group considering HE's unique geographical risks.

Q. What is the composition of your proxy group?

A. My proxy group consists of the 17 companies shown in Figure 6.

[32] Hawaii Electric Industries, Inc., 2021 Form 10-K, at 23.
[33] *Id.*, at 86.
[34] *Id.*, at 20.

Figure 6: Proxy Group

Company	Ticker
ALLETE, Inc.	ALE
Alliant Energy Corporation	LNT
Ameren Corporation	AEE
American Electric Power Company, Inc.	AEP
Avista Corporation	AVA
CMS Energy Corporation	CMS
Duke Energy Corporation	DUK
Entergy Corporation	ETR
Evergy, Inc.	EVRG
IDACORP, Inc.	IDA
NextEra Energy, Inc.	NEE
NorthWestern Corporation	NWE
OGE Energy Corporation	OGE
Otter Tail Corporation[35]	OTTR
Portland General Electric	POR
Southern Company	SO
Xcel Energy Inc.	XEL

VII. COST OF EQUITY ESTIMATION

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

A. The ROE is the cost of common equity capital in the utility's capital structure for ratemaking purposes. The overall rate of return for a regulated utility is the weighted average cost of capital, in which the cost rates of the individual sources of capital are weighted by their respective book values. 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.

[35] Otter Tail Corporation had one year of anomalous financial results, causing their operating income from regulated electric operations to fall below 70 percent (Page 4 of Otter Tail's 2021 10-K states, "Our 2021 earnings mix was impacted by significantly higher earnings in our Plastics segment as unique supply and demand conditions during the year in the PVC pipe industry led to earnings levels not previously experienced. We expect our earnings mix to return back to our targeted 70% from the Electric segment and 30% from Manufacturing and Plastics segment over the long term as this industry conditions subside." Given these anomalous conditions, Otter Tail was included in the proxy sample.

Q. How is the required cost of equity determined?

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

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

A. I considered the results of the constant growth DCF model, the CAPM, the ECAPM, and the Bond Yield Plus Risk Premium approach. As discussed in more detail below, a reasonable cost of equity estimate appropriately considers alternative methodologies and the reasonableness of their individual and collective results.

A. Importance of Multiple Analytical Approaches

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

A. Yes. Because the cost of equity is not directly observable, it must be estimated based on both quantitative and qualitative information. When faced with the task of estimating the cost of equity, analysts and investors are inclined to gather and evaluate as much relevant data as reasonably can be analyzed. Several models have been developed to estimate the cost of equity, and I use multiple approaches to estimate the cost of equity. As a practical matter, however, all the models available for estimating the cost of equity are subject to limiting assumptions or other methodological constraints. Consequently, many well-

regarded finance texts recommend using multiple approaches when estimating the cost of equity. For example, Copeland, Koller, and Murrin[36] suggest using the CAPM and Arbitrage Pricing Theory model, while Brigham and Gapenski[37] recommend the CAPM, DCF, and Bond Yield Plus Risk Premium approaches.

Q. Do current market conditions support your reliance on more than one analytical approach?

A. Yes. As I discussed above, interest rates have increased substantially over the past year and are expected to remain elevated over at least the next year from the lows seen during the COVID-19 pandemic. The benefit of using multiple models is that each model relies on different assumptions, certain of which may better reflect current and projected market conditions at different times. As discussed previously, the CAPM and Bond Yield Plus Risk Premium method address effect of expected changes in interest rates, whereas the effect of changes in interest rates particularly the recent increase in interest rates may not be captured as well in the DCF model at this time. Therefore, it is important to use multiple analytical approaches to ensure that the cost of equity results reflect market conditions that are expected during the period that the Company's rates will be in effect.

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

A. Yes. It is my understanding that the Commission has emphasized that "[t]he determination of cost of capital in rate proceedings, as noted above, combines economic science, economic art and sound judgment as to what yields the most reasonable result."[38]

[36] 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.
[37] Eugene Brigham and Louis Gapenski, Financial Management: Theory and Practice, 7th Ed. (Orlando: Dryden Press, 1994) at 341.
[38] Docket No. 20000-ER-03-198 (Record No. 11573), Order, at ¶ 34 b1 (Feb. 28, 2004).

Moreover, in Docket No. 20000-ER-02-184, the Commission concluded that the ROE should not be set based on one specific model or a variation of a specific model and encouraged the evolution of economic thought be presented in future cases.[39]

B. Constant Growth DCF Model

Q. Please describe the DCF approach.

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

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

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

[39] Docket No. 20000-ER-02-184 (Record No. 10469), Order, at ¶ 260 (March 6, 2003).

the extent that any of these assumptions are violated, considered judgment and/or specific adjustments should be applied to the results.

Q. What market data do 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 group companies' current annualized dividend and average closing stock prices over the 30-, 90-, and 180-trading days ended January 31, 2023.

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

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

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

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

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

A. In its Constant Growth form, the DCF model (*i.e.*, Equation [2]) assumes a single growth estimate in perpetuity. To reduce the long-term growth rate to a single measure, one must assume that the payout ratio remains constant and that earnings per share, dividends per share and book value per share all grow at the same constant rate. Over the long run, however, dividend growth can only be sustained by earnings growth. Therefore, it is important to consider a variety of sources in arriving at a singular long-term earnings growth rate for 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) Yahoo! Finance; and (3) *Value Line*.

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

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

Q. What are the results of your DCF analyses?

A. Figure 7 summarizes the results of my DCF analyses. As shown in Figure 7, the mean DCF results using the average growth rates range from 9.40 percent to 9.54 percent, and the mean results using the maximum growth rates range from 10.39 percent to 10.53 percent.

While I also summarize the DCF results using the minimum growth rates, given the expected underperformance of utility stocks going forward and thus the likelihood that the DCF model is understating the cost of equity, I do not believe it is appropriate to consider these DCF results at this time.

Figure 7: Discounted Cash Flow Results

Constant Growth DCF			
	Mean using Low Growth Rate	Mean using Average Growth Rate	Mean using High Growth Rate
30-Day Average	8.11%	9.40%	10.39%
90-Day Average	8.25%	9.54%	10.53%
180-Day Average	8.14%	9.44%	10.42%
Average	8.17%	9.46%	10.45%

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

A. As discussed previously, one primary assumption of the DCF models is a constant price-to-earnings ratio. That assumption is heavily influenced by the market price of utility stocks. Since utility stocks are expected to underperform the broader market over the near-term as interest rates remain elevated and yields on long-term government bonds exceed utility dividend yields, it is important to consider the results of the DCF models with caution. Therefore, while I have given weight to the results of the Constant Growth DCF model, my recommendation also gives weight to the results of other cost of equity estimation models.

C. CAPM Analysis

Q. Please briefly describe the CAPM.

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

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

The CAPM is defined by four components:

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

Where:

K_e = the required market ROE;

β = beta coefficient of an individual security;

r_f = the risk-free rate of return; and

r_m = the required return on the market.

In this specification, the term ($r_m - r_f$) represents the market risk premium. According to the theory underlying the CAPM, because unsystematic risk can be diversified away, 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 do you use in your CAPM analysis?

A. I rely on three sources for my estimate of the risk-free rate: (1) the current 30-day average yield on 30-year Treasury bonds, which is 3.71 percent;[40] (2) the average projected 30-year

[40] Bloomberg Professional, as of Jan. 31, 2023.

Treasury bond yield for the second quarter of 2023 through the second quarter of 2024, which is 3.82 percent;[41] and (3) the average projected 30-year Treasury bond yield for 2024 through 2028, which is 3.90 percent.[42]

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

A. As shown on RMP Exhibit 4.5, I use the beta coefficients for the proxy group companies as reported by Bloomberg and *Value Line*. The beta coefficients reported by Bloomberg are calculated using ten years of weekly returns relative to the S&P 500 Index. The beta coefficients reported by *Value Line* are calculated using five years of weekly returns relative to the New York Stock Exchange ("NYSE") Composite Index. Additionally, as shown on RMP Exhibit 4.5 and RMP Exhibit 4.6, I also considered an additional CAPM analysis that relies on the long-term average beta coefficient for the companies in my proxy group, which is calculated as an average of the *Value Line* beta coefficients for the companies in my proxy group from 2013 through 2022.

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

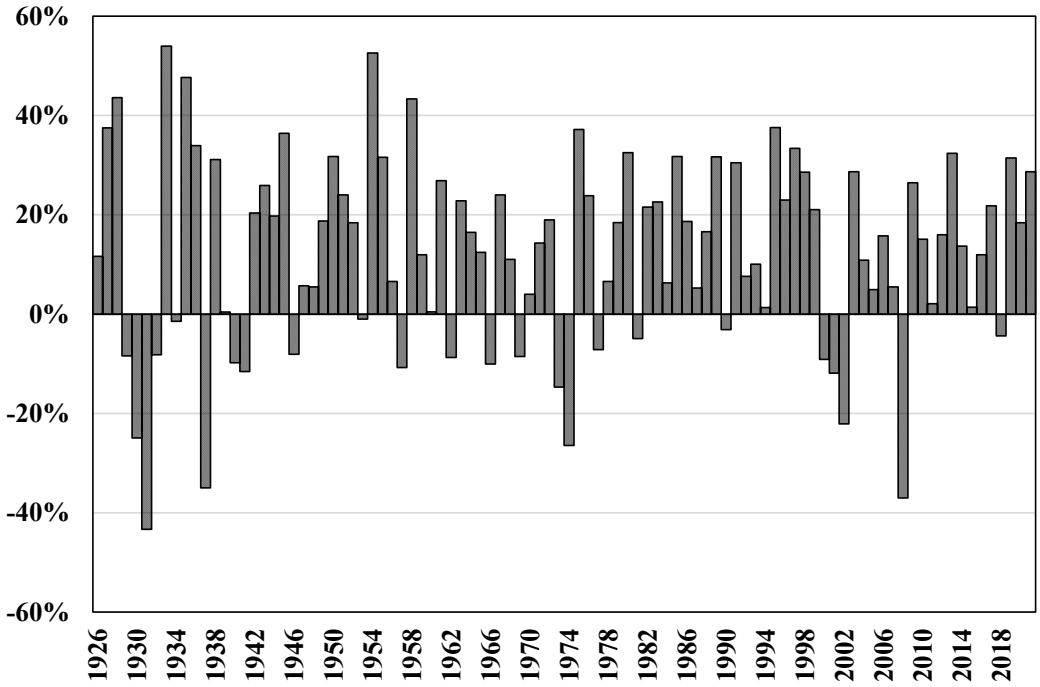
A. I estimate the market risk premium as the difference between the implied expected equity market return and the risk-free rate. As shown in RMP Exhibit 4.7, the expected market return is calculated using the constant growth DCF model discussed earlier in my testimony for the companies in the S&P 500 Index. Based on an estimated market capitalization-weighted dividend yield of 1.75 percent and a weighted long-term growth rate of 10.65 percent, the estimated required market return for the S&P 500 Index as of January 31, 2023 is 12.50 percent. Based on the three risk-free rates considered, the market risk premium ranges from 8.60 percent to 8.79 percent.

[41] Blue Chip Financial Forecasts, Vol. 42, No. 2, Feb. 1, 2023, at 2.
[42] Blue Chip Financial Forecasts, Vol. 41, No. 12, Dec. 2, 2022, at 14.

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

A. As shown in Figure 8, given the range of annual equity returns that have been observed over the past century, a current expected market return of 12.50 percent is not unreasonable. As shown, in 50 out of the past 96 years (or roughly 52 percent of observations), the realized equity market return was at least 12.50 percent or greater.

Figure 8: Realized U.S. Equity Market Returns (1926-2021)[43]



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

A. Yes. I have also considered the results of an ECAPM analysis in estimating the cost of equity for RMP.[44] The ECAPM calculates the product of the adjusted beta coefficient and the market risk premium and applies a weight of 75.00 percent to that result. The model

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

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

then applies a 25.00 percent weight to the market risk premium without any effect from the beta coefficient. The results of the two calculations are summed, along with the risk-free rate, to produce the ECAPM result, as noted in Equation [5] below:

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

Where:

k_e = the required market ROE

β = Adjusted Beta coefficient of an individual security

r_f = the risk-free rate of return

r_m = the required return on the market as a whole

In essence, the ECAPM addresses the tendency of the "traditional" CAPM to underestimate the cost of equity for companies with low beta coefficients such as regulated utilities. In that regard, the ECAPM is not redundant to the use of adjusted betas in the traditional CAPM, but rather it recognizes the results of academic research indicating that the risk-return relationship is different (in essence, flatter) than estimated by the CAPM, and that the CAPM underestimates the "alpha," or the constant return term.[45]

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

Q. What are the results of your CAPM analyses?

A. As shown in Figure 9 (*see* also RMP Exhibit 4.5), my traditional CAPM analysis produces a range of returns from 10.33 percent to 11.38 percent, and the ECAPM analysis results range from 10.87 percent to 11.66 percent.

[45] *Id.,* at 191.

Figure 9: CAPM and ECAPM Results

	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
CAPM			
Value Line Beta	11.36%	11.37%	11.38%
Bloomberg Beta	10.77%	10.79%	10.81%
Long-term Avg. Beta	10.33%	10.36%	10.38%
ECAPM			
Value Line Beta	11.64%	11.65%	11.66%
Bloomberg Beta	11.20%	11.22%	11.23%
Long-term Avg. Beta	10.87%	10.89%	10.91%

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

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

A. Yes. It is important to recognize both academic literature and market evidence indicating that the equity risk premium (as used in this approach) is inversely related to the level of interest rates (*i.e.*, as interest rates increase, the equity risk premium decreases, and vice versa). Consequently, it is important to develop an analysis that: (1) reflects the inverse relationship between interest rates and the equity risk premium; and (2) relies on recent

and expected market conditions. Such an analysis can be developed based on a regression of the risk premium as a function of Treasury bond yields. When the authorized ROEs for electric utilities serve as the measure of required equity returns and the yield on the long-term Treasury bond is defined as the relevant measure of interest rates, the risk premium is the difference between those two points.[46]

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

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

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

A. As shown in Figure 10, from 1992 through January 2023, there was a strong negative relationship between risk premia and interest rates. To estimate that relationship, I conducted a regression analysis using the following equation:

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

Where:

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

a = intercept term

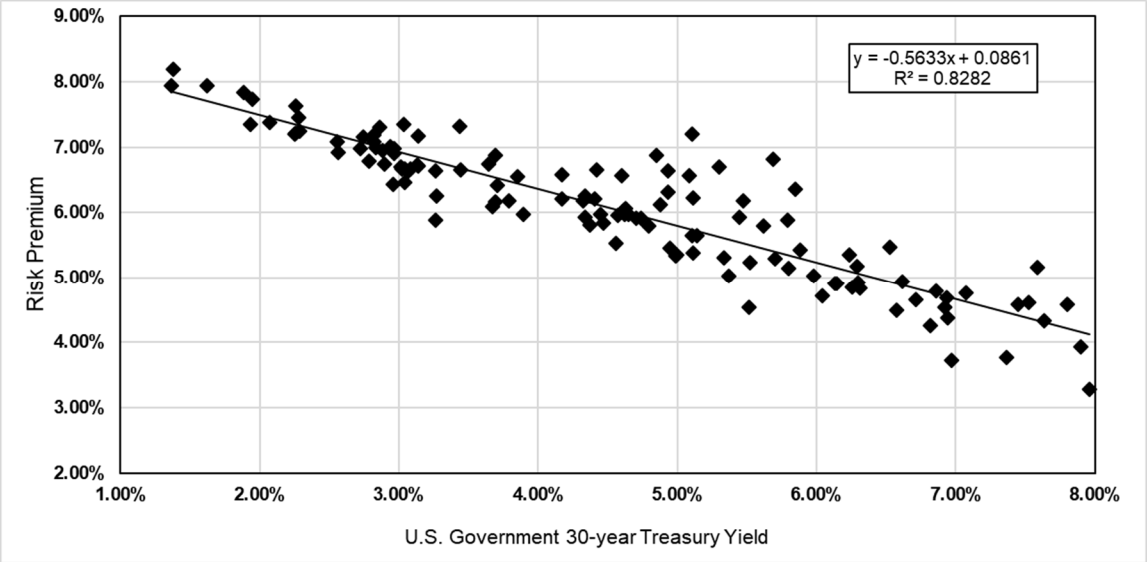
b = slope term

[46] 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) (the author used a similar methodology, including using authorized ROEs as the relevant data source, and came to similar conclusions regarding the inverse relationship between risk premia and interest rates). *See also* Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return*, Financial Management, Spring 1986, at 66.

T = 30-year Treasury bond yield

Data regarding authorized ROEs were derived from all vertically integrated electric rate cases from 1992 through January 2023 as reported by Regulatory Research Associates ("RRA").[47] This equation's coefficients were statistically significant at the 99.00 percent level.

Figure 10: Risk Premium Regression Analysis



Q. What are the COE estimates that result from this equation?

A. As shown in RMP Exhibit 4.8, based on the current 30-day average of the 30-year Treasury bond yield, the risk premium would be 6.52 percent, resulting in an estimated cost of equity of 10.23 percent. Based on the consensus estimate of the near-term (*i.e.*, Q2/2023 – Q2/2024) projected 30-year Treasury bond yield (*i.e.*, 3.82 percent), the risk premium would be 6.46 percent, resulting in an estimated cost of equity of 10.28 percent. Based on a consensus estimate of the longer-term (*i.e.*, 2024 – 2028) projection of the 30-year

[47] This analysis began with over 1,441 cases and was screened to eliminate limited issue rider cases, transmission-only cases, distribution-only cases and cases that were silent with respect to the authorized ROE. After applying those screening criteria, the analysis was based on data from 704 cases.

Treasury bond yield (*i.e.*, 3.90 percent), the risk premium would be 6.42 percent, resulting in an estimated cost of equity of 10.32 percent.

Q. How did the results of the Bond Yield Plus Risk Premium analysis inform your recommended ROE for Rocky Mountain Power?

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

VIII. REGULATORY AND BUSINESS RISKS

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

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

A. Capital Expenditures

Q. Please summarize PacifiCorp's capital expenditure requirements.

A. PacifiCorp's current projections for 2023 through 2027 include approximately $20.8 billion in capital investments for the period.[48] Based on PacifiCorp's net utility plant of

[48] Data provided by PacifiCorp for Capital Expenditures 2023-2027.

approximately $21.1 billion as of June 30, 2022, the $20.8 billion anticipated capital expenditures are approximately 98.6 percent.[49]

Q. How is PacifiCorp's risk profile affected by its capital expenditure requirements?

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

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

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

> When applicable, a jurisdiction's willingness to support large capital projects with cash during construction is an important aspect of our analysis. This is especially true when the project represents a major addition to rate base and entails long lead times and technological risks that make it susceptible to construction delays. Broad support for all capital spending is the most credit-sustaining. Support for only specific types of capital spending, such as specific environmental projects or system integrity plans, is less so, but still favorable for creditors. Allowance of a cash return on construction work-in-progress or similar ratemaking methods historically were extraordinary measures for use in unusual circumstances, but when construction costs are rising, cash flow support could be crucial to maintain credit quality through the spending program. Even more favorable are those jurisdictions that present an opportunity for a higher return on capital projects as an incentive to investors.[50]

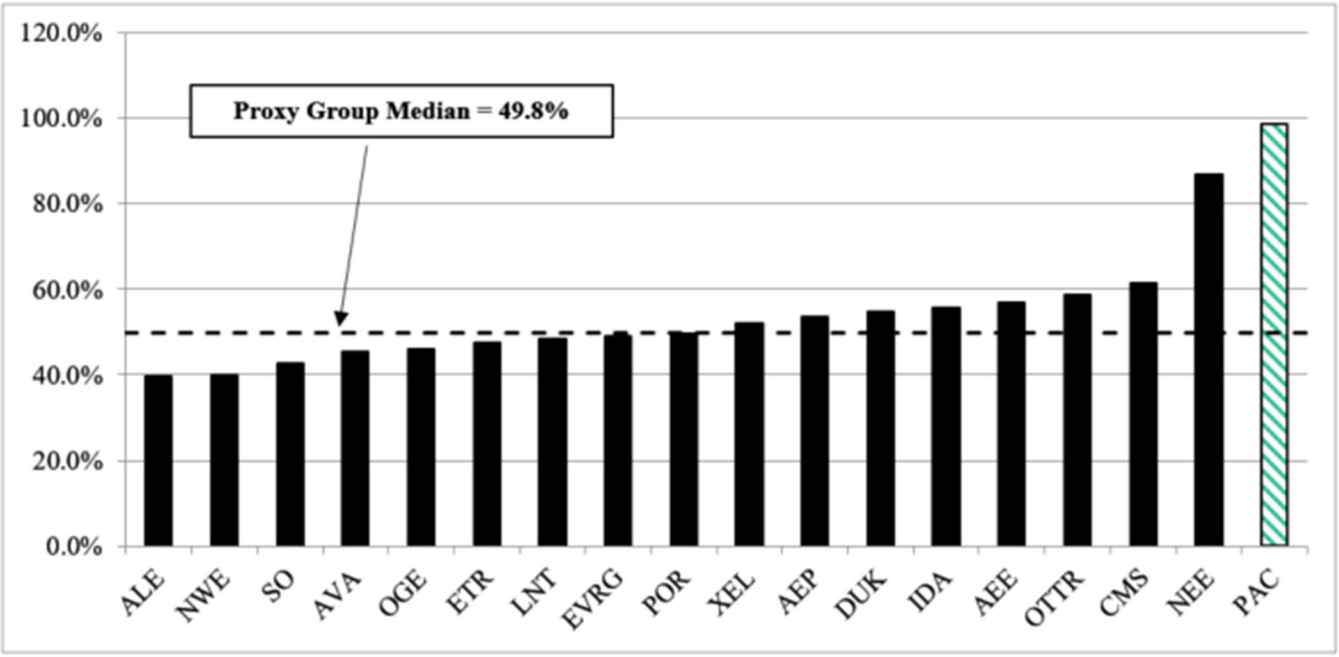
[49] Data provided by PacifiCorp.
[50] S&P Global Ratings, *Assessing U.S. Investor-Owned Utility Regulatory Environments,* at 7 (Aug. 10, 2016).

While RMP is not currently rated by the credit rating agencies, the Company's business risk is also increased as a result of elevated capital expenditures. Therefore, to the extent that the Company's rates do not permit the opportunity to recover its capital investments on a regular and timely basis, it will face increased recovery risk and thus increased pressure on its credit metrics.

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

A. As shown in RMP Exhibit 4.9, I calculated the ratio of expected capital expenditures to net utility plant for PacifiCorp and each of the companies in the proxy group by dividing each company's projected capital expenditures for the period from 2023-2027 by its total net utility plant as of December 31, 2022. As shown in RMP Exhibit 4.9 (*see* also Figure 11 below), PacifiCorp's ratio of capital expenditures as a percentage of net utility plant of 98.6 percent is approximately 1.98 times the median for the proxy group companies of 49.78 percent. This result indicates greater risk relative to the companies in the proxy group.

Figure 11: Comparison of Capital Expenditures - Proxy Group Companies



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

A. No. RMP does not recover capital investment costs between rate cases utilizing a capital tracking mechanism. RMP has received approval for deferral accounting treatment of certain generation investments to minimize regulatory lag; however, RMP still depends on rate case filings for all capital cost recovery. Increased capital expenditure programs like RMP's often receive cost recovery through capital trackers in other jurisdictions. As shown in RMP Exhibit 4.10, 69.41 percent of the proxy group utilities recover costs through capital tracking mechanisms. Since RMP currently does not have a capital tracking mechanism to recover its significant capital expenditure costs, RMP's risk relative to the proxy group is significantly increased.

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

A. PacifiCorp's capital expenditure requirements as a percentage of net utility plant are increasing and will continue over the next few years. Additionally, unlike a number of the operating subsidiaries of the proxy group, RMP does not have a comprehensive capital tracking mechanism to recover projected capital expenditures. Therefore, RMP's plans for increased capital expenditures and limited ability to recover the capital investment on an as-incurred basis results in a risk profile that is greater than that of the proxy group and supports an ROE toward the higher end of the reasonable range of ROEs.

