MONTANA-DAKOTA UTILITIES CO.
BEFORE THE NORTH DAKOTA PUBLIC SERVICE COMMISSION
CASE NO. PU-22___
PREPARED DIRECT TESTIMONY OF
ANN E. BULKLEY

**Q1. Please state your name and business address**

A1. My name is Ann E. Bulkley. My business address is One Beacon Street, Suite 2600, Boston, Massachusetts 02108.

**Q2. What is your position with The Brattle Group ("Brattle")?**

A2. I am employed by The Brattle Group ("Brattle") as a Principal.

**Q3. On whose behalf are you submitting this testimony?**

A3. I am submitting Direct Testimony before the North Dakota Public Service Commission ("Commission") on behalf of Montana-Dakota Utilities Co. My testimony addresses the regulated electric utility operations of Montana-Dakota Utilities Co. within North Dakota ("Montana-Dakota" or the "Company").

**Q4. Please describe your background and professional experience in the energy and utility industries.**

A4. I hold a Bachelor's degree in Economics and Finance from Simmons College and a Master's degree in Economics from Boston University, with more than 25 years of experience consulting to the energy industry. I have provided testimony regarding financial matters, including the cost of capital, before multiple regulatory agencies. 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. A summary of my professional and educational background is presented in Exhibit No. ___ (AEB-2), Schedule 1.

**Q5. Have you testified before any regulatory authorities?**

A5. Yes. A list of proceedings in which I have provided testimony is provided in Exhibit No. ___ (AEB-2), Schedule 1.

## I. PURPOSE AND OVERVIEW OF DIRECT TESTIMONY

**Q6. What is the purpose of your Direct Testimony?**

A6. The purpose of my Direct Testimony is to present evidence and provide a recommendation regarding the Montana-Dakota's return on equity ("ROE")[1] for its electric utility operations to be used for ratemaking purposes. I also address the appropriateness of the Company's proposed capital structure. My analyses and recommendations are supported by the data presented in Exhibit No. ___(AEB-2), Schedules 2 through 11, which were prepared by me or under my direction.

**Q7. Please provide a brief overview of the analyses that led to your ROE recommendation.**

A7. As discussed more in Section VI in developing my ROE recommendation, I applied the Constant Growth Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the Empirical Capital Asset Pricing Model ("ECAPM"), and the Risk Premium approach. My recommendation also takes into consideration: (1) the regulatory environment in which the Company operates; (2) the Company's customer concentration;

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

and (3) flotation costs. While I did not make any specific adjustments to my ROE estimates for any of these factors, I did take them into consideration in aggregate where the Company's ROE falls within the range of analytical results. Finally, I consider the Company's proposed capital structure as compared to the capital structures of the proxy companies.

**Q8. How is the remainder of your Direct Testimony organized?**

A8. Section II provides a summary of my analyses and conclusions. Section III reviews the regulatory guidelines pertinent to the development of the cost of capital. Section IV discusses current and projected capital market conditions and the effect of those conditions on Montana-Dakota's cost of equity. Section V explains my selection of proxy group of electric utilities. Section VI describes my analyses and the analytical basis for the recommendation of the appropriate ROE for Montana-Dakota. Section VII 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 VIII discusses the capital structure of the Company as compared with the proxy group. Section IX presents my conclusions and recommendations for the market cost of equity.

## II. SUMMARY OF ANALYSIS AND CONCLUSIONS

**Q9. Please summarize the key factors considered in your analyses and upon which you base your recommended ROE.**

A9. My analyses and recommendations considered the following:

- The *Hope* and *Bluefield* decisions[2, 3] that established the standards for determining a fair and reasonable allowed ROE, including consistency of the allowed return with other businesses having similar risk, adequacy of the return to provide access to capital and support credit quality, and that the end result must lead to just and reasonable rates.
- The effect of current and projected capital market conditions on investors' return requirements.
- The results of several analytical approaches that provide estimates of the Company's cost of equity.
- The Company's regulatory, business, and financial risks relative to the proxy group of comparable companies and the implications of those risks in arriving at the appropriate ROE.

**Q10. Please explain how you considered those factors.**

A10. I have relied on several analytical approaches to estimate Montana-Dakota's cost of equity based on a proxy group of publicly traded companies. As shown in Figure 1, those ROE estimation models produce a wide range of results. My conclusion as to where within that range of results Montana-Dakota's ROE falls is based on Montana-Dakota's business and financial risk relative to the proxy group. While my proxy group is generally comparable to Montana-Dakota, Montana-Dakota faces higher risk than the group. In order for Montana-Dakota to compete for capital within the proxy companies, those additional risk factors should be acknowledged and reflected in Montana-Dakota's ROE.

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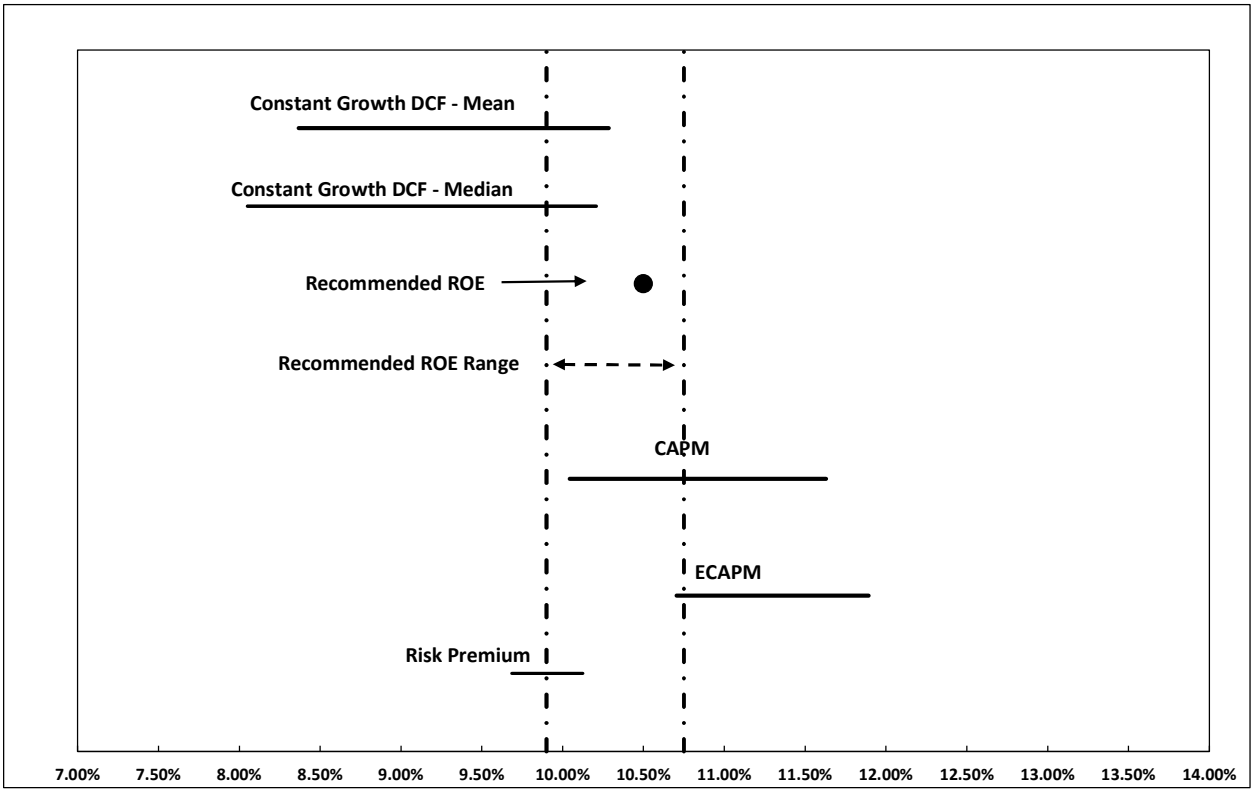
[2] U.S. Supreme Court, *Bluefield Water works & Improvement Company v. Public Service Commission of West Virginia*, 262 U.S. 679, 693 (1923).

[3] U.S. Supreme Court, *Federal Power Commission v. Hope Natural Gas Company*, 320 U.S. 591, 603 (1944).

**Q11. Please summarize the ROE estimation models that you considered to establish the range of ROEs for Montana-Dakota.**

A11. I considered the results of the Constant Growth DCF model, the Capital Asset Pricing Model ("CAPM"), the Empirical CAPM and the Bond Yield Plus Risk Premium methodology. Figure 1 summarizes the range of results established using each of these estimation methodologies.

**Figure 1: Summary of Cost of Equity Analytical Results**




As shown in Figure 1, (and in Exhibit No.___(AEB-2), Schedule 2), the range of results produced by the ROE estimation models is wide. While it is common to consider multiple models to estimate the cost of equity, it is particularly important when the range of results varies considerably across methodologies. 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 Montana-Dakota's company-specific risk factors and current and prospective capital market conditions.

**Q12. What is your recommended ROE for Montana-Dakota?**

A12. Considering the analytical results presented in Figure 1, as well as the level of regulatory, business, and financial risk faced by Montana-Dakota's electric operations in North Dakota relative to the proxy group, I believe a range from 9.90 to 10.75 percent is reasonable. Within that range, a return of 10.50 percent is reasonable. This recommendation reflects the range of results for the proxy group companies, the relative risk of Montana-Dakota's electric operations in North Dakota as compared to the proxy group, and current capital market conditions.

**Q13. Please summarize your analysis of the appropriate ratemaking capital structure for the Company.**

A13. Based on the analysis presented in Section VIII of my testimony, I conclude that Montana-Dakota's proposed 50.79 percent common equity ratio for the rate year ending December 31, 2022 and 50.81 percent common equity ratio for the rate year ending December 31, 2023 are reasonable. To determine if Montana-Dakota's requested capital structure was reasonable, I reviewed the capital structures of the utility subsidiaries of the proxy companies. As shown in Exhibit No.___(AEB-2), Schedule 11, the results of that analysis demonstrate that the average equity ratios for the utility operating companies of the proxy group range from 46.83 percent to 59.91 percent, with an average of 52.35 percent. Comparing the recommended equity ratio to the proxy group demonstrates that the Company's requested equity ratio is significantly below the average equity ratio for the

utility operating subsidiaries of the proxy group companies. Further, the Company's proposed equity ratio is reasonable considering the negative effects from Tax Cuts and Jobs Act of 2017 ("TCJA") on coverage ratios and increased capital expenditures on the cash flows and credit metrics of regulated utilities.

## III. REGULATORY GUIDELINES

**Q14. Please describe the guiding principles to be used in establishing the cost of capital for a regulatory utility.**

A14. The United States Supreme Court's precedent-setting *Hope* and *Bluefield* cases established the standards for determining the fairness or reasonableness of a utility's allowed ROE. Among the standards established by the Court in those cases are: (1) consistency with other businesses having similar or comparable risks; (2) adequacy of the return to support credit quality and access to capital; and (3) that the end result, as opposed to the methodology employed, is the controlling factor in arriving at just and reasonable rates.[4]

Based on those recognized standards, the return authorized in this case should provide the Company with the opportunity to earn an ROE that is:

- Adequate to attract capital on reasonable terms, thereby enabling the Company to provide safe, reliable service;
- Sufficient to ensure the financial soundness of the Company's operations; and
- Commensurate with returns on investments in comparable risk enterprises.

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[4] *Supra 3 and 4.*

The allowed ROE should enable the Company to finance capital expenditures on reasonable terms and optimize its financial flexibility over the period during which rates are expected to remain in effect.

**Q15. Is fixing a fair rate of return just about protecting the utility's interests?**

A15. No. As the court noted in *Bluefield*, a proper rate of return not only assures "confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit [but also] enable[s the utility] to raise the money necessary for the proper discharge of its public duties." Bluefield Waterworks & Imp. Co. vs. Pub. Serv. Commn. of W. Va., 262 US 679, 693, 43 S Ct 675, 679, 67 L Ed 1176 (1923). As the Court went on to explain in *Hope*, "[t]the rate-making process … involves balancing of the investor and consumer interests." Fed Power Commn. v. Hope Nat. Gas Co., 320 US 591, 603 (1944).

**Q16. 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?**

A16. An ROE that is adequate to attract capital at reasonable terms enables the Company to continue to provide safe, reliable electric utility service while maintaining its financial integrity. To the extent the Company has the opportunity to earn its market-based cost of capital, neither customers nor shareholders are disadvantaged.

**Q17. Is a utility's ability to attract capital also affected by the ROEs that are authorized for other utilities?**

A17. Yes. Utilities compete directly for capital with other investments of similar risk, which include other natural gas and electric utilities. Therefore, the ROE awarded to a utility

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

While Montana-Dakota is committed to investing the required capital to provide safe and reliable service, because Montana-Dakota is a subsidiary of MDU Resources, the Company competes with the other MDU Resources subsidiaries for discretionary investment capital. In determining how to allocate its finite discretionary capital resources, it would be reasonable for MDU Resources to consider the authorized ROE of each of its subsidiaries.

**Q18. What are your conclusions regarding regulatory guidelines and capital market expectations?**

A18. 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. Further, in light of the Company's market and regulatory risks as discussed below, it is important that Montana-Dakota be afforded the opportunity to maintain a financial profile that will enable it to access the capital markets at reasonable rates.

## IV. CAPITAL MARKET CONDITIONS

**Q19. Why is it important to analyze capital market conditions?**

A19. The ROE estimation models rely on market data that are either specific to the proxy group, in the case of the DCF model, or the expectations of market risk, in the case of the CAPM. The results of the ROE estimation models can be affected by prevailing market conditions at the time the analysis is performed. While the ROE that is established in a rate proceeding is intended to be forward-looking, the practitioner uses current and projected market data, specifically stock prices, dividends, growth rates and interest rates in the ROE estimation models to estimate the required return for the subject company.

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

**Q20. What factors are affecting the cost of equity for regulated utilities in the current and prospective capital markets?**

A20. 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) currently high inflation continuing into 2022, 3) increasing interest rates, and 4) volatile

market conditions. These factors affect the assumptions used in the ROE estimation models. In this section, I discuss each of these factors and how it affects the models used to estimate the cost of equity for regulated utilities.

**Q21. What effect do current and prospective market conditions have on the cost of equity for Montana-Dakota?**

A21. As is discussed in more detail in the remainder of this section, the combination of persistently high inflation, the Federal Reserve's changes in monetary policy, and the dramatic shifts in market conditions resulting from political influences all contribute to an expectation of increased market risk and an increase in the cost of the investor-required return on equity. It is essential that these factors be considered in setting a forward-looking cost of equity. Inflation is currently at its highest level seen in approximately 40 years. Interest rates, which have increased from significantly from pandemic-related lows seen in 2020 are expected to continue to increase in direct response to the Federal Reserve's use of monetary policy. As discussed later herein, since there is a strong historical inverse correlation between interest rates and the share prices of utility stocks, it is reasonable to expect that investors' cost of equity is increasing. Because the cost of equity in this proceeding is being estimated for the 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, ROE estimates based in whole or in part on current market conditions will understate the ROE during the future period that the Company's rates will be in effect.

### A. The Effect of Monetary Policy on Market Dynamics

**Q22. Please summarize the monetary policy actions of the Federal Reserve in response to the economic effects of COVID-19.**

A22. In response to the COVID-19 pandemic, the Federal Reserve:

- decreased the Federal Funds rate twice in March 2020, resulting in a target range of 0.00 percent to 0.25 percent;
- increased its holdings of both Treasury and mortgaged-back securities;
- started expansive programs to support credit to large employers – the Primary Market Corporate Credit Facility to provide liquidity for new issuances of corporate bonds; and the Secondary Market Corporate Credit Facility to provide liquidity for outstanding corporate debt issuances; and
- supported the flow of credit to consumers and businesses through the Term Asset-Backed Securities Loan Facility.

In addition, Congress also passed the Coronavirus Aid, Relief, and Economic Security ("CARES") Act in March 2020, the Consolidated Appropriations Act, 2021 in December 2020, and the American Rescue Plan Act in March 2021, which included $2.2. trillion, $900 billion, and $1.9 trillion, respectively, in fiscal stimulus aimed at also mitigating the economic effects of COVID-19. These expansive monetary and fiscal programs mitigated the economic effects of the COVID-19 pandemic and provided additional support as the economy recovers from the COVID-19 recession.