B. Regulatory Risk

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

A. The ratemaking process is premised on the principle that, for investors and companies to commit the capital needed to provide safe and reliable utility service, the subject utility must have the opportunity to recover the return of, and the market-required return on, invested capital. Regulatory authorities recognize that because utility operations are capital intensive, regulatory decisions should enable the utility to attract capital at reasonable terms, and doing so balances the long-term interests of investors and customers. To achieve this balance, the Company must be able to finance its operations assuming a reasonable opportunity to earn an appropriate return on invested capital to maintain an acceptable financial profile. In that respect, the regulatory environment is one of the most important factors considered in both debt and equity investors' risk assessments.

From the perspective of debt investors, the authorized return should enable the utility to generate the cash flow needed to meet its near-term financial obligations, make

the capital investments needed to maintain and expand its systems, and maintain the necessary levels of liquidity to fund unexpected events. This financial liquidity must be derived not only from internally-generated funds, but also by efficient access to capital markets. Moreover, because fixed income investors have many investment alternatives, even within a given market sector, the utility's financial profile must be adequate on a relative basis to ensure its ability to attract capital under a variety of economic and financial market conditions.

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

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

A. Both Moody's and S&P consider the overall regulatory framework in establishing credit ratings. Specifically, 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.[51]

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

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."[52] S&P identifies four specific factors that it uses to assess the credit implications of the regulatory jurisdictions of investor-owned regulated utilities: (1) regulatory stability; (2) tariff-setting procedures and design; (3) financial stability; and (4) regulatory independence and insulation.[53]

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."[54] Moody's has further highlighted the relevance of a stable and predictable regulatory environment to a utility's credit quality, noting: "[b]roadly speaking, the Regulatory Framework is the foundation for how all the decisions that affect utilities are made (including the setting of rates), as well as the predictability and consistency of decision-making provided by that foundation."[55]

[52] Standard & Poor's Global Ratings, Ratings Direct, *U.S. and Canadian Regulatory Jurisdictions Support Utilities' Credit Quality—But Some More So Than Others,* at 2 (June 25, 2018).
[53] *Id.,* at 1.
[54] Moody's Investors Service, *Rating Methodology: Regulated Electric and Gas Utilities,* at 6 (June 23, 2017).
[55] *Id.*

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

A. Yes. I have evaluated the regulatory framework in Wyoming considering three factors which are important to ensuring RMP maintains access to capital at reasonable terms. As I will discuss in more detail below, the three factors are: (1) cost recovery mechanisms which allow a utility to recover costs in a timely manner between rate cases and provide the utility the opportunity to earn its authorized return; (2) comparable return standard because an awarded ROE that is significantly below the ROEs awarded to other utilities with comparable risks can affect the ability of a utility to attract capital at reasonable terms; and (3) the ability of the Company to earn its authorized ROE because while an authorized ROE may be consistent with the authorized ROEs of other comparable vertically integrated electric utilities, if the Company is unable to earn its authorized ROE, RMP's ability to attract capital at reasonable terms could be affected. The results of these analyses demonstrate that RMP has greater regulatory risk relative to the proxy group.

1. Cost Recovery Mechanisms

Q. Have you conducted any analysis to compare the cost recovery mechanisms of Wyoming to the cost recovery mechanisms approved in the jurisdictions in which the utility operating subsidiaries of the companies in your proxy group operate?

A. Yes. I selected four mechanisms that are important to provide a regulated utility an opportunity to earn its authorized ROE. These are: (1) fuel cost recovery; (2) test year convention (*i.e.*, forecast vs. historical); (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 RMP Exhibit 4.10) and are summarized below.

- Fuel and Energy Cost Recovery: RMP has an Energy Cost Adjustment Mechanism ("ECAM") to recover power costs. Under this mechanism, only 80 percent of the difference between base net power costs set during a general rate case and actual net power costs is deferred and reflected in future rates.[56] As a result, the ECAM does not fully mitigate the power cost risk for RMP.[57] RMP is proposing in this proceeding to recover the full cost of fuel and power costs. As shown in Exhibit 4.10, the full recovery of power costs is consistent with the recovery mechanisms that are relied on by the majority of the proxy group operating companies. According to S&P Capital IQ Pro, there are only eight states (*i.e.*, Arizona, Idaho, Missouri, Montana, Oregon, Vermont, Washington and Wyoming) that have fuel cost recovery mechanisms with sharing bands.[58] The remaining 42 states either have restructured and the electric utilities do not own generation or have fuel cost recovery mechanisms with a true-up between actual and forecasted fuel costs. Finally, 88.24 percent of the operating companies held by my proxy group are allowed to pass through fuel costs and purchased power costs directly to customers, without deadbands and sharing bands.
- To the extent that RMP's request to fully recover all power costs were not to be approved, this would result in higher overall business and financial risk as compared with the proxy group. Fuel and purchased power costs typically account for 50 - 60 percent of the total operating costs for a regulated utility.

[56] Berkshire Hathaway Energy Company, 2021 Form 10-K, at 41.
[57] *Id.*
[58] Source: S&P Capital IQ Pro, Commission Profiles as of January 31, 2023.

Therefore, a mechanism that does not provide for full recovery of these costs increases the financial risk for the Company.

- Test year convention: RMP has been able to use a test year containing forecasted data, which is generally consistent with 48.24 percent of the operating companies held by the proxy group that provide service in jurisdictions that use a fully or partially forecast test year.
- Volumetric Risk: RMP does not have protection against volumetric risk in Wyoming. In contrast, 58 percent of the operating companies held by the proxy group have some form of protection against volumetric risk through either a partial or full revenue decoupling mechanism that mitigates the effect of fluctuations in volume on revenues.
- Capital Cost Recovery: As discussed above, RMP does not have a capital tracking mechanism to recover capital investment costs between rate cases. However, 69.41 percent of the operating companies held by the proxy group have some form of capital cost recovery mechanism in place.

2. Earned ROE

Q. Is there evidence that RMP has been unable to earn its authorized return on equity?

A. Yes. As shown in Figure 12, RMP has under-earned its authorized ROE in each year since 2017. Over this period, the Company's average earned ROE was 8.70 percent as compared with the average authorized ROE of 9.50 percent, for an average under-earning of 80 basis points per year. This under-earning is due in part to the regulatory environment in Wyoming where, as discussed above, a limited number of adjustment mechanisms have historically been available to utilities. While the Company relies on a test year that contains

forecasted data, the Company does not have protection against volumetric risk nor does RMP have a capital cost recovery mechanism to recover capital expenditures costs on a timely basis. The prior under earning and the near-term effect of inflation, highlights the importance of a constructive outcome in the current proceeding so that RMP has the opportunity to earn its authorized ROE.

Figure 12: Earned vs. Authorized ROE

	Earned ROE[59]	Authorized ROE	Earnings differential (bps)
2017	9.26%	9.50%	(0.24%)
2018	9.23%	9.50%	(0.27%
2019	7.74%	9.50%	(1.76%)
2020	8.60%	9.50%	(0.90%)
2021	8.68%	9.50%	(0.82%)
Average	**8.70%**	**9.50%**	**(0.80%)**

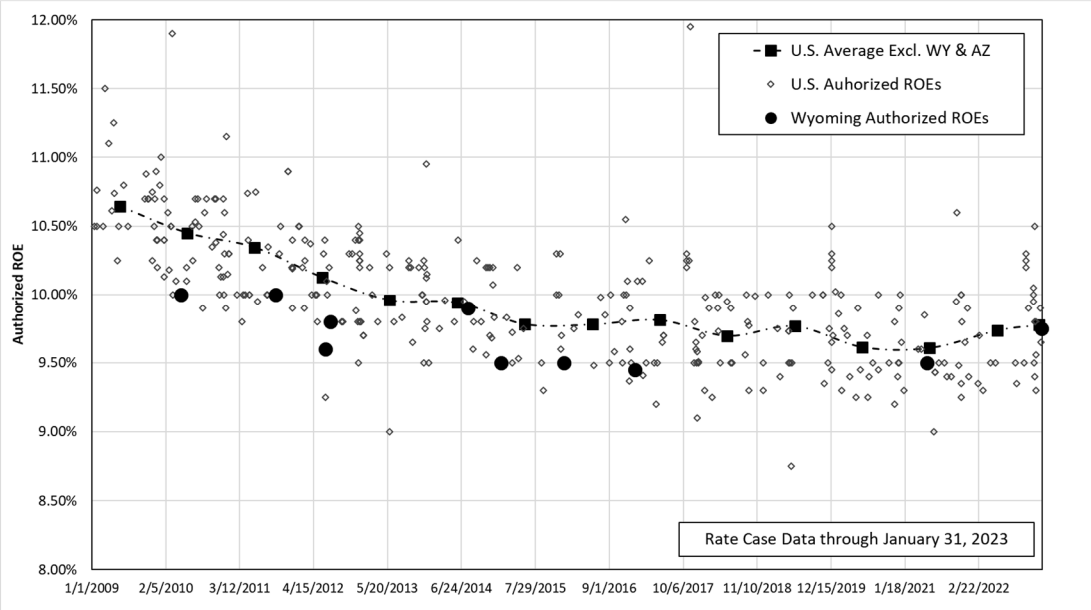
3. Authorized ROEs

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

A. The authorized ROEs for electric utilities in Wyoming, while partially the result of settlement agreements approved by the Commission, have been below the average authorized ROEs for vertically integrated electric utilities across the U.S. Figure 13 below shows the authorized returns for vertically integrated electric utilities in other jurisdictions since January 2009, and the returns authorized in Wyoming for electric companies. As shown in Figure 13, the authorized returns for electric utilities in Wyoming have been at the low end of the range produced by the authorized ROEs from other state jurisdictions for 2009 through January 2023.

[59] Rocky Mountain Power Company, Annual Reports to the Wyoming Public Service Commission, 2017-2021.

Figure 13: Comparison of Wyoming and U.S. Authorized Electric Returns



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

A. Credit rating agencies have indicated that the industry overall has increased risk, has responded with close scrutiny of the financial coverage ratios of the sector, and has a negative outlook on the industry overall for 2023. Therefore, it is critically important to consider these factors and to recognize that the investor-required ROE would be higher today than at the time of Commission decisions in the recent past. As discussed in more detail in Section V, current market conditions demonstrate greater risk than at the time the Commission authorized returns in the recent past.

Q. Do credit rating agencies consider the authorized ROE in the overall risk assessment of a utility?

A. Yes, they do. To the extent that the returns in a jurisdiction are lower than the returns that have been authorized more broadly, credit rating agencies will consider this in the overall risk assessment of the regulatory jurisdiction in which the company operates. It is important to consider credit ratings because they affect the overall cost of borrowing, and they act as

a signal to equity investors about the risk of investing in the equity of a company. Therefore, lower credit ratings can affect both the cost of debt and equity. Examples of recent credit rating agency responses include ALLETE, Inc., and PNW. Moody's downgraded ALLETE, Inc. from A3 to Baa1 primarily based on the less than favorable outcome in Minnesota Power's last fully litigated rate case in Minnesota which included what Moody's noted was a below average authorized ROE of 9.25 percent.[60] In addition, FitchRatings recently downgraded and maintained a negative outlook for APS and its parent, PNW, following the hearings conducted by the Arizona Corporation Commission ("ACC") in October 2021 regarding APS' current rate case proceeding.[61] While the ACC had not issued a final order in APS' rate case at the time, FitchRatings noted that the developments at the hearing in October indicate a likely credit negative outcome that will negatively affect the financial metrics of both APS and PNW. It is also important to note that both S&P and Moody's downgraded PNW's and APS' credit rating and put the companies on credit watch negative following the Commission's November vote that officially authorized the 8.70 percent ROE.[62]

Q. Are you aware of any utilities whose market data has been affected by adverse rate case developments?

A. Yes, I am. The market has responded negatively to recent returns authorized by the ACC. As noted above, the most recent ROE determination in Arizona was for APS. The Recommended Opinion and Order ("Order") issued in the APS rate proceeding on August 2, 2021, recommended an ROE of 9.16 percent. In October 2021, that recommendation

[60] Moody's Investors Service, Credit Opinion: ALLETE, Inc. Update following downgrade, at 3 (Apr. 3, 2019).
[61] FitchRatings, Fitch Downgrades Pinnacle West Capital & Arizona Public Service to 'BBB+'; Outlooks Remain Negative (Oct. 12, 2021).
[62] *See* S&P Capital IQ and Moody's Investors Service, Rating Actions: Moody's downgrades Pinnacle West to Baa1 and Arizona Public Service to A3; outlook negative (Nov. 17, 2021).

was amended to reduce the company's ROE to 8.70 percent. The final ROE that was established for APS was 8.70 percent.[63] The market reacted strongly to the proposed order and subsequent amendment and final decision. Guggenheim Securities LLC, an equity analyst that follows PNW, the parent company of APS, informed its clients that

> [T]he "Arizona Corporation Commission is now confirmed to be the single most value destructive regulatory environment in the country as far as investor-owned utilities are concerned".[64]

S&P Global Market Intelligence ("Regulatory Research Associates") noted that this decision was "among the lowest ROEs RRA had encountered in its coverage of vertically integrated electric utilities in the past 30 years."[65]

As shown in Figure 14 below, PNW's stock price declined approximately 24 percent from August 2, 2021 to November 4, 2021 following the issuance of the Order, which recommended an ROE of 9.16 percent, and then the subsequent amendment to that opinion recommending the 8.70 percent ROE ultimately adopted by the ACC. Moreover, the Value Line five-year projected EPS growth rates for this company have fallen from 5.0 percent in July 2021, prior to the deliberations in the rate proceeding to "Nil" in October 2021 and most recently 0.5 percent in January 20, 2023. For PNW, the APS decision has had a significant effect on the share price and growth rate assumptions used in the DCF model.

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[63] *In the Matter of the Application of Arizona Public Service Company for a Hearing to Determine the Fair Value of the Utility Property of the Company for Ratemaking Purposes, to Fix a Just and Reasonable Rate of Return Thereon, to Approve Rate Schedules Designed to Develop Such Return,* Arizona Corporation Commission Docket No. E-01345A-19-0236, Commissioner Olson Proposed Amendment No. 1 to the Recommended Opinion and Order (Oct. 4, 2021).

[64] S&P Global Market Intelligence, *Pinnacle West shares tumble after regulators slash returns in rate case* (Oct. 7, 2021).

[65] S&P Global Market Intelligence, RRA Regulatory Focus, *Commission accords Arizona Public Service Company a well below average ROE* (Oct. 8, 2021).

Figure 14: Pinnacle West Capital Stock Price VS. S&P 500

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

A. As discussed above, the companies in the proxy group operate in multiple jurisdictions across the U.S. Since RMP 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 RMP which faces increased risk as a result of its capital expenditure plan and limited cost recovery mechanisms. Therefore, authorizing an ROE for RMP 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 RMP. As such, it is important that the

Commission consider, as I have in my recommendation, the additional risk of RMP and place the authorized ROE for RMP towards the high end of authorized ROEs for other vertically integrated electric utilities.

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

A. 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. Many of the companies in the proxy group have timely cost recovery through forecasted test years, capital cost recovery trackers, and non-volumetric rate designs/revenue stabilization mechanisms. Wyoming is relatively restrictive compared to other commissions on certain factors. For instance, the Company's fuel cost recovery mechanism does not fully mitigate power cost risk nor does the Company have either protection against volumetric risk or the ability to recover capital expenditures on an as incurred basis. Additionally, the Company has not earned its authorized ROE since 2017. Finally, authorized ROEs in Wyoming have been below the average authorized ROEs for vertically integrated electric utilities across the U.S. For these reasons, I conclude that the authorized ROE for RMP should be higher than the proxy group mean.

C. Generation Ownership

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.[66] As a result of this higher business risk, integrated electric utilities typically require a higher ROE or percentage of equity in the capital structure than other electric or gas utilities.

Q. Are there other risk factors specific to vertically integrated electric utilities that the credit rating agencies consider when determining the credit rating of a company that owns generation?

A. Yes. As discussed above, 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. The third factor diversification, which Moody's assigns a 10.00 percent weighting in the overall assessments of a company's business risk, considers the fuel source diversity of a utility with generation. Moody's notes:

> For utilities with electric generation, fuel source diversity can mitigate the impact (to the utility and to its rate-payers) of changes in commodity prices, hydrology and water flow, and environmental or other regulations affecting plant operations and economics. We have observed that utilities' regulatory environments are most likely to become unfavorable during periods of rapid rate increases (which are more important than absolute rate levels) and that fuel diversity leads to more stable rates over time.
>
> For that reason, fuel diversity can be important even if fuel and purchased power expenses are an automatic pass-through to the utility's ratepayers. Changes in environmental, safety and other regulations have caused vulnerabilities for certain technologies and fuel sources during the past five years. These vulnerabilities have varied widely in different countries and have changed over time.[67]

[66] Moody's Investors Service, *Rating Methodology: Regulated Electric and Gas Utilities,* at 21-22 (June 23, 2017).
[67] *Id.,* at 16.

Q. Are you aware that the state of Wyoming imposed legislative requirements related to the composition of PacifiCorp's generation resources?

A. Yes, I am aware of two recent bills that impact the composition of PacifiCorp's generation resources.[68] Wyoming Senate File 159 ("SF 159"), passed on March 8, 2019, restricts utilities from recovering the costs of new generation assets replacing Wyoming-based coal generating plants unless utilities first make "a good faith effort" to sell the closing facilities. The restriction inhibits RMP from seeking the optimal low-cost resources for their customers, imposing additional costs to customers and risks to investors. That is, if RMP's resource planning process concludes that new investments are more cost-effective for customers than continued operation of certain Wyoming, coal-based resources, SF 159 requires that RMP undergo a potentially protracted and costly sale process for the uneconomic coal plants before it may retire them and recover the costs of lower-cost replacement resources. In addition, House Bill 200 ("HB 200"), passed in March 2020, requires a portion of the public utility's generation portfolio be met with coal-fired generation using carbon capture technology. The bill further limits the recovery of the costs of retired coal facilities.

Q. Is PacifiCorp subject to legislative mandates in other jurisdictions?

A. Yes. In March 2016, Oregon Senate Bill No. 1547-B, the Clean Electricity and Coal Transition Plan, was signed into law. Senate Bill No. 1547-B requires that coal-fueled resources are eliminated from Oregon's allocation of electricity by January 1, 2030 and increases the current Renewable Portfolio Standard target from 25 percent in 2025 to 50 percent by 2040. Furthermore, in 2021, Oregon enacted House Bill 2021 which requires

[68] PacifiCorp Integrated Resource Plan, Volume 1, September 1, 2021 at 65.

that retail electricity providers reduce greenhouse gas ("GHG") emissions associated with electricity sold to Oregon consumers by 80 percent below baseline emission levels by 2030, 90 percent reductions below baseline emissions levels by 2035 and 100 percent below baseline emissions levels by 2040.[69] Similarly, the Washington Clean Energy Transformation Act ("CETA") will require PacifiCorp to remove coal-fired generation from rates by 2025, be GHG neutral by 2030, and serve retail customers with 100 percent non-emitting resources by 2045.[70] Finally, California passed Senate Bill ("SB") 32 in 2016, which establishes timelines for the reduction of GHG emissions to 40 percent below 1990 levels by 2030. Moreover, in California, SB 350 was passed in 2015 and SB 100 was passed in 2018, both of which established requirements related to the procurement of electricity from renewable resources; 60 percent of all electricity by 2030 and 100 percent from carbon-free resources by 2045.[71]

Q. Do the legislative initiatives in Oregon, Washington, California and Wyoming present risk for RMP?

A. Yes. The legislation passed in Oregon, Washington and California is in conflict with the Wyoming legislation, SF159. The Wyoming legislation requires that the Company attempt to sell any Wyoming-based coal-fired generating assets that would be retired before the Company could recover the cost of a replacement generating asset. In addition, SF 159 requires that the Company engage in a purchase power agreement to buy back the power from the generating asset. This will present challenges to PacifiCorp as it diverges from energy policies in other states, such as California, Oregon and Washington legislation

[69] PacifiCorp Integrated Resource Plan, Volume 1, September 1, 2021 at 63.
[70] *Id.*, at 64.
[71] *Id.*, at 67.

mandating that the Company transition from coal to renewable resources. While the Company could assign the costs of some amount of coal-fired generation directly to the Wyoming customers, the size of the Company's Wyoming coal fleet exceeds the capacity requirements of its Wyoming customers. Therefore, the legislative initiatives of these three states are conflicting and create uncertainty and risk surrounding the recovery of the cost of retired generating assets. This risk is not uniformly represented in the proxy group companies.

Q. Have you conducted an analysis to compare the fuel sources for the generation portfolio of RMP to the companies in your proxy group?

A. Yes, I have. Specifically, I calculated for RMP, and each company in the proxy group, the percentage of regulated owned generation capacity that was derived from one of the following fuel sources: oil/natural gas, coal, nuclear, water, solar, wind, and other. As shown in Figure 15, approximately 46.4 percent of RMP's regulated, owned generation came from coal-fired power plants with approximately 70.7 percent coming from either oil, natural gas, or coal-fired power plants. Therefore, RMP is reliant on a limited number of fuel sources for its regulated generation including a significant reliance on coal-fired generation.

Figure 15: Regulated Owned Generation Capacity - Fuel Source Composition for PacifiCorp and Proxy Group

	In % of Total Regulated Owned Generation Capacity							
Company	**Coal**	**Gas & Oil**	**Nuclear**	**Water**	**Solar**	**Wind**	**Other**	**Total**
ALLETE, Inc.	49.2	7.6	0.0	7.5	0.6	31.3	3.6	100
Alliant Energy Corporation	24.3	51.5	0.0	0.7	1.4	22.0	0.2	100
Ameren Corporation	44.9	31.1	11.8	7.5	0.1	4.5	0.1	100
American Electric Power Company, Inc.	51.2	29.6	9.3	3.5	0.2	6.1	0.0	100
Avista Corporation	10.4	33.4	0.0	53.8	0.0	0.0	2.4	100
CMS Energy Corporation	21.7	48.6	0.0	19.6	0.1	10.0	0.0	100
Duke Energy Corporation	27.5	46.0	17.3	6.8	2.3	0.0	0.1	100
Entergy Corporation	11.2	71.7	15.9	0.3	0.9	0.0	0.0	100
Evergy, Inc.	49.8	34.8	10.2	0.0	0.1	5.0	0.0	100
IDACORP, Inc.	22.7	22.4	0.0	54.9	0.0	0.0	0.0	100
NextEra Energy, Inc.	2.0	76.2	9.7	0.0	12.2	0.0	0.0	100
NorthWestern Corporation	32.2	24.0	0.0	33.8	0.0	10.0	0.0	100
OGE Energy Corporation	19.0	74.4	0.0	0.0	0.4	6.3	0.0	100
Otter Tail Corporation	35.8	32.9	0.0	0.4	0.0	31.0	0.0	100
Portland General Electric Company	8.4	55.4	0.0	13.0	0.0	23.1	0.1	100
Southern Company	26.7	51.3	11.7	9.1	1.2	0.0	0.0	100
Xcel Energy Inc.	27.8	41.5	7.9	2.5	0.0	20.0	0.2	100
PacifiCorp	**46.4**	**24.3**	**0.0**	**9.7**	**0.2**	**19.1**	**0.3**	**100**

Q. What are your conclusions regarding the perceived risks related to the fuel mix of RMP's generation portfolio?

A. RMP generates a significant percentage of its electricity using coal-fired generation. As renewable resources have become more economic, PacifiCorp has planned to reduce customer costs by making sizable future capital expenditures to become less dependent on coal-fired generation. SF 159 imposes additional regulatory requirements on RMP that conflict with environmental mandates in other states, and imposes additional costs on the company as RMP seeks a more economic resource portfolio. While the Company intends to improve fuel diversity over the long-run, the plans will require continued access to capital markets to finance the new investments. The Company's existing generation portfolio and proposed transmission and generation investment plans increase the overall risk profile as compared with the proxy group.

IX. CAPITAL STRUCTURE

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

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

Q. What is RMP's proposed capital structure?

A. As discussed in the direct testimony of Company witness Ms. Nikki L. Kobliha, RMP is proposing a capital structure that is composed of 51.27 percent common equity, 0.01 percent preferred stock and 48.72 percent long-term debt.

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

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

is reasonable to look to the average capital structure for the proxy group to benchmark the equity ratios for the Company.