**Q23. How did the accommodative monetary and fiscal policy affect the U.S. economy?**

A23. The expansive monetary and fiscal policy programs resulted in a strong economic recovery in 2021 from the COVID-19 induced recessionary period in 2020. In fact, according to the Bureau of Economic Analysis, real GDP grew by 5.7 percent in 2021 driven primarily by

a 7.9 percent increase in personal consumption expenditures.[5] Moreover, the unemployment rate decreased from a high of 14.7 percent in April 2020 to 3.9 percent as of December 2021.[6] Finally, as I will discuss in more detail below, the economic recovery has also included a substantial increase in inflation with the year-over-year ("YOY") change in the Consumer Price Index ("CPI") at 8.56 percent in March 2022. The strong economic recovery along with the increase in inflation has resulted in the Federal Reserve normalizing monetary policy and removing the accommodative policy programs that it used to mitigate the effect of COVID-19.

**Q24. Is the Federal Reserve currently normalizing monetary policy?**

A24. Yes. In response to the significant increase in inflation that will be discussed in more detail below, the Federal Reserve is currently pursuing an aggressive normalization of monetary policy. As of the May 4, 2022 meeting, the Federal Reserve:

- Completed its taper of Treasury bond and mortgage-backed securities purchases[7];
- Increased the target federal funds rate from 0.00 – 0.25 percent to 0.25 – 0.50 percent at the March 16, 2022 meeting[8] and then from 0.25 – 0.50 percent to 0.75 to 1.00 percent at the May 4, 2022 meeting[9];
- Forecasted a total of seven rate increases in 2022 and four rate increases in 2023 which resulted a median forecast of the federal funds rate of 1.9 percent and 2.8 percent, respectively[10];
- Will begin reducing its holdings of Treasury and mortgage-backed securities on June 1, 2022.[11] The Federal Reserve will reduce the size of its balance sheet by

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5 Source: Bureau of Economic Analysis, News Release, February 24, 2022, at 8.
6 Source: Bureau of Labor Statistics. https://data.bls.gov/timeseries/LNS14000000
7 Source: 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.
8 Source: Federal Reserve, Press Release, (Mar. 16, 2022).
9 Source: Federal Reserve, Press Release, (May 4, 2022).
10 Federal Reserve, Summary of Economic Projections, March 16, 2022, at 2.
11 Source: Federal Reserve, Press Release, (May 4, 2022).

only reinvesting principal payments on owned securities after the total amount of payments received exceeds a defined cap. For Treasury Securities, the cap will be set at $30 billion per month for the first three months and $60 billion per month after the first three months while for mortgage-backed securities the cap will be set at $17.5 billion per month for the first three months and $35 billion per month after the first three months.[12]

**Q25. What is the market response to the recent FOMC meetings?**

A25. The market response is an expectation that interest rates will increase to address inflation. The CME Group calculates investors' views regarding the probability of the target federal funds rate range at upcoming Federal Reserve meetings based on federal funds rate futures contracts. Figure 2 below contains investors' expectations regarding the level of the federal funds rate at each of the next eleven meetings as of May 5, 2022. As shown in Figure 2, investors expect the Federal Reserve to increase the federal funds rate at a faster pace than what was indicated in the forecasts released at the Federal Reserve's March 16, 2022 meeting. For example, as shown in Figure 2, according to the CME Group, there is a 53.6 percent probability[13] that the target federal funds rate range is 3.00 percent to 3.25 percent as of December 2022 which is greater than the Federal Reserve's median forecast of 1.90 percent. In particular:

- Citigroup, Inc. is now projecting 50 basis point increases at the next four FOMC meetings followed by 25 basis point increases in October and December, reaching 3.50 to 3.75 percent.
- Bank of America Corp. is projecting a 25 basis point increase in May, followed by two 50 basis point increases, and then a 25 basis point increase at each subsequent meeting through May 2023, reaching a range of 3.00 to 3.25 percent.

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[12] Source: Federal Reserve, Plans for Reducing the Size of the Federal Reserve's Balance Sheet, Press Release, (May 4, 2022).

[13] The probability of a rate hike is calculated by adding the probabilities of all target rate levels above the current target rate.

- Goldman Sachs Group Inc. is projecting 50 basis point increases at the May and June FOMC meetings with a 25 basis point increase at the four remaining meetings in 2022.[14]Moody's recently noted that the financial markets are close to fully pricing in three 50-basis point rate increases this year.[15]

Thus, investors expect that the Federal Reserve will pursue more aggressive monetary policy than indicated at the March 16 meeting to combat persistent high levels of inflation.

**Figure 2: Investor Expectation of Future Federal Funds Rate Increases[16]**

| MEETING PROBABILITIES | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEETING DATE | 125-150 | 150-175 | 175-200 | 200-225 | 225-250 | 250-275 | 275-300 | 300-325 | 325-350 | 350-375 | 375-400 | 400-425 | 425-450 | 450-475 | 475-500 |
| 6/15/2022 | 12.9% | 87.1% | 0.0% | 0.0% | | | | | | | | | | | |
| 7/27/2022 | 0.0% | 0.0% | 12.8% | 86.9% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | | | | | | |
| 9/21/2022 | 0.0% | 0.0% | 0.0% | 6.8% | 52.1% | 41.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | |
| 11/2/2022 | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 43.0% | 43.2% | 8.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 12/14/2022 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.2% | 41.2% | 43.2% | 10.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 2/1/2023 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 17.4% | 41.9% | 31.9% | 6.8% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% |
| 3/15/2023 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 8.8% | 28.4% | 37.4% | 20.6% | 3.8% | 0.2% | 0.0% | 0.0% |
| 5/3/2023 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 1.5% | 10.5% | 29.2% | 36.0% | 19.2% | 3.5% | 0.1% | 0.0% | 0.0% |
| 6/14/2023 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 6.4% | 20.7% | 32.9% | 26.8% | 10.6% | 1.7% | 0.1% |
| 7/26/2023 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 5.5% | 18.4% | 30.9% | 27.8% | 13.2% | 3.1% | 0.3% |

**Q26. Has the Federal Reserve provided support for investors' expectations regarding the federal funds rate since the Federal Reserve's projections were released at the March 2022 meeting?**

A26. Yes. Specifically, at the May 4, 2022 meeting, the Federal Reserve increased the federal funds rate 50 basis points from 0.25 – 0.50 percent to 0.75 to 1.00 percent and at his press

[14] Lanman, Scott, "Wall Street Lifts Fed Forecasts; Citi See Four Half-Point Hikes," Bloomberg, March 25, 2022.
[15] Moody's Analytics, Weekly Market Outlook, "Fed Girds for Stagflation", April 14, 2022.
[16] CME Group; FedWatch tool as of May 5, 2022.

conference, Federal Reserve Chairman Powell noted that additional 50 basis point increases may be needed at the next couple of meetings:

> "[w]e are on a path to move our policy rate expeditiously to more normal levels. Assuming that economic and financial conditions evolve in line with expectations, there is a broad sense on the Committee that additional 50 basis point increases should be on the table at the next couple of meetings. We will make our decisions meeting by meeting, as we learn from incoming data and the evolving outlook for the economy. And we will continue to communicate our thinking as clearly as possible. Our overarching focus is using our tools to bring inflation back down to our 2 percent goal."[17]

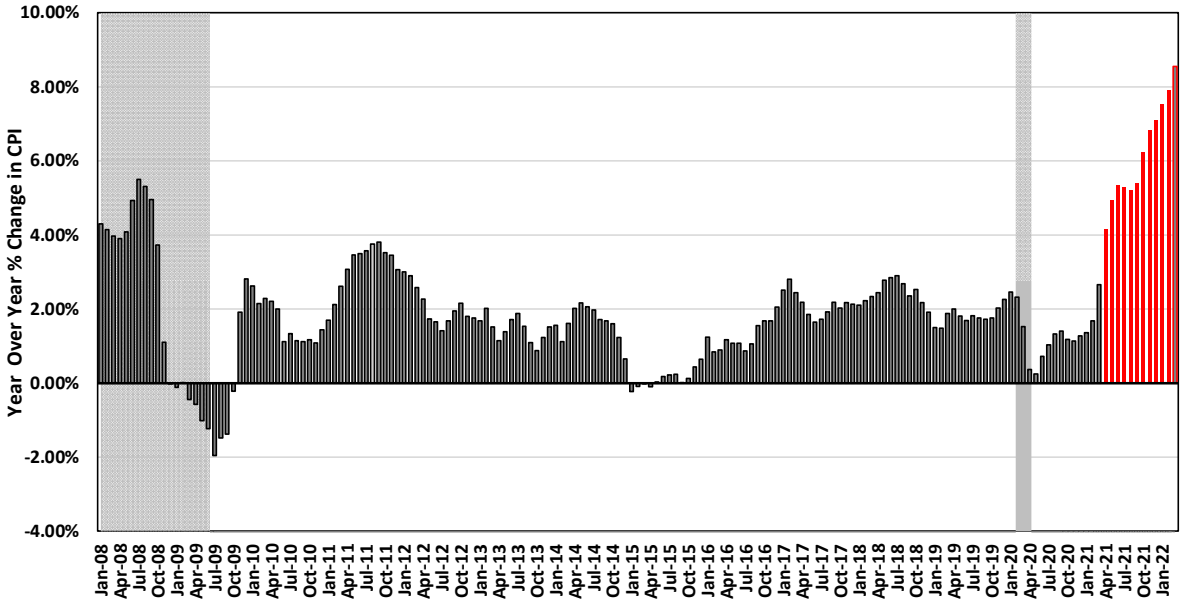
### B. Inflationary Expectations in Current and Projected Market Conditions

**Q27. Is the increase in inflation significant?**

A27. Yes. As shown in Figure 3, the YOY change in the Consumer Price Index ("CPI") published by the Bureau of Labor statistics has increased steadily over the past year rising from 1.37 percent in January 2021 to 8.56 percent in March 2022. The 8.56 percent YOY in the CPI in March 2022 is the largest 12-month increase since 1981 and significantly greater than any level seen since January 2008.

[17] Source: Federal Reserve, Transcript of Chair Powell's Press Conference Opening Statement, (May 4, 2022), at 3.

**Figure 3: Consumer Price Index – YOY Percent Change – January 2008 – March 2022**[18]




**Q28. What are the expectations for inflation over the near-term?**

A28. In his press conference following the May 4, 2022 meeting, Chairman Powell noted that "[i]nflation is much too high and we understand the hardship it is causing, and we're moving expeditiously to bring it back down".[19] Therefore, investors expect inflation to remain elevated over the near-term. One measure of investors' expectations regarding inflation is the breakeven inflation rate calculated as the spread between the yield on a Treasury bond and the yield on a Treasury Inflation-Protected bond, since a Treasury Inflation-Protected bond would account for the effect of inflation. The maturity of the bond selected would then reflect investors' views of inflation during the holding period of the bond. For example, the 10-year breakeven inflation rate calculated as the spread between the 10-year Treasury bond yield and the 10-year Treasury Inflation-Protected bond yield

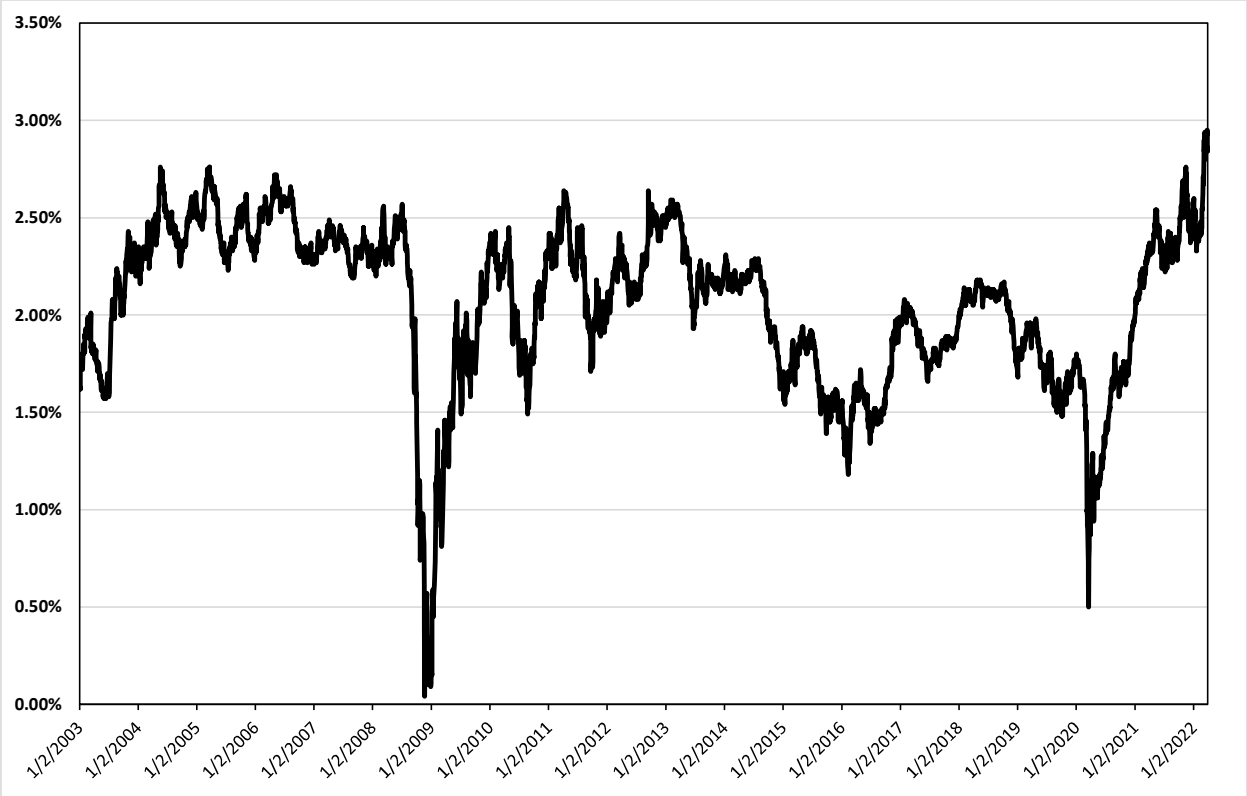
[18] Source: Bureau of Labor Statistics, shaded area indicates a recession.
[19] Source: Federal Reserve, Transcript of Chair Powell's Press Conference Opening Statement, (May 4, 2022), at 1.

would reflect investors' expectations of inflation over the next 10 years. As shown in Figure 4 below, the 10-year breakeven inflation rate is currently greater than any level seen since January 2003. Furthermore, the 10-year breakeven inflation rate as of March 31, 2022 was 2.84 percent indicating that investors expect inflation will remain well above the Federal Reserve's 2 percent target over the next 10 years. There are many factors as to why inflation is expected to remain elevated, Kiplinger recently noted a few factors including supply shortages due to COVID-19 and Russia's war in Ukraine which led them to forecast an inflation rate of 5.5 percent for 2022:

> The surge in gasoline prices in March boosted annual inflation to 8.5%, the highest in 40 years. This is likely to be the peak for the year, with inflation beginning to ease soon. But it will end the year at a still high 5.5%. The inflation rate will ease because oil prices are coming down off their peaks, though they remain high. Even if the war in Ukraine ends soon, disincentives to imports of Russian oil and gas will likely continue for quite a while. Ukraine is also a major world producer of wheat. Those prices have surged 40% this year. Other grain and meat prices are also at double or triple their previous long-term averages. Plus, there are expectations of continued upward price pressures on rent, housing costs and prices of many services, as the pandemic eases and demand rebounds.[20]

[20] Payne, David, "Inflation Rate Will Ease, But Prices Will Remain High," Kiplinger, April 13, 2022.