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

A. I calculated the average proportion of common equity, long-term debt, and preferred equity for the most recent eight quarters (2020 Q4 – 2022 Q3) for each of the companies in the proxy group at the operating subsidiary level. As shown in RMP Exhibit 4.11, the average common equity ratio for operating subsidiaries of the proxy group companies was 52.88 percent (representing a range from 45.95 percent to 61.06 percent). RMP's proposed equity ratio of 51.27 percent is in the mid-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, there are other factors that should be considered in setting the Company's capital structure, namely the challenges that the credit rating agencies have highlighted as placing pressure on the outlook for utilities in 2023.

For example, Moody's recently revised its 2023 outlook for the regulated gas and electric utilities sector to "negative" based on ongoing challenges of inflation, increasing interest rates and higher natural gas prices. Moody's noted that these challenges increase the pressure on customer affordability, and thus face heightened public scrutiny and the ability of utilities to promptly recover their costs. Moody's concluded that regulated utilities' financial metrics are already under pressure with little cushion, and that sustained capital spending is likely as utilities continue progress towards emissions reductions and net-zero goals. Moody's noted that the outlook could return to stable if regulatory support remains intact, natural gas prices are at a level where utilities are able to recover their fuel

and purchased power costs without delay beyond 12 months, overall inflation moderates, interest rates stabilize and/or utilities' aggregate funds from operations-to-debt ratio remains between 14% to 15%.[72]

Fitch Ratings ("Fitch") also highlights similar factors identified by Moody's as challenging utilities' outlook for 2023, stating that the sector faces mounting cost pressures due to "elevated commodity prices, inflationary headwinds and rising interest costs," and that some offset in managing these headwinds include "higher authorized ROEs and the use of tools such as securitization of under-recovered fuel balances."[73]

Likewise, S&P also continues to maintain a negative outlook for the utility industry, noting that downgrades have outpaced upgrades for the third consecutive year in 2022 with a median investor-owned utility credit rating of "BBB+".[74] Further, S&P expects the industry to have negative discretionary cash flow as a result of significant capital spending and consistent dividends.[75] Therefore, the utility industry will need ongoing access to capital markets to fund the capital expenditures. However, S&P notes that inflation, rising interest rates and decreasing equity prices may "hamper" consistent access to capital markets and result in additional pressure on cash flows.[76] Moreover, S&P indicates that if inflation risks persist over the near-term and customer bills increase, regulatory credit support could decrease resulting in weaker financial metrics for the industry:

> Over the past decade the industry's financial measures have weakened from a combination of rising capital spending, regulatory lag, and lower authorized return on equity (ROE). The industry's return on capital was

[72] Moody's Investors Service, Outlook. *2023 outlook negative due to higher natural gas prices, inflation and rising interest rates* (Nov. 10, 2022); Moody's Investors Service. Outlook, Sector In-Depth. *Inflation, high natural gas prices complicate prospects for supportive rate increases* (Nov. 11, 2022).
[73] Fitch Ratings, *North American Utilities, Power & Gas Outlook 2023*,at 1-2 (Dec. 7, 2022).
[74] S&P Global Ratings. Industry Top Trends, *North American Regulated Utilities: The industries outlook remains negative* (Jan. 23, 2023).
[75] *Id.*
[76] *Id.*

> about 6% a decade ago and today is closer to 4%. More recently, we have seen instances where not only is the authorized ROE lowered but also the equity ratio is lowered. These results have weakened the industry's financial measures, pressuring credit quality. Under our base case of moderating inflationary risks during 2023, we expect the industry's credit measures to generally remain flat. However, if inflationary risks persist, it may further pressure the customer bill, potentially decreasing the level of regulatory credit support, weakening the industry's financial performance.[77]

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

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 RMP. 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 equity ratio for RMP?

A. Considering the actual capital structures of the utility operating subsidiaries of the proxy group, I believe that the Company's proposed common equity ratio of 51.27 percent is reasonable. Specifically, the Company's proposed equity ratio is below the average equity ratios of the utility operating subsidiaries of the proxy group, which, all else equal, suggests that the Company has relatively greater financial risk as compared to the proxy group.

[77] *Id.*

X. CONCLUSIONS AND RECOMMENDATIONS

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

A. Figure 16 summarizes the results of my cost of equity analyses. Based on the quantitative and qualitative analyses presented in my direct testimony, the business and financial risks of the Company as compared to the proxy group and current and prospective capital market conditions, I recommend an ROE of 10.30 percent for the Company. The cost of capital, when considered in the context of the overall rate request, is expected to 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 Wyoming.

Figure 16: Summary of Analytical Results

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.11%	9.40%	10.39%
90-Day Average	8.25%	9.54%	10.53%
180-Day Average	8.14%	9.44%	10.42%
Constant Growth Average	8.17%	9.46%	10.45%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.36%	11.37%	11.38%
Bloomberg Beta	10.77%	10.79%	10.81%
Long-term Avg. Beta	10.33%	10.36%	10.38%
ECAPM			
Value Line Beta	11.64%	11.65%	11.66%
Bloomberg Beta	11.20%	11.22%	11.23%
Long-term Avg. Beta	10.87%	10.89%	10.91%
Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	10.23%	10.28%	10.32%

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

A. My conclusion is that RMP's proposal to establish a capital structure consisting of 51.27 percent common equity, 48.72 percent long-term debt, and 0.01 percent preferred equity is reasonable when compared to the capital structures of the companies in the proxy group and taking in consideration the effect of inflation and increased capital expenditures on the cash flows, and therefore should be adopted.

Q. Does this conclude your direct testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION OF WYOMING

IN THE MATTER OF THE APPLICATION OF ROCKY MOUNTAIN POWER FOR AUTHORITY TO INCREASE ITS RETAIL ELECTRIC SERVICE RATES AND TO REVISE THE ENERGY COST ADJUSTMENT MECHANISM	DOCKET NO. 20000-___-ER-23 (RECORD NO. _____)

AFFIDAVIT, OATH AND VERIFICATION

Ann Bulkley (Affiant) being of lawful age and being first duly sworn, hereby deposes and says that:

Affiant is a Principal of The Brattle Group who has filed testimony on behalf of PacifiCorp d/b/a Rocky Mountain Power, which is a party in this matter.

Affiant prepared and caused to be filed the foregoing testimony. Affiant has, by all necessary action, been duly authorized to file this testimony and make this Oath and Verification.

Affiant hereby verifies that, based on Affiant's knowledge, all statements and information contained within the testimony and all of its associated attachments are true and complete and constitute the recommendations of the Affiant in her official capacity as Principal with The Brattle Group.

Further Affiant Sayeth Not.

Dated this 24th day of February, 2023

Ann E. Bulkley
Principal, The Brattle Group

COMMONWEALTH OF MASSACHUSETTS)
) SS:
COUNTY OF Suffolk)

The foregoing was acknowledged before me by Ann E. Bulkley on this 24 day of February 2023. Witness my hand and official seal.

Notary Public

My Commission Expires:

Gerard M. Rooney
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
6/30/2028

Rocky Mountain Power
Exhibit 4.1
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Resume

March 2023

Ann E. Bulkley

PRINCIPAL

Boston 508.981.0866 Ann.Bulkley@brattle.com

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

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

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

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

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

AREAS OF EXPERTISE

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

EDUCATION

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

PROFESSIONAL EXPERIENCE

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

SELECTED CONSULTING EXPERIENCE & EXPERT TESTIMONY

REGULATORY ANALYSIS AND RATEMAKING

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

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

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

COST OF CAPITAL

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

RATEMAKING

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

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

VALUATION

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

Representative projects/clients have included:

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

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

STRATEGIC AND FINANCIAL ADVISORY SERVICES

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

Representative projects include:

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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arizona Corporation Commission				
UNS Electric	11/22	UNS Electric	Docket No. E-04204A-15-0251	Return on Equity
Tucson Electric Power Company	6/22	Tucson Electric Power Company	Docket No. G-01933A-22-0107	Return on Equity
Southwest Gas Corporation	12/21	Southwest Gas Corporation	Docket No. G-01551A-21-0368	Return on Equity
Arizona Public Service Company	10/19	Arizona Public Service Company	Docket No. E-01345A-19-0236	Return on Equity
Tucson Electric Power Company	04/19	Tucson Electric Power Company	Docket No. E-01933A-19-0028	Return on Equity
Tucson Electric Power Company	11/15	Tucson Electric Power Company	Docket No. E-01933A-15-0322	Return on Equity
UNS Electric	05/15	UNS Electric	Docket No. E-04204A-15-0142	Return on Equity
UNS Electric	12/12	UNS Electric	Docket No. E-04204A-12-0504	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arkansas Public Service Commission				
Oklahoma Gas and Electric Co	10/21	Oklahoma Gas and Electric Co	Docket No. D-18-046-FR	Return on Equity
Arkansas Oklahoma Gas Corporation	10/13	Arkansas Oklahoma Gas Corporation	Docket No. 13-078-U	Return on Equity
California Public Utilities Commission				
PacifiCorp, d/b/a Pacific Power	5/22	PacifiCorp, d/b/a Pacific Power	Docket No. A-22-05-006	Return on Equity
San Jose Water Company	05/21	San Jose Water Company	A2105004	Return on Equity
Colorado Public Utilities Commission				
Public Service Company of Colorado	11/22	Public Service Company of Colorado	Docket No. 22AL-0530E	Return on Equity
Public Service Company of Colorado	01/22	Public Service Company of Colorado	Docket No. 22AL-0046G	Return on Equity
Public Service Company of Colorado	07/21	Public Service Company of Colorado	21AL-0317E	Return on Equity
Public Service Company of Colorado	02/20	Public Service Company of Colorado	20AL-0049G	Return on Equity
Public Service Company of Colorado	05/19	Public Service Company of Colorado	19AL-0268E	Return on Equity
Public Service Company of Colorado	01/19	Public Service Company of Colorado	19AL-0063ST	Return on Equity
Atmos Energy Corporation	05/15	Atmos Energy Corporation	Docket No. 15AL-0299G	Return on Equity
Atmos Energy Corporation	04/14	Atmos Energy Corporation	Docket No. 14AL-0300G	Return on Equity
Atmos Energy Corporation	05/13	Atmos Energy Corporation	Docket No. 13AL-0496G	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Connecticut Public Utilities Regulatory Authority				
United Illuminating	09/22	United Illuminating	Docket No. 22-08-08	Return on Equity
United Illuminating	05/21	United Illuminating	Docket No. 17-12-03RE11	Return on Equity
Connecticut Water Company	01/21	Connecticut Water Company	Docket No. 20-12-30	Return on Equity
Connecticut Natural Gas Corporation	06/18	Connecticut Natural Gas Corporation	Docket No. 18-05-16	Return on Equity
Yankee Gas Services Co. d/b/a Eversource Energy	06/18	Yankee Gas Services Co. d/b/a Eversource Energy	Docket No. 18-05-10	Return on Equity
The Southern Connecticut Gas Company	06/17	The Southern Connecticut Gas Company	Docket No. 17-05-42	Return on Equity
The United Illuminating Company	07/16	The United Illuminating Company	Docket No. 16-06-04	Return on Equity
Federal Energy Regulatory Commission				
Sea Robin Pipeline	12/22	Sea Robin Pipeline	Docket No. RP22-___	Return on Equity
Northern Natural Gas Company	07/22	Northern Natural Gas Company	Docket No. RP22-___	Return on Equity
Transwestern Pipeline Company, LLC	07/22	Transwestern Pipeline Company, LLC	Docket No. RP22-___	Return on Equity
Florida Gas Transmission	02/21	Florida Gas Transmission	Docket No. RP21-441	Return on Equity
TransCanyon	01/21	TransCanyon	Docket No. ER21-1065	Return on Equity
Duke Energy	12/20	Duke Energy	Docket No. EL21-9-000	Return on Equity
Wisconsin Electric Power Company	08/20	Wisconsin Electric Power Company	Docket No. EL20-57-000	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Panhandle Eastern Pipe Line Company, LP	10/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-78-000 RP19-78-001	Return on Equity
Panhandle Eastern Pipe Line Company, LP	08/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-1523	Return on Equity
Sea Robin Pipeline Company LLC	11/18	Sea Robin Pipeline Company LLC	Docket# RP19-352-000	Return on Equity
Tallgrass Interstate Gas Transmission	10/15	Tallgrass Interstate Gas Transmission	RP16-137	Return on Equity
Idaho Public Utilities Commission				
Intermountain Gas Co	12/22	Intermountain Gas Co	C-INT-G-22-07	Return on Equity
PacifiCorp d/b/a Rocky Mountain Power	05/21	PacifiCorp d/b/a Rocky Mountain Power	Case No. PAC-E-21-07	Return on Equity
Illinois Commerce Commission				
Peoples Gas Light & Coke Company	01/23	Peoples Gas Light & Coke Company	D-23-0069	Return on Equity
North Shore Gas Company	01/23	North Shore Gas Company	D-23-0068	Return on Equity
Illinois American Water	02/22	Illinois American Water	Docket No. 22-0210	Return on Equity
North Shore Gas Company	02/21	North Shore Gas Company	No. 20-0810	Return on Equity
Indiana Utility Regulatory Commission				
Indiana Michigan Power Co.	07/21	Indiana Michigan Power Co.	IURC Cause No. 45576	Return on Equity
Indiana Gas Company Inc.	12/20	Indiana Gas Company Inc.	IURC Cause No. 45468	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Southern Indiana Gas and Electric Company	10/20	Southern Indiana Gas and Electric Company	IURC Cause No. 45447	Return on Equity
Indiana and Michigan American Water Company	09/18	Indiana and Michigan American Water Company	IURC Cause No. 45142	Return on Equity
Indianapolis Power and Light Company	12/17	Indianapolis Power and Light Company	Cause No. 45029	Fair Value
Northern Indiana Public Service Company	09/17	Northern Indiana Public Service Company	Cause No. 44988	Fair Value
Indianapolis Power and Light Company	12/16	Indianapolis Power and Light Company	Cause No.44893	Fair Value
Northern Indiana Public Service Company	10/15	Northern Indiana Public Service Company	Cause No. 44688	Fair Value
Indianapolis Power and Light Company	09/15	Indianapolis Power and Light Company	Cause No. 44576 Cause No. 44602	Fair Value
Kokomo Gas and Fuel Company	09/10	Kokomo Gas and Fuel Company	Cause No. 43942	Fair Value
Northern Indiana Fuel and Light Company, Inc.	09/10	Northern Indiana Fuel and Light Company, Inc.	Cause No. 43943	Fair Value
Iowa Department of Commerce Utilities Board				
MidAmerican Energy Company	01/22	MidAmerican Energy Company	Docket No. RPU-2022-0001	Return on Equity
Iowa-American Water Company	08/20	Iowa-American Water Company	Docket No. RPU-2020-0001	Return on Equity
Kansas Corporation Commission				
Atmos Energy Corporation	08/15	Atmos Energy Corporation	Docket No. 16-ATMG-079-RTS	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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	08/22	Central Maine Power	Docket No. 2022-00152	Return on Equity
Central Maine Power	10/18	Central Maine Power	Docket No. 2018-194	Return on Equity
Maryland Public Service Commission				
Maryland American Water Company	06/18	Maryland American Water Company	Case No. 9487	Return on Equity
Massachusetts Appellate Tax Board				
Hopkinton LNG Corporation	03/20	Hopkinton LNG Corporation	Docket No.	Valuation of LNG Facility
FirstLight Hydro Generating Company	06/17	FirstLight Hydro Generating Company	Docket No. F-325471 Docket No. F-325472 Docket No. F-325473 Docket No. F-325474	Valuation of Electric Generation Assets
Massachusetts Department of Public Utilities				
National Grid USA	11/20	Boston Gas Company	DPU 20-120	Return on Equity
Berkshire Gas Company	05/18	Berkshire Gas Company	DPU 18-40	Return on Equity
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
Michigan Public Service Commission				
Michigan Gas Utilities Corporation	03/21	Michigan Gas Utilities Corporation	Case No. U-20718	Return on Equity
Wisconsin Electric Power Company	12/11	Wisconsin Electric Power Company	Case No. U-16830	Return on Equity

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	11/22	Minnesota Energy Resources Corporation	Docket No. G011/GR-22-504	Return on Equity
CenterPoint Energy Resources	11/21	CenterPoint Energy Resources	D-G-008/GR-21-435	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/21	Allete, Inc. d/b/a Minnesota Power	D-E-015/GR-21-630	Return on Equity
Otter Tail Power Company	11/20	Otter Tail Power Company	E017/GR-20-719	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/19	Allete, Inc. d/b/a Minnesota Power	E015/GR-19-442	Return on Equity
CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	10/19	CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	G-008/GR-19-524	Return on Equity
Great Plains Natural Gas Co.	09/19	Great Plains Natural Gas Co.	Docket No. G004/GR-19-511	Return on Equity
Minnesota Energy Resources Corporation	10/17	Minnesota Energy Resources Corporation	Docket No. G011/GR-17-563	Return on Equity
Missouri Public Service Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Ameren Missouri	08/22	Ameren Missouri	File No. ER-2022-0337	Return on Equity
Missouri American Water Company	07/22	Missouri American Water Company	Case No. WR-2022-0303 Case No. SR-2022-0304	Return on Equity
Evergy Missouri West	1/22	Evergy Missouri West	File No. ER-2022-0130	Return on Equity
Evergy Missouri Metro	1/22	Evergy Missouri Metro	File No. ER-2022-0129	Return on Equity
Ameren Missouri	03/21	Ameren Missouri	Docket No. ER-2021-0240 Docket No. GR-2021-0241	Return on Equity
Missouri American Water Company	06/20	Missouri American Water Company	Case No. WR-2020-0344 Case No. SR-2020-0345	Return on Equity
Missouri American Water Company	06/17	Missouri American Water Company	Case No. WR-17-0285 Case No. SR-17-0286	Return on Equity
Montana Public Service Commission				
Montana-Dakota Utilities Co.	06/20	Montana-Dakota Utilities Co.	D2022.11.099	Return on Equity
Montana-Dakota Utilities Co.	06/20	Montana-Dakota Utilities Co.	D2020.06.076	Return on Equity
Montana-Dakota Utilities Co.	09/18	Montana-Dakota Utilities Co.	D2018.9.60	Return on Equity
New Hampshire - Board of Tax and Land Appeals				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Public Service Company of New Hampshire d/b/a Eversource Energy	11/19 12/19	Public Service Company of New Hampshire d/b/a Eversource Energy	Master Docket No. 28873-14-15-16-17PT	Valuation of Utility Property and Generating Assets
New Hampshire Public Utilities Commission				
Public Service Company of New Hampshire	05/19	Public Service Company of New Hampshire	DE-19-057	Return on Equity
New Hampshire-Merrimack County Superior Court				
Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	04/18	Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	220-2012-CV-1100	Valuation of Utility Property
New Hampshire-Rockingham Superior Court				
Eversource Energy	05/18	Public Service Commission of New Hampshire	218-2016-CV-00899 218-2017-CV-00917	Valuation of Utility Property
New Jersey Board of Public Utilities				
New Jersey American Water Company, Inc.	01/22	New Jersey American Water Company, Inc.	WR22010019	Return on Equity
Public Service Electric and Gas Company	10/20	Public Service Electric and Gas Company	EO18101115	Return on Equity
New Jersey American Water Company, Inc.	12/19	New Jersey American Water Company, Inc.	WR19121516	Return on Equity
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
New Mexico Public Regulation Commission				
Southwestern Public Service Company	07/19	Southwestern Public Service Company	19-00170-UT	Return on Equity
Southwestern Public Service Company	10/17	Southwestern Public Service Company	Case No. 17-00255-UT	Return on Equity
Southwestern Public Service Company	12/16	Southwestern Public Service Company	Case No. 16-00269-UT	Return on Equity
Southwestern Public Service Company	10/15	Southwestern Public Service Company	Case No. 15-00296-UT	Return on Equity
Southwestern Public Service Company	06/15	Southwestern Public Service Company	Case No. 15-00139-UT	Return on Equity
New York State Department of Public Service				
New York State Electric and Gas Company Rochester Gas and Electric	05/22	New York State Electric and Gas Company Rochester Gas and Electric	22-E-0317 22-G-0318 22-E-0319 22-G-0320	Return on Equity
Corning Natural Gas Corporation	07/21	Corning Natural Gas Corporation	Case No. 21-G-0394	Return on Equity
Central Hudson Gas and Electric Corporation	08/20	Central Hudson Gas and Electric Corporation	Electric 20-E-0428 Gas 20-G-0429	Return on Equity
Niagara Mohawk Power Corporation	07/20	National Grid USA	Case No. 20-E-0380 20-G-0381	Return on Equity
Corning Natural Gas Corporation	02/20	Corning Natural Gas Corporation	Case No. 20-G-0101	Return on Equity
New York State Electric and Gas Company Rochester Gas and Electric	05/19	New York State Electric and Gas Company Rochester Gas and Electric	19-E-0378 19-G-0379 19-E-0380 19-G-0381	Return on Equity

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

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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Southwestern Public Service Commission	08/19	Southwestern Public Service Commission	Docket No. D-49831	Return on Equity
Southwestern Public Service Company	01/14	Southwestern Public Service Company	Docket No. 42004	Return on Equity
Utah Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	05/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20-035-04	Return on Equity
Virginia State Corporation Commission				
Virginia American Water Company, Inc.	11/21	Virginia American Water Company, Inc.	Docket No. PUR-2021-00255	Return on Equity
Virginia American Water Company, Inc.	11/18	Virginia American Water Company, Inc.	Docket No. PUR-2018-00175	Return on Equity
Washington Utilities Transportation Commission				
Cascade Natural Gas Corporation	06/20	Cascade Natural Gas Corporation	Docket No. UG-200568	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	12/19	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-191024	Return on Equity
Cascade Natural Gas Corporation	04/19	Cascade Natural Gas Corporation	Docket No. UG-190210	Return on Equity
West Virginia Public Service Commission				
West Virginia American Water Company	04/21	West Virginia American Water Company	Case No. 21-02369-W-42T	Return on Equity
West Virginia American Water Company	04/18	West Virginia American Water Company	Case No. 18-0573-W-42T Case No. 18-0576-S-42T	Return on Equity
Wisconsin Public Service Commission				
Wisconsin Electric Power Company and Wisconsin Gas LLC	04/22	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-110	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Wisconsin Public Service Corp.	04/22	Wisconsin Public Service Corp.	6690-UR-127	Return on Equity
Alliant Energy		Alliant Energy		Return on Equity
Wisconsin Electric Power Company and Wisconsin Gas LLC	03/19	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-109	Return on Equity
Wisconsin Public Service Corp.	03/19	Wisconsin Public Service Corp.	6690-UR-126	Return on Equity
Wyoming Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	03/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20000-578-ER-20	Return on Equity
Montana-Dakota Utilities Co.	05/19	Montana-Dakota Utilities Co.	30013-351-GR-19	Return on Equity

CERTIFICATIONS/ACCREDITATIONS

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

Rocky Mountain Power
Exhibit 4.2
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Summary of Results

March 2023

SUMMARY OF ROE ANALYSES RESULTS AS OF JANUARY 31, 2023

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.11%	9.40%	10.39%
90-Day Average	8.25%	9.54%	10.53%
180-Day Average	8.14%	9.44%	10.42%
Constant Growth Average	8.17%	9.46%	10.45%
	Median Low	Median	Median High
30-Day Average	7.98%	9.40%	10.13%
90-Day Average	8.11%	9.50%	10.24%
180-Day Average	7.94%	9.38%	10.13%
Constant Growth Average	8.01%	9.43%	10.16%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.36%	11.37%	11.38%
Bloomberg Beta	10.77%	10.79%	10.81%
Long-term Avg. Beta	10.33%	10.36%	10.38%
ECAPM			
Value Line Beta	11.64%	11.65%	11.66%
Bloomberg Beta	11.20%	11.22%	11.23%
Long-term Avg. Beta	10.87%	10.89%	10.91%
Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	10.23%	10.28%	10.32%

Rocky Mountain Power
Exhibit 4.3
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Proxy Group Selection

March 2023

PROXY GROUP SCREENING DATA AND RESULTS

Company	Ticker	[1] Dividends	[2] S&P Credit Rating Between BBB- and AAA	[3] Covered by More Than 1 Analyst	[4] Positive Growth Rates from at least two sources (Value Line, Yahoo! First Call, and Zacks)	[5] Generation Assets Included in Rate Base	[6] % Company-Owned Generation ≥ 40%	[7] % Regulated Operating Income ≥ 60%	[8] % Regulated Electric Operating Income ≥ 60%	[9] Announced Merger
ALLETE, Inc.	ALE	Yes	BBB	Yes	Yes	Yes	41.54%	95.57%	93.08%	No
Alliant Energy Corporation	LNT	Yes	A-	Yes	Yes	Yes	70.97%	96.60%	88.08%	No
Ameren Corporation	AEE	Yes	BBB+	Yes	Yes	Yes	76.04%	100.00%	85.03%	No
American Electric Power Company, Inc.	AEP	Yes	A-	Yes	Yes	Yes	52.91%	95.43%	95.43%	No
Avista Corporation	AVA	Yes	BBB	Yes	Yes	Yes	59.38%	100.00%	76.10%	No
CMS Energy Corporation	CMS	Yes	BBB+	Yes	Yes	Yes	41.36%	98.76%	67.46%	No
Duke Energy Corporation	DUK	Yes	BBB+	Yes	Yes	Yes	82.34%	99.36%	90.32%	No
Entergy Corporation	ETR	Yes	BBB+	Yes	Yes	Yes	68.34%	100.00%	99.41%	No
Evergy, Inc.	EVRG	Yes	A-	Yes	Yes	Yes	62.52%	100.00%	100.00%	No
IDACORP, Inc.	IDA	Yes	BBB	Yes	Yes	Yes	68.95%	99.84%	99.84%	No
NextEra Energy, Inc.	NEE	Yes	A-	Yes	Yes	Yes	96.85%	85.07%	85.07%	No
NorthWestern Corporation	NWE	Yes	BBB	Yes	Yes	Yes	56.48%	99.75%	84.01%	No
OGE Energy Corporation	OGE	Yes	BBB+	Yes	Yes	Yes	55.06%	100.00%	100.00%	No
Otter Tail Corporation	OTTR	Yes	BBB	Yes	Yes	Yes	55.70%	72.69%	62.74%	No
Portland General Electric Company	POR	Yes	BBB+	Yes	Yes	Yes	60.82%	100.00%	100.00%	No
Southern Company	SO	Yes	BBB+	Yes	Yes	Yes	77.81%	84.58%	67.76%	No
Xcel Energy Inc.	XEL	Yes	A-	Yes	Yes	Yes	57.64%	100.00%	86.47%	No

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional
[3] Source: Yahoo! Finance and Zacks
[4] Source: Yahoo! Finance, Value Line Investment Survey, and Zacks
[5] Source: S&P Capital IQ Pro
[6] Source: S&P Capital IQ Pro
[7] Source: Form 10-K's for 2021, 2020, and 2019
[8] Source: Form 10-K's for 2021, 2020, and 2019
[9] Source: S&P Capital IQ Pro Financial News Releases
[10] OTTR: 2021 Operating Income Data was excluded from the three year average since, as noted by Otter Tail, 2021 operating income was impacted by the plastics segment that is not expected to continue over the long-term term.