**Figure 4: 10-year Breakeven Inflation Rate – Janaury 2003 – March 2022[21]**




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

**Q29. What effect will inflation have on long-term interest rates?**

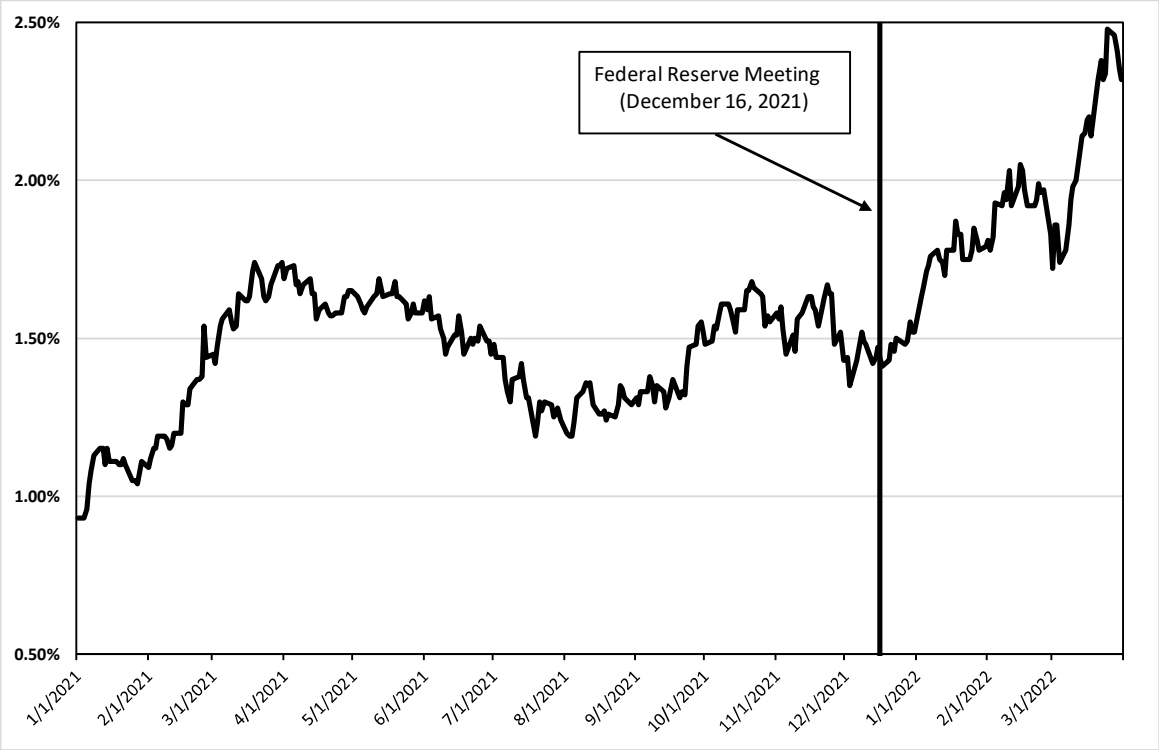
A29. Inflation and the Federal Reserve's normalization of monetary policy will likely result in increases in long-term interest rates. Specifically, inflation reduces the purchasing power of the future interest payments an investor expects to receive over the duration of the bond. This risk increases the longer the duration of the bond. As a result, if investors expect increased levels of inflation, they will require higher yields to compensate for the increased risk of inflation, which means interest rates will increase.

[21] Federal Reserve Bank of St. Louis, 10-Year Breakeven Inflation Rate [T10YIE], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/T10YIE, March 31, 2022.

**Q30. Have the yields on long-term government bonds increased in response to inflation and the Federal Reserve's normalization of monetary policy?**

A30. Yes, they have. As shown in Figure 5, since the Federal Reserve's December 2021 meeting, as the process of normalizing monetary policy has accelerated to respond to inflation, the yield on the 10-year Treasury bond has increased over 90 basis points from 1.47 percent on December 15, 2021 to 2.38 percent on April 1, 2022. The increase is due to the Federal Reserve's announcements at the December 2021, January 2022 and March 2022 meetings and the continued increased levels of inflation that are now expected to persist much longer than the Federal Reserve and investors had originally projected.

**Figure 5: 10-Year Treasury Bond Yield – Janaury 2021 – March 2022[22]**




**Q31. What have equity analysts said about long-term government bond yields?**

A31. Several equity analysts have noted that they expect economic conditions to continue to improve and thus the yields on long-term government bonds to continue to increase through the end of 2022. As shown in Figure 6, according to various equity analysts, the yield on the 10-year Treasury Bond is expected to range from 2.70 percent to 2.80 percent in 2022, and the current 30-day average yield on the 10-year Treasury Bond as of March 31, 2022 is already 2.08 percent and was trading close to 2.90 percent as of April 29, 2022.

[22] S&P Capital IQ Pro.

**Figure 6: Equity Analysts Forecast of the 10-year Treasury Yield**

| | **Actual** |
|---|---|
| 30-Day Average as of March 31, 2022 | 2.08% |
| | |
| | **2022 Forecast** |
| Credit Suisse[23] | 2.70% |
| Goldman Sachs[24] | 2.70% |
| Blue Chip Financial Forecasts (Consensus Estimate)[25] | 2.80% |
| BMO Economics[26] | 2.70% |

**Q32. Have you considered any additional indicators that may imply long-term interest rates are expected to increase?**

A32. Yes, I have. I considered the net position of commercials (i.e., banks) in U.S. Treasury Bond futures contracts as reported in the Commitment of Traders ("COT") Report produced by the Commodity Futures Trading Commission ("CFTC"). A net position is defined as the total number of long positions in a futures contract minus the total number of short positions in a futures contract. A long position means that an investor agrees to purchase an asset in the future at a specified price today and therefore profits if the price of the underlying asset increases. Conversely, short position is when an investor agrees to sell an asset at a time in the future at a specified price today and profits if the price of the asset declines. Therefore, if banks are increasing the number of short positions and thus have a declining net position, the banks are assuming that the price of the asset will decline.

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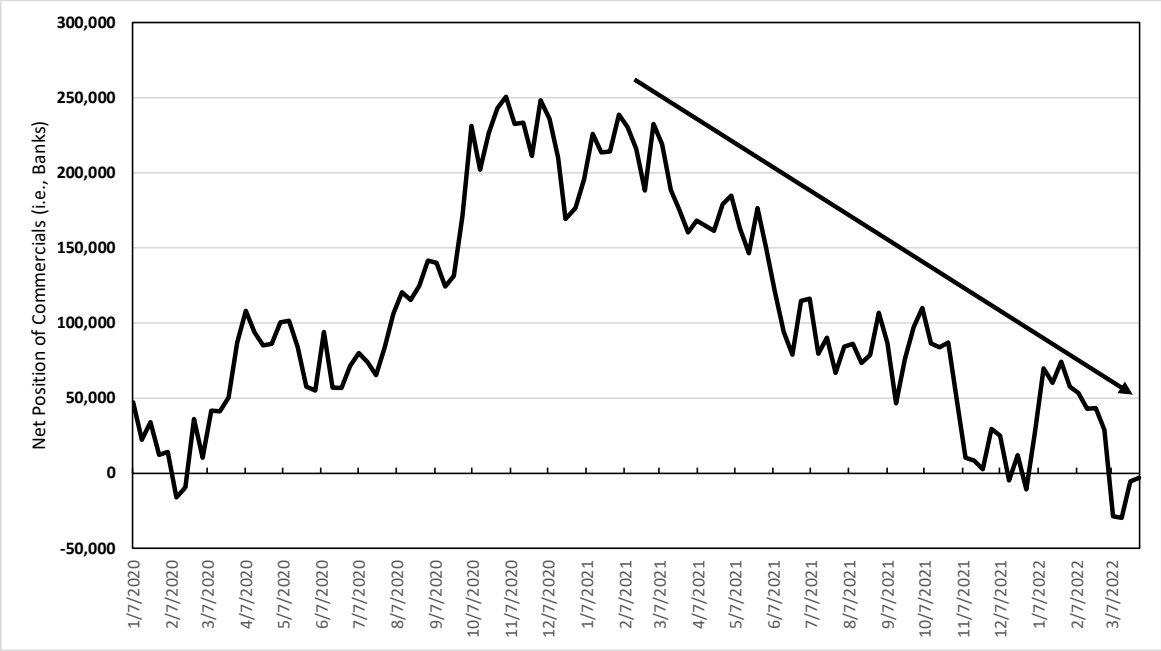
[23] Reuters, "U.S. 10-year yield to hit 2.7% this year - Credit Suisse," February 16, 2022.
[24] Worrachate, Anchalee. "Goldman Sees Higher U.S. Treasury Yields, Curve Inversion." Bloomberg.com, March 25, 2022.
[25] Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2.
[26] BMO Economics, "North American Outlook: Out of the Pandemic and Into the Fire," March 31, 2022.

As shown in Figure 7, the net position of banks in U.S. Treasury Bonds has been decreasing since the end of 2020. Therefore, banks are forecasting a decrease in the price of long-term government bonds and thus the yields (which are inversely related to the price) to increase over the near-term.

**Figure 7: Commitment of Traders Report – Net Position of Commercials (i.e., Banks) in U.S. Treasury Bond Futures Contracts[27]**




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

**Q33. Are utility share prices correlated to changes in the yields on long-term government bonds?**

A33. Yes, interest rates and utility share prices are inversely correlated which means, for example, that an increase in interest rates will result in a decline in the share prices of

[27] Commitment of Traders Report, as of March 31, 2022 - https://www.cftc.gov/MarketReports/CommitmentsofTraders/HistoricalCompressed/index.htm

utilities. For example, Goldman Sachs and Deutsche Bank recently 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).[28]

**Q34. Have electric utility stock prices recently increased?**

A34. Yes. Utility stock prices had trended down as interest rates moved higher; however, as a result of the political turmoil associated with the war in Ukraine, investors have recently returned to utility stocks as a safe haven seeking to lower risk, resulting in higher electric utility stock prices and thus lower dividend yields.

**Q35. How do equity analysts expect the utilities sector to perform in an increasing interest rate environment?**

A35. Even with the recent increase in electric utility stock prices, equity analysts project that utilities are expected to continue to underperform the broader market as interest rates increase. For example, in its most recent Big Money poll, which closed in mid-April and surveyed 112 money managers regarding the outlook for the next twelve months, the professional investors selected the utility sector as the least attractive of all industries for investment.[29] In addition, Fidelity recently recommended underweighting the utility sector and noted that it classified the sector as underweight due to a combination of "poor

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

29 Jasinski, Nicholas, Bearish Now, Bullish Later: How Investors Are Sizing Up Stocks, Barron's, updated April 24, 2022.

fundamentals and expensive valuations".[30] Furthermore, regarding the recent increase in utility share prices, Fidelity stated that:

> Energy stocks have garnered a lot of attention, but in February utilities was the only sector with monthly returns in the 90th percentile of its historical range. In the past, powerful utilities rallies have signaled investors getting too defensive. The market typically has gained, and utilities have underperformed, in 12-month periods after top-decile monthly relative returns for the sector.[31]

**Q36. Have you reviewed any market indicators that may imply that utilities will underperform over the near-term?**

A36. Yes, I have. As discussed above, the utility sector is considered a "bond proxy" or a sector in which investors are attracted as a safe haven alternative to bonds, and utility stock prices are therefore inversely related to changes in interest rates. For example, the utility sector tends to perform well when interest rates are low since the dividend yields for utilities offer investors the prospect of higher returns when compared to the yields on long-term government bonds. Conversely, the utility sector underperforms as the yields on long-term government bonds increase and the spread between the dividend yields on utility stocks and the yields on long-term government bonds decreases. Therefore, I examined the yield spread between the dividend yields of utility stocks and the yields on long-term government bonds from January 2010 through April 2022. 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 8, the yield spread as of April 8, 2022 was 0.00 percent indicating that yield on the 10-year Treasury Bond is equivalent to the dividend yield for the S&P Utilities

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[30] Fidelity, "Top sectors to watch in Q2," May 4, 2022.

[31] *Ibid*

Index which is the smallest yield spread since at least 2010. Furthermore, the current yield spread of 0.00 percent is well below the long-term average since January 2010 of 1.47 percent. Given that the yield spread is currently well below the long-term average as well as the expectation that interest rates will continue to increase, it is reasonable to conclude that utility sector will underperform over the near-term. This is because investors that purchased utility stocks as an alternative to the low yields on long-term government bonds will begin to rotate back into government bonds as the yields on long-term government bonds continue to increase thus resulting in a decrease in the share prices of utilities.

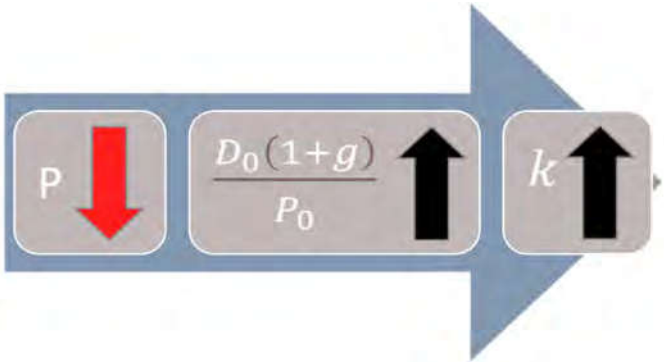
**Figure 8: Yield Spread between the Dividend Yield on the S&P Utilities Index and the Yield on the 10-year Treasury Bond – January 2010 – April 2022[32]**


**Q37. What is the significance of the inverse relationship between interest rates and utility share prices in the current market?**

A37. As discussed above, the Federal Reserve is currently normalizing monetary policy in response to inflation which is expected to increase long-term government bond yields. If interest rates increase as expected, then the share prices of utilities will decline. If the prices of utility stocks decline, then the DCF model, which relies on historical averages of share prices, is likely to understate the cost of equity. For example, Figure 9, below summarizes the effect of price on the dividend yield in the Constant Growth DCF model.

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

**Figure 9: The Effect of a Decline in Stock Prices on the Constant Growth DCF Model**




A decline in stock prices will increase the dividend yields and thus the estimate of the ROE produced by the Constant Growth DCF model. Therefore, this expected change in market conditions supports consideration of the range of ROE results produced by the mean to mean-high DCF results since the mean DCF results would likely understate the cost of equity during the period that the Company's rates will be in effect. Moreover, prospective market conditions warrant consideration of other ROE estimation models such as the CAPM and ECAPM, which may better reflect expected market conditions. For example, two out of three inputs to the CAPM (i.e., the market risk premium and risk-free rate) are forward-looking.

**Q38. Have state regulatory commissions considered market events and the utility's ability to attract capital in determining the equity return?**

A38. Yes. In a recent rate case for Consumers Energy Company, the Michigan Public Service Commission ("Michigan PSC") noted that it is important to consider how a utility's access to capital could be affected in the near-term as a result of market reactions to global events like those that have occurred in the recent past. Specifically, the Michigan PSC stated that:

> [i]n setting the ROE at 9.90%, the Commission believes there is an opportunity for the company to earn a fair return during this period of atypical market conditions. This decision also reinforces the belief, as stated in the Commission's March 29 order, "that customers do not benefit from a lower ROE if it means the utility has difficulty accessing capital at attractive terms and in a timely manner." These conditions still hold true based on the evidence in the instant case. The fact that other utilities have been able to access capital despite lower ROEs, as argued by many intervenors, is also a relevant consideration. *It is also important to consider how extreme market reactions to global events, as have occurred in the recent past, may impact how easily capital will be able to be accessed during the future test period should an unforeseen market shock occur. The Commission will continue to monitor a variety of market factors in future rate cases to gauge whether volatility and uncertainty continue to be prevalent issues that merit more consideration in setting the ROE*.[33]

The Michigan PSC references "global events" and the overall effect the events could have on the ability of a utility to access capital. Consistent with the Michigan PSC's views, it is important to consider current market conditions and the impact of those conditions on the access to and cost of capital, and to position utilities to be able to maintain access in rapidly changing market conditions.

### E. Conclusion

**Q39. What are your conclusions regarding the effect of current market conditions on the cost of equity for the Company?**

A39. Over the near-term, investors expect long-term interest rates to increase 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, an increase in long-term government bond yields will likely result in a decline in utility share prices, which is the reason a number of equity analysts expect the utility sector to

[33] Michigan Public Service Commission Order, Cause No. U-20697, Consumers Energy Company, at 165 (Dec. 17, 2020).

underperform over the near-term. 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. This change in market conditions also supports the use of other ROE estimation models such as the CAPM and the ECAPM, which may better reflect expected market conditions.

## V. PROXY GROUP SELECTION

**Q40. Why have you used a group of proxy companies to estimate the Cost of Equity for Montana-Dakota?**

A40. In this proceeding, we are focused on estimating the Cost of Equity for Montana-Dakota's electric utility operations. Since the Cost of Equity is a market-based concept, and given that Montana-Dakota does 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 Montana-Dakota in certain fundamental business and financial respects to serve as its "proxy" in the ROE estimation process.

Even if Montana-Dakota's electric utility operations in North Dakota did constitute the entirety of a publicly-traded entity, it is possible that transitory events could bias its market value over a given period of time. A significant benefit of using a proxy group is that it moderates the effects of unusual events that may be associated with any one company. The proxy companies used in my analyses all possess a set of operating and risk characteristics that are substantially comparable to the Company, and thus provide a reasonable basis to derive and estimate the appropriate ROE for Montana-Dakota.

**Q41. Please provide a brief profile of Montana-Dakota.**

A41. Montana-Dakota Utilities Co. is a wholly owned subsidiary of MDU Resources. It provides regulated retail natural gas and/or electric service to parts of Montana, North Dakota, South Dakota, and Wyoming. The Company's electric utility operations in North Dakota serves approximately 93,344 residential, general, lighting and municipal customers. As of December 31, 2021, the Company's net utility electric plant in North Dakota was approximately 903.6 million.[34] In addition, the Company had total electric sales in North Dakota in 2021 of approximately 2,075,391,863 MWh, composed of 35.94 percent residential, 61.02 percent general and 3.04 percent lighting and municipal customers.[35] For the Company's parent entity, MDU Resources, North Dakota accounted for 64.00 percent of its total electric retail sales revenue in 2021, while Montana operations were 22.00 percent, South Dakota was 5.00 percent, and Wyoming was 9.00 percent.[36] Montana-Dakota Utilities Co. currently has an investment-grade long-term rating of BBB+ (Outlook: Stable) from S&P and BBB+ (Outlook: Stable) from Fitch[37].

**Q42. How did you select the companies included in your proxy group?**

A42. 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.

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[34] Montana-Dakota Utilities Co. 2021 Annual Report to the North Dakota Public Service Commission, at Intrastate Return on Equity, at 2.

[35] Montana-Dakota Utilities Co. 2021 Annual Report to the North Dakota Public Service Commission, at Miscellaneous, at 1.

[36] MDU Resources Group, Inc., Form 2021 SEC Form 10-K at 12.

[37] S&P and Fitch Ratings accessed March 31, 2022.

- have positive long-term earnings growth forecasts from at least two equity analysts.
- have investment grade long-term issuer ratings from both S&P and Moody's.
- own generation assets included in rate base
- have more than 40 percent of company-owned generation;
- derive more than 60 percent of total operating income from regulated operations;
- derive more than 80 percent of their total regulated operating income from regulated electric operations; and
- were not party to a merger or transformative transaction during the analytical period considered.

**Q43. Did you exclude any other companies from the proxy group?**

A43. Yes. I also excluded Pinnacle West Capital Corporation ("PNW") and Hawaiian Electric Industries, Inc. ("HE"). For PNW, the share price decreased approximately 24 percent over a two-month period from October through November 2021 resulting from a negative regulatory decision for its largest operating company, Arizona Public Service Company ("APS"). Therefore, similar to the reason that I exclude transformative transactions; because the stock price can be affected by one-time events, I also excluded PNW from the proxy group.

HE's operations are concentrated on the islands of Hawaii; therefore, the company faces geographic concentration risk. As HE noted in the company's 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].[38]

[38] Hawaii Electric Industries, Inc., 2021 Form 10-K, at 23.

The increased risk of service interruptions resulting from HE's geographic location which 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").[39] 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.[40] As a result, I have excluded HE from my proxy group considering HE's unique geographical risks.

**Q44. What is the composition of your proxy group?**

A44. The screening criteria discussed above is shown in Exhibit No. ___(AEB-2), Schedule 3 and resulted in a proxy group consisting of the companies shown in Figure 10 below .

**Figure 10: Proxy Group**

| Company | Ticker |
|---|---|
| ALLETE, Inc. | ALE |
| Alliant Energy Corporation | LNT |
| Ameren Corporation | AEE |
| American Electric Power Company, Inc. | AEP |
| Duke Energy Corporation | DUK |
| Entergy Corporation | ETR |
| Evergy, Inc. | EVRG |

[39] *Id.*, at 86.
[40] *Id.*, at 20.

| | |
|---|---|
| IDACORP, Inc. | IDA |
| NextEra Energy, Inc. | NEE |
| NorthWestern Corporation | NWE |
| OGE Energy Corporation | OGE |
| Otter Tail Corporation | OTTR |
| Portland General Electric Company | POR |
| Southern Company | SO |
| Xcel Energy Inc. | XEL |

## VI. COST OF EQUITY ESTIMATION

**Q45. Please briefly discuss the ROE in the context of the regulated rate of return.**

A45. The overall rate of return for a regulated utility is based on its 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 cost 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.

**Q46. How is the required ROE determined?**

A46. While the cost of debt can be directly observed, the cost of equity and the required ROE are market-based and, therefore, must be estimated based on observable market information. The required ROE is determined by using one or more analytical techniques that rely on market data to quantify investor expectations regarding the range of required equity returns. Informed judgment is applied, based on the results of those analyses, to determine where within the range of results the cost of equity for a company falls. As a general proposition, the key consideration in determining the cost of equity is to ensure

that the methodologies employed reasonably reflect investors' views of the financial markets, the proxy group companies, and the subject company's risk profile.

**Q47. What methods did you use to determine the Company's ROE?**

A47. I considered the results of the Constant Growth DCF model, the CAPM, the ECAPM, and the Bond Yield Plus Risk Premium Analysis. As discussed in more detail below, a reasonable ROE estimate appropriately considers alternative methodologies and the reasonableness of their individual and collective results.

## A. Importance of Multiple Analytical Approaches

**Q48. Why is it important to use more than one analytical approach?**

A48. 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. A number of models have been developed to estimate the Cost of Equity, and I use multiple approaches to estimate the Cost of Equity. As a practical matter, however, all of the models available for estimating the Cost of Equity are subject to limiting assumptions or other methodologies constraints. Consequently, many well-regarded finance texts recommended using multiple approaches when estimating the Cost of Equity. For example, Copeland, Koller, and Murrin[41] suggest using the CAPM and

[41] 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.

Arbitrage Pricing Theory model, while Brigham and Gapenski[42] recommend the CAPM, DCF, and "bond yield plus risk premium" approaches.

**Q49. Do current market conditions support the use of more than one analytical approach?**

A49. Yes. The effect of the low interest rate environment can be seen in the low dividend yields for utilities which result in DCF cost of equity estimates that are understating the forward-looking cost of equity. The CAPM and Bond Yield Plus Risk Premium method offer some balance to the sensitivity of the DCF model to low Treasury yields. Low interest rates might also affect the CAPM in two ways: (1) the risk-free rate is lower, and (2) because the market risk premium is a function of interest rates, (*i.e.*, it is the return on the broad stock market less the risk-free interest rate), the risk premium should move higher when interest rates are lower. However, when applied appropriately, the CAPM will take into account the relationship between ROE and interest rates through the market risk premium component. Therefore, it is important to use multiple analytical approaches to moderate the impact that the current low interest rate environment is having on the ROE estimates, especially the DCF analysis, and where possible consider using projected market data in the models to estimate the return for the forward-looking period.

**Q50. Are you aware of any regulatory commissions that have recognized the importance of considering the results of multiple models?**

A50. Yes, several regulatory commissions consider the results of multiple ROE estimation methodologies such as the DCF, CAPM, and ECAPM in determining the authorized ROE,

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

including the Minnesota Public Utilities Commission ("Minnesota PUC")[43], the Michigan Public Service Commission ("Michigan PSC")[44], the Iowa Utilities Board ("IUB")[45], the Washington Utilities and Transportation Commission ("Washington UTC")[46] and the New Jersey Board of Public Utilities ("NJBPU")[47]. For example, the Washington UTC has repeatedly emphasized that it "places value on each of the methodologies used to calculate the cost of equity and does not find it appropriate to select a single method as being the most accurate or instructive."[48] The Washington UTC has also explained that "[f]inancial circumstances are constantly shifting and changing, and we welcome a robust and diverse record of evidence based on a variety of analytics and cost of capital methodologies."[49]

Additionally, in its recent order for DTE Gas Company ("DTE Gas") in Case No. U-18999, the Michigan PSC considered the results of each of the models presented by the ROE witnesses, which included the DCF, CAPM, and ECAPM in the determination of the authorized ROE.[50] The Commission also considered authorized ROEs in other states, increased volatility in capital markets and the company-specific business risks of DTE Gas.

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43 Docket No. G011/GR-17-563, Findings of Fact, Conclusions and Order, at 27; Docket No. E015/GR-16-664, Findings of Fact, Conclusions and Order, at 60-61.

44 Michigan Public Service Commission Order, DTE Gas Company, Case No. U-18999, September 13, 2018, at 45-47.

45 Iowa Utilities Board, Iowa-American Water Company, RPU-2016-0002, Final Decision and Order issued February 27, 2017, at 35.

46 *Wash. Utils. & Transp. Comm'n v. PacifiCorp*, Docket UE-130043, Order 05, n. 89 (Dec. 4, 2013); *Wash. Utils. & Transp. Comm'n v. PacifiCorp*, Docket UE-100749, Order 06, ¶ 91 (March 25, 2011).

47 NJBPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Order Adopting Initial Decision with Modifications and Clarifications, March 18, 2015, at 71.

48 *Wash. Utils. & Transp. Comm'n v. PacifiCorp*, Docket UE-130043, Order 05, n. 89 (Dec. 4, 2013).

49 *Wash. Utils. & Transp. Comm'n v. PacifiCorp*, Docket UE-100749, Order 06, ¶ 91 (March 25, 2011).

50 Michigan Public Service Commission Order, DTE Gas Company, Case No. U-18999, September 13, 2018, at 45-47.

**Q51. What are your conclusions about the results of the DCF and CAPM models?**

A51. Recent market data that is used as the basis for the assumptions for both models have been affected by market conditions. As a result, relying exclusively on historical assumptions in these models, without considering whether these assumptions are consistent with investors' future expectations, will underestimate the cost of equity that investors would require over the period that the rates in this case are to be in effect. In this instance, relying on the historically low dividend yields that are not expected to continue over the period that the new rates will be in effect will underestimate the ROE for Montana-Dakota.

Furthermore, as discussed in Section IV above, long-term interest rates have increased since August 2020 and this trend is expected to continue as the Federal Reserve normalizes monetary policy in response to increased inflation. Therefore, the use of current averages of Treasury bond yields as the estimate of the risk-free rate in the CAPM is not appropriate since recent market conditions are not expected to continue over the long-term. Instead, analysts should rely on projected yields of Treasury Bonds in the CAPM. The projected Treasury Bond yields result in CAPM estimates that are more reflective of the market conditions that investors expect during the period that the Company's rates will be in effect.

**B. Constant Growth DCF Model**

**Q52. Please describe the DCF approach.**

A52. 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:

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

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

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

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.

**Q53. What assumptions are required for the Constant Growth DCF model?**

A53. The Constant Growth DCF model requires the following assumptions: (1) a constant growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-earnings ("P/E") ratio; and (4) a discount rate greater than the expected growth rate. To the extent any of these assumptions is violated, considered judgment and/or specific adjustments should be applied to the results.

**Q54. What market data did you use to calculate the dividend yield in your Constant Growth DCF model?**

A54. The dividend yield in my Constant Growth DCF model is based on the proxy companies' current annual dividend and average closing stock prices over the 30-, 90-, and 180-trading days as of March 31, 2022.

**Q55. Why did you use three averaging periods for stock prices?**

A55. In my Constant Growth DCF model, I use an average of recent trading days to calculate the price term ($P_0$) in the DCF model to ensure that the ROE is not skewed by anomalous

events that may affect stock prices on any given trading day. The averaging period should also be reasonably representative of expected capital market conditions over the long-term. However, as discussed above, recent market data is not representative of expected market conditions over the long-term. Therefore, the results of my Constant Growth DCF model using historical data may underestimate the forward-looking cost of equity. As a result, I place more weight on the median to median-high results produced by my Constant Growth DCF model.

**Q56. Did you make any adjustments to the dividend yield to account for periodic growth in dividends?**

A56. 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.

**Q57. Why is it important to select appropriate measures of long-term growth in applying the DCF model?**

A57. In its Constant Growth form, the DCF model (i.e., Equation [2]) assumes a single long-term growth rate in perpetuity. To reduce the long-term growth rate to a single measure, one must assume that the dividend payout ratio remains constant and that earnings per share, dividends per share, and book value per share all grow at the same constant rate. Over the long run, however, dividend growth can only be sustained by earnings growth.

Therefore, it is important to incorporate a variety of sources of long-term earnings growth rates into the Constant Growth DCF model.

**Q58. What sources of long-term growth rates did you rely on in your Constant Growth DCF model?**

A58. My Constant Growth DCF model incorporates the following sources of long-term growth rates: (1) consensus long-term earnings growth estimates from Zacks Investment Research; (2) consensus long-term earnings growth estimates from Thomson First Call (provided by Yahoo! Finance); and (3) long-term earnings growth estimates from Value Line.

**Q59. How did you calculate the expected dividend yield?**

A59. I adjusted the dividend yield to reflect the growth rate that was being used in that particular scenario. This ensures that the growth rate used in the dividend yield calculation and the growth rate used as the "g" term of the DCF model are internally consistent.

**Q60. How did you calculate the range of results for the Constant Growth DCF model?**

A60. I calculated the low DCF result using the minimum growth rate (i.e., the lowest of the Thomson First Call, Zacks, and Value Line earnings growth rates) for each of the proxy group companies. Thus, the low result reflects the minimum DCF result for the proxy group. I used a similar approach to calculate the high results, using the highest growth rate for each proxy group company. The mean results were calculated using the average growth rates from all sources.

**Q61. Please summarize the results of your Constant Growth DCF analyses.**

A61. Figure 11 (see also Exhibit No. ___(AEB-2), Schedule 4), present the results of the Constant Growth DCF analyses using a 30-Day, 90-Day, or 180-Day average for the

closing stock price of the proxy groups as of March 31, 2022. The mean results range from 9.34 percent to 9.42 percent. The mean high results range from 10.25 percent to 10.33 percent. The median and median high results range from 9.50 percent to 9.56 percent and 10.18 percent to 10.24 percent respectively.

**Figure 11: Summary of Constant Growth DCF Results**

| ***Constant Growth DCF*** | | | |
|---|---|---|---|
| | Mean Low | Mean | Mean High |
| 30-Day Average | 8.33% | 9.34% | 10.25% |
| 90-Day Average | 8.36% | 9.37% | 10.28% |
| 180-Day Average | 8.41% | 9.42% | 10.33% |
| | Median Low | Median | Median High |
| 30-Day Average | 7.98% | 9.50% | 10.18% |
| 90-Day Average | 8.02% | 9.40% | 10.21% |
| 180-Day Average | 8.15% | 9.56% | 10.24% |

**Q62. What are your conclusions about the results of the Constant Growth DCF model?**

A62. As discussed previously, one primary assumption of the DCF model is a constant P/E ratio. That assumption is heavily influenced by the market price of utility stocks. Since utility stocks are expected to underperform the broader market over the near-term as interest rates increase, it is important to consider the results of the DCF models with caution because the DCF tends to understate the cost of equity in rising interest rate and higher inflationary environments, which, as discussed previously, currently exist. 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 ROE estimation models.

### C. Capital Asset Pricing Model

**Q63. Please briefly describe the Capital Asset Pricing Model ("CAPM")**

A63. 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. This form of risk cannot be diversified away using a portfolio of assets. Non-systematic risk is the risk of a specific company that can be mitigated through portfolio diversification.

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

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

Where:

$K_e$ = the required market ROE;

$\beta$ = Beta coefficient of an individual security;

$r_f$ = the risk-free ROR; and

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

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

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

The variance of the market return (i.e., Variance ($r_m$)) is a measure of the uncertainty of the general market. 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.

**Q64. What risk-free rate did you use in your CAPM analysis?**

A64. I relied on three sources for my estimate of the risk-free rate: (1) the current 30 day average yield on 30-year U.S. Treasury bonds (i.e., 2.37 percent);[51] (2) the projected 30-year U.S. Treasury bond yield for Q3 2022 through Q3 2023 (i.e., 3.12 percent);[52] and (3) the projected 30-year U.S. Treasury bond yield for 2023 through 2027 (i.e., 3.40 percent).[53]

**Q65. Would you place more weight on one of these scenarios?**

A65. Yes. Based on current market conditions, I place more weight on the results of the projected yields on the 30-year Treasury bonds. As discussed previously, the estimation of the cost of equity in this case should be forward-looking because it is the return that investors would receive over the future rate period. Therefore, the inputs and assumptions used in the CAPM analysis should reflect the expectations of the market at that time. While I have included the results of a CAPM analysis that relies on the current average risk-free

[51] Bloomberg, as of March 31, 2022
[52] Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2.
[53] Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14.

rate, this analysis fails to take into consideration the effect of the market's expectations for interest rate increases on the cost of equity.

**Q66. What beta coefficients did you use in your CAPM analysis?**

A66. As shown in Exhibit No. ___(AEB-2), Schedule 5, I used the Beta coefficients for the proxy group companies as reported by Bloomberg and Value Line. The Beta coefficients reported by Bloomberg were calculated using ten years of weekly returns relative to the S&P 500 Index. Value Line's calculation is based on five years of weekly returns relative to the New York Stock Exchange Composite Index.

Additionally, as shown in Exhibit No. ___(AEB-2), Schedule 6, I also considered an additional CAPM analysis which relies on the long-term average utility Beta coefficient for the companies in my proxy group. The long-term average utility Beta coefficient was calculated as an average of the Value Line Beta coefficients for the companies in my proxy group from 2013 through 2021.