Rocky Mountain Power
Exhibit 4.4
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Constant Growth Discounted Cash Flow Model

March 2023

30-DAY CONSTANT GROWTH DCF -- RMP PROXY GROUP

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Value Line EPS Growth	[6] Yahoo! Finance EPS Growth	[7] Zacks EPS Growth	[8] Average Growth Rate	[9] Low ROE	[10] Mean ROE	[11] High ROE
ALLETE, Inc.	ALE	$2.60	$64.09	4.06%	4.22%	6.00%	8.70%	9.60%	8.10%	10.18%	12.32%	13.85%
Alliant Energy Corporation	LNT	$1.81	$54.38	3.33%	3.42%	6.00%	5.55%	5.80%	5.78%	8.97%	9.21%	9.43%
Ameren Corporation	AEE	$2.36	$88.15	2.68%	2.77%	6.50%	6.64%	6.90%	6.68%	9.26%	9.45%	9.67%
American Electric Power Company, Inc.	AEP	$3.32	$94.56	3.51%	3.62%	6.50%	6.15%	6.10%	6.25%	9.72%	9.87%	10.13%
Avista Corporation	AVA	$1.76	$42.48	4.14%	4.24%	3.50%	5.20%	5.20%	4.63%	7.72%	8.87%	9.45%
CMS Energy Corporation	CMS	$1.84	$63.12	2.92%	3.03%	6.50%	8.17%	8.00%	7.56%	9.51%	10.58%	11.20%
Duke Energy Corporation	DUK	$4.02	$102.85	3.91%	4.01%	5.00%	5.65%	5.50%	5.38%	9.01%	9.40%	9.67%
Entergy Corporation	ETR	$4.28	$109.55	3.91%	4.01%	4.00%	6.19%	6.00%	5.40%	7.98%	9.41%	10.22%
Evergy, Inc.	EVRG	$2.45	$62.50	3.92%	4.02%	7.50%	2.43%	5.30%	5.08%	6.40%	9.10%	11.57%
IDACORP, Inc.	IDA	$3.16	$106.55	2.97%	3.02%	4.50%	3.40%	3.40%	3.77%	6.42%	6.79%	7.53%
NextEra Energy, Inc.	NEE	$1.70	$82.50	2.06%	2.16%	10.50%	10.21%	9.00%	9.90%	11.15%	12.07%	12.67%
NorthWestern Corporation	NWE	$2.52	$57.74	4.36%	4.43%	3.50%	4.50%	1.70%	3.23%	6.10%	7.67%	8.96%
OGE Energy Corporation	OGE	$1.66	$39.21	4.22%	4.32%	6.50%	1.90%	5.00%	4.47%	6.17%	8.79%	10.86%
Otter Tail Corporation	OTTR	$1.65	$60.44	2.73%	2.82%	4.50%	9.00%	n/a	6.75%	7.29%	9.57%	11.85%
Portland General Electric Company	POR	$1.81	$48.17	3.76%	3.83%	5.00%	1.39%	5.30%	3.90%	5.17%	7.73%	9.16%
Southern Company	SO	$2.72	$69.75	3.90%	4.01%	6.50%	6.48%	4.00%	5.66%	7.98%	9.67%	10.53%
Xcel Energy Inc.	XEL	$1.95	$69.89	2.79%	2.88%	6.00%	7.01%	6.50%	6.50%	8.87%	9.38%	9.90%
Mean				3.48%	3.58%	5.79%	5.80%	5.83%	5.83%	8.11%	9.40%	10.39%
Median				3.76%	3.83%	6.00%	6.15%	5.65%	5.66%	7.98%	9.40%	10.13%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 30-day average as of January 31, 2023
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

90-DAY CONSTANT GROWTH DCF -- RMP PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	$2.60	$59.65	4.36%	4.54%	6.00%	8.70%	9.60%	8.10%	10.49%	12.64%	14.17%
Alliant Energy Corporation	LNT	$1.81	$53.40	3.39%	3.49%	6.00%	5.55%	5.80%	5.78%	9.03%	9.27%	9.49%
Ameren Corporation	AEE	$2.36	$84.71	2.79%	2.88%	6.50%	6.64%	6.90%	6.68%	9.38%	9.56%	9.78%
American Electric Power Company, Inc.	AEP	$3.32	$91.64	3.62%	3.74%	6.50%	6.15%	6.10%	6.25%	9.83%	9.99%	10.24%
Avista Corporation	AVA	$1.76	$40.23	4.37%	4.48%	3.50%	5.20%	5.20%	4.63%	7.95%	9.11%	9.69%
CMS Energy Corporation	CMS	$1.84	$60.13	3.06%	3.18%	6.50%	8.17%	8.00%	7.56%	9.66%	10.73%	11.36%
Duke Energy Corporation	DUK	$4.02	$97.43	4.13%	4.24%	5.00%	5.65%	5.50%	5.38%	9.23%	9.62%	9.89%
Entergy Corporation	ETR	$4.28	$108.60	3.94%	4.05%	4.00%	6.19%	6.00%	5.40%	8.02%	9.44%	10.25%
Evergy, Inc.	EVRG	$2.45	$60.52	4.05%	4.15%	7.50%	2.43%	5.30%	5.08%	6.53%	9.23%	11.70%
IDACORP, Inc.	IDA	$3.16	$103.99	3.04%	3.10%	4.50%	3.40%	3.40%	3.77%	6.49%	6.86%	7.61%
NextEra Energy, Inc.	NEE	$1.70	$80.86	2.10%	2.21%	10.50%	10.21%	9.00%	9.90%	11.20%	12.11%	12.71%
NorthWestern Corporation	NWE	$2.52	$54.56	4.62%	4.69%	3.50%	4.50%	1.70%	3.23%	6.36%	7.93%	9.22%
OGE Energy Corporation	OGE	$1.66	$37.88	4.37%	4.47%	6.50%	1.90%	5.00%	4.47%	6.31%	8.94%	11.01%
Otter Tail Corporation	OTTR	$1.65	$60.40	2.73%	2.82%	4.50%	9.00%	n/a	6.75%	7.29%	9.57%	11.85%
Portland General Electric Company	POR	$1.81	$46.44	3.90%	3.97%	5.00%	1.39%	5.30%	3.90%	5.31%	7.87%	9.30%
Southern Company	SO	$2.72	$67.48	4.03%	4.14%	6.50%	6.48%	4.00%	5.66%	8.11%	9.80%	10.66%
Xcel Energy Inc.	XEL	$1.95	$67.09	2.91%	3.00%	6.00%	7.01%	6.50%	6.50%	8.99%	9.50%	10.02%
Mean				3.61%	3.71%	5.79%	5.80%	5.83%	5.83%	8.25%	9.54%	10.53%
Median				3.90%	3.97%	6.00%	6.15%	5.65%	5.66%	8.11%	9.50%	10.24%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 90-day average as of January 31, 2023
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

180-DAY CONSTANT GROWTH DCF -- RMP PROXY GROUP

Company	Ticker	[1] Annualized Dividend	[2] Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Value Line EPS Growth	[6] Yahoo! Finance EPS Growth	[7] Zacks EPS Growth	[8] Average Growth Rate	[9] Low ROE	[10] Mean ROE	[11] High ROE
ALLETE, Inc.	ALE	$2.60	$59.39	4.38%	4.56%	6.00%	8.70%	9.60%	8.10%	10.51%	12.66%	14.19%
Alliant Energy Corporation	LNT	$1.81	$56.17	3.22%	3.32%	6.00%	5.55%	5.80%	5.78%	8.86%	9.10%	9.32%
Ameren Corporation	AEE	$2.36	$87.43	2.70%	2.79%	6.50%	6.64%	6.90%	6.68%	9.29%	9.47%	9.69%
American Electric Power Company, Inc.	AEP	$3.32	$94.51	3.51%	3.62%	6.50%	6.15%	6.10%	6.25%	9.72%	9.87%	10.13%
Avista Corporation	AVA	$1.76	$40.84	4.31%	4.41%	3.50%	5.20%	5.20%	4.63%	7.88%	9.04%	9.62%
CMS Energy Corporation	CMS	$1.84	$63.56	2.89%	3.00%	6.50%	8.17%	8.00%	7.56%	9.49%	10.56%	11.18%
Duke Energy Corporation	DUK	$4.02	$101.88	3.95%	4.05%	5.00%	5.65%	5.50%	5.38%	9.04%	9.44%	9.71%
Entergy Corporation	ETR	$4.28	$111.02	3.86%	3.96%	4.00%	6.19%	6.00%	5.40%	7.93%	9.36%	10.16%
Evergy, Inc.	EVRG	$2.45	$63.35	3.87%	3.97%	7.50%	2.43%	5.30%	5.08%	6.34%	9.04%	11.51%
IDACORP, Inc.	IDA	$3.16	$105.36	3.00%	3.06%	4.50%	3.40%	3.40%	3.77%	6.45%	6.82%	7.57%
NextEra Energy, Inc.	NEE	$1.70	$80.77	2.10%	2.21%	10.50%	10.21%	9.00%	9.90%	11.20%	12.11%	12.72%
NorthWestern Corporation	NWE	$2.52	$55.02	4.58%	4.65%	3.50%	4.50%	1.70%	3.23%	6.32%	7.89%	9.18%
OGE Energy Corporation	OGE	$1.66	$38.41	4.31%	4.41%	6.50%	1.90%	5.00%	4.47%	6.25%	8.88%	10.95%
Otter Tail Corporation	OTTR	$1.65	$64.85	2.54%	2.63%	4.50%	9.00%	n/a	6.75%	7.10%	9.38%	11.66%
Portland General Electric Company	POR	$1.81	$47.85	3.78%	3.86%	5.00%	1.39%	5.30%	3.90%	5.20%	7.75%	9.18%
Southern Company	SO	$2.72	$70.50	3.86%	3.97%	6.50%	6.48%	4.00%	5.66%	7.94%	9.63%	10.48%
Xcel Energy Inc.	XEL	$1.95	$69.39	2.81%	2.90%	6.00%	7.01%	6.50%	6.50%	8.89%	9.40%	9.92%
Mean				3.51%	3.61%	5.79%	5.80%	5.83%	5.83%	8.14%	9.44%	10.42%
Median				3.78%	3.86%	6.00%	6.15%	5.65%	5.66%	7.94%	9.38%	10.13%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 180-day average as of January 31, 2023
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

Rocky Mountain Power
Exhibit 4.5
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Capital Asset Pricing Model

March 2023

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
Alliant Energy Corporation	LNT	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Ameren Corporation	AEE	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
American Electric Power Company, Inc.	AEP	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Avista Corporation	AVA	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
CMS Energy Corporation	CMS	3.71%	0.80	12.50%	8.79%	10.74%	11.18%
Duke Energy Corporation	DUK	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Entergy Corporation	ETR	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
Evergy, Inc.	EVRG	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
IDACORP, Inc.	IDA	3.71%	0.80	12.50%	8.79%	10.74%	11.18%
NextEra Energy, Inc.	NEE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
NorthWestern Corporation	NWE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
OGE Energy Corporation	OGE	3.71%	1.00	12.50%	8.79%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Portland General Electric Company	POR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Southern Company	SO	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
Xcel Energy Inc.	XEL	3.71%	0.80	12.50%	8.79%	10.74%	11.18%
Mean						11.36%	11.64%
Median						11.18%	11.51%

Notes:
[1] Source: Bloomberg Professional, as of January 31, 2023
[2] Source: Value Line
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
Alliant Energy Corporation	LNT	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Ameren Corporation	AEE	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
American Electric Power Company, Inc.	AEP	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Avista Corporation	AVA	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
CMS Energy Corporation	CMS	3.82%	0.80	12.50%	8.68%	10.76%	11.19%
Duke Energy Corporation	DUK	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Entergy Corporation	ETR	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
Evergy, Inc.	EVRG	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
IDACORP, Inc.	IDA	3.82%	0.80	12.50%	8.68%	10.76%	11.19%
NextEra Energy, Inc.	NEE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
NorthWestern Corporation	NWE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
OGE Energy Corporation	OGE	3.82%	1.00	12.50%	8.68%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Portland General Electric Company	POR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Southern Company	SO	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
Xcel Energy Inc.	XEL	3.82%	0.80	12.50%	8.68%	10.76%	11.19%
Mean						11.37%	11.65%
Median						11.19%	11.52%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2023, at 2
[2] Source: Value Line
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
Alliant Energy Corporation	LNT	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Ameren Corporation	AEE	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
American Electric Power Company, Inc.	AEP	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Avista Corporation	AVA	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
CMS Energy Corporation	CMS	3.90%	0.80	12.50%	8.60%	10.78%	11.21%
Duke Energy Corporation	DUK	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Entergy Corporation	ETR	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
Evergy, Inc.	EVRG	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
IDACORP, Inc.	IDA	3.90%	0.80	12.50%	8.60%	10.78%	11.21%
NextEra Energy, Inc.	NEE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
NorthWestern Corporation	NWE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
OGE Energy Corporation	OGE	3.90%	1.00	12.50%	8.60%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Portland General Electric Company	POR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Southern Company	SO	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
Xcel Energy Inc.	XEL	3.90%	0.80	12.50%	8.60%	10.78%	11.21%
Mean						11.38%	11.66%
Median						11.21%	11.53%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
[2] Source: Value Line
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.71%	0.83	12.50%	8.79%	11.01%	11.38%
Alliant Energy Corporation	LNT	3.71%	0.80	12.50%	8.79%	10.71%	11.16%
Ameren Corporation	AEE	3.71%	0.76	12.50%	8.79%	10.37%	10.90%
American Electric Power Company, Inc.	AEP	3.71%	0.77	12.50%	8.79%	10.48%	10.98%
Avista Corporation	AVA	3.71%	0.76	12.50%	8.79%	10.36%	10.89%
CMS Energy Corporation	CMS	3.71%	0.76	12.50%	8.79%	10.36%	10.89%
Duke Energy Corporation	DUK	3.71%	0.73	12.50%	8.79%	10.08%	10.69%
Entergy Corporation	ETR	3.71%	0.86	12.50%	8.79%	11.25%	11.56%
Evergy, Inc.	EVRG	3.71%	0.79	12.50%	8.79%	10.63%	11.10%
IDACORP, Inc.	IDA	3.71%	0.81	12.50%	8.79%	10.80%	11.22%
NextEra Energy, Inc.	NEE	3.71%	0.82	12.50%	8.79%	10.94%	11.33%
NorthWestern Corporation	NWE	3.71%	0.86	12.50%	8.79%	11.30%	11.60%
OGE Energy Corporation	OGE	3.71%	0.93	12.50%	8.79%	11.87%	12.03%
Otter Tail Corporation	OTTR	3.71%	0.88	12.50%	8.79%	11.46%	11.72%
Portland General Electric Company	POR	3.71%	0.79	12.50%	8.79%	10.62%	11.09%
Southern Company	SO	3.71%	0.78	12.50%	8.79%	10.55%	11.04%
Xcel Energy Inc.	XEL	3.71%	0.75	12.50%	8.79%	10.28%	10.84%
Mean						10.77%	11.20%
Median						10.63%	11.10%

Notes:
[1] Source: Bloomberg Professional, as of January 31, 2023
[2] Source: Bloomberg Professional, based on 10-year weekly returns
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.82%	0.83	12.50%	8.68%	11.03%	11.40%
Alliant Energy Corporation	LNT	3.82%	0.80	12.50%	8.68%	10.73%	11.17%
Ameren Corporation	AEE	3.82%	0.76	12.50%	8.68%	10.40%	10.92%
American Electric Power Company, Inc.	AEP	3.82%	0.77	12.50%	8.68%	10.50%	11.00%
Avista Corporation	AVA	3.82%	0.76	12.50%	8.68%	10.38%	10.91%
CMS Energy Corporation	CMS	3.82%	0.76	12.50%	8.68%	10.38%	10.91%
Duke Energy Corporation	DUK	3.82%	0.73	12.50%	8.68%	10.11%	10.71%
Entergy Corporation	ETR	3.82%	0.86	12.50%	8.68%	11.26%	11.57%
Evergy, Inc.	EVRG	3.82%	0.79	12.50%	8.68%	10.65%	11.11%
IDACORP, Inc.	IDA	3.82%	0.81	12.50%	8.68%	10.82%	11.24%
NextEra Energy, Inc.	NEE	3.82%	0.82	12.50%	8.68%	10.96%	11.34%
NorthWestern Corporation	NWE	3.82%	0.86	12.50%	8.68%	11.31%	11.61%
OGE Energy Corporation	OGE	3.82%	0.93	12.50%	8.68%	11.88%	12.03%
Otter Tail Corporation	OTTR	3.82%	0.88	12.50%	8.68%	11.48%	11.73%
Portland General Electric Company	POR	3.82%	0.79	12.50%	8.68%	10.64%	11.11%
Southern Company	SO	3.82%	0.78	12.50%	8.68%	10.58%	11.06%
Xcel Energy Inc.	XEL	3.82%	0.75	12.50%	8.68%	10.31%	10.86%
Mean						10.79%	11.22%
Median						10.65%	11.11%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2023, at 2
[2] Source: Bloomberg Professional, based on 10-year weekly returns
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.90%	0.83	12.50%	8.60%	11.05%	11.41%
Alliant Energy Corporation	LNT	3.90%	0.80	12.50%	8.60%	10.75%	11.19%
Ameren Corporation	AEE	3.90%	0.76	12.50%	8.60%	10.42%	10.94%
American Electric Power Company, Inc.	AEP	3.90%	0.77	12.50%	8.60%	10.52%	11.01%
Avista Corporation	AVA	3.90%	0.76	12.50%	8.60%	10.40%	10.93%
CMS Energy Corporation	CMS	3.90%	0.76	12.50%	8.60%	10.40%	10.93%
Duke Energy Corporation	DUK	3.90%	0.73	12.50%	8.60%	10.13%	10.73%
Entergy Corporation	ETR	3.90%	0.86	12.50%	8.60%	11.27%	11.58%
Evergy, Inc.	EVRG	3.90%	0.79	12.50%	8.60%	10.67%	11.13%
IDACORP, Inc.	IDA	3.90%	0.81	12.50%	8.60%	10.84%	11.25%
NextEra Energy, Inc.	NEE	3.90%	0.82	12.50%	8.60%	10.97%	11.35%
NorthWestern Corporation	NWE	3.90%	0.86	12.50%	8.60%	11.32%	11.62%
OGE Energy Corporation	OGE	3.90%	0.93	12.50%	8.60%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.90%	0.88	12.50%	8.60%	11.48%	11.74%
Portland General Electric Company	POR	3.90%	0.79	12.50%	8.60%	10.66%	11.12%
Southern Company	SO	3.90%	0.78	12.50%	8.60%	10.60%	11.07%
Xcel Energy Inc.	XEL	3.90%	0.75	12.50%	8.60%	10.33%	10.87%
Mean						10.81%	11.23%
Median						10.67%	11.13%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
[2] Source: Bloomberg Professional, based on 10-year weekly returns
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

Company	Ticker	[1] Current 30-day average of 30-year U.S. Treasury bond yield	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
ALLETE, Inc.	ALE	3.71%	0.79	12.50%	8.79%	10.61%	11.08%
Alliant Energy Corporation	LNT	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Ameren Corporation	AEE	3.71%	0.73	12.50%	8.79%	10.08%	10.68%
American Electric Power Company, Inc.	AEP	3.71%	0.68	12.50%	8.79%	9.64%	10.35%
Avista Corporation	AVA	3.71%	0.79	12.50%	8.79%	10.61%	11.08%
CMS Energy Corporation	CMS	3.71%	0.69	12.50%	8.79%	9.77%	10.45%
Duke Energy Corporation	DUK	3.71%	0.67	12.50%	8.79%	9.55%	10.29%
Entergy Corporation	ETR	3.71%	0.75	12.50%	8.79%	10.26%	10.82%
Evergy, Inc.	EVRG	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
IDACORP, Inc.	IDA	3.71%	0.73	12.50%	8.79%	10.12%	10.72%
NextEra Energy, Inc.	NEE	3.71%	0.73	12.50%	8.79%	10.12%	10.72%
NorthWestern Corporation	NWE	3.71%	0.75	12.50%	8.79%	10.26%	10.82%
OGE Energy Corporation	OGE	3.71%	0.93	12.50%	8.79%	11.88%	12.03%
Otter Tail Corporation	OTTR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Portland General Electric Company	POR	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Southern Company	SO	3.71%	0.66	12.50%	8.79%	9.46%	10.22%
Xcel Energy Inc.	XEL	3.71%	0.66	12.50%	8.79%	9.46%	10.22%
Mean						10.33%	10.87%
Median						10.26%	10.82%

Notes:
[1] Source: Bloomberg Professional, as of January 31, 2023
[2] RMP Exhibit 4.6
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