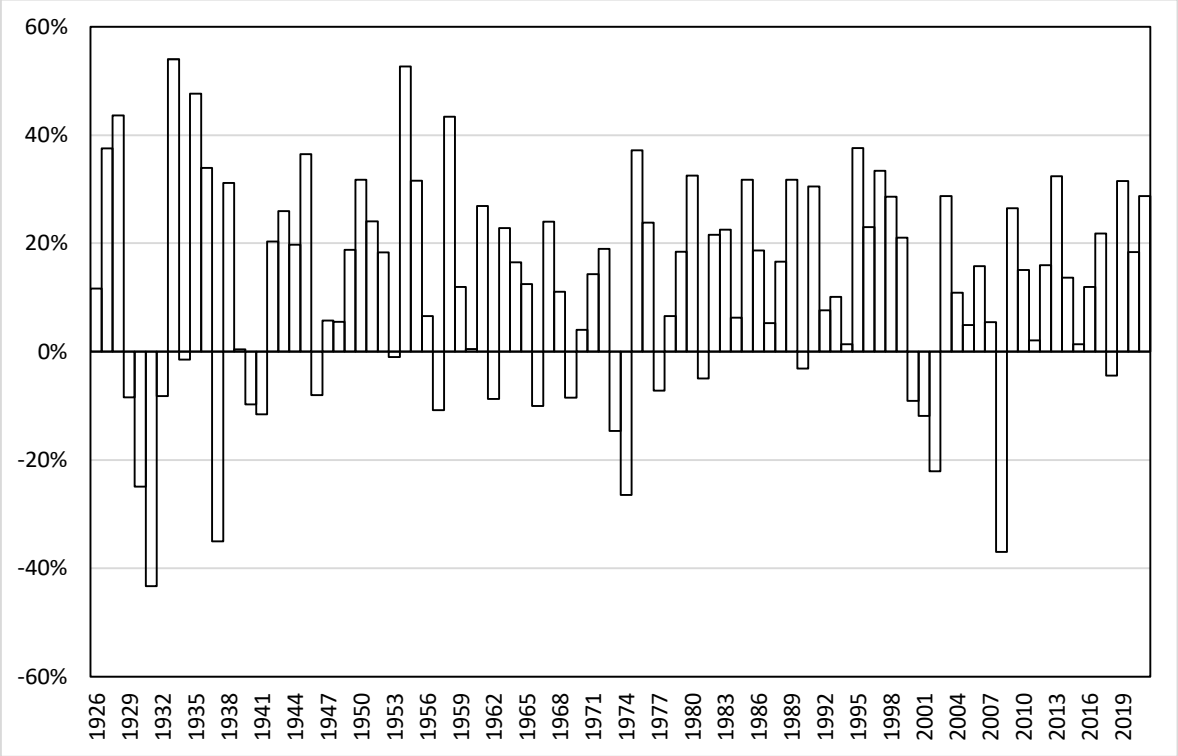
**Q67. How did you estimate the Market Risk Premium in the CAPM?**

A67. I estimated the Market Risk Premium ("MRP") as the difference between the implied expected equity market return and the risk-free rate. As shown in Exhibit No. ___(AEB-2), Schedule 7, the expected return on the S&P 500 Index 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 1.61 percent and a weighted long-term growth rate of 10.99 percent, the estimated required market return for the S&P 500 Index is 12.68 percent.

**Q68. How does the current expected market return of 12.68 percent compare to observed historical market returns?**

A68. Given the range of annual equity returns that have been observed over the past 96 years (shown in Figure 12 below), a current expected return of 12.68 percent is not unreasonable. In 50 of the past 96 years (i.e., in approximately half of all observations), the realized total equity return was at least 12.68 percent or greater.

**Figure 12: Realized U.S. Equity Market Returns (1926-2021)[54]**




**Q69. Did you consider another form of the CAPM in your analysis?**

A69. Yes. I have also considered the results of an Empirical CAPM ("ECAPM" or alternatively referred to as the Zero-Beta CAPM)[55] in estimating the cost of equity for MDU-ND. The ECAPM calculates the product of the adjusted Beta coefficient and the market risk

[54] Depicts total annual returns on large company stocks, as reported in the 2022 Duff & Phelps SBBI Yearbook.
[55] See e.g., Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 189.

premium and applies a weight of 75.00 percent to that result. The model then applies a 25.00 percent weight to the market risk premium, without any effect from the Beta coefficient. The results of the two calculations are summed, along with the risk-free rate, to produce the ECAPM result, as noted in Equation [5] below:

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

Where:

$k_e$ = the required market ROE

$\beta$ = 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 Empirical form of the CAPM addresses the tendency of the "traditional" CAPM to underestimate the cost of equity for companies with low Beta coefficients such as regulated utilities. In that regard, the ECAPM is not redundant to the use of adjusted Betas; rather, it recognizes the results of academic research indicating that the risk-return relationship is different (in essence, flatter) than estimated by the CAPM, and that the CAPM underestimates the "alpha," or the constant return term.[56]

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

[56] *Id.*, at 191.

**Q70. What are the results of your CAPM analyses?**

A70. As shown in Figure 13 (see also Exhibit No. ___(AEB-2), Schedule 5), my traditional CAPM analysis produces a range of returns from 10.04 percent to 11.63 percent. The ECAPM analysis results range from 10.70 percent to 11.89 percent.

**Figure 13: 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 | 11.51% | 11.60% | 11.63% |
| Bloomberg Beta | 10.71% | 10.85% | 10.90% |
| Long-term Avg. Beta | 10.04% | 10.24% | 10.31% |
| ***ECAPM*** | | | |
| Value Line Beta | 11.80% | 11.87% | 11.89% |
| Bloomberg Beta | 11.20% | 11.31% | 11.35% |
| Long-term Avg. Beta | 10.70% | 10.85% | 10.90% |

## D. Bond Yield Plus Risk Premium Analysis

**Q71. Please describe the Bond Yield Plus Risk Premium approach.**

A71. In general terms, this approach is based on the fundamental principle that equity investors bear the residual risk associated with equity ownership and therefore require a premium over the return they would have earned as a bondholder. That is, because returns to equity holders have greater risk than returns to bondholders, equity investors must be compensated to bear that risk. Risk premium approaches, therefore, estimate the cost of equity as the sum of the equity risk premium and the yield on a particular class of bonds. In my analysis, I used actual authorized returns for electric utility companies as the historical measure of the cost of equity to determine the risk premium.

**Q72. Are there other considerations that should be addressed in conducting this analysis?**

A72. Yes. It is important to recognize both academic literature and market evidence indicating that the equity risk premium (as used in this approach) is inversely related to the level of interest rates. That is, as interest rates increase (decrease), the equity risk premium decreases (increases). Consequently, it is important to develop an analysis that: (1) reflects the inverse relationship between interest rates and the equity risk premium; and (2) relies on recent and expected market conditions. Such an analysis can be developed based on a regression of the risk premium as a function of U.S. Treasury bond yields. If we let authorized ROEs for electric utilities serve as the measure of required equity returns and define the yield on the long-term U.S. Treasury bond as the relevant measure of interest rates, the risk premium simply would be the difference between those two points.[57]

**Q73. Is the Bond Yield Plus Risk Premium analysis relevant to investors?**

A73. Yes. Investors are aware of ROE awards in other jurisdictions, and they consider those awards as a benchmark for a reasonable level of equity returns for utilities of comparable risk operating in other jurisdictions. Because my Bond Yield Plus Risk Premium analysis is based on authorized ROEs for utility companies relative to corresponding Treasury yields, it provides relevant information to assess the return expectations of investors.

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

**Q74. What did your Bond Yield Plus Risk Premium analysis reveal?**

A74. As shown in Figure 14 below, from 1992 through March 2022, 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:

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

Where

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

a = intercept term

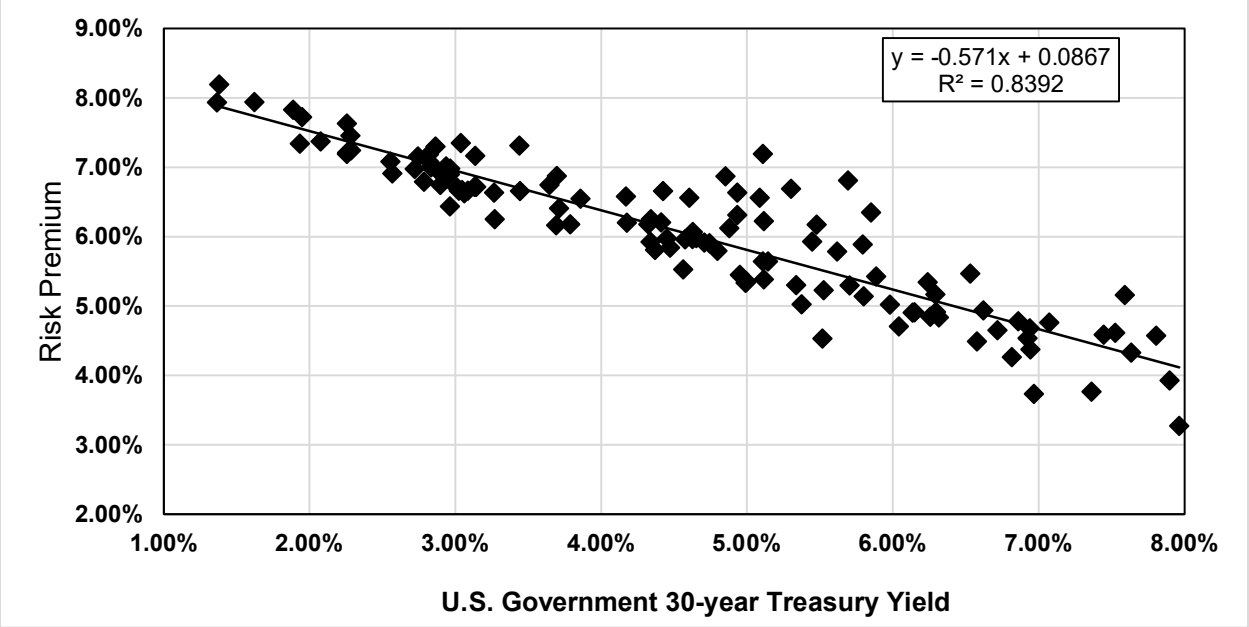
b = slope term

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

Data regarding allowed ROEs were derived from 681 vertically integrated electric utility rate cases from 1992 through March 2022 as reported by Regulatory Research Associates ("RRA").[58] This equation's coefficients were statistically significant at the 99.00 percent level.

[58] This analysis began with a total of 1,371 cases and was screened to eliminate limited issue rider cases, transmission-only cases, distribution cases, and cases that were silent with respect to the authorized ROE. After applying those screening criteria, the analysis was based on data for 681 cases.

**Figure 14: Risk Premium Results**




As shown on Exhibit No. ___(AEB-2), Schedule 8, based on the current 30-day average of the 30-year U.S. Treasury bond yield (i.e., 2.37 percent), the risk premium would be 7.31 percent, resulting in an estimated ROE of 9.68 percent. Based on the near-term (Q3 2022 – Q3 2023) projections of the 30-year U.S. Treasury bond yield (i.e., 3.12 percent), the risk premium would be 6.88 percent, resulting in an estimated ROE of 10.00 percent. Based on longer-term (2023-2027) projections of the 30-year U.S. Treasury bond yield (i.e., 3.40 percent), the risk premium would be 6.73 percent, resulting in an estimated ROE of 10.13 percent.

**Q75. How did the results of the Bond Yield Risk Premium inform your recommended ROE for Montana-Dakota?**

A75. I have considered the results of the Bond Yield Risk Premium analysis in setting my recommended ROE for Montana-Dakota. As noted above, investors consider the ROE determination by a regulator 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 US.

## VII. REGULATORY AND BUSINESS RISKS

**Q76. Do the DCF, CAPM, and ECAPM results for the proxy group, taken alone, provide an appropriate estimate of the cost of equity for Montana-Dakota?**

A76. No. These results provide only a range of the appropriate estimate of the Company's cost of equity. There are several additional factors that must be taken into consideration when determining where the Company's cost of equity falls within the range of results. These factors, which are discussed below, should be considered with respect to their overall effect on the Company's risk profile.

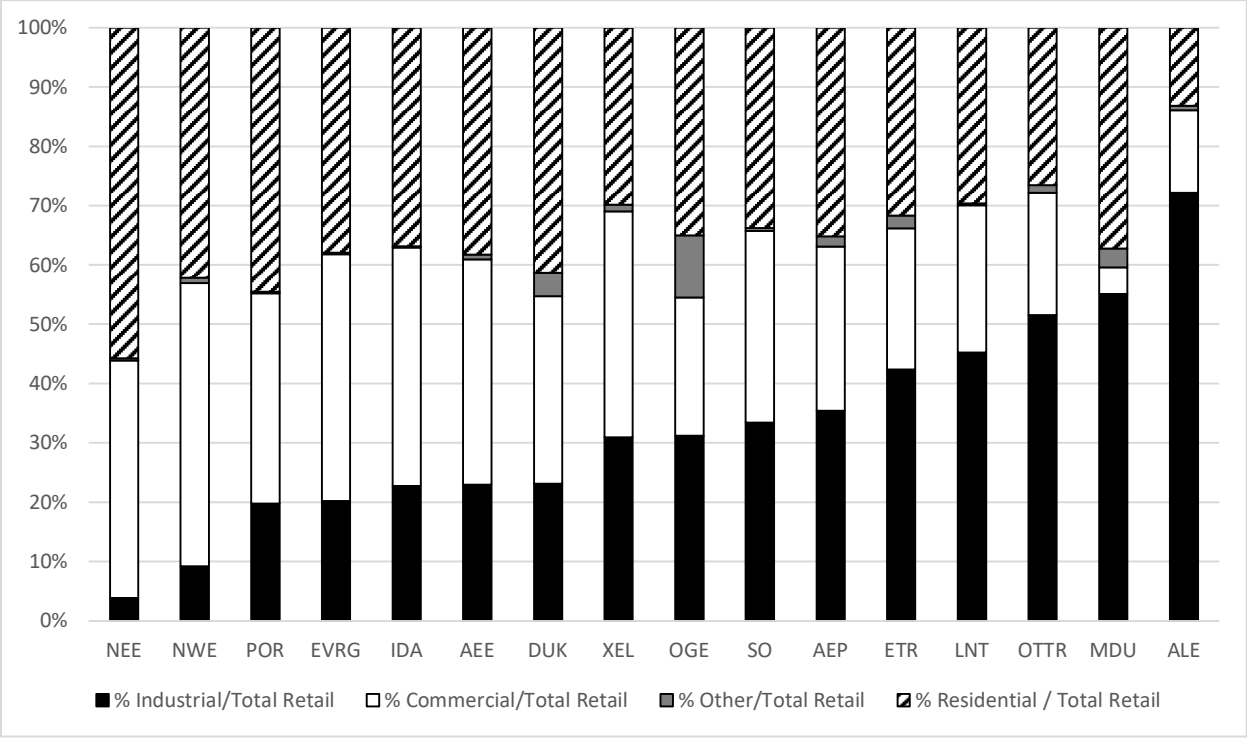
### A. Service Territory Risk

**Q77. Please summarize Montana-Dakota's service territory risk.**

A77. As noted above, Montana-Dakota provides electric service to approximately 93,000 customers in North Dakota. The Company's service area is in Central and Western North Dakota, where a number of Montana-Dakota's large general service customers are engaged in crude oil refining, oil and natural gas production, precious metal refining and manufacturing. As I will discuss in more detail below, the oil and natural gas production industry represents a large portion of the economy in North Dakota and supports the Company's residential and commercial customers. Approximately 55 and 56 percent of Montana-Dakota's 2020 and 2021 total retail kWh electric sales in North Dakota were derived from the large general customer class. As shown in Figure 15, Montana-Dakota's

large general service sales volume as a percentage of total retail electric sales was higher than all but one of the companies in the proxy group.[59]

**Figure 15: Customer Concentration[60]**




**Q78. How does customer concentration and the Company's service territory affect business risk?**

A78. An extremely high concentration of industrial customers results in higher business risk. Since the customers are large, they can represent a significant portion of a company's sales which could be lost if a customer goes out of business. Moreover, the loss of large industrial customers would have an effect on the local economy which would ultimately also affect

[59] Does not include "other", commercial or residential customers.
[60] Source: S&P Capital IQ Pro - Other sales includes: Total Public Street and Highway Lighting, Other Sales to Public Authorities, Sales to Railroad and Railways, and Interdepartmental Sales.

the sales to residential and commercial customers. As noted by Dhaliwal, Judd, Serfling and Shaikh in their article, *Customer Concentration Risk and the Cost of Equity Capital*:

> Depending on a major customer for a large portion of sales can be risky for a supplier for two primary reasons. First, a supplier faces the risk of losing substantial future sales if a major customer becomes financially distressed or declares bankruptcy, switches to a different supplier, or decides to develop products internally. Consistent with this notion, Hertzel et al. (2008) and Kolay et al. (2015) document negative supplier abnormal stock returns to the announcement that a major customer declares bankruptcy. Further, a customer's weak financial condition or actions could signal inherent problems about the supplier's viability to its remaining customers and lead to compounding losses in sales. Second, a supplier faces the risk of losing anticipated cash flows from being unable to collect outstanding receivables if the customer goes bankrupt. This assertion is consistent with the finding that suppliers offering customers more trade credit experience larger negative abnormal stock returns around the announcement of a customer filing for Chapter 11 bankruptcy (Jorion and Zhang, 2009; Kolay et al., 2015).[61]

Therefore, a company that has a high degree of customer concentration will be inherently riskier than a company that derived income from a larger customer base. Furthermore, as Dhaliwal, Judd, Serfling and Shaik detail in the article, the increased risk associated with a more concentrated customer base will have the effect of increasing a company's cost of equity.[62]

**Q79. Please describe how changes in economic conditions and the interdependent nature of Montana-Dakota's service territory can affect its business risk?**

A79. While Montana-Dakota doesn't necessarily depend on any one major customer, it is important to note that one large general service customer in the oil refining industry did comprise 8.87 percent of the Company's 2021 total retail electric sales. Furthermore, the Company has a high concentration of large general service customers. Montana-Dakota's

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

[62] *Id.,* at 4.

major large general service customers are engaged in industries such as crude oil refining, oil and natural gas production, precious metal refining and manufacturing. Additionally, North Dakota's state economy depends on the oil and natural gas production industry; thus the industry also supports the Company's commercial and residential customers. It is well-documented that the oil and natural gas production industry is very cyclical. Additionally, like other industries, the oil and natural gas production industries are also dependent on the general business cycle. As a result, the production of the customers could change based on general or industry specific economic conditions thereby impacting the customers' energy consumption.

Furthermore, the oil and natural gas production industries could also be facing a downward trend in overall demand over the long-term given state, national and global initiatives to significantly reduce carbon emissions by 2050. In addition, achieving long-term carbon emissions goals requires the steady reduction in emissions over time which means investment is needed in the near-term to begin to reduce the carbon emissions associated with natural gas and oil production. In fact, many companies in the oil and natural gas industry have set their own carbon emissions goals as part of their environmental social governance plans ("ESG"). For example, as noted in a recent article in the Williston Herald, the recent recovery in oil and gas production in North Dakota has been slower than expected given the increase in oil prices due in part to lack of infrastructure to transport the oil and natural gas to market because of companies' carbon gas capture rate goals:

> North Dakota Pipeline Authority Justin Kringstad has talked about this issue [lack of infrastructure to transport the gas to market] frequently. Even 5 percent growth in oil production would be difficult, as things stand now, when it comes to gas

> takeaway. That sets a new ceiling, as many companies have set ambitious 98 and 99 percent gas capture rates for their ESG goals.[63]

Companies are currently weighing the cost/benefit of making additional investments over the near-term to increase oil and natural gas production in industries that could face significant declines in demand over time to meet long-term carbon emissions standards. This means the oil and natural gas industry in North Dakota is unlikely to experience significant growth even if commodity prices continue to increase in the near-term. The lack of growth in the near-term and the expected decline in demand for oil and natural gas over the long-term, increases uncertainty and the risk for Montana-Dakota because as I will discuss in more detail below, the economy of the Company's service territory is heavily dependent on the oil and natural gas industry.

**Q80. How has employment in the oil and natural gas production industry faired in recent economic conditions?**

A80. Figure 16 below contains data on mining and logging employment in North Dakota from January 2006 through February 2022. I reviewed mining and logging employment[64] because this data series considers employment in the oil and natural gas production industry. As shown in Figure 16, mining and logging employment in North Dakota has been highly dependent on the price of oil which has been very volatile since 2006. In fact, the decline in the price of oil that began in 2014 and ended in 2016 resulted in a decrease in mining and logging employment in North Dakota from 31,600 in October 2014 to a low

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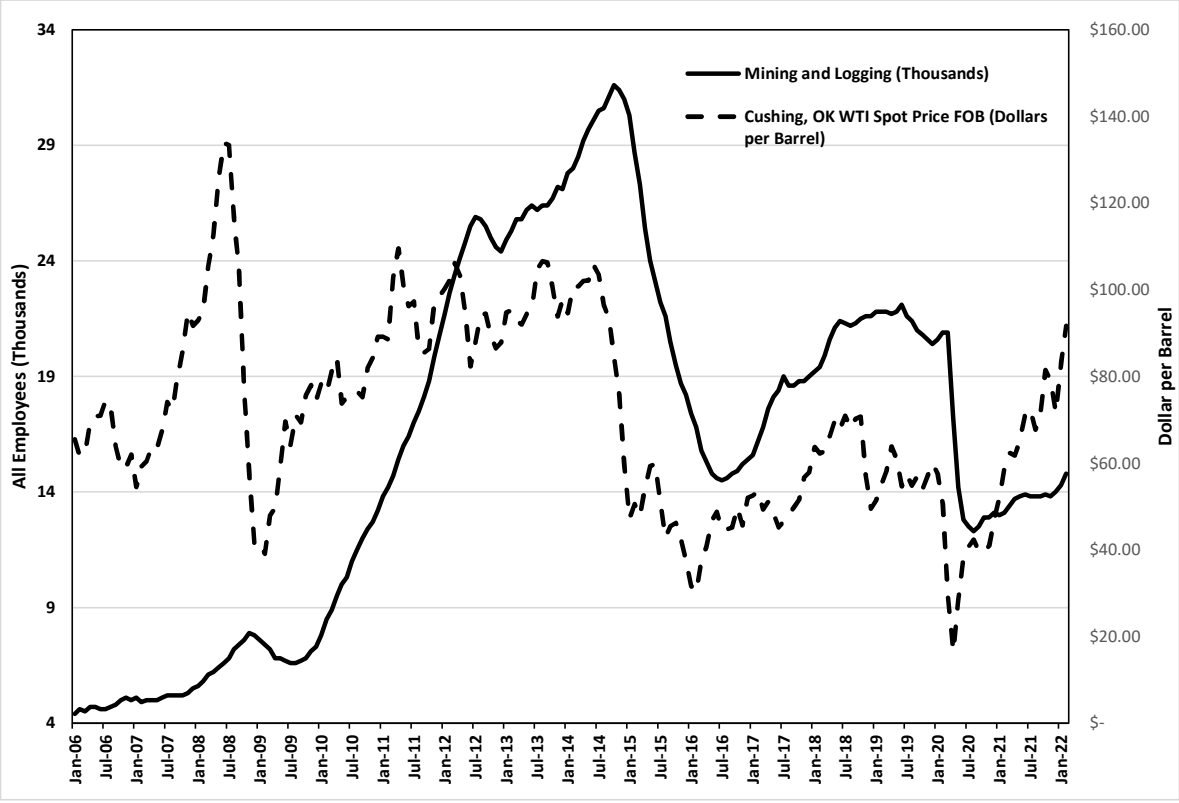
[63] Jean, Renee, "Labor, lack of infrastructure are taking the top off North Dakota's oil and gas recovery," Williston Herald, February 21, 2022. https://www.willistonherald.com/news/oil_and_energy/labor-lack-of-infrastructure-are-taking-the-top-off-north-dakotas-oil-and-gas-recovery/article_68672a6c-935e-11ec-a69e-df734464fe8d.html

[64] Logging is not a significant source of employment in North Dakota; however, the Bureau of Labor Statistics combines mining and logging employment when reporting state level employment statistics.

of 14,500 in July 2016 (i.e., a decline of approximately 50 percent). Furthermore, while oil prices have increased significantly over the past year from the lows in 2020 that occurred as a result of the COVID-19 pandemic, mining and logging employment in North Dakota has not yet similarly recovered due in part to the transportation constraints and carbon emissions standards discussed above.

**Figure 16: North Dakota Mining and Logging Employment (Thous.) & West Texas Intermediate Spot Price for a Barrel of Oil[65]**




**Q81. Are Montana-Dakota's electric sales dependent on the oil refining and natural gas and oil production industries?**

A81. Yes. As discussed above, a large portion of the Company's electric sales were to large general service customers some of which operate in the natural gas and oil production and

[65] Source: Bureau of Labor Statistics and the EIA.

oil refining industries. Moreover, since the economy in Western North Dakota is heavily reliant on the oil and natural gas production industry, Montana-Dakota's commercial and residential customers also rely on the industry for sales and employment. For example, a recent study conducted by North Dakota State University noted the oil and gas industries contribution to the North Dakota economy in 2019:

> Overall, the industry was estimated to support 59,100 jobs in the state having a $4.45 billion payroll. The industry's economic contribution was estimated at $40.2 billion in 2019. The industry was estimated to contribute $25 billion to North Dakota's gross state product. The industry was responsible for $3.8 billion in local and state government revenues.[66]

The study further noted that while the industry has not recovered to the levels of production seen in 2014, the oil and gas industry is still one of the key contributors to the North Dakota economy.[67] Therefore, fluctuations in the price of oil as a result of the overall business cycle or external events that occur in the industry as well as the expected overall decline in the demand for oil over the long-term due to carbon emission standards and goals could have a significant effect on the economic conditions in Montana-Dakota's service territory in the near- and long-term. This could result in a reduction in sales to large general service customers. Additionally, if large general service customers reduce output, the effect would be compounded by a decline in local employment which would also reduce the electric sales for Montana-Dakota's residential and commercial customers.

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[66] Bangsund, Dean, and Nancy Hodur, "Petroleum Industry's Economic Contribution to North Dakota in 2019," North Dakota State University, February 2021, at 31.

[67] *Ibid.*

**Q82. What is your conclusion regarding the Company's service territory and its effect on the cost of equity for Montana-Dakota?**

A82. Montana-Dakota is heavily reliant on sales to large general service customers. As noted above, approximately 56 percent of Montana-Dakota's 2021 total electric sales in North Dakota were to large general service customers. This concentration is higher than all but one of the proxy group companies. A high degree of customer concentration increases Montana-Dakota's risk related to customer migration and changes in economic conditions. This risk is greater in Montana-Dakota's service territory because the residential and commercial customers rely on the success of the oil and natural gas production industry for sales and employment. Increased customer and economic diversity decreases the effect that any one customer or industry can have on a company's sales. Thus, Montana-Dakota's service territory, where large general service customers represent a large portion of electric sales and commercial and residential customers rely economically on the success of the one industry segment, implies that Montana-Dakota has an above average risk profile when compared to the companies in the proxy group.

## B. Regulatory Environment

**Q83. Please explain how the regulatory framework affects investors' risk assessments.**

A83. The ratemaking process is premised on the principle that, for investors and companies to commit the capital needed to provide safe and reliable utility services, the subject utility must have the opportunity to recover invested capital and the market-required return on such capital. Regulatory commissions recognize that because utility operations are capital intensive, regulatory decisions should enable the utility to attract capital at reasonable terms, which balances the long-term interests of investors and customers. In that respect,

the regulatory framework in which a utility operates is one of the most important factors considered in both debt and equity investors' risk assessments.

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

From the perspective of equity investors, the authorized return must be adequate to provide a risk-comparable return on the equity portion of the Company's capital investments. Because equity investors are the residual claimants on the Company's cash flows (that is, debt interest must be paid prior to any equity dividends), equity investors are particularly concerned with the regulatory framework in which a utility operates and its effect on future earnings and cash flows.

**Q84. Please explain how credit rating agencies consider the regulatory framework in establishing a company's credit rating.**

A84. Both S&P and Moody's consider the overall regulatory framework in establishing credit ratings. Moody's establishes credit ratings based on four key factors: (1) regulatory framework; (2) the ability to recover costs and earn returns; (3) diversification; and (4) financial strength, liquidity and key financial metrics. Of these criteria, regulatory

framework and the ability to recover costs and earn returns are each given a broad rating factor of 25.00 percent. Therefore, Moody's assigns regulatory risk a 50.00 percent weighting in the overall assessment of business and financial risk for regulated utilities. [68]

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." [69] S&P identifies four specific factors that it uses to assess the credit implications of the regulatory environment in which investor-owned regulated utilities operate: (1) regulatory stability; (2) tariff-setting procedures and design; (3) financial stability; and (4) regulatory independence and insulation.[70]

**Q85. How does the regulatory environment in which a utility operates affect its access to and cost of capital?**

A85. 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."[71] Moody's further highlighted the relevance of a stable and predictable regulatory environment to a utility's credit quality, noting: "[b]roadly

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

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

[70] *Id*., at 1.

[71] Moody's Investors Service, Rating Methodology: Regulated Electric and Gas Utilities, at 6 (June 23, 2017).

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." [72]

**Q86. Have you conducted any analysis of the regulatory framework in North Dakota relative to the jurisdictions in which the companies in your proxy group operate?**

A86. Yes. I have evaluated the regulatory framework in North Dakota considering two factors which are important to ensuring Montana-Dakota maintains access to capital at reasonable terms. As I will discuss in more detail below, the two 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; and 2) 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, Montana-Dakota's ability to attract capital at reasonable terms could be affected.

### 1. Cost Recovery Mechanisms

**Q87. Have you conducted any analysis to compare the cost recovery mechanisms of Montana-Dakota to the cost recovery mechanisms approved in the jurisdictions in which the companies in your proxy group operate?**

A87. Yes. I selected four mechanisms that are important to provide a regulated utility an opportunity to earn its authorized ROE. These are: 1) test year convention (i.e., forecast vs. historical); 2) method for determining rate base (i.e., average vs. year-end); 3) use of

[72] *Ibid.*

revenue decoupling mechanisms or formula-based rates that mitigate volumetric risk; and 4) prevalence of capital cost recovery between rate cases. The results of this cost recovery assessment are shown in Exhibit No. ___(AEB-2), Schedule 9 and are summarized below.

Test year convention: Montana-Dakota is proposing to use projected test years as of December 31, 2022 and December 31, 2023 in North Dakota which is similar to the proxy group. As shown in Exhibit No. ___(AEB-2), Schedule 9, 50.00 percent of the proxy group provide service in jurisdictions that use a fully or partially forecast test year.

Rate base: Montana-Dakota's rate base in North Dakota is determined based on the average of the beginning and ending test year rate base balances, while 46.15 percent of the operating companies held by proxy group are allowed to use year-end rate base, meaning that the rate base includes capital additions that occurred in the second half of the test year and is more reflective of total net utility plant going forward.

Non-Volumetric Rate Design: Montana-Dakota has not requested approval of a non-volumetric rate design mechanism such as straight fixed variable rate design, a revenue decoupling mechanism or a formula rate plan and thus does not have protection against volumetric risk in North Dakota. However, 44 out of 78 (56.41 percent) of the operating companies held by the proxy group have some form of non-volumetric rate design that allow them to break the link between customer usage and revenues.

Capital Cost Recovery: As discussed above, Montana-Dakota does have capital tracking mechanisms and is proposing to use a fully forecast test year which will allow the Company to recover a portion of its capital expenditures plan. Similarly, 56.41

percent of the operating companies held by the proxy group have some form of capital cost recovery mechanism in place.

### 2. Earned ROE

**Q88. Is there evidence that Montana-Dakota has been unable to earn its authorized ROE?**

A88. Yes. As shown in Figure 17, Montana-Dakota's electric operations in North Dakota has persistently under-earned its authorized ROE in each year since 2015. Over this period, the average earned ROE on the Company's electric operations in North Dakota was 8.59 percent, as compared with the average authorized ROE of 9.96 percent, for an average under-earning of 137 basis points per year. This under-earning occurred despite the fact that Montana-Dakota relied on a forecast test year and was allowed to recover a portion of qualifying capital investments through capital tracking mechanisms.