Company	Ticker	[1] Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2 2024)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
ALLETE, Inc.	ALE	3.82%	0.79	12.50%	8.68%	10.63%	11.10%
Alliant Energy Corporation	LNT	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Ameren Corporation	AEE	3.82%	0.73	12.50%	8.68%	10.11%	10.71%
American Electric Power Company, Inc.	AEP	3.82%	0.68	12.50%	8.68%	9.68%	10.38%
Avista Corporation	AVA	3.82%	0.79	12.50%	8.68%	10.63%	11.10%
CMS Energy Corporation	CMS	3.82%	0.69	12.50%	8.68%	9.81%	10.48%
Duke Energy Corporation	DUK	3.82%	0.67	12.50%	8.68%	9.59%	10.32%
Entergy Corporation	ETR	3.82%	0.75	12.50%	8.68%	10.28%	10.84%
Evergy, Inc.	EVRG	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
IDACORP, Inc.	IDA	3.82%	0.73	12.50%	8.68%	10.15%	10.74%
NextEra Energy, Inc.	NEE	3.82%	0.73	12.50%	8.68%	10.15%	10.74%
NorthWestern Corporation	NWE	3.82%	0.75	12.50%	8.68%	10.28%	10.84%
OGE Energy Corporation	OGE	3.82%	0.93	12.50%	8.68%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Portland General Electric Company	POR	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Southern Company	SO	3.82%	0.66	12.50%	8.68%	9.50%	10.25%
Xcel Energy Inc.	XEL	3.82%	0.66	12.50%	8.68%	9.50%	10.25%
Mean						10.36%	10.89%
Median						10.28%	10.84%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2023, at 2
[2] RMP Exhibit 4.6
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.90%	0.79	12.50%	8.60%	10.65%	11.11%
Alliant Energy Corporation	LNT	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Ameren Corporation	AEE	3.90%	0.73	12.50%	8.60%	10.13%	10.72%
American Electric Power Company, Inc.	AEP	3.90%	0.68	12.50%	8.60%	9.70%	10.40%
Avista Corporation	AVA	3.90%	0.79	12.50%	8.60%	10.65%	11.11%
CMS Energy Corporation	CMS	3.90%	0.69	12.50%	8.60%	9.83%	10.50%
Duke Energy Corporation	DUK	3.90%	0.67	12.50%	8.60%	9.62%	10.34%
Entergy Corporation	ETR	3.90%	0.75	12.50%	8.60%	10.30%	10.85%
Evergy, Inc.	EVRG	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
IDACORP, Inc.	IDA	3.90%	0.73	12.50%	8.60%	10.18%	10.76%
NextEra Energy, Inc.	NEE	3.90%	0.73	12.50%	8.60%	10.18%	10.76%
NorthWestern Corporation	NWE	3.90%	0.75	12.50%	8.60%	10.30%	10.85%
OGE Energy Corporation	OGE	3.90%	0.93	12.50%	8.60%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Portland General Electric Company	POR	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Southern Company	SO	3.90%	0.66	12.50%	8.60%	9.53%	10.27%
Xcel Energy Inc.	XEL	3.90%	0.66	12.50%	8.60%	9.53%	10.27%
Mean						10.38%	10.91%
Median						10.30%	10.85%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
[2] RMP Exhibit 4.6
[3] RMP Exhibit 4.7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Rocky Mountain Power
Exhibit 4.6
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Long-Term Average Beta

March 2023

HISTORICAL BETA - 2013 - 2022

Company	Ticker	[1] 12/31/2013	[2] 12/31/2014	[3] 12/31/2015	[4] 12/31/2016	[5] 12/31/2017	[6] 12/31/2018	[7] 12/31/2019	[8] 12/31/2020	[9] 12/31/2021	[10] 12/31/2022	[11] Average
ALLETE, Inc.	ALE	0.75	0.80	0.80	0.75	0.80	0.65	0.65	0.85	0.90	0.90	0.79
Alliant Energy Corporation	LNT	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.85	0.85	0.75
Ameren Corporation	AEE	0.80	0.75	0.75	0.65	0.70	0.55	0.55	0.85	0.80	0.85	0.73
American Electric Power Company, Inc.	AEP	0.70	0.70	0.70	0.65	0.65	0.55	0.55	0.75	0.75	0.75	0.68
Avista Corporation	AVA	0.75	0.80	0.80	0.70	0.75	0.65	0.60	0.95	0.95	0.90	0.79
CMS Energy Corporation	CMS	0.70	0.70	0.75	0.65	0.65	0.55	0.50	0.80	0.80	0.80	0.69
Duke Energy Corporation	DUK	0.65	0.60	0.65	0.60	0.60	0.50	0.50	0.85	0.85	0.85	0.67
Entergy Corporation	ETR	0.70	0.70	0.70	0.65	0.65	0.60	0.60	0.95	0.95	0.95	0.75
Evergy, Inc.	EVRG						NMF	NMF	1.00	0.95	0.90	0.95
IDACORP, Inc.	IDA	0.75	0.80	0.80	0.75	0.70	0.55	0.55	0.80	0.80	0.80	0.73
NextEra Energy, Inc.	NEE	0.70	0.70	0.75	0.65	0.65	0.55	0.55	0.90	0.90	0.95	0.73
NorthWestern Corporation	NWE	0.70	0.70	0.70	0.70	0.70	0.55	0.60	0.95	0.95	0.90	0.75
OGE Energy Corporation	OGE	0.85	0.90	0.95	0.90	0.95	0.85	0.75	1.10	1.05	1.00	0.93
Otter Tail Corporation	OTTR	0.95	0.90	0.85	0.85	0.90	0.75	0.70	0.85	0.90	0.85	0.85
Portland General Electric Company	POR	0.75	0.80	0.80	0.70	0.70	0.60	0.55	0.85	0.90	0.85	0.75
Southern Company	SO	0.55	0.55	0.60	0.55	0.55	0.50	0.50	0.90	0.95	0.90	0.66
Xcel Energy Inc.	XEL	0.65	0.65	0.65	0.60	0.60	0.50	0.50	0.80	0.80	0.80	0.66
Mean		0.73	0.74	0.75	0.69	0.70	0.59	0.58	0.88	0.89	0.87	0.75

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

Rocky Mountain Power
Exhibit 4.7
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Market Return

March 2023

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

[1] Estimated Weighted Average Dividend Yield	1.75%
[2] Estimated Weighted Average Long-Term Growth Rate	10.65%
[3] S&P 500 Estimated Required Market Return	12.50%

STANDARD AND POOR'S 500 INDEX

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	325.62	96.69	31,484.58	0.11%	4.92%	0.01%	3.50%	0.00%
Signature Bank/New York NY	SBNY	62.93	128.95	8,114.69	0.03%	2.17%	0.00%	14.50%	0.00%
American Express Co	AXP	743.00	174.93	129,972.99	0.46%	1.19%	0.01%	10.00%	0.05%
Verizon Communications Inc	VZ	4,200.00	41.57	174,594.00	0.62%	6.28%	0.04%	2.50%	0.02%
Broadcom Inc	AVGO	417.89	585.01	244,467.49		3.15%		30.00%	
Boeing Co/The	BA	598.24	213.00	127,425.12					
Caterpillar Inc	CAT	520.41	252.29	131,293.99	0.46%	1.90%	0.01%	11.00%	0.05%
JPMorgan Chase & Co	JPM	2,933.21	139.96	410,531.37	1.45%	2.86%	0.04%	5.00%	0.07%
Chevron Corp	CVX	1,901.00	174.02	330,812.02		3.47%		44.00%	
Coca-Cola Co/The	KO	4,324.51	61.32	265,179.14	0.94%	2.87%	0.03%	8.00%	0.07%
AbbVie Inc	ABBV	1,768.48	147.75	261,293.07	0.92%	4.01%	0.04%	4.50%	0.04%
Walt Disney Co/The	DIS	1,823.59	108.49	197,841.50				86.00%	
FleetCor Technologies Inc	FLT	73.75	208.81	15,400.16	0.05%			10.50%	0.01%
Extra Space Storage Inc	EXR	133.92	157.83	21,136.91	0.07%	3.80%	0.00%	4.00%	0.00%
Exxon Mobil Corp	XOM	4,118.29	116.01	477,763.17		3.14%			
Phillips 66	PSX	472.63	100.27	47,390.81		3.87%		85.00%	
General Electric Co	GE	1,092.67	80.48	87,937.92		0.40%		21.00%	
HP Inc	HPQ	982.15	29.14	28,619.73	0.10%	3.60%	0.00%	10.50%	0.01%
Home Depot Inc/The	HD	1,019.19	324.17	330,389.53	1.17%	2.34%	0.03%	9.00%	0.11%
Monolithic Power Systems Inc	MPWR	46.94	426.56	20,023.58		0.70%		23.50%	
International Business Machines Corp	IBM	904.13	134.73	121,812.90	0.43%	4.90%	0.02%	3.00%	0.01%
Johnson & Johnson	JNJ	2,614.48	163.42	427,258.98	1.51%	2.77%	0.04%	8.00%	0.12%
McDonald's Corp	MCD	732.42	267.40	195,850.18	0.69%	2.27%	0.02%	10.50%	0.07%
Merck & Co Inc	MRK	2,535.40	107.41	272,326.88	0.96%	2.72%	0.03%	8.00%	0.08%
3M Co	MMM	552.74	115.08	63,609.66	0.22%	5.18%	0.01%	7.50%	0.02%
American Water Works Co Inc	AWK	181.83	156.49	28,454.26	0.10%	1.67%	0.00%	3.00%	0.00%
Bank of America Corp	BAC	7,996.78	35.48	283,725.68	1.00%	2.48%	0.02%	8.50%	0.09%
Pfizer Inc	PFE	5,613.32	44.16	247,883.99	0.88%	3.71%	0.03%	6.50%	0.06%
Procter & Gamble Co/The	PG	2,359.14	142.38	335,894.92	1.19%	2.57%	0.03%	6.50%	0.08%
AT&T Inc	T	7,128.00	20.37	145,197.36	0.51%	5.45%	0.03%	1.00%	0.01%
Travelers Cos Inc/The	TRV	232.10	191.12	44,358.95	0.16%	1.95%	0.00%	6.50%	0.01%
Raytheon Technologies Corp	RTX	1,470.06	99.85	146,785.59	0.52%	2.20%	0.01%	7.00%	0.04%
Analog Devices Inc	ADI	509.30	171.47	87,328.99	0.31%	1.77%	0.01%	14.00%	0.04%
Walmart Inc	WMT	2,696.80	143.87	387,988.62	1.37%	1.56%	0.02%	7.50%	0.10%
Cisco Systems Inc	CSCO	4,108.10	48.67	199,941.37	0.71%	3.12%	0.02%	9.00%	0.06%
Intel Corp	INTC	4,137.00	28.26	116,911.62		5.17%			
General Motors Co	GM	1,394.64	39.32	54,837.13	0.19%	0.92%	0.00%	10.00%	0.02%
Microsoft Corp	MSFT	7,443.80	247.81	1,844,649.07	6.52%	1.10%	0.07%	15.00%	0.98%
Dollar General Corp	DG	223.58	233.60	52,227.12	0.18%	0.94%	0.00%	10.00%	0.02%
Cigna Corp	CI	305.74	316.67	96,818.37	0.34%	1.41%	0.00%	10.00%	0.03%
Kinder Morgan Inc	KMI	2,247.74	18.30	41,133.68	0.15%	6.07%	0.01%	19.00%	0.03%
Citigroup Inc	C	1,937.00	52.22	101,150.14	0.36%	3.91%	0.01%	3.50%	0.01%
American International Group Inc	AIG	742.98	63.22	46,971.20	0.17%	2.02%	0.00%	6.50%	0.01%
Altria Group Inc	MO	1,792.17	45.04	80,719.47	0.29%	8.35%	0.02%	6.00%	0.02%
HCA Healthcare Inc	HCA	282.72	255.07	72,112.63	0.25%	0.94%	0.00%	12.50%	0.03%
International Paper Co	IP	355.67	41.82	14,874.12	0.05%	4.42%	0.00%	13.50%	0.01%
Hewlett Packard Enterprise Co	HPE	1,281.82	16.13	20,675.71	0.07%	2.98%	0.00%	7.50%	0.01%
Abbott Laboratories	ABT	1,743.57	110.55	192,752.11	0.68%	1.85%	0.01%	7.00%	0.05%
Aflac Inc	AFL	621.79	73.50	45,701.49	0.16%	2.29%	0.00%	9.00%	0.01%
Air Products and Chemicals Inc	APD	221.99	320.51	71,149.37	0.25%	2.18%	0.01%	11.50%	0.03%
Royal Caribbean Cruises Ltd	RCL	255.18	64.94	16,571.52					
Hess Corp	HES	308.31	150.16	46,295.53		1.00%			
Archer-Daniels-Midland Co	ADM	549.33	82.85	45,512.32	0.16%	2.17%	0.00%	13.00%	0.02%
Automatic Data Processing Inc	ADP	414.40	225.81	93,575.66	0.33%	2.21%	0.01%	10.00%	0.03%
Verisk Analytics Inc	VRSK	156.39	181.79	28,429.77	0.10%	0.68%	0.00%	13.00%	0.01%
AutoZone Inc	AZO	18.77	2,438.85	45,767.46	0.16%			14.50%	0.02%
Avery Dennison Corp	AVY	80.97	189.44	15,338.77	0.05%	1.58%	0.00%	12.00%	0.01%
Enphase Energy Inc	ENPH	135.92	221.38	30,090.86				26.50%	
MSCI Inc	MSCI	79.96	531.56	42,502.47	0.15%	1.04%	0.00%	14.50%	0.02%
Ball Corp	BALL	313.92	58.24	18,282.70		1.37%		21.50%	
Ceridian HCM Holding Inc	CDAY	153.60	72.28	11,101.85					
Carrier Global Corp	CARR	836.26	45.53	38,075.01		1.63%			
Bank of New York Mellon Corp/The	BK	808.45	50.57	40,883.06	0.14%	2.93%	0.00%	6.00%	0.01%
Otis Worldwide Corp	OTIS	416.59	82.23	34,255.87		1.41%			
Baxter International Inc	BAX	504.12	45.69	23,033.29	0.08%	2.54%	0.00%	8.00%	0.01%
Becton Dickinson and Co	BDX	284.27	252.22	71,698.07	0.25%	1.44%	0.00%	4.50%	0.01%
Berkshire Hathaway Inc	BRK/B	1,301.98	311.52	405,593.12	1.43%			6.00%	0.09%
Best Buy Co Inc	BBY	221.26	88.72	19,630.54	0.07%	3.97%	0.00%	4.00%	0.00%
Boston Scientific Corp	BSX	1,432.31	46.25	66,244.38	0.23%			17.00%	0.04%
Bristol-Myers Squibb Co	BMY	2,126.16	72.65	154,465.52		3.14%			
Brown-Forman Corp	BF/B	309.95	66.58	20,636.60	0.07%	1.23%	0.00%	14.50%	0.01%
Coterra Energy Inc	CTRA	788.47	25.03	19,735.33		10.87%			
Campbell Soup Co	CPB	299.47	51.93	15,551.37	0.05%	2.85%	0.00%	5.00%	0.00%
Hilton Worldwide Holdings Inc	HLT	270.46	145.09	39,240.46		0.41%			
Carnival Corp	CCL	1,112.71	10.82	12,039.49					
Qorvo Inc	QRVO	101.39	108.66	11,016.93	0.04%			14.50%	0.01%
Lumen Technologies Inc	LUMN	1,034.58	5.25	5,431.56	0.02%			1.50%	0.00%
UDR Inc	UDR	325.54	42.59	13,864.83	0.05%	3.57%	0.00%	10.50%	0.01%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Clorox Co/The	CLX	123.39	144.69	17,852.58	0.06%	3.26%	0.00%	7.50%	0.00%
Paycom Software Inc	PAYC	60.02	323.94	19,442.88				21.00%	
CMS Energy Corp	CMS	290.25	63.19	18,341.02	0.06%	2.91%	0.00%	6.50%	0.00%
Newell Brands Inc	NWL	413.60	15.96	6,601.06		5.76%			
Colgate-Palmolive Co	CL	835.21	74.53	62,248.50	0.22%	2.52%	0.01%	6.50%	0.01%
EPAM Systems Inc	EPAM	57.51	332.65	19,131.70				20.50%	
Comerica Inc	CMA	131.00	73.31	9,603.61	0.03%	3.71%	0.00%	9.00%	0.00%
Conagra Brands Inc	CAG	476.62	37.19	17,725.61	0.06%	3.55%	0.00%	3.50%	0.00%
Consolidated Edison Inc	ED	354.86	95.31	33,821.99	0.12%	3.40%	0.00%	4.00%	0.00%
Corning Inc	GLW	845.81	34.61	29,273.52	0.10%	3.12%	0.00%	17.50%	0.02%
Cummins Inc	CMI	141.02	249.54	35,190.63	0.12%	2.52%	0.00%	8.50%	0.01%
Caesars Entertainment Inc	CZR	214.57	52.06	11,170.31					
Danaher Corp	DHR	728.30	264.38	192,547.95	0.68%	0.38%	0.00%	16.00%	0.11%
Target Corp	TGT	460.31	172.14	79,237.76	0.28%	2.51%	0.01%	12.00%	0.03%
Deere & Co	DE	297.16	422.84	125,649.87	0.44%	1.14%	0.01%	16.50%	0.07%
Dominion Energy Inc	D	833.28	63.64	53,029.62	0.19%	4.20%	0.01%	5.50%	0.01%
Dover Corp	DOV	140.35	151.83	21,309.95	0.08%	1.33%	0.00%	9.00%	0.01%
Alliant Energy Corp	LNT	251.02	54.03	13,562.72	0.05%	3.35%	0.00%	6.00%	0.00%
Steel Dynamics Inc	STLD	175.57	120.64	21,180.89	0.07%	1.13%	0.00%	2.00%	0.00%
Duke Energy Corp	DUK	770.00	102.45	78,886.50	0.28%	3.92%	0.01%	5.00%	0.01%
Regency Centers Corp	REG	171.12	66.63	11,401.93	0.04%	3.90%	0.00%	12.50%	0.01%
Eaton Corp PLC	ETN	397.70	162.21	64,510.92	0.23%	2.00%	0.00%	12.00%	0.03%
Ecolab Inc	ECL	284.83	154.83	44,099.92	0.16%	1.37%	0.00%	10.50%	0.02%
PerkinElmer Inc	PKI	126.32	137.53	17,372.24	0.06%	0.20%	0.00%	4.00%	0.00%
Emerson Electric Co	EMR	582.30	90.22	52,535.38	0.19%	2.31%	0.00%	9.50%	0.02%
EOG Resources Inc	EOG	587.39	132.25	77,682.20		2.50%		26.00%	
Aon PLC	AON	206.85	318.68	65,919.91	0.23%	0.70%	0.00%	7.50%	0.02%
Entergy Corp	ETR	203.48	108.28	22,033.25	0.08%	3.95%	0.00%	4.00%	0.00%
Equifax Inc	EFX	122.44	222.20	27,206.83	0.10%	0.70%	0.00%	7.00%	0.01%
EQT Corp	EQT	367.05	32.67	11,991.39		1.84%			
IQVIA Holdings Inc	IQV	185.74	229.41	42,610.61	0.15%			14.50%	0.02%
Gartner Inc	IT	79.02	338.14	26,721.18	0.09%			18.00%	0.02%
FedEx Corp	FDX	252.40	193.86	48,929.68	0.17%	2.37%	0.00%	13.00%	0.02%
FMC Corp	FMC	125.97	133.13	16,769.85	0.06%	1.74%	0.00%	11.00%	0.01%
Brown & Brown Inc	BRO	283.20	58.56	16,584.19	0.06%	0.79%	0.00%	8.00%	0.00%
Ford Motor Co	F	3,949.64	13.51	53,359.66		4.44%		33.50%	
NextEra Energy Inc	NEE	1,987.16	74.63	148,302.05	0.52%	2.28%	0.01%	10.50%	0.06%
Franklin Resources Inc	BEN	500.36	31.20	15,611.17	0.06%	3.85%	0.00%	3.50%	0.00%
Garmin Ltd	GRMN	191.66	98.88	18,951.74	0.07%	2.95%	0.00%	6.00%	0.00%
Freeport-McMoRan Inc	FCX	1,429.33	44.62	63,776.57		1.34%		27.50%	
Dexcom Inc	DXCM	386.26	107.09	41,364.37					
General Dynamics Corp	GD	274.55	233.06	63,986.39	0.23%	2.16%	0.00%	9.00%	0.02%
General Mills Inc	GIS	589.61	78.36	46,201.92	0.16%	2.76%	0.00%	4.00%	0.01%
Genuine Parts Co	GPC	141.16	167.82	23,689.64	0.08%	2.13%	0.00%	9.00%	0.01%
Atmos Energy Corp	ATO	141.02	117.54	16,575.02	0.06%	2.52%	0.00%	7.50%	0.00%
WW Grainger Inc	GWW	50.53	589.48	29,785.83	0.11%	1.17%	0.00%	11.00%	0.01%
Halliburton Co	HAL	908.05	41.22	37,429.70		1.55%		32.50%	
L3Harris Technologies Inc	LHX	190.40	214.82	40,902.37	0.14%	2.09%	0.00%	18.00%	0.03%
Healthpeak Properties Inc	PEAK	537.54	27.48	14,771.60	0.05%	4.37%	0.00%	17.00%	0.01%
Catalent Inc	CTLT	179.96	53.55	9,637.07				21.00%	
Fortive Corp	FTV	353.81	68.03	24,069.56	0.09%	0.41%	0.00%	12.00%	0.01%
Hershey Co/The	HSY	146.97	224.60	33,009.24	0.12%	1.85%	0.00%	9.00%	0.01%
Synchrony Financial	SYF	438.20	36.73	16,095.09	0.06%	2.50%	0.00%	9.50%	0.01%
Hormel Foods Corp	HRL	546.42	45.31	24,758.47	0.09%	2.43%	0.00%	7.50%	0.01%
Arthur J Gallagher & Co	AJG	211.90	195.72	41,473.07	0.15%	1.12%	0.00%	18.50%	0.03%
Mondelez International Inc	MDLZ	1,365.62	65.44	89,366.11	0.32%	2.35%	0.01%	7.50%	0.02%
CenterPoint Energy Inc	CNP	629.43	30.12	18,958.49	0.07%	2.52%	0.00%	6.50%	0.00%
Humana Inc	HUM	126.60	511.70	64,781.22	0.23%	0.62%	0.00%	11.00%	0.03%
Willis Towers Watson PLC	WTW	108.24	254.19	27,513.02	0.10%	1.29%	0.00%	8.50%	0.01%
Illinois Tool Works Inc	ITW	307.19	236.04	72,508.18	0.26%	2.22%	0.01%	11.00%	0.03%
CDW Corp/DE	CDW	135.39	196.03	26,540.70	0.09%	1.20%	0.00%	8.50%	0.01%
Trane Technologies PLC	TT	230.31	179.12	41,252.59		1.50%			
Interpublic Group of Cos Inc/The	IPG	388.53	36.46	14,165.62	0.05%	3.18%	0.00%	10.00%	0.01%
International Flavors & Fragrances Inc	IFF	254.96	112.46	28,673.03	0.10%	2.88%	0.00%	7.50%	0.01%
Generac Holdings Inc	GNRC	63.36	120.60	7,640.73				23.50%	
NXP Semiconductors NV	NXPI	259.14	184.31	47,761.17	0.17%	2.20%	0.00%	12.00%	0.02%
Kellogg Co	K	341.28	68.58	23,405.05	0.08%	3.44%	0.00%	3.50%	0.00%
Broadridge Financial Solutions Inc	BR	117.66	150.36	17,690.61	0.06%	1.93%	0.00%	9.50%	0.01%
Kimberly-Clark Corp	KMB	337.49	130.01	43,877.33	0.16%	3.63%	0.01%	5.50%	0.01%
Kimco Realty Corp	KIM	618.46	22.46	13,890.63	0.05%	4.10%	0.00%	8.50%	0.00%
Oracle Corp	ORCL	2,696.25	88.46	238,510.54	0.84%	1.45%	0.01%	10.00%	0.08%
Kroger Co/The	KR	715.82	44.63	31,947.14	0.11%	2.33%	0.00%	6.50%	0.01%
Lennar Corp	LEN	253.54	102.40	25,962.39	0.09%	1.46%	0.00%	8.50%	0.01%
Eli Lilly & Co	LLY	950.18	344.15	327,003.76	1.16%	1.31%	0.02%	11.50%	0.13%
Bath & Body Works Inc	BBWI	228.42	46.01	10,509.37		1.74%		26.50%	
Charter Communications Inc	CHTR	155.67	384.31	59,826.31				23.00%	
Lincoln National Corp	LNC	169.22	35.43	5,995.29	0.02%	5.08%	0.00%	11.50%	0.00%
Loews Corp	L	237.43	61.48	14,597.01	0.05%	0.41%	0.00%	18.50%	0.01%
Lowe's Cos Inc	LOW	604.70	208.25	125,929.40	0.45%	2.02%	0.01%	12.50%	0.06%
IDEX Corp	IEX	75.42	239.68	18,076.91	0.06%	1.00%	0.00%	11.00%	0.01%
Marsh & McLennan Cos Inc	MMC	496.01	174.91	86,757.11	0.31%	1.35%	0.00%	11.00%	0.03%
Masco Corp	MAS	225.53	53.20	11,998.14	0.04%	2.11%	0.00%	8.00%	0.00%
S&P Global Inc	SPGI	325.80	374.94	122,155.45	0.43%	0.96%	0.00%	9.50%	0.04%
Medtronic PLC	MDT	1,330.18	83.69	111,322.76	0.39%	3.25%	0.01%	7.50%	0.03%
Viatris Inc	VTRS	1,212.69	12.16	14,746.25		3.95%			
CVS Health Corp	CVS	1,313.97	88.22	115,918.17	0.41%	2.74%	0.01%	6.00%	0.02%
DuPont de Nemours Inc	DD	496.79	73.95	36,737.55	0.13%	1.78%	0.00%	9.50%	0.01%
Micron Technology Inc	MU	1,091.18	60.30	65,797.97	0.23%	0.76%	0.00%	13.00%	0.03%
Motorola Solutions Inc	MSI	167.20	257.01	42,972.84	0.15%	1.37%	0.00%	10.50%	0.02%
Cboe Global Markets Inc	CBOE	106.08	122.88	13,035.36	0.05%	1.63%	0.00%	10.00%	0.00%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Laboratory Corp of America Holdings	LH	88.60	252.12	22,337.83	0.08%	1.14%	0.00%	1.50%	0.00%
Newmont Corp	NEM	793.74	52.93	42,012.61	0.15%	4.16%	0.01%	9.50%	0.01%
NIKE Inc	NKE	1,245.67	127.33	158,610.65		1.07%		24.00%	
NiSource Inc	NI	406.13	27.75	11,270.22	0.04%	3.60%	0.00%	9.50%	0.00%
Norfolk Southern Corp	NSC	228.08	245.81	56,063.36	0.20%	2.20%	0.00%	10.00%	0.02%
Principal Financial Group Inc	PFG	244.68	92.55	22,645.41	0.08%	2.77%	0.00%	6.50%	0.01%
Eversource Energy	ES	348.31	82.33	28,676.12	0.10%	3.10%	0.00%	6.50%	0.01%
Northrop Grumman Corp	NOC	153.05	448.04	68,573.87	0.24%	1.54%	0.00%	6.50%	0.02%
Wells Fargo & Co	WFC	3,833.80	46.87	179,690.21	0.64%	2.56%	0.02%	12.00%	0.08%
Nucor Corp	NUE	256.54	169.02	43,361.07	0.15%	1.21%	0.00%	2.50%	0.00%
Occidental Petroleum Corp	OXY	908.91	64.79	58,888.54		0.80%			
Omnicom Group Inc	OMC	203.92	85.99	17,534.74	0.06%	3.26%	0.00%	6.50%	0.00%
ONEOK Inc	OKE	446.95	68.48	30,607.41	0.11%	5.58%	0.01%	11.50%	0.01%
Raymond James Financial Inc	RJF	215.00	112.77	24,245.55	0.09%	1.49%	0.00%	15.00%	0.01%
PG&E Corp	PCG	1,987.70	15.90	31,604.43	0.11%			7.50%	0.01%
Parker-Hannifin Corp	PH	128.41	326.00	41,860.36	0.15%	1.63%	0.00%	15.50%	0.02%
Rollins Inc	ROL	492.47	36.40	17,925.98	0.06%	1.43%	0.00%	10.50%	0.01%
PPL Corp	PPL	736.32	29.60	21,795.01	0.08%	3.04%	0.00%	3.00%	0.00%
ConocoPhillips	COP	1,246.07	121.87	151,858.67	0.54%	0.57%	0.00%	20.00%	0.11%
PulteGroup Inc	PHM	227.82	56.89	12,960.68	0.05%	1.12%	0.00%	7.00%	0.00%
Pinnacle West Capital Corp	PNW	113.14	74.55	8,434.59	0.03%	4.64%	0.00%	0.50%	0.00%
PNC Financial Services Group Inc/The	PNC	401.00	165.43	66,337.43	0.23%	3.63%	0.01%	12.00%	0.03%
PPG Industries Inc	PPG	235.03	130.34	30,633.42	0.11%	1.90%	0.00%	4.00%	0.00%
Progressive Corp/The	PGR	584.90	136.35	79,751.12	0.28%	0.29%	0.00%	6.50%	0.02%
Public Service Enterprise Group Inc	PEG	498.95	61.93	30,899.97	0.11%	3.49%	0.00%	4.50%	0.00%
Robert Half International Inc	RHI	108.50	83.96	9,109.58	0.03%	2.05%	0.00%	10.50%	0.00%
Edison International	EIX	381.88	68.90	26,311.19	0.09%	4.28%	0.00%	16.00%	0.01%
Schlumberger Ltd	SLB	1,420.19	56.98	80,922.31		1.76%		28.50%	
Charles Schwab Corp/The	SCHW	1,815.85	77.42	140,582.80	0.50%	1.29%	0.01%	9.00%	0.04%
Sherwin-Williams Co/The	SHW	259.14	236.59	61,310.64	0.22%	1.01%	0.00%	11.50%	0.02%
West Pharmaceutical Services Inc	WST	74.03	265.60	19,663.16	0.07%	0.29%	0.00%	17.00%	0.01%
J M Smucker Co/The	SJM	106.64	152.80	16,294.44	0.06%	2.67%	0.00%	4.00%	0.00%
Snap-on Inc	SNA	53.16	248.73	13,221.24	0.05%	2.61%	0.00%	4.50%	0.00%
AMETEK Inc	AME	229.65	144.92	33,281.46	0.12%	0.61%	0.00%	10.00%	0.01%
Southern Co/The	SO	1,088.67	67.68	73,681.39	0.26%	4.02%	0.01%	6.50%	0.02%
Truist Financial Corp	TFC	1,326.83	49.39	65,532.08	0.23%	4.21%	0.01%	5.50%	0.01%
Southwest Airlines Co	LUV	593.75	35.77	21,238.51		2.01%			
W R Berkley Corp	WRB	264.55	70.14	18,555.26	0.07%	0.57%	0.00%	15.50%	0.01%
Stanley Black & Decker Inc	SWK	147.94	89.31	13,212.70	0.05%	3.58%	0.00%	6.00%	0.00%
Public Storage	PSA	175.64	304.34	53,453.67	0.19%	2.63%	0.00%	8.00%	0.02%
Arista Networks Inc	ANET	305.57	126.02	38,508.31	0.14%			10.00%	0.01%
Sysco Corp	SYY	506.77	77.46	39,254.25		2.53%		21.50%	
Corteva Inc	CTVA	718.60	64.45	46,313.77	0.16%	0.93%	0.00%	16.50%	0.03%
Texas Instruments Inc	TXN	906.00	177.21	160,552.26	0.57%	2.80%	0.02%	7.50%	0.04%
Textron Inc	TXT	208.77	72.85	15,208.97	0.05%	0.11%	0.00%	10.50%	0.01%
Thermo Fisher Scientific Inc	TMO	392.20	570.33	223,681.14	0.79%	0.21%	0.00%	11.00%	0.09%
TJX Cos Inc/The	TJX	1,155.50	81.86	94,589.56	0.33%	1.44%	0.00%	17.00%	0.06%
Globe Life Inc	GL	97.27	120.85	11,755.08	0.04%	0.69%	0.00%	8.50%	0.00%
Johnson Controls International plc	JCI	687.21	69.57	47,809.48	0.17%	2.01%	0.00%	12.50%	0.02%
Ulta Beauty Inc	ULTA	50.88	513.96	26,150.80	0.09%			16.50%	0.02%
Union Pacific Corp	UNP	614.80	204.19	125,536.22	0.44%	2.55%	0.01%	9.50%	0.04%
Keysight Technologies Inc	KEYS	178.34	179.35	31,986.00	0.11%			13.00%	0.01%
UnitedHealth Group Inc	UNH	934.35	499.19	466,417.68	1.65%	1.32%	0.02%	12.00%	0.20%
Marathon Oil Corp	MRO	635.07	27.47	17,445.32		1.46%			
Bio-Rad Laboratories Inc	BIO	24.75	467.46	11,569.17	0.04%			11.50%	0.00%
Ventas Inc	VTR	399.72	51.81	20,709.39	0.07%	3.47%	0.00%	10.50%	0.01%
VF Corp	VFC	388.57	30.94	12,022.23	0.04%	6.59%	0.00%	9.00%	0.00%
Vulcan Materials Co	VMC	132.91	183.33	24,365.84	0.09%	0.87%	0.00%	8.50%	0.01%
Weyerhaeuser Co	WY	732.79	34.43	25,230.10	0.09%	2.09%	0.00%	7.00%	0.01%
Whirlpool Corp	WHR	54.00	155.59	8,401.86	0.03%	4.50%	0.00%	6.00%	0.00%
Williams Cos Inc/The	WMB	1,218.34	32.24	39,279.28	0.14%	5.55%	0.01%	12.00%	0.02%
Constellation Energy Corp	CEG	326.66	85.36	27,884.04		0.66%			
WEC Energy Group Inc	WEC	315.44	93.99	29,647.74	0.10%	3.32%	0.00%	6.00%	0.01%
Adobe Inc	ADBE	457.80	370.34	169,541.65	0.60%			13.00%	0.08%
AES Corp/The	AES	667.95	27.41	18,308.51	0.06%	2.42%	0.00%	14.00%	0.01%
Amgen Inc	AMGN	533.58	252.40	134,675.34	0.48%	3.38%	0.02%	5.50%	0.03%
Apple Inc	AAPL	15,836.21	144.29	2,285,007.17	8.08%	0.64%	0.05%	13.50%	1.09%
Autodesk Inc	ADSK	215.77	215.16	46,424.43	0.16%			14.00%	0.02%
Cintas Corp	CTAS	101.62	443.74	45,092.86	0.16%	1.04%	0.00%	14.00%	0.02%
Comcast Corp	CMCSA	4,313.96	39.35	169,754.48	0.60%	2.95%	0.02%	9.00%	0.05%
Molson Coors Beverage Co	TAP	200.15	52.58	10,523.62		2.89%		49.50%	
KLA Corp	KLAC	138.48	392.48	54,350.63	0.19%	1.32%	0.00%	20.00%	0.04%
Marriott International Inc/MD	MAR	316.54	174.18	55,134.94	0.19%	0.92%	0.00%	17.50%	0.03%
McCormick & Co Inc/MD	MKC	250.72	75.12	18,834.16	0.07%	2.08%	0.00%	4.50%	0.00%
PACCAR Inc	PCAR	348.00	109.31	38,039.88	0.13%	0.91%	0.00%	5.00%	0.01%
Costco Wholesale Corp	COST	443.73	511.14	226,807.64	0.80%	0.70%	0.01%	10.50%	0.08%
First Republic Bank/CA	FRC	182.93	140.88	25,770.47	0.09%	0.77%	0.00%	11.50%	0.01%
Stryker Corp	SYK	378.43	253.81	96,049.32	0.34%	1.18%	0.00%	8.50%	0.03%
Tyson Foods Inc	TSN	287.82	65.75	18,923.90	0.07%	2.92%	0.00%	6.00%	0.00%
Lamb Weston Holdings Inc	LW	143.87	99.89	14,371.27	0.05%	1.12%	0.00%	11.50%	0.01%
Applied Materials Inc	AMAT	843.08	111.49	93,994.77	0.33%	0.93%	0.00%	13.50%	0.04%
American Airlines Group Inc	AAL	649.90	16.14	10,489.40					
Cardinal Health Inc	CAH	262.13	77.25	20,249.85	0.07%	2.57%	0.00%	5.00%	0.00%
Cincinnati Financial Corp	CINF	157.18	113.15	17,785.37	0.06%	2.65%	0.00%	9.00%	0.01%
Paramount Global	PARA	608.47	23.16	14,092.17	0.05%	4.15%	0.00%	4.50%	0.00%
DR Horton Inc	DHI	343.39	98.69	33,889.46	0.12%	1.01%	0.00%	0.50%	0.00%
Electronic Arts Inc	EA	276.08	128.68	35,525.97	0.13%	0.59%	0.00%	13.00%	0.02%
Expeditors International of Washington Inc	EXPD	159.14	108.15	17,210.56	0.06%	1.24%	0.00%	10.00%	0.01%
Fastenal Co	FAST	570.81	50.20	28,654.76	0.10%	2.79%	0.00%	8.50%	0.01%
M&T Bank Corp	MTB	172.61	156.00	26,927.63	0.10%	3.08%	0.00%	9.00%	0.01%

STANDARD AND POOR'S 500 INDEX

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Xcel Energy Inc	XEL	547.25	68.77	37,634.24	0.13%	2.84%	0.00%	6.00%	0.01%
Fiserv Inc	FISV	635.03	106.68	67,744.79	0.24%			11.00%	0.03%
Fifth Third Bancorp	FITB	683.39	36.29	24,800.08	0.09%	3.64%	0.00%	9.50%	0.01%
Gilead Sciences Inc	GILD	1,254.24	83.94	105,281.24	0.37%	3.48%	0.01%	12.00%	0.04%
Hasbro Inc	HAS	138.11	59.17	8,172.21	0.03%	4.73%	0.00%	7.50%	0.00%
Huntington Bancshares Inc/OH	HBAN	1,442.73	15.17	21,886.27	0.08%	4.09%	0.00%	12.50%	0.01%
Welltower Inc	WELL	472.52	75.04	35,457.98	0.13%	3.25%	0.00%	2.50%	0.00%
Biogen Inc	BIIB	144.00	290.90	41,889.89				-10.50%	
Northern Trust Corp	NTRS	208.89	96.97	20,256.45	0.07%	3.09%	0.00%	8.00%	0.01%
Packaging Corp of America	PKG	92.53	142.70	13,204.60	0.05%	3.50%	0.00%	11.00%	0.01%
Paychex Inc	PAYX	360.47	115.86	41,763.71	0.15%	2.73%	0.00%	10.50%	0.02%
QUALCOMM Inc	QCOM	1,117.19	133.21	148,821.15	0.53%	2.25%	0.01%	18.00%	0.09%
Roper Technologies Inc	ROP	106.05	426.75	45,257.69	0.16%	0.64%	0.00%	3.50%	0.01%
Ross Stores Inc	ROST	344.37	118.19	40,701.21	0.14%	1.05%	0.00%	14.00%	0.02%
IDEXX Laboratories Inc	IDXX	82.82	480.50	39,793.57	0.14%			12.00%	0.02%
Starbucks Corp	SBUX	1,148.56	109.14	125,353.73	0.44%	1.94%	0.01%	16.00%	0.07%
KeyCorp	KEY	933.33	19.19	17,910.51	0.06%	4.27%	0.00%	7.50%	0.00%
Fox Corp	FOXA	302.48	33.94	10,266.00	0.04%	1.47%	0.00%	12.00%	0.00%
Fox Corp	FOX	240.22	31.70	7,614.94		1.58%			
State Street Corp	STT	349.02	91.33	31,876.36	0.11%	2.76%	0.00%	8.50%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	421.40	15.21	6,409.43					
US Bancorp	USB	1,531.00	49.80	76,243.80	0.27%	3.86%	0.01%	6.00%	0.02%
A O Smith Corp	AOS	126.87	67.70	8,589.10	0.03%	1.77%	0.00%	11.50%	0.00%
Gen Digital Inc	GEN	651.36	23.01	14,987.79	0.05%	2.17%	0.00%	10.50%	0.01%
T Rowe Price Group Inc	TROW	224.30	116.47	26,124.22	0.09%	4.12%	0.00%	4.50%	0.00%
Waste Management Inc	WM	410.48	154.73	63,513.11	0.22%	1.68%	0.00%	6.50%	0.01%
Constellation Brands Inc	STZ	184.50	231.52	42,714.98	0.15%	1.38%	0.00%	6.00%	0.01%
DENTSPLY SIRONA Inc	XRAY	214.91	36.83	7,915.21	0.03%	1.36%	0.00%	12.00%	0.00%
Zions Bancorp NA	ZION	148.66	53.16	7,902.98	0.03%	3.09%	0.00%	6.50%	0.00%
Alaska Air Group Inc	ALK	127.53	51.34	6,547.54					
Invesco Ltd	IVZ	454.80	18.51	8,418.35	0.03%	4.05%	0.00%	10.00%	0.00%
Linde PLC	LIN	492.46	330.94	162,973.72	0.58%	1.41%	0.01%	12.00%	0.07%
Intuit Inc	INTU	280.93	422.67	118,738.57	0.42%	0.74%	0.00%	16.50%	0.07%
Morgan Stanley	MS	1,690.11	97.33	164,498.31	0.58%	3.19%	0.02%	8.50%	0.05%
Microchip Technology Inc	MCHP	550.01	77.62	42,691.70	0.15%	1.69%	0.00%	10.00%	0.02%
Chubb Ltd	CB	415.05	227.49	94,419.72	0.33%	1.46%	0.00%	14.50%	0.05%
Hologic Inc	HOLX	246.55	81.37	20,061.85				25.00%	
Citizens Financial Group Inc	CFG	492.49	43.32	21,334.71	0.08%	3.88%	0.00%	8.00%	0.01%
O'Reilly Automotive Inc	ORLY	62.58	792.35	49,582.09	0.18%			13.00%	0.02%
Allstate Corp/The	ALL	265.21	128.47	34,071.53	0.12%	2.65%	0.00%	2.50%	0.00%
Equity Residential	EQR	377.92	63.65	24,054.54		3.93%		-6.00%	
BorgWarner Inc	BWA	234.15	47.28	11,070.80	0.04%	1.44%	0.00%	9.50%	0.00%
Keurig Dr Pepper Inc	KDP	1,416.25	35.28	49,965.34	0.18%	2.27%	0.00%	11.50%	0.02%
Organon & Co	OGN	254.36	30.13	7,663.99		3.72%			
Host Hotels & Resorts Inc	HST	715.03	18.85	13,478.28		2.55%		59.50%	
Incyte Corp	INCY	222.48	85.14	18,941.52				25.50%	
Simon Property Group Inc	SPG	326.95	128.46	41,999.48	0.15%	5.60%	0.01%	3.00%	0.00%
Eastman Chemical Co	EMN	119.99	88.17	10,579.52	0.04%	3.58%	0.00%	7.00%	0.00%
AvalonBay Communities Inc	AVB	139.90	177.44	24,823.32	0.09%	3.58%	0.00%	9.00%	0.01%
Prudential Financial Inc	PRU	368.00	104.94	38,617.92	0.14%	4.57%	0.01%	5.00%	0.01%
United Parcel Service Inc	UPS	729.82	185.23	135,184.74	0.48%	3.50%	0.02%	11.50%	0.05%
Walgreens Boots Alliance Inc	WBA	862.50	36.86	31,791.90	0.11%	5.21%	0.01%	3.00%	0.00%
STERIS PLC	STE	99.82	206.51	20,614.45	0.07%	0.91%	0.00%	10.00%	0.01%
McKesson Corp	MCK	141.79	378.68	53,694.17	0.19%	0.57%	0.00%	10.00%	0.02%
Lockheed Martin Corp	LMT	255.30	463.26	118,268.89	0.42%	2.59%	0.01%	8.00%	0.03%
AmerisourceBergen Corp	ABC	202.24	168.96	34,169.79	0.12%	1.15%	0.00%	8.50%	0.01%
Capital One Financial Corp	COF	381.30	119.00	45,374.70		2.02%			
Waters Corp	WAT	59.41	328.58	19,520.28	0.07%			6.00%	0.00%
Nordson Corp	NDSN	57.18	243.30	13,911.65	0.05%	1.07%	0.00%	12.00%	0.01%
Dollar Tree Inc	DLTR	221.18	150.18	33,217.41	0.12%			12.00%	0.01%
Darden Restaurants Inc	DRI	121.71	147.97	18,008.69		3.27%		21.50%	
Evergy Inc	EVRG	229.48	62.65	14,376.80	0.05%	3.91%	0.00%	7.50%	0.00%
Match Group Inc	MTCH	279.31	54.12	15,116.04				21.00%	
Domino's Pizza Inc	DPZ	35.40	353.00	12,495.85	0.04%	1.25%	0.00%	14.00%	0.01%
NVR Inc	NVR	3.20	5,270.00	16,842.92	0.06%			5.50%	0.00%
NetApp Inc	NTAP	215.57	66.23	14,277.40	0.05%	3.02%	0.00%	8.50%	0.00%
DXC Technology Co	DXC	230.07	28.73	6,609.77	0.02%			12.00%	0.00%
Old Dominion Freight Line Inc	ODFL	110.48	333.24	36,817.02	0.13%	0.36%	0.00%	11.50%	0.01%
DaVita Inc	DVA	90.10	82.39	7,423.34	0.03%			8.50%	0.00%
Hartford Financial Services Group Inc/The	HIG	318.10	77.61	24,687.66	0.09%	2.19%	0.00%	6.50%	0.01%
Iron Mountain Inc	IRM	290.71	54.58	15,867.17	0.06%	4.53%	0.00%	11.00%	0.01%
Estee Lauder Cos Inc/The	EL	231.27	277.08	64,080.29	0.23%	0.95%	0.00%	14.00%	0.03%
Cadence Design Systems Inc	CDNS	274.32	182.83	50,153.19	0.18%			12.00%	0.02%
Tyler Technologies Inc	TYL	41.64	322.77	13,440.14	0.05%			12.00%	0.01%
Universal Health Services Inc	UHS	64.16	148.21	9,508.71	0.03%	0.54%	0.00%	7.00%	0.00%
Skyworks Solutions Inc	SWKS	160.16	109.67	17,564.86	0.06%	2.26%	0.00%	9.00%	0.01%
Quest Diagnostics Inc	DGX	113.89	148.48	16,909.94	0.06%	1.78%	0.00%	3.50%	0.00%
Activision Blizzard Inc	ATVI	782.63	76.57	59,925.60	0.21%	0.61%	0.00%	11.50%	0.02%
Rockwell Automation Inc	ROK	114.78	282.03	32,371.97	0.11%	1.67%	0.00%	9.50%	0.01%
Kraft Heinz Co/The	KHC	1,224.93	40.53	49,646.41	0.18%	3.95%	0.01%	6.50%	0.01%
American Tower Corp	AMT	465.61	223.39	104,011.72	0.37%	2.79%	0.01%	9.00%	0.03%
Regeneron Pharmaceuticals Inc	REGN	107.08	758.47	81,220.00	0.29%			3.00%	0.01%
Amazon.com Inc	AMZN	10,201.65	103.13	1,052,096.58				26.50%	
Jack Henry & Associates Inc	JKHY	72.95	180.09	13,137.39	0.05%	1.09%	0.00%	8.50%	0.00%
Ralph Lauren Corp	RL	41.09	123.85	5,089.12	0.02%	2.42%	0.00%	12.00%	0.00%
Boston Properties Inc	BXP	156.76	74.54	11,684.52		5.26%		-1.00%	
Amphenol Corp	APH	595.10	79.77	47,470.73	0.17%	1.05%	0.00%	13.00%	0.02%
Howmet Aerospace Inc	HWM	413.71	40.69	16,833.94	0.06%	0.39%	0.00%	12.00%	0.01%
Pioneer Natural Resources Co	PXD	237.60	230.35	54,730.93		9.92%		21.00%	
Valero Energy Corp	VLO	385.52	140.03	53,984.79	0.19%	2.91%	0.01%	11.00%	0.02%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Synopsys Inc	SNPS	152.42	353.75	53,917.51	0.19%			12.50%	0.02%
Etsy Inc	ETSY	125.69	137.58	17,292.16				24.50%	
CH Robinson Worldwide Inc	CHRW	117.71	100.17	11,790.91	0.04%	2.44%	0.00%	8.50%	0.00%
Accenture PLC	ACN	658.39	279.05	183,723.45	0.65%	1.61%	0.01%	12.50%	0.08%
TransDigm Group Inc	TDG	54.54	717.75	39,142.50	0.14%			19.50%	0.03%
Yum! Brands Inc	YUM	281.69	130.51	36,763.10	0.13%	1.75%	0.00%	10.50%	0.01%
Prologis Inc	PLD	923.08	129.28	119,335.65	0.42%	2.44%	0.01%	6.00%	0.03%
FirstEnergy Corp	FE	571.75	40.95	23,413.29	0.08%	3.81%	0.00%	3.00%	0.00%
VeriSign Inc	VRSN	106.02	218.05	23,116.79	0.08%			11.00%	0.01%
Quanta Services Inc	PWR	142.90	152.19	21,748.10	0.08%	0.21%	0.00%	16.50%	0.01%
Henry Schein Inc	HSIC	135.55	86.15	11,677.46	0.04%			7.00%	0.00%
Ameren Corp	AEE	258.37	86.87	22,444.69	0.08%	2.72%	0.00%	6.50%	0.01%
ANSYS Inc	ANSS	87.11	266.36	23,203.15	0.08%			8.50%	0.01%
FactSet Research Systems Inc	FDS	38.25	422.94	16,178.30	0.06%	0.84%	0.00%	10.50%	0.01%
NVIDIA Corp	NVDA	2,460.00	195.37	480,610.20		0.08%		23.00%	
Sealed Air Corp	SEE	144.66	54.76	7,921.47	0.03%	1.46%	0.00%	10.00%	0.00%
Cognizant Technology Solutions Corp	CTSH	513.92	66.75	34,304.23	0.12%	1.62%	0.00%	8.00%	0.01%
SVB Financial Group	SIVB	59.17	302.44	17,895.98	0.06%			8.50%	0.01%
Intuitive Surgical Inc	ISRG	353.39	245.69	86,823.16	0.31%			12.50%	0.04%
Take-Two Interactive Software Inc	TTWO	167.82	113.23	19,002.15	0.07%			3.00%	0.00%
Republic Services Inc	RSG	316.00	124.82	39,443.24	0.14%	1.59%	0.00%	12.50%	0.02%
eBay Inc	EBAY	542.66	49.50	26,861.62	0.09%	1.78%	0.00%	12.50%	0.01%
Goldman Sachs Group Inc/The	GS	334.92	365.81	122,515.62	0.43%	2.73%	0.01%	5.00%	0.02%
SBA Communications Corp	SBAC	107.97	297.53	32,123.12		0.95%		35.50%	
Sempra Energy	SRE	314.33	160.33	50,397.01	0.18%	2.86%	0.01%	7.50%	0.01%
Moody's Corp	MCO	183.20	322.75	59,127.80	0.21%	0.95%	0.00%	4.00%	0.01%
ON Semiconductor Corp	ON	432.42	73.45	31,761.54				22.50%	
Booking Holdings Inc	BKNG	38.79	2,434.10	94,416.30				22.00%	
F5 Inc	FFIV	60.12	147.66	8,877.02	0.03%			10.00%	0.00%
Akamai Technologies Inc	AKAM	157.24	88.95	13,986.68	0.05%			5.50%	0.00%
Charles River Laboratories International Inc	CRL	50.88	243.25	12,376.32	0.04%			12.00%	0.01%
MarketAxess Holdings Inc	MKTX	37.64	363.85	13,694.22	0.05%	0.79%	0.00%	10.00%	0.00%
Devon Energy Corp	DVN	653.70	63.24	41,339.99		8.54%		33.50%	
Bio-Techne Corp	TECH	156.97	79.66	12,504.23	0.04%	0.40%	0.00%	14.50%	0.01%
Alphabet Inc	GOOGL	5,973.00	98.84	590,371.32					
Teleflex Inc	TFX	46.91	243.42	11,417.86	0.04%	0.56%	0.00%	10.00%	0.00%
Netflix Inc	NFLX	445.35	353.86	157,590.49	0.56%			14.50%	0.08%
Allegion plc	ALLE	87.85	117.55	10,326.18	0.04%	1.40%	0.00%	11.00%	0.00%
Agilent Technologies Inc	A	296.07	152.08	45,026.63	0.16%	0.59%	0.00%	12.00%	0.02%
Warner Bros Discovery Inc	WBD	2,428.40	14.82	35,988.83					
Elevance Health Inc	ELV	238.83	499.99	119,411.61	0.42%	1.18%	0.00%	12.50%	0.05%
Trimble Inc	TRMB	246.63	58.06	14,319.05	0.05%			10.00%	0.01%
CME Group Inc	CME	359.73	176.66	63,549.02	0.22%	2.26%	0.01%	8.50%	0.02%
Juniper Networks Inc	JNPR	324.56	32.30	10,483.16	0.04%	2.72%	0.00%	10.50%	0.00%
BlackRock Inc	BLK	150.20	759.21	114,030.31	0.40%	2.63%	0.01%	8.50%	0.03%
DTE Energy Co	DTE	193.74	116.37	22,545.76	0.08%	3.27%	0.00%	4.50%	0.00%
Nasdaq Inc	NDAQ	491.28	60.19	29,570.14	0.10%	1.33%	0.00%	8.50%	0.01%
Celanese Corp	CE	108.43	123.20	13,358.33	0.05%	2.27%	0.00%	7.50%	0.00%
Philip Morris International Inc	PM	1,550.20	104.24	161,593.06	0.57%	4.87%	0.03%	5.00%	0.03%
Salesforce Inc	CRM	1,000.00	167.97	167,970.00	0.59%			19.50%	0.12%
Ingersoll Rand Inc	IR	404.93	56.00	22,675.86		0.14%			
Huntington Ingalls Industries Inc	HII	39.90	220.54	8,800.43	0.03%	2.25%	0.00%	10.00%	0.00%
MetLife Inc	MET	784.61	73.02	57,291.93	0.20%	2.74%	0.01%	5.00%	0.01%
Tapestry Inc	TPR	240.96	45.57	10,980.59	0.04%	2.63%	0.00%	13.50%	0.01%
CSX Corp	CSX	2,102.41	30.92	65,006.49	0.23%	1.29%	0.00%	10.50%	0.02%
Edwards Lifesciences Corp	EW	618.26	76.70	47,420.54	0.17%			11.00%	0.02%
Ameriprise Financial Inc	AMP	106.42	350.12	37,258.72	0.13%	1.43%	0.00%	13.50%	0.02%
Zebra Technologies Corp	ZBRA	51.63	316.18	16,324.37	0.06%			11.50%	0.01%
Zimmer Biomet Holdings Inc	ZBH	209.85	127.34	26,722.55	0.09%	0.75%	0.00%	5.50%	0.01%
CBRE Group Inc	CBRE	315.95	85.51	27,016.80	0.10%			8.50%	0.01%
Camden Property Trust	CPT	106.53	123.21	13,125.31	0.05%	3.05%	0.00%	3.50%	0.00%
Mastercard Inc	MA	948.00	370.60	351,328.80	1.24%	0.62%	0.01%	18.50%	0.23%
CarMax Inc	KMX	158.02	70.45	11,132.72				-3.00%	
Intercontinental Exchange Inc	ICE	558.55	107.55	60,072.27	0.21%	1.41%	0.00%	7.00%	0.01%
Fidelity National Information Services Inc	FIS	593.38	75.04	44,527.16		2.51%		52.00%	
Chipotle Mexican Grill Inc	CMG	27.72	1,646.38	45,639.30				23.00%	
Wynn Resorts Ltd	WYNN	113.31	103.64	11,743.86				27.00%	
Live Nation Entertainment Inc	LYV	230.88	80.49	18,583.53					
Assurant Inc	AIZ	52.83	132.59	7,004.86	0.02%	2.11%	0.00%	15.50%	0.00%
NRG Energy Inc	NRG	213.39	34.22	7,302.17		4.41%		-10.50%	
Regions Financial Corp	RF	934.45	23.54	21,996.86	0.08%	3.40%	0.00%	11.50%	0.01%
Monster Beverage Corp	MNST	521.74	104.08	54,303.12	0.19%			10.50%	0.02%
Mosaic Co/The	MOS	340.48	49.54	16,867.43		1.61%		38.00%	
Baker Hughes Co	BKR	1,001.47	31.74	31,786.59		2.39%			
Expedia Group Inc	EXPE	150.57	114.30	17,209.81					
CF Industries Holdings Inc	CF	196.19	84.70	16,617.21		1.89%		32.00%	
Leidos Holdings Inc	LDOS	136.69	98.84	13,510.44	0.05%	1.46%	0.00%	8.50%	0.00%
APA Corp	APA	321.51	44.33	14,252.63		2.26%			
Alphabet Inc	GOOG	6,086.00	99.87	607,808.82	2.15%			18.50%	0.40%
First Solar Inc	FSLR	106.61	177.60	18,933.23				20.50%	
TE Connectivity Ltd	TEL	316.46	127.15	40,237.51	0.14%	1.76%	0.00%	10.50%	0.01%
Cooper Cos Inc/The	COO	49.43	348.93	17,245.87	0.06%	0.02%	0.00%	14.00%	0.01%
Discover Financial Services	DFS	267.00	116.73	31,166.91	0.11%	2.06%	0.00%	8.50%	0.01%
Visa Inc	V	1,624.95	230.21	374,080.66	1.32%	0.78%	0.01%	13.50%	0.18%
Mid-America Apartment Communities Inc	MAA	115.48	166.72	19,252.33		3.36%		-14.50%	
Xylem Inc/NY	XYL	180.26	104.01	18,748.43	0.07%	1.15%	0.00%	9.00%	0.01%
Marathon Petroleum Corp	MPC	468.66	128.52	60,232.31		2.33%			
Tractor Supply Co	TSCO	110.46	227.99	25,184.46	0.09%	1.61%	0.00%	13.00%	0.01%
Advanced Micro Devices Inc	AMD	1,612.36	75.15	121,168.55				25.50%	
ResMed Inc	RMD	146.91	228.37	33,549.61	0.12%	0.77%	0.00%	8.50%	0.01%