**Figure 17: Montana-Dakota's Earned vs. Authorized ROE (2015-2021)**

| | EARNED ROE | AUTHORIZED ROE | EARNINGS DIFFERENTIAL (BPS) |
|---|---|---|---|
| 2015 | 6.88% | 10.75% | -387 |
| 2016 | 9.27% | 10.75% | -148 |
| 2017 | 9.09% | 9.65% | -56 |
| 2018 | 8.89% | 9.65% | -76 |
| 2019 | 8.82% | 9.65% | -83 |
| 2020 | 9.39% | 9.65% | -26 |
| 2021 | 7.83% | 9.65% | -182 |
| **Average** | **8.59%** | **10.02%** | **-137** |

**Q89. What is your conclusion regarding the regulatory framework in North Dakota as compared with the jurisdictions in which the proxy group companies operate?**

A89. As discussed throughout this section of my testimony, both Moody's and S&P have identified the supportiveness of the regulatory environment as an important consideration

in developing their overall credit ratings for regulated utilities. Considering the regulatory adjustment mechanisms, many of the companies in the proxy group have more timely cost recovery through forecasted test years, year-end rate base, cost recovery trackers and revenue stabilization mechanisms than Montana-Dakota has in North Dakota. While Montana-Dakota relies on a forecast test year and has capital tracking mechanisms, the Company does not have a revenue decoupling mechanism to mitigate volumetric risk and determines rate base using the average method. Additionally, the Company has not earned its authorized ROE since 2015. For these reasons, I conclude that Montana-Dakota has greater than average regulatory risk when compared to the proxy group, indicating that the authorized ROE for Montana-Dakota should be higher than the proxy group median.

### C. Flotation Cost

**Q90. What are flotation costs?**

A90. Flotation costs are the costs associated with the sale of new issues of common stock. These costs include out-of-pocket expenditures for preparation, filing, underwriting, and other issuance costs.

**Q91. Why is it important to consider flotation costs in the allowed ROE?**

A91. A regulated utility must have the opportunity to earn an ROE that is both competitive and compensatory to attract and retain new investors. To the extent that a company is denied the opportunity to recover prudently incurred flotation costs, actual returns will fall short of expected (or required) returns, thereby diluting equity share value.

**Q92. Are flotation costs part of the utility's invested costs or part of the utility's expenses?**

A92. Flotation costs are part of the invested costs of the utility, which are properly reflected on the balance sheet under "paid in capital." They are not current expenses, and, therefore, are not reflected on the income statement. Rather, like investments in rate base or the issuance costs of long-term debt, flotation costs are incurred over time. As a result, the great majority of a utility's flotation cost is incurred prior to the test year but remains part of the cost structure that exists during the test year and beyond, and as such, should be recognized for ratemaking purposes. Therefore, it is irrelevant whether an issuance occurs during the test year or is planned for the test year because failure to allow recovery of past flotation costs may deny Montana-Dakota the opportunity to earn its required ROR in the future.

**Q93. Please provide an example of why a flotation cost adjustment is necessary to compensate investors for the capital they have invested.**

A93. Suppose MDU Resources issues stock with a value of $100, and an equity investor invests $100 in MDU Resources in exchange for that stock. Further suppose that, after paying the flotation costs associated with the equity issuance, which include fees paid to underwriters and attorneys, among others, MDU Resources ends up with only $97 of issuance proceeds, rather than the $100 the investor contributed. MDU Resources invests that $97 in plant used to serve its customers, which becomes part of rate base. Absent a flotation cost adjustment, the investor will thereafter earn a return on only the $97 invested in rate base, even though she contributed $100. Making a small flotation cost adjustment gives the investor a reasonable opportunity to earn the authorized return, rather than the lower return

that results when the authorized return is applied to an amount less than what the investor contributed.

**Q94. Is the date of MDU Resources' last issued common equity important in the determination of flotation costs?**

A94. No. As shown in Exhibit No. ___(AEB-2), Schedule 10, MDU Resources closed on equity issuances of approximately $58 million and $54 million (for a total of 4.7 million shares of common stock) in November 2002 and February 2004, respectively. The vintage of the issuance, however, is not particularly important because the investor suffers a shortfall in every year that he should have a reasonable opportunity to earn a return on the full amount of capital that he has contributed. Returning to my earlier example, the investor who contributed $100 is entitled to a reasonable opportunity to earn a return on $100 not only in the first year after the investment, but in every subsequent year in which he has the $100 invested. Leaving aside depreciation, which is dealt with separately, there is no basis to conclude that the investor is entitled to earn a return on $100 in the first year after issuance, but thereafter is entitled to earn a return on only $97. As long as the $100 is invested, the investor should have a reasonable opportunity to earn a return on the entire amount.

**Q95. Is the need to consider flotation costs recognized by the academic and financial communities?**

A95. Yes. The need to reimburse shareholders for the lost returns associated with equity issuance costs is recognized by the academic and financial communities in the same spirit that investors are reimbursed for the costs of issuing debt. This treatment is consistent with the philosophy of a fair ROR. According to Dr. Shannon Pratt:

> Flotation costs occur when new issues of stock or debt are sold to the public. The firm usually incurs several kinds of flotation or transaction costs, which reduce the actual proceeds received by the firm. Some of these are direct out-of-pocket outlays, such as fees paid to underwriters, legal expenses, and prospectus preparation costs. Because of this reduction in proceeds, the firm's required returns on these proceeds equate to a higher return to compensate for the additional costs. Flotation costs can be accounted for either by amortizing the cost, thus reducing the cash flow to discount, or by incorporating the cost into the cost of capital. Because flotation costs are not typically applied to operating cash flow, one must incorporate them into the cost of capital.[73]

**Q96. How did you calculate the flotation costs for MDU Resources?**

A96. My flotation cost calculation is based on the costs of issuing equity that were incurred by MDU Resources in its two most recent common equity issuance. These issuance costs were applied to my proxy group. Applying the actual issuance costs for MDU Resources provided in Exhibit No. ___(AEB-2), Schedule 10, to the DCF analysis, the flotation costs are estimated to be 0.13 percent (i.e., 13 basis points).

**Q97. Do your final results include an adjustment for flotation cost recovery?**

A97. No. I did not make an explicit adjustment for flotation costs to any of my quantitative analyses. Rather, I provide the above result for consideration in my recommended ROE, which reflects the range of results from my Constant Growth DCF, CAPM, ECAPM and Risk Premium analyses.

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

## VIII. CAPITAL STRUCTURE

**Q98. Is the capital structure of the Company an important consideration in the determination of the appropriate ROE?**

A98. Yes, it is. Assuming other factors are equal, a higher debt ratio increases the risk to investors. For debt holders, higher debt ratios result in a greater portion of the available cash flow being required to meet debt service, thereby increasing the risk associated with the payments on debt. The result of increased risk is a higher interest rate. The incremental risk of a higher debt ratio is more significant for common equity shareholders, who are the residual claimants on the cash flow of the Company. Therefore, the greater the debt service requirement, the less cash flow is available for common equity holders.

**Q99. What is Montana-Dakota's proposed capital structure?**

A99. Montana-Dakota's is proposing a projected capitalization for 2022 that is composed of 50.787 percent equity, 46.688 long-term debt and 2.525 percent short-term debt. The Company's proposed capitalization for 2023 is composed of 50.810 percent equity, 44.587 percent long-term debt and 4.603 percent short-term debt.

**Q100. Did you conduct any analysis to determine if this projected equity ratio was reasonable?**

A100. Yes, I did. I reviewed the Company's proposed capital structure and the capital structures of the utility operating subsidiaries of the proxy companies. Because the ROE is set based on the return that is derived from the risk-comparable proxy group, it is reasonable to look to the proxy group average capital structure to benchmark the equity ratio for the Company.

**Q101. Please discuss your analysis of the capital structures of the proxy group companies.**

A101. I calculated the mean proportions of common equity, long-term debt and short-term debt for the most recent eight quarters[74] for each of the companies in the proxy group at the operating subsidiary level. My analysis of the capital structures of the proxy group companies is provided in Exhibit No. ___(AEB-2), Schedule 11. As shown in Exhibit No. ___(AEB-2), Schedule 11, the equity ratios for the proxy group ranged from 46.83 percent to 59.91 percent, with an average of 52.35 percent. Montana-Dakota's proposed equity ratios of 50.787 percent in 2022 and 50.810 percent in 2023 are below the average equity ratio for the utility operating subsidiaries of the proxy group and are therefore reasonable.

**Q102. Are there other factors to be considered in setting the Company's capital structure?**

A102. The credit rating agencies' response to the Tax Cuts and Jobs Act of 2017 ("TCJA") must also be considered when determining the equity ratio. All three rating agencies have noted that the TCJA has negative implications for utility cash flows. S&P and Fitch specifically identified increasing the equity ratio as one approach to ensure that utilities have sufficient cash flows following the federal income tax rate reductions and the loss of bonus depreciation. As S&P noted "[r]egulators must also recognize that tax reform is a strain on utility credit quality, and we expect companies to request stronger capital structures and other means to offset some of the negative impact".[75] Furthermore, Moody's downgraded the rating outlook for the entire utilities sector in June 2018 and has continued to

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[74] The source data for this analysis is the operating company data provided in FERC Form 1 reports. Due to the timing of those filings, my average capital structure analysis uses the quarterly capital structures reported for the proxy group companies for the period from fourth quarter of 2019 through the third quarter of 2021.

[75] Standard & Poor's Ratings, "U.S. Tax Reform: For Utilities' Credit Quality, Challenges Abound", January 24, 2018, at 5.

downgrade the ratings of utilities based in part on the negative effects of the TCJA on cash flows.

S&P continues to maintain a negative outlook for the utility industry in 2022 and noted that since downgrades outpaced upgrades for a second consecutive year in 2021 for the first time ever the median investor-owned utility credit rating fell to the "BBB" category.[76] Further, S&P expects continued pressure on cash flows over the near-term as utilities continue to increase leverage to fund capital expenditure plans necessary to reduce greenhouse gas emission and improve safety and reliability. Finally, S&P also highlighted inflation, higher interest rates and rising commodity prices as additional risks that could further constrain the credit metrics for utilities over the near-term. In regards to inflation S&P noted:

> Inflation recently spiked to its highest level in decades after rising for several consecutive months in 2021. Given the sustained increase to the U.S. consumer price index in 2021, inflation no longer appears to be just transitory and may have financial implications for the investor-owned North American regulated utility industry. Because of the regulatory lag within the industry, inflation, which causes prices to rise, typically leads to a weakening of financial performance. The regulatory lag is the timing difference between when costs are incurred and when regulators allow those costs to be fully recovered from ratepayers.[77]

The credit ratings agencies continued concerns over the negative effects or the TCJA, inflation, and increased capital expenditures underscores the importance of maintaining adequate cash flow metrics for the industry, as a whole, and Montana-Dakota, particularly, in the context of this proceeding.

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[76] S&P Global Ratings, "For The First Time Ever, The Median Investor-Owned Utility Ratings Falls To The 'BBB' Category," January 20, 2022.

[77] Ibid.

**Q103. Is there a relationship between the equity ratio and the authorized ROE?**

A103. Yes. The equity ratio is the primary indicator of financial risk for a regulated utility such as Montana-Dakota. 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.

**Q104. What is your conclusion regarding an appropriate equity ratio for Montana-Dakota?**

A104. Considering the actual capital structures of the proxy group operating companies, I believe that Montana-Dakota's proposed common equity ratios of 50.787 percent for 2022 and 50.810 percent for 2023 are reasonable. These projected equity ratios are well within the range of equity ratios established by the capital structures of the utility operating subsidiaries of the proxy companies. Finally, based on the cash flow concerns raised by credit rating agencies as a result of the TCJA, inflation, and increased capital expenditures, it is reasonable to rely on a higher equity ratio than the Company may have relied on in prior rate cases.

## IX. CONCLUSION AND RECOMMENDATION

**Q105. What is your conclusion regarding a fair ROE for Montana-Dakota?**

A105. Figure 18 below provides a summary of my analytical results for the proxy group. Based on these results, the qualitative analyses presented in my Direct Testimony, the business and financial risks of Montana-Dakota compared to the proxy group, and current conditions in capital markets including the expectation for rising interest rates and increase in inflationary pressure, it is my view that an ROE of 10.50 percent is reasonable and would fairly balance the interests of customers and shareholders. This ROE would enable the

Company to maintain 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 North Dakota.

**Figure 18: Summary of Analytical Results**

| ***Constant Growth DCF*** | | | |
|---|---|---|---|
| | Mean Low | Mean | Mean High |
| 30-Day Average | 8.33% | 9.34% | 10.25% |
| 90-Day Average | 8.36% | 9.37% | 10.28% |
| 180-Day Average | 8.41% | 9.42% | 10.33% |
| | Median Low | Median | Median High |
| 30-Day Average | 7.98% | 9.50% | 10.18% |
| 90-Day Average | 8.02% | 9.40% | 10.21% |
| 180-Day Average | 8.15% | 9.56% | 10.24% |
| ***CAPM*** | | | |
| | Current 30-day Average Treasury Bond Yield | Near-Term Blue Chip Forecast Yield | Long-Term Blue Chip Forecast Yield |
| Value Line Beta | 11.51% | 11.60% | 11.63% |
| Bloomberg Beta | 10.71% | 10.85% | 10.90% |
| Long-Term Avg. Beta | 10.04% | 10.24% | 10.31% |
| ***ECAPM*** | | | |
| | Current 30-day Average Treasury Bond Yield | Near-Term Blue Chip Forecast Yield | Long-Term Blue Chip Forecast Yield |
| Value Line Beta | 11.80% | 11.87% | 11.89% |
| Bloomberg Beta | 11.20% | 11.31% | 11.35% |
| Long-Term Avg. Beta | 10.70% | 10.85% | 10.90% |
| ***Risk Premium*** | | | |
| | Current 30-day Average Treasury Bond Yield | Near-Term Blue Chip Forecast Yield | Long-Term Blue Chip Forecast Yield |
| Risk Premium Results | 9.68% | 10.00% | 10.13% |
| ***ROE Recommendation*** | | | |
| Range of Reasonableness | | 9.90% | 10.75% |
| Recommendation | | 10.50% | |

**Q106. What is your conclusion regarding the Company's proposed common equity ratio?**

A106. I conclude that Montana-Dakota's projected rate-making capital structures are reasonable when compared to the capital structures of the companies in the proxy group and taking in consideration the effect of the TCJA, and increased capital expenditures on cash flows and therefore should be adopted.

**Q107. Does this conclude you direct testimony?**

A107. Yes, it does.

# Ann E. Bulkley

## PRINCIPAL

Boston 508.981.0866 Ann.Bulkley@brattle.com

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

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

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

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

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

### AREAS OF EXPERTISE

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

## EDUCATION

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

## PROFESSIONAL EXPERIENCE

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

## SELECTED CONSULTING EXPERIENCE & EXPERT TESTIMONY

### REGULATORY ANALYSIS AND RATEMAKING

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

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

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

### COST OF CAPITAL

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

### RATEMAKING

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

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

### VALUATION

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

Representative projects/clients have included:

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

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

## STRATEGIC AND FINANCIAL ADVISORY SERVICES

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

Representative projects include:

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

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| **Arizona Corporation Commission** | | | | |
| Southwest Gas Corporation | 12/21 | Southwest Gas Corporation | Docket No. G-01551A-21-0368 | Return on Equity |
| Arizona Public Service Company | 10/19 | Arizona Public Service Company | Docket No. E-01345A-19-0236 | Return on Equity |
| Tucson Electric Power Company | 04/19 | Tucson Electric Power Company | Docket No. E-01933A-19-0028 | Return on Equity |
| Tucson Electric Power Company | 11/15 | Tucson Electric Power Company | Docket No. E-01933A-15-0322 | Return on Equity |
| UNS Electric | 05/15 | UNS Electric | Docket No. E-04204A-15-0142 | Return on Equity |
| UNS Electric | 12/12 | UNS Electric | Docket No. E-04204A-12-0504 | Return on Equity |
| **Arkansas Public Service Commission** | | | | |
| Oklahoma Gas and Electric Co | 10/21 | Oklahoma Gas and Electric Co | Docket No. D-18-046-FR | Return on Equity |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| Arkansas Oklahoma Gas Corporation | 10/13 | Arkansas Oklahoma Gas Corporation | Docket No. 13-078-U | Return on Equity |
| **California Public Utilities Commission** | | | | |
| San Jose Water Company | 05/21 | San Jose Water Company | A2105004 | Return on Equity |
| **Colorado Public Utilities Commission** | | | | |
| Public Service Company of Colorado | 07/21 | Public Service Company of Colorado | 21AL-0317E | Return on Equity |
| Public Service Company of Colorado | 02/20 | Public Service Company of Colorado | 20AL-0049G | Return on Equity |
| Public Service Company of Colorado | 05/19 | Public Service Company of Colorado | 19AL-0268E | Return on Equity |
| Public Service Company of Colorado | 01/19 | Public Service Company of Colorado | 19AL-0063ST | Return on Equity |
| Atmos Energy Corporation | 05/15 | Atmos Energy Corporation | Docket No. 15AL-0299G | Return on Equity |
| Atmos Energy Corporation | 04/14 | Atmos Energy Corporation | Docket No. 14AL-0300G | Return on Equity |
| Atmos Energy Corporation | 05/13 | Atmos Energy Corporation | Docket No. 13AL-0496G | Return on Equity |
| **Connecticut Public Utilities Regulatory Authority** | | | | |
| United Illuminating | 05/21 | United Illuminating | Docket No. 17-12-03RE11 | Return on Equity |
| Connecticut Water Company | 01/21 | Connecticut Water Company | Docket No. 20-12-30 | Return on Equity |
| Connecticut Natural Gas Corporation | 06/18 | Connecticut Natural Gas Corporation | Docket No. 18-05-16 | Return on Equity |
| Yankee Gas Services Co. d/b/a Eversource Energy | 06/18 | Yankee Gas Services Co. d/b/a Eversource Energy | Docket No. 18-05-10 | Return on Equity |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| The Southern Connecticut Gas Company | 06/17 | The Southern Connecticut Gas Company | Docket No. 17-05-42 | Return on Equity |
| The United Illuminating Company | 07/16 | The United Illuminating Company | Docket No. 16-06-04 | Return on Equity |
| **Federal Energy Regulatory Commission** | | | | |
| Florida Gas Transmission | 02/21 | Florida Gas Transmission | Docket No. RP21-441 | Return on Equity |
| TransCanyon | 01/21 | TransCanyon | Docket No. ER21-1065 | Return on Equity |
| Duke Energy | 12/20 | Duke Energy | Docket No. EL21-9-000 | Return on Equity |
| Wisconsin Electric Power Company | 08/20 | Wisconsin Electric Power Company | Docket No. EL20-57-000 | Return on Equity |
| Panhandle Eastern Pipe Line Company, LP | 10/19 | Panhandle Eastern Pipe Line Company, LP | Docket Nos. RP19-78-000 RP19-78-001 | Return on Equity |
| Panhandle Eastern Pipe Line Company, LP | 08/19 | Panhandle Eastern Pipe Line Company, LP | Docket Nos. RP19-1523 | Return on Equity |
| Sea Robin Pipeline Company LLC | 11/18 | Sea Robin Pipeline Company LLC | Docket# RP19-352-000 | Return on Equity |
| Tallgrass Interstate Gas Transmission | 10/15 | Tallgrass Interstate Gas Transmission | RP16-137 | Return on Equity |
| **Idaho Public Utilities Commission** | | | | |
| 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** | | | | |
| North Shore Gas Company | 02/21 | North Shore Gas Company | No. 20-0810 | Return on Equity |
| **Indiana Utility Regulatory Commission** | | | | |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| Indiana Michigan Power Co. | 07/21 | Indiana Michigan Power Co. | IURC Cause No. 45576 | Return on Equity |
| Indiana Gas Company Inc. | 12/20 | Indiana Gas Company Inc. | IURC Cause No. 45468 | Return on Equity |
| Southern Indiana Gas and Electric Company | 10/20 | Southern Indiana Gas and Electric Company | IURC Cause No. 45447 | Return on Equity |
| Indiana and Michigan American Water Company | 09/18 | Indiana and Michigan American Water Company | IURC Cause No. 45142 | Return on Equity |
| Indianapolis Power and Light Company | 12/17 | Indianapolis Power and Light Company | Cause No. 45029 | Fair Value |
| Northern Indiana Public Service Company | 09/17 | Northern Indiana Public Service Company | Cause No. 44988 | Fair Value |
| Indianapolis Power and Light Company | 12/16 | Indianapolis Power and Light Company | Cause No.44893 | Fair Value |
| Northern Indiana Public Service Company | 10/15 | Northern Indiana Public Service Company | Cause No. 44688 | Fair Value |
| Indianapolis Power and Light Company | 09/15 | Indianapolis Power and Light Company | Cause No. 44576 Cause No. 44602 | Fair Value |
| Kokomo Gas and Fuel Company | 09/10 | Kokomo Gas and Fuel Company | Cause No. 43942 | Fair Value |
| Northern Indiana Fuel and Light Company, Inc. | 09/10 | Northern Indiana Fuel and Light Company, Inc. | Cause No. 43943 | Fair Value |
| **Iowa Department of Commerce Utilities Board** | | | | |
| Iowa-American Water Company | 08/20 | Iowa-American Water Company | Docket No. RPU-2020-0001 | Return on Equity |
| **Kansas Corporation Commission** | | | | |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| Atmos Energy Corporation | 08/15 | Atmos Energy Corporation | Docket No. 16-ATMG-079-RTS | Return on Equity |
| **Kentucky Public Service Commission** | | | | |
| Kentucky American Water Company | 11/18 | Kentucky American Water Company | Docket No. 2018-00358 | Return on Equity |
| **Maine Public Utilities Commission** | | | | |
| Central Maine Power | 10/18 | Central Maine Power | Docket No. 2018-194 | 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<br>Docket No. F-325472<br>Docket No. F-325473<br>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** | | | | |
| 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** | | | | |
| Evergy Missouri West | 1/22 | Evergy Missouri West | File No. ER-2022-0130 | Return on Equity |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| Evergy Missouri Metro | 1/22 | Evergy Missouri Metro | File No. ER-2022-0129 | Return on Equity |
| Ameren Missouri | 03/21 | Ameren Missouri | Docket No. ER-2021-0240<br>Docket No. GR-2021-0241 | Return on Equity |
| Missouri American Water Company | 06/20 | Missouri American Water Company | Case No. WR-2020-0344<br>Case No. SR-2020-0345 | Return on Equity |
| Missouri American Water Company | 06/17 | Missouri American Water Company | Case No. WR-17-0285<br>Case No. SR-17-0286 | Return on Equity |
| **Montana Public Service Commission** | | | | |
| 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** | | | | |
| Public Service Company of New Hampshire d/b/a Eversource Energy | 11/19<br>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** | | | | |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| 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<br>218-2017-CV-00917 | Valuation of Utility Property |
| **New Jersey Board of Public Utilities** | | | | |
| 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<br>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<br>GR18010030 | Return on Equity |
| **New Mexico Public Regulation Commission** | | | | |
| Southwestern Public Service Company | 07/19 | Southwestern Public Service Company | 19-00170-UT | Return on Equity |
| Southwestern Public Service Company | 10/17 | Southwestern Public Service Company | Case No. 17-00255-UT | Return on Equity |
| Southwestern Public Service Company | 12/16 | Southwestern Public Service Company | Case No. 16-00269-UT | Return on Equity |
| Southwestern Public Service Company | 10/15 | Southwestern Public Service Company | Case No. 15-00296-UT | Return on Equity |
| Southwestern Public Service Company | 06/15 | Southwestern Public Service Company | Case No. 15-00139-UT | Return on Equity |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| **New York State Department of Public Service** | | | | |
| 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<br>Gas 20-G-0429 | Return on Equity |
| Niagara Mohawk Power Corporation | 07/20 | National Grid USA | Case No. 20-E-0380<br>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<br><br>Rochester Gas and Electric | 05/19 | New York State Electric and Gas Company<br><br>Rochester Gas and Electric | 19-E-0378<br>19-G-0379<br>19-E-0380<br>19-G-0381 | Return on Equity |
| Brooklyn Union Gas Company d/b/a National Grid NY<br>KeySpan Gas East Corporation d/b/a National Grid | 04/19 | Brooklyn Union Gas Company d/b/a National Grid NY<br>KeySpan Gas East Corporation d/b/a National Grid | 19-G-0309<br>19-G-0310 | Return on Equity |
| Central Hudson Gas and Electric Corporation | 07/17 | Central Hudson Gas and Electric Corporation | Electric 17-E-0459<br>Gas 17-G-0460 | Return on Equity |
| Niagara Mohawk Power Corporation | 04/17 | National Grid USA | Case No. 17-E-0238<br>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<br>Case No. 15-G-0059 | Return on Equity |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| New York State Electric and Gas Company<br>Rochester Gas and Electric | 05/15 | New York State Electric and Gas Company<br>Rochester Gas and Electric | Case No. 15-E-0283<br>Case No. 15-G-0284<br>Case No. 15-E-0285<br>Case No. 15-G-0286 | Return on Equity |
| **North Dakota Public Service Commission** | | | | |
| 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** | | | | |
| 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 | 02/22 | 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)<br>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)<br>Docket No. R-2020-3019371 (wastewater) | Return on Equity |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| American Water Works Company Inc. | 04/17 | Pennsylvania-American Water Company | Docket No. R-2017-2595853 | Return on Equity |
| **South Dakota Public Utilities Commission** | | | | |
| Northern States Power Company | 06/14 | Northern States Power Company | Docket No. EL14-058 | Return on Equity |
| **Texas Public Utility Commission** | | | | |
| Southwestern Public Service Commission | 08/19 | Southwestern Public Service Commission | 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 |

| SPONSOR | DATE | CASE/APPLICANT | DOCKET /CASE NO. | SUBJECT |
|---|---|---|---|---|
| West Virginia American Water Company | 04/18 | West Virginia American Water Company | Case No. 18-0573-W-42T<br>Case No. 18-0576-S-42T | Return on Equity |
| **Wisconsin Public Service Commission** | | | | |
| 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

SUMMARY OF ROE ANALYSES RESULTS

| *Constant Growth DCF* | | | |
|---|---|---|---|
| | Mean Low | Mean | Mean High |
| 30-Day Average | 8.33% | 9.34% | 10.25% |
| 90-Day Average | 8.36% | 9.37% | 10.28% |
| 180-Day Average | 8.41% | 9.42% | 10.33% |
| Constant Growth Average | 8.37% | 9.38% | 10.29% |
| | Median Low | Median | Median High |
| 30-Day Average | 7.98% | 9.50% | 10.18% |
| 90-Day Average | 8.02% | 9.40% | 10.21% |
| 180-Day Average | 8.15% | 9.56% | 10.24% |
| Constant Growth Average | 8.05% | 9.49% | 10.21% |
| *CAPM* | | | |
| | Current 30-day Average Treasury Bond Yield | Near-Term Blue Chip Forecast Yield | Long-Term Blue Chip Forecast Yield |
| Value Line Beta | 11.51% | 11.60% | 11.63% |
| Bloomberg Beta | 10.71% | 10.85% | 10.90% |
| Long-term Avg. Beta | 10.04% | 10.24% | 10.31% |
| *ECAPM* | | | |
| Value Line Beta | 11.80% | 11.87% | 11.89% |
| Bloomberg Beta | 11.20% | 11.31% | 11.35% |
| Long-term Avg. Beta | 10.70% | 10.85% | 10.90% |
| *Risk Premium* | | | |
| | Current 30-day Average Treasury Bond Yield | Near-Term Blue Chip Forecast Yield | Long-Term Blue Chip Forecast Yield |
| Risk Premium Results | 9.68% | 10.00% | 10.13% |

PROXY GROUP SCREENING DATA AND RESULTS - FINAL PROXY GROUP

| 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 > 80% | [9] Announced Merger |
|---|---|---|---|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | Yes | BBB | Yes | Yes | Yes | 46.42% | 95.6% | 97.18% | No |
| Alliant Energy Corporatior | LNT | Yes | A- | Yes | Yes | Yes | 69.07% | 96.6% | 91.18% | No |
| Ameren Corporation | AEE | Yes | BBB+ | Yes | Yes | Yes | 76.86% | 100.0% | 85.23% | No |
| American Electric Power Company, Inc. | AEP | Yes | A- | Yes | Yes | Yes | 53.74% | 95.4% | 100.00% | No |
| Duke Energy Corporation | DUK | Yes | BBB+ | Yes | Yes | Yes | 82.70% | 99.4% | 90.89% | No |
| Entergy Corporation | ETR | Yes | BBB+ | Yes | Yes | Yes | 66.73% | 100.0% | 99.47% | No |
| Evergy, Inc. | EVRG | Yes | A- | Yes | Yes | Yes | 64.10% | 100.0% | 100.00% | No |
| IDACORP, Inc. | IDA | Yes | BBB | Yes | Yes | Yes | 71.93% | 99.8% | 100.00% | No |
| NextEra Energy, Inc. | NEE | Yes | A- | Yes | Yes | Yes | 97.24% | 85.1% | 100.00% | No |
| NorthWestern Corporation | NWE | Yes | BBB | Yes | Yes | Yes | 57.89% | 99.7% | 84.22% | No |
| OGE Energy Corporation | OGE | Yes | BBB+ | Yes | Yes | Yes | 57.21% | 100.0% | 100.00% | No |
| Otter Tail Corporation | OTTR | Yes | BBB | Yes | Yes | Yes | 56.26% | 62.7% | 100.00% | No |
| Portland General Electric Company | POR | Yes | BBB+ | Yes | Yes | Yes | 62.41% | 100.0% | 100.00% | No |
| Southern Company | SO | Yes | BBB+ | Yes | Yes | Yes | 78.45% | 84.6% | 80.48% | No |
| Xcel Energy Inc. | XEL | Yes | A- | Yes | Yes | Yes | 57.43% | 100.0% | 86.47% | No |

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional
[3] Source: Yahoo! Finance and Zacks
[4] Source: Yahoo! Finance, Value Line Investment Survey, and Zacks
[5] to [6] Source: S&P Capital IQ Pro
[7] to [8] Source: Form 10-K's for 2021, 2020, and 2019
[9] Source: S&P Capital IQ Pro Financial News Releases

**30-DAY CONSTANT GROWTH DCF -- MONTANA-DAKOTA 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 | $64.44 | 4.03% | 4.15% | 6.00% | 5.67% | n/a | 5.84% | 9.82% | 9.99% | 10.16% |
| Alliant Energy Corporation | LNT | $1.71 | $59.72 | 2.86% | 2.94% | 4.50% | 6.10% | 6.10% | 5.57% | 7.43% | 8.51% | 9.05% |
| Ameren Corporation | AEE | $2.36 | $87.98 | 2.68% | 2.78% | 6.50% | 7.40% | 7.20% | 7.03% | 9.27% | 9.81% | 10.18% |
| American Electric Power Company, Inc. | AEP | $3.12 | $93.63 | 3.33% | 3.43% | 6.50% | 6.10% | 5.80% | 6.13% | 9.23% | 9.57% | 9.94% |
| Duke Energy Corporation | DUK | $3.94 | $104.74 | 3.76% | 3.88% | 7.00% | 5.85% | 6.10% | 6.32% | 9.72% | 10.20% | 10.89% |
| Entergy Corporation | ETR | $4.04 | $109.57 | 3.69% | 3.78% | 3.00% | 6.00% | 6.00% | 5.00% | 6.74% | 8.78% | 9.80% |
| Evergy, Inc. | EVRG | $2.29 | $64.00 | 3.58% | 3.69% | 7.50% | 5.12% | 6.10% | 6.24% | 8.79% | 9.93% | 11.21% |
| IDACORP, Inc. | IDA | $3.00 | $108.85 | 2.76% | 2.81% | 4.00% | 4.40% | 4.30% | 4.23% | 6.81% | 7.05% | 7.22% |
| NextEra Energy, Inc | NEE | $1.70 | $80.31 | 2.12% | 2.22% | 11.00% | 9.95% | 8.80% | 9.92% | 11.01% | 12.14% | 13.23% |
| NorthWestern Corporation | NWE | $2.52 | $59.44 | 4.24% | 4.31% | 2.00% | 4.50% | 3.10% | 3.20% | 6.28% | 7.51% | 8.84% |
| OGE Energy Corporation | OGE | $1.64 | $38.44 | 4.27% | 4.37% | 6.50% | 3.90% | 3.50% | 4.63% | 7.84% | 9.00% | 10.91% |
| Otter Tail Corporation | OTTR | $1.65 | $62.03 | 2.66% | 2.75% | 4.50% | 9.00% | n/a | 6.75% | 7.22% | 9.50% | 11.78% |
| Portland General Electric Company | POR | $1.72 | $52.99 | 3.25% | 3.35% | 7.00% | 7.15% | 4.60% | 6.25% | 7.92% | 9.60% | 10.51% |
| Southern Company | SO | $2.64 | $67.65 | 3.90% | 4.00% | 5.50% | 6.20% | 4.00% | 5.23% | 7.98% | 9.24% | 10.22% |
| Xcel Energy Inc. | XEL | $1.95 | $69.08 | 2.82% | 2.91% | 6.00% | 6.90% | 6.40% | 6.43% | 8.91% | 9.35% | 9.82% |
| Mean | | | | 3.33% | 3.43% | 5.83% | 6.28% | 5.54% | 5.92% | 8.33% | 9.34% | 10.25% |
| Median | | | | 3.33% | 3.43% | 6.00% | 6.10% | 6.00% | 6.13% | 7.98% | 9.50% | 10.18% |

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 30-day average as of March 31, 2022
[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 -- MONTANA-DAKOTA 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 | $63.95 | 4.07% | 4.18% | 