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Mettler-Toledo International Inc	MTD	22.29	1,532.92	34,174.92	0.12%			13.50%	0.02%
VICI Properties Inc	VICI	1,033.99	34.18	35,341.88	0.12%	4.56%	0.01%	8.50%	0.01%
Copart Inc	CPRT	476.30	66.61	31,726.34	0.11%			7.00%	0.01%
Jacobs Solutions Inc	J	126.61	123.55	15,642.79	0.06%	0.84%	0.00%	12.00%	0.01%
Albemarle Corp	ALB	117.15	281.45	32,972.71		0.56%		21.50%	
Fortinet Inc	FTNT	781.24	52.34	40,889.89				21.50%	
Moderna Inc	MRNA	384.18	176.06	67,638.73				-2.50%	
Essex Property Trust Inc	ESS	64.75	226.07	14,638.94		3.89%		-4.00%	
CoStar Group Inc	CSGP	406.69	77.90	31,681.15	0.11%			13.00%	0.01%
Realty Income Corp	O	627.15	67.83	42,539.86	0.15%	4.40%	0.01%	6.00%	0.01%
Westrock Co	WRK	254.52	39.24	9,987.29	0.04%	2.80%	0.00%	15.00%	0.01%
Westinghouse Air Brake Technologies Corp	WAB	181.87	103.81	18,879.72	0.07%	0.58%	0.00%	9.50%	0.01%
Pool Corp	POOL	39.05	385.61	15,058.46	0.05%	1.04%	0.00%	14.00%	0.01%
Western Digital Corp	WDC	317.65	43.95	13,960.72	0.05%			6.50%	0.00%
PepsiCo Inc	PEP	1,377.71	171.02	235,615.79	0.83%	2.69%	0.02%	6.50%	0.05%
Diamondback Energy Inc	FANG	181.86	146.12	26,573.24		6.19%			
ServiceNow Inc	NOW	203.00	455.13	92,391.39				45.50%	
Church & Dwight Co Inc	CHD	243.87	80.86	19,719.17	0.07%	1.30%	0.00%	6.00%	0.00%
Federal Realty Investment Trust	FRT	81.21	111.53	9,057.24	0.03%	3.87%	0.00%	2.50%	0.00%
MGM Resorts International	MGM	384.02	41.41	15,902.27		0.02%		25.00%	
American Electric Power Co Inc	AEP	513.86	93.96	48,282.66	0.17%	3.53%	0.01%	6.50%	0.01%
SolarEdge Technologies Inc	SEDG	55.90	319.13	17,837.77				22.00%	
Invitation Homes Inc	INVH	611.41	32.50	19,870.83		2.71%			
PTC Inc	PTC	118.15	134.88	15,936.61				29.00%	
JB Hunt Transport Services Inc	JBHT	103.54	189.05	19,573.67	0.07%	0.89%	0.00%	11.50%	0.01%
Lam Research Corp	LRCX	134.94	500.10	67,481.49	0.24%	1.38%	0.00%	14.00%	0.03%
Mohawk Industries Inc	MHK	63.53	120.06	7,627.89	0.03%			10.00%	0.00%
Pentair PLC	PNR	164.50	55.38	9,109.90	0.03%	1.59%	0.00%	12.00%	0.00%
GE HealthCare Technologies Inc	GEHC	453.93	69.52	31,556.94					
Vertex Pharmaceuticals Inc	VRTX	256.69	323.10	82,936.86	0.29%			12.50%	0.04%
Amcor PLC	AMCR	1,489.02	12.06	17,957.58	0.06%	4.06%	0.00%	14.50%	0.01%
Meta Platforms Inc	META	2,255.32	148.97	335,975.17	1.19%			11.00%	0.13%
T-Mobile US Inc	TMUS	1,244.15	149.31	185,764.63	0.66%			16.50%	0.11%
United Rentals Inc	URI	69.36	440.95	30,584.29	0.11%	1.34%	0.00%	18.00%	0.02%
Honeywell International Inc	HON	672.32	208.48	140,165.69	0.50%	1.98%	0.01%	12.00%	0.06%
Alexandria Real Estate Equities Inc	ARE	173.09	160.74	27,822.00	0.10%	3.01%	0.00%	10.00%	0.01%
Delta Air Lines Inc	DAL	641.19	39.10	25,070.45					
Seagate Technology Holdings PLC	STX	206.48	67.78	13,995.49	0.05%	4.13%	0.00%	11.50%	0.01%
United Airlines Holdings Inc	UAL	326.73	48.96	15,996.65					
News Corp	NWS	193.28	20.44	3,950.56		0.98%			
Centene Corp	CNC	566.26	76.24	43,171.66	0.15%			10.00%	0.02%
Martin Marietta Materials Inc	MLM	62.09	359.64	22,330.41	0.08%	0.73%	0.00%	4.50%	0.00%
Teradyne Inc	TER	155.76	101.70	15,840.39	0.06%	0.43%	0.00%	11.50%	0.01%
PayPal Holdings Inc	PYPL	1,140.03	81.49	92,900.88	0.33%			12.00%	0.04%
Tesla Inc	TSLA	3,164.10	173.22	548,085.92				51.50%	
Arch Capital Group Ltd	ACGL	369.87	64.35	23,801.33	0.08%			19.50%	0.02%
DISH Network Corp	DISH	292.27	14.39	4,205.78				-1.50%	
Dow Inc	DOW	703.76	59.35	41,768.10	0.15%	4.72%	0.01%	15.00%	0.02%
Everest Re Group Ltd	RE	39.17	349.69	13,695.61	0.05%	1.89%	0.00%	9.50%	0.00%
Teledyne Technologies Inc	TDY	46.87	424.26	19,885.49	0.07%			11.50%	0.01%
News Corp	NWSA	382.35	20.26	7,746.43		0.99%			
Exelon Corp	EXC	991.76	42.19	41,842.23		3.20%			
Global Payments Inc	GPN	270.40	112.72	30,479.60	0.11%	0.89%	0.00%	17.00%	0.02%
Crown Castle Inc	CCI	433.00	148.11	64,131.63	0.23%	4.23%	0.01%	12.00%	0.03%
Aptiv PLC	APTV	270.95	113.09	30,641.74				26.00%	
Advance Auto Parts Inc	AAP	59.25	152.28	9,023.20	0.03%	3.94%	0.00%	12.00%	0.00%
Align Technology Inc	ALGN	78.11	269.73	21,069.15	0.07%			17.00%	0.01%
Illumina Inc	ILMN	157.30	214.20	33,693.66	0.12%			6.50%	0.01%
Targa Resources Corp	TRGP	226.38	75.02	16,982.65		1.87%			
LKQ Corp	LKQ	267.18	58.96	15,752.64	0.06%	1.87%	0.00%	13.00%	0.01%
Zoetis Inc	ZTS	466.07	165.49	77,130.26	0.27%	0.91%	0.00%	11.00%	0.03%
Equinix Inc	EQIX	92.54	738.13	68,305.07	0.24%	1.68%	0.00%	15.00%	0.04%
Digital Realty Trust Inc	DLR	287.52	114.62	32,955.77		4.26%		-3.50%	
Las Vegas Sands Corp	LVS	764.17	59.00	45,085.79					
Molina Healthcare Inc	MOH	58.40	311.83	18,210.87	0.06%			11.00%	0.01%

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

Rocky Mountain Power
Exhibit 4.8
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Bond Yield Plus Risk Premium

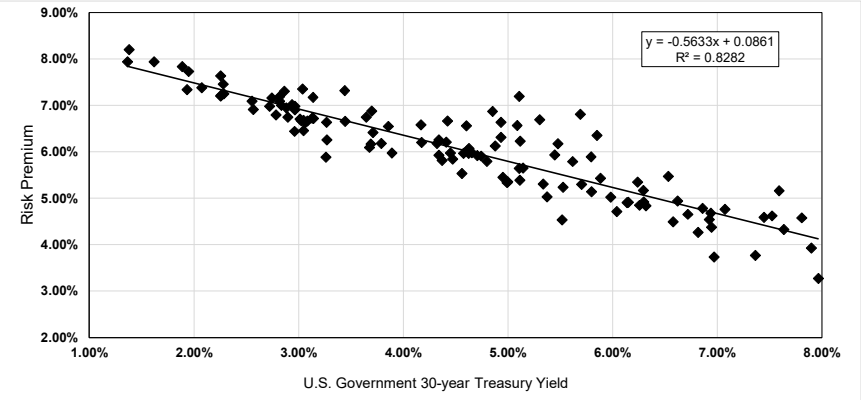
March 2023

BOND YIELD PLUS RISK PREMIUM

Quarter	[1] Average Authorized VI Electric ROE	[2] U.S. Govt. 30-year Treasury	[3] Risk Premium
1992.1	12.38%	7.81%	4.58%
1992.2	11.83%	7.90%	3.93%
1992.3	12.03%	7.45%	4.59%
1992.4	12.14%	7.52%	4.62%
1993.1	11.84%	7.07%	4.76%
1993.2	11.64%	6.86%	4.78%
1993.3	11.15%	6.32%	4.84%
1993.4	11.04%	6.14%	4.91%
1994.1	11.07%	6.58%	4.49%
1994.2	11.13%	7.36%	3.77%
1994.3	12.75%	7.59%	5.16%
1994.4	11.24%	7.96%	3.28%
1995.1	11.96%	7.63%	4.33%
1995.2	11.32%	6.94%	4.37%
1995.3	11.37%	6.72%	4.65%
1995.4	11.58%	6.24%	5.35%
1996.1	11.46%	6.29%	5.17%
1996.2	11.46%	6.92%	4.54%
1996.3	10.70%	6.97%	3.73%
1996.4	11.56%	6.62%	4.94%
1997.1	11.08%	6.82%	4.26%
1997.2	11.62%	6.94%	4.68%
1997.3	12.00%	6.53%	5.47%
1997.4	11.06%	6.15%	4.91%
1998.1	11.31%	5.88%	5.43%
1998.2	12.20%	5.85%	6.35%
1998.3	11.65%	5.48%	6.17%
1998.4	12.30%	5.11%	7.19%
1999.1	10.40%	5.37%	5.03%
1999.2	10.94%	5.80%	5.14%
1999.3	10.75%	6.04%	4.71%
1999.4	11.10%	6.26%	4.84%
2000.1	11.21%	6.30%	4.92%
2000.2	11.00%	5.98%	5.02%
2000.3	11.68%	5.79%	5.89%
2000.4	12.50%	5.69%	6.81%
2001.1	11.38%	5.45%	5.93%
2001.2	11.00%	5.70%	5.30%
2001.3	10.76%	5.53%	5.23%
2001.4	11.99%	5.30%	6.69%
2002.1	10.05%	5.52%	4.53%
2002.2	11.41%	5.62%	5.79%
2002.3	11.65%	5.09%	6.56%
2002.4	11.57%	4.93%	6.63%
2003.1	11.72%	4.85%	6.87%
2003.2	11.16%	4.60%	6.56%
2003.3	10.50%	5.11%	5.39%
2003.4	11.34%	5.11%	6.23%
2004.1	11.00%	4.88%	6.12%
2004.2	10.64%	5.34%	5.30%
2004.3	10.75%	5.11%	5.64%
2004.4	11.24%	4.93%	6.31%
2005.1	10.63%	4.71%	5.92%
2005.2	10.31%	4.47%	5.84%
2005.3	11.08%	4.42%	6.66%
2005.4	10.63%	4.65%	5.98%
2006.1	10.70%	4.63%	6.07%
2006.2	10.79%	5.14%	5.64%
2006.3	10.35%	5.00%	5.35%
2006.4	10.65%	4.74%	5.91%
2007.1	10.59%	4.80%	5.79%
2007.2	10.33%	4.99%	5.34%
2007.3	10.40%	4.95%	5.45%
2007.4	10.65%	4.61%	6.04%
2008.1	10.62%	4.41%	6.21%
2008.2	10.54%	4.57%	5.96%
2008.3	10.43%	4.45%	5.98%
2008.4	10.39%	3.64%	6.74%
2009.1	10.75%	3.44%	7.31%
2009.2	10.75%	4.17%	6.58%
2009.3	10.50%	4.32%	6.18%
2009.4	10.59%	4.34%	6.25%
2010.1	10.59%	4.62%	5.97%
2010.2	10.18%	4.37%	5.81%
2010.3	10.40%	3.86%	6.55%
2010.4	10.38%	4.17%	6.20%
2011.1	10.09%	4.56%	5.53%
2011.2	10.26%	4.34%	5.92%
2011.3	10.57%	3.70%	6.88%

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
Quarter	Average Authorized VI Electric ROE	U.S. Govt. 30-year Treasury	Risk Premium
2011.4	10.39%	3.04%	7.35%
2012.1	10.30%	3.14%	7.17%
2012.2	9.95%	2.94%	7.01%
2012.3	9.90%	2.74%	7.16%
2012.4	10.16%	2.86%	7.30%
2013.1	9.85%	3.13%	6.72%
2013.2	9.86%	3.14%	6.72%
2013.3	10.12%	3.71%	6.41%
2013.4	9.97%	3.79%	6.18%
2014.1	9.86%	3.69%	6.16%
2014.2	10.10%	3.44%	6.66%
2014.3	9.90%	3.27%	6.63%
2014.4	9.94%	2.96%	6.98%
2015.1	9.64%	2.55%	7.08%
2015.2	9.83%	2.88%	6.94%
2015.3	9.40%	2.96%	6.44%
2015.4	9.86%	2.96%	6.90%
2016.1	9.70%	2.72%	6.98%
2016.2	9.48%	2.57%	6.91%
2016.3	9.74%	2.28%	7.46%
2016.4	9.83%	2.83%	7.00%
2017.1	9.72%	3.05%	6.67%
2017.2	9.64%	2.90%	6.75%
2017.3	10.00%	2.82%	7.18%
2017.4	9.91%	2.82%	7.09%
2018.1	9.69%	3.02%	6.66%
2018.2	9.75%	3.09%	6.66%
2018.3	9.69%	3.06%	6.63%
2018.4	9.52%	3.27%	6.25%
2019.1	9.72%	3.01%	6.70%
2019.2	9.58%	2.78%	6.79%
2019.3	9.53%	2.29%	7.25%
2019.4	9.89%	2.26%	7.63%
2020.1	9.72%	1.89%	7.83%
2020.2	9.58%	1.38%	8.19%
2020.3	9.30%	1.37%	7.93%
2020.4	9.56%	1.62%	7.94%
2021.1	9.45%	2.07%	7.38%
2021.2	9.47%	2.26%	7.21%
2021.3	9.27%	1.93%	7.34%
2021.4	9.67%	1.95%	7.73%
2022.1	9.45%	2.25%	7.20%
2022.2	9.50%	3.05%	6.45%
2022.3	9.14%	3.26%	5.88%
2022.4	9.87%	3.89%	5.98%
2023.1	9.77%	3.68%	6.09%
AVERAGE	10.60%	4.55%	6.05%
MEDIAN	10.57%	4.60%	6.17%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.91004
R Square	0.82817
Adjusted R Square	0.82677
Standard Error	0.00426
Observations	125

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.010756	0.010756	592.823498	0.000000
Residual	123	0.002232	0.000018		
Total	124	0.012987			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0861	0.001119	76.96	0.00000	0.08391	0.08834	0.08391	0.08834
U.S. Govt. 30-year Treasury	(0.5633)	0.023134	(24.35)	0.00000	(0.60907)	(0.51748)	(0.60907)	(0.51748)

	U.S. Govt. 30-year Treasury	Risk Premium	ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	3.71%	6.52%	10.23%
Blue Chip Near-Term Projected Forecast (Q2 2023 - Q2 2024) [5]	3.82%	6.46%	10.28%
Blue Chip Long-Term Projected Forecast (2024-2028) [6]	3.90%	6.42%	10.32%
AVERAGE			10.28%

Notes:
[1] Source: Regulatory Research Associates, rate cases through January 31, 2023
[2] Source: S&P Capital IQ Pro, quarterly bond yields are the average of each trading day in the quarter
[3] Equals Column [1] − Column [2]
[4] RMP Exhibit 4.5
[5] Source: Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2022, at 2
[6] Source: Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
[7] See notes [4], [5] & [6]
[8] Equals 0.086126 + (-0.563277 x Column [7])
[9] Equals Column [7] + Column [8]

Rocky Mountain Power
Exhibit 4.9
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Capital Expenditures Analysis

March 2023

2023-2027 CAPITAL EXPENDITURES AS A PERCENT OF 2022 NET PLANT
($ Millions)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
		2022	2023	2024	2025	2026	2027	2023-27 Cap. Ex. / 2022 Net Plant
ALLETE, Inc.	ALE							
Capital Spending per Share			$5.95	$6.60	$7.25	$7.25	$7.25	
Common Shares Outstanding			58.00	59.50	61.00	61.00	61.00	
Capital Expenditures			$345.1	$392.7	$442.3	$442.3	$442.3	39.59%
Net Plant		$5,215.0						
Alliant Energy Corporation	LNT							
Capital Spending per Share			$5.90	$6.08	$6.25	$6.25	$6.25	
Common Shares Outstanding			251.50	252.25	253.00	253.00	253.00	
Capital Expenditures			$1,483.9	$1,532.4	$1,581.3	$1,581.3	$1,581.3	48.42%
Net Plant		$16,025.0						
Ameren Corporation	AEE							
Capital Spending per Share			$12.55	$12.78	$13.00	$13.00	$13.00	
Common Shares Outstanding			267.00	273.50	280.00	280.00	280.00	
Capital Expenditures			$3,350.9	$3,494.0	$3,640.0	$3,640.0	$3,640.0	56.89%
Net Plant		$31,225.0						
American Electric Power Company, Inc.	AEP							
Capital Spending per Share			$14.15	$14.08	$14.00	$14.00	$14.00	
Common Shares Outstanding			523.00	534.00	545.00	545.00	545.00	
Capital Expenditures			$7,400.5	$7,516.1	$7,630.0	$7,630.0	$7,630.0	53.51%
Net Plant		$70,650.0						
Avista Corporation	AVA							
Capital Spending per Share			$6.40	$6.20	$6.00	$6.00	$6.00	
Common Shares Outstanding			77.00	80.00	83.00	83.00	83.00	
Capital Expenditures			$492.8	$496.0	$498.0	$498.0	$498.0	45.56%
Net Plant		$5,450.0						
CMS Energy Corporation	CMS							
Capital Spending per Share			$10.00	$9.88	$9.75	$9.75	$9.75	
Common Shares Outstanding			290.00	295.00	300.00	300.00	300.00	
Capital Expenditures			$2,900.0	$2,913.1	$2,925.0	$2,925.0	$2,925.0	61.36%
Net Plant		$23,775.0						
Duke Energy Corporation	DUK							
Capital Spending per Share			$16.75	$16.75	$16.75	$16.75	$16.75	
Common Shares Outstanding			770.00	770.00	770.00	770.00	770.00	
Capital Expenditures			$12,897.5	$12,897.5	$12,897.5	$12,897.5	$12,897.5	54.78%
Net Plant		$117,725.0						
Entergy Corporation	ETR							
Capital Spending per Share			$19.00	$19.38	$19.75	$19.75	$19.75	
Common Shares Outstanding			209.00	211.50	214.00	214.00	214.00	
Capital Expenditures			$3,971.0	$4,097.8	$4,226.5	$4,226.5	$4,226.5	47.42%
Net Plant		$43,750.0						
Evergy, Inc.	EVRG							
Capital Spending per Share			$9.20	$9.35	$9.50	$9.50	$9.50	
Common Shares Outstanding			230.00	230.00	230.00	230.00	230.00	
Capital Expenditures			$2,116.0	$2,150.5	$2,185.0	$2,185.0	$2,185.0	48.97%
Net Plant		$22,100.0						
IDACORP, Inc.	IDA							
Capital Spending per Share			$14.20	$12.15	$10.10	$10.10	$10.10	
Common Shares Outstanding			51.00	51.50	52.00	52.00	52.00	
Capital Expenditures			$724.2	$625.7	$525.2	$525.2	$525.2	55.72%
Net Plant		$5,250.0						

2023-2027 CAPITAL EXPENDITURES AS A PERCENT OF 2022 NET PLANT
($ Millions)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
		2022	2023	2024	2025	2026	2027	2023-27 Cap. Ex. / 2022 Net Plant
NextEra Energy, Inc.	NEE							
Capital Spending per Share			$8.40	$9.20	$10.00	$10.00	$10.00	
Common Shares Outstanding			2025.00	2025.00	2025.00	2025.00	2025.00	
Capital Expenditures			$17,010.0	$18,630.0	$20,250.0	$20,250.0	$20,250.0	86.90%
Net Plant		$110,925.0						
NorthWestern Corporation	NWE							
Capital Spending per Share			$9.10	$7.80	$6.50	$6.50	$6.50	
Common Shares Outstanding			62.00	62.00	62.00	62.00	62.00	
Capital Expenditures			$564.2	$483.6	$403.0	$403.0	$403.0	40.09%
Net Plant		$5,630.0						
OGE Energy Corporation	OGE							
Capital Spending per Share			$4.75	$4.75	$4.75	$4.75	$4.75	
Common Shares Outstanding			200.20	200.20	200.20	200.20	200.20	
Capital Expenditures			$951.0	$951.0	$951.0	$951.0	$951.0	45.96%
Net Plant		$10,345.0						
Otter Tail Corporation	OTTR							
Capital Spending per Share			$5.90	$6.08	$6.25	$6.25	$6.25	
Common Shares Outstanding			41.90	42.20	42.50	42.50	42.50	
Capital Expenditures			$247.2	$256.4	$265.6	$265.6	$265.6	58.84%
Net Plant		$2,210.0						
Portland General Electric Company	POR							
Capital Spending per Share			$8.25	$8.38	$8.50	$8.50	$8.50	
Common Shares Outstanding			94.50	97.25	100.00	100.00	100.00	
Capital Expenditures			$779.6	$814.5	$850.0	$850.0	$850.0	49.78%
Net Plant		$8,325.0						
Southern Company	SO							
Capital Spending per Share			$7.85	$7.68	$7.50	$7.50	$7.50	
Common Shares Outstanding			1070.00	1070.00	1070.00	1070.00	1070.00	
Capital Expenditures			$8,399.5	$8,212.3	$8,025.0	$8,025.0	$8,025.0	42.76%
Net Plant		$95,150.0						
Xcel Energy Inc.	XEL							
Capital Spending per Share			$9.00	$9.00	$9.00	$9.00	$9.00	
Common Shares Outstanding			550.00	555.50	561.00	561.00	561.00	
Capital Expenditures			$4,950.0	$4,999.5	$5,049.0	$5,049.0	$5,049.0	52.04%
Net Plant		$48,225.0						
PacifiCorp	PAC							
Capital Expenditures [8]			3,884.6	3,179.4	4,490.5	4,582.0	4,687.0	98.59%
Net Plant [9]		$21,120.6						
PacifiCorp CapEx Total (2023 - 2027)								$20,823.3
PacifiCorp CapEx Annual Average								$4,164.7
Proxy Group Median								49.78%
PacifiCorp as % Proxy Group Median								1.98

Notes:
[1] - [6] Source: Value Line, dated November 11, 2022, December 9, 2022, January 20, 2023.
[7] Equals (Column [2] + [3] + [4] + [5] + [6]) / Column [1]
[8] Source: Company Provided Data
[9] Source: Company Provided Data

Rocky Mountain Power
Exhibit 4.10
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Regulatory Risk Assessment

March 2023

COMPARISON OF RMP AND PROXY GROUP COMPANIES
RISK ASSESSMENT

				[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
						Non-Volumetric Rate Design				Capital Cost Recovery				
Proxy Group Company	Operating Subsidiary	Jurisdiction	Service	Electric fuel/gas commodity/purchase power	Test Year	Revenue Decoupling	Formula-based rates	Straight Fixed-Variable Rate Design	Non-Volumetric Rate Design	Traditional Generation	Renewables/Non-Traditional Generation	Delivery Infrastructure	Environmental Compliance	Capital Cost Recovery
ALLETE, Inc.	ALLETE (Minnesota Power)	Minnesota	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes	No	No	Yes
Alliant Energy Corporation	Interstate Power & Light Co.	Iowa	Electric	Yes	Historical	No	No	No	No	No	Yes	No	Yes	Yes
	Interstate Power & Light Co.	Iowa	Gas	Yes	Historical	No	No	No	No	No	No	No	No	No
	Wisconsin Power & Light Co.	Wisconsin	Electric	Yes	Fully Forecast	No	No	No	No	No	No	No	No	No
	Wisconsin Power & Light Co.	Wisconsin	Gas	Yes	Fully Forecast	No	No	No	No	No	No	No	No	No
Ameren Corporation	Ameren Illinois Co.	Illinois	Electric	N/A	Historical	Partial	Yes	No	Yes	No	Yes	No	Yes	Yes
	Ameren Illinois Co.	Illinois	Gas	Yes	Fully Forecast	Partial	No	No	Yes	No	Yes	No	Yes	Yes
	Union Electric Co.	Missouri	Electric	Yes - Sharing Band	Historical	Partial	No	No	Yes	No	Yes	No	No	Yes
	Union Electric Co.	Missouri	Gas	Yes	Historical	Partial	No	No	Yes	No	No	No	No	Yes
American Electric Power Company, Inc.	Southwestern Electric Power Co.	Arkansas	Electric	Yes	Historical	Partial	Yes	No	Yes	Yes	No	No	Yes	Yes
	Indiana Michigan Power Co.	Indiana	Electric	Yes	Fully Forecast	Partial	No	No	Yes	No	Yes	Yes	Yes	Yes
	Kentucky Power Co.	Kentucky	Electric	Yes	Fully Forecast	Partial	No	No	Yes	No	No	No	Yes	Yes
	Southwestern Electric Power Co.	Louisiana	Electric	Yes	Historical	Partial	Yes	No	Yes	No	No	No	No	No
	Indiana Michigan Power Co.	Michigan	Electric	Yes	Fully Forecast	Partial	No	No	Yes	No	Yes	No	No	Yes
	Ohio Power Co.	Ohio	Electric	N/A	Partially Forecast	Partial	No	No	Yes	No	Yes	Yes	No	Yes
	Public Service Co. of Oklahoma	Oklahoma	Electric	Yes	Historical	Partial	No	No	Yes	No	Yes	Yes	No	Yes
	Kingsport Power Co.	Tennessee	Electric	Yes	Fully Forecast	No	No	No	No	No	No	No	No	No
	AEP Texas	Texas	Electric	N/A	Historical	No	No	No	No	No	No	Yes	No	Yes
	Southwestern Electric Power Co.	Texas	Electric	Yes	Historical	No	No	No	No	No	No	Yes	No	Yes
	Appalachian Power Co.	Virginia	Electric	Yes	Historical	No	No	No	No	Yes	No	No	Yes	Yes
	Appalachian Power Co./Wheeling Power Co.	West Virginia	Electric	Yes	Historical	No	No	No	No	No	No	No	Yes	Yes
Avista Corporation	Alaska Electric Light and Power Co.	Alaska	Electric	Yes	Historical	No	No	No	No	No	No	No	No	No
	Avista Corp.	Idaho	Electric	Yes - Sharing Band	Historical	Full	No	No	Yes	No	No	No	No	No
	Avista Corp.	Idaho	Gas	Yes	Historical	Full	No	No	Yes	No	No	No	No	No
	Avista Corp.	Oregon	Gas	Yes - Sharing Band	Fully Forecast	Full	No	No	Yes	No	No	No	No	No
	Avista Corp.	Washington	Electric	Yes - Sharing Band	Historical	Partial	No	No	Yes	No	No	No	No	No
	Avista Corp.	Washington	Gas	Yes	Historical	Partial	No	No	Yes	No	No	No	No	No
CMS Energy Corporation	Consumers Energy	Michigan	Electric	Yes	Fully Forecast	No	No	No	No	Yes	Yes	No	Yes	Yes
	Consumers Energy	Michigan	Gas	Yes	Fully Forecast	Partial	No	No	Yes	No	No	No	Yes	Yes
Duke Energy Corporation	Duke Energy Florida LLC	Florida	Electric	Yes	Fully Forecast	No	No	No	No	Yes	Yes	No	Yes	Yes
	Duke Energy Indiana LLC	Indiana	Electric	Yes	Historical	Partial	No	No	Yes	No	Yes	Yes	Yes	Yes
	Duke Energy Kentucky Inc.	Kentucky	Electric	Yes	Fully Forecast	Partial	No	No	Yes	No	No	No	Yes	Yes
	Duke Energy Kentucky Inc.	Kentucky	Gas	Yes	Fully Forecast	Partial	No	No	Yes	No	No	Yes	No	Yes
	Duke Energy Carolinas LLC/Duke Energy Progress LLC	North Carolina	Electric	Yes	Historical	No	No	No	No	No	Yes	No	Yes	Yes
	Piedmont Natural Gas Co. Inc.	North Carolina	Gas	Yes	Historical	Full	No	No	Yes	No	No	Yes	No	Yes
	Duke Energy Ohio Inc.	Ohio	Electric	N/A	Partially Forecast	Partial	No	No	Yes	No	Yes	Yes	No	Yes
	Duke Energy Ohio Inc.	Ohio	Gas	Yes	Partially Forecast	No	No	Yes	Yes	No	No	Yes	Yes	Yes
	Duke Energy Carolinas LLC/Duke Energy Progress LLC	South Carolina	Electric	Yes	Historical	No	No	No	No	No	Yes	No	Yes	Yes
	Piedmont Natural Gas Co. Inc.	South Carolina	Gas	Yes	Historical	Partial	No	No	Yes	No	No	No	No	No
	Piedmont Natural Gas Co. Inc.	Tennessee	Gas	Yes	Fully Forecast	Partial	No	No	Yes	No	No	Yes	No	Yes
Entergy Corporation	Entergy Arkansas LLC	Arkansas	Electric	Yes	Fully Forecast	Partial	Yes	No	Yes	Yes	Yes	Yes	No	Yes
	Entergy New Orleans LLC	Louisiana-NOCC	Electric	Yes	Partially Forecast	No	Yes	No	Yes	No	Yes	No	Yes	Yes
	Entergy New Orleans LLC	Louisiana-NOCC	Gas	Yes	Partially Forecast	No	Yes	No	Yes	No	No	No	No	No
	Entergy Louisiana LLC	Louisiana	Electric	Yes	Historical	Partial	Yes	No	Yes	No	No	No	Yes	Yes
	Entergy Louisiana LLC	Louisiana	Gas	Yes	Historical	No	Yes	No	Yes	No	No	Yes	No	Yes
	Entergy Mississippi LLC	Mississippi	Electric	Yes	Fully Forecast	Partial	Yes	No	Yes	No	No	No	No	No
	Entergy Texas Inc.	Texas	Electric	Yes	Historical	No	No	No	No	Yes	No	Yes	No	Yes
Evergy, Inc.	Evergy Kansas Central Inc	Kansas	Electric	Yes	Historical	Partial	No	No	Yes	No	No	Yes	Yes	Yes
	Evergy Metro Inc.	Kansas	Electric	Yes	Historical	No	No	No	No	No	No	Yes	No	Yes
	Evergy Metro Inc	Missouri	Electric	Yes - Sharing Band	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
	Evergy Missouri West Inc.	Missouri	Electric	Yes - Sharing Band	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
IDACORP, Inc.	Idaho Power Co.	Idaho	Electric	Yes - Sharing Band	Partially Forecast	Full	No	No	Yes	No	No	No	No	No
	Idaho Power Co.	Oregon	Electric	Yes - Sharing Band	Partially Forecast	No	No	No	No	No	No	No	No	No
NextEra Energy, Inc.	Florida Power & Light Co.	Florida	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes	No	Yes	Yes
	Pivotal Utility Holdings Inc.	Florida	Gas	Yes	Fully Forecast	No	No	No	No	No	No	Yes	Yes	Yes
	Lone Star Transmission LLC	Texas	Electric	N/A	Historical	No	No	No	No	No	No	Yes	No	Yes
NorthWestern Corporation	NorthWestern Corporation	Montana	Electric	Yes - Sharing Band	Historical	No	No	No	No	No	No	No	No	No
	NorthWestern Corporation	Montana	Gas	Yes	Historical	No	No	No	No	No	No	No	No	No
	NorthWestern Corporation	Nebraska	Gas	Yes	Historical	No	No	No	No	No	No	No	No	No
	NorthWestern Corporation	South Dakota	Electric	Yes	Historical	No	No	No	No	No	No	No	No	No
	NorthWestern Corporation	South Dakota	Gas	Yes	Historical	No	No	No	No	No	No	No	No	No
OGE Energy Corporation	Oklahoma Gas and Electric Co.	Arkansas	Electric	Yes	Historical	Partial	Yes	No	Yes	Yes	Yes	Yes	No	Yes
	Oklahoma Gas & Electric Co.	Oklahoma	Electric	Yes	Historical	Partial	No	No	Yes	No	No	Yes	Yes	Yes
Otter Tail Corporation	Otter Tail Power Co.	Minnesota	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes	No	Yes	Yes
	Otter Tail Power Co.	North Dakota	Electric	Yes	Fully Forecast	No	No	No	No	Yes	Yes	Yes	Yes	Yes
	Otter Tail Power Co.	South Dakota	Electric	Yes	Historical	No	No	No	No	Yes	No	Yes	Yes	Yes
Portland General Electric Company	Portland General Electric Co.	Oregon	Electric	Yes - Sharing Band	Fully Forecast	No	No	No	No	Yes	Yes	No	Yes	Yes
Southern Company	Alabama Power Co.	Alabama	Electric	Yes	Fully Forecast	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes
	Georgia Power Co.	Georgia	Electric	Yes	Fully Forecast	No	Yes	No	Yes	Yes	No	No	Yes	Yes
	Atlanta Gas & Light Co.	Georgia	Gas	N/A	Fully Forecast	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
	Northern Illinois Gas Co.	Illinois	Gas	Yes	Fully Forecast	Partial	No	No	Yes	No	No	Yes	Yes	Yes
	Mississippi Power Co.	Mississippi	Electric	Yes	Fully Forecast	Partial	Yes	No	Yes	No	No	No	Yes	Yes
	Chattanooga Gas Co.	Tennessee	Gas	Yes	Fully Forecast	Full	Yes	No	Yes	No	No	No	No	No
	Virginia Natural Gas Inc.	Virginia	Gas	Yes	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
Xcel Energy Inc.	Public Service Co. of Colorado	Colorado	Electric	Yes	Historical	Partial	No	No	Yes	No	Yes	No	No	No
	Public Service Co. of Colorado	Colorado	Gas	Yes	Historical	Partial	No	No	Yes	No	No	Yes	No	Yes
	Northern States Power Co.-Minnesota	Minnesota	Electric	Yes	Fully Forecast	Partial	Yes	No	Yes	No	Yes	No	Yes	Yes
	Northern States Power Co.-Minnesota	Minnesota	Gas	Yes	Fully Forecast	No	No	No	No	No	No	Yes	No	Yes
	Southwestern Public Service Co.	New Mexico	Electric	Yes	Historical	No	No	No	No	No	Yes	No	No	Yes
	Northern States Power Co.-Minnesota	North Dakota	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes	Yes	No	Yes
	Northern States Power Co.-Minnesota	North Dakota	Gas	Yes	Fully Forecast	No	No	Yes	Yes	No	No	No	No	No
	Northern States Power Co.-Minnesota	South Dakota	Electric	Yes	Historical	Partial	No	No	Yes	Yes	No	Yes	Yes	Yes
	Southwestern Public Service Co.	Texas	Electric	Yes	Historical	No	No	No	No	No	No	No	No	No
	Northern States Power Co.-Wisconsin	Wisconsin	Electric	Yes	Fully Forecast	No	No	No	No	No	No	No	No	No
	Northern States Power Co.-Wisconsin	Wisconsin	Gas	Yes	Fully Forecast	No	No	No	No	No	No	No	No	No

						Non-Volumetric Rate Design			CCRM
Proxy Group Average	Yes	69	Fully Forecast	34		Yes	49	Yes	59
	No	0	Partially Forecast	7		No	36	No	26
	Yes - Sharing Band	10	Historical	44					
	N/A	6							
	Yes/N/A	88.24%	Forecast	48.24%		NVRD	57.65%	CCRM	69.41%

RMP [12]	Wyoming	Electric	Yes - Sharing Band	Forecast	No	No	No	No	No	No	No	No	No

Notes:
[1] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022. Operating subsidiaries not covered in this report were excluded from this exhibit.
[2] Sources: Regulatory Research Associates, effective as of September 30, 2022.
[3] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[4] Sources: Company Form 10-K, Company Tariffs, S&P Capital IQ Pro
[5] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[6] Equals IF(AND([3]=No, [4]=No, [5]=No), No, Yes)
[7] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[8] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[9] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[10] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.
[11] Equals IF(AND([7]=No, [8]=No, [9]=No, [10]=No), No, Yes)
[12] Data provided by RMP.

Rocky Mountain Power
Exhibit 4.11
Docket No. 20000-___-ER-23
Witness: Ann E. Bulkley

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Ann E. Bulkley

Capital Structure Analysis

March 2023

CAPITAL STRUCTURE ANALYSIS

Proxy Group Company	Ticker	Most Recent 8 Quarters (2020Q4 - 2022Q3) Common Equity Ratio	Long-Term Debt Ratio	Preferred Equity Ratio	Total Capitalization
ALLETE, Inc.	ALE	57.27%	42.73%	0.00%	100%
Alliant Energy Corporation	LNT	52.00%	47.20%	0.81%	100%
Ameren Corporation	AEE	53.12%	46.25%	0.63%	100%
American Electric Power Company, Inc.	AEP	48.17%	51.83%	0.00%	100%
Avista Corporation	AVA	50.33%	49.67%	0.00%	100%
CMS Energy	CMS	52.26%	47.53%	0.21%	100%
Duke Energy Corporation	DUK	53.18%	46.82%	0.00%	100%
Entergy Corporation	ETR	46.19%	53.71%	0.10%	100%
Evergy, Inc.	EVRG	60.63%	39.37%	0.00%	100%
IDACORP, Inc.	IDA	54.07%	45.65%	0.28%	100%
NextEra Energy, Inc.	NEE	61.06%	38.94%	0.00%	100%
NorthWestern Corporation	NWE	47.81%	52.19%	0.00%	100%
OGE Energy Corporation	OGE	54.01%	45.99%	0.00%	100%
Otter Tail Corporation	OTTR	54.26%	45.74%	0.00%	100%
Portland General Electric Company	POR	45.95%	54.05%	0.00%	100%
The Southern Company	SO	54.49%	45.00%	0.52%	100%
Xcel Energy Inc.	XEL	54.21%	45.79%	0.00%	100%
Average		52.88%	46.97%	0.15%	
Median		53.18%	46.25%	0.00%	
Maximum		61.06%	54.05%	0.81%	
Minimum		45.95%	38.94%	0.00%	

Notes:

[1] Ratios are weighted by actual common capital, preferred capital, and long-term debt of the operating subsidiaries.

[2] Electric and Natural Gas operating subsidiaries with data listed as N/A from S&P Capital IQ have been excluded from the analysis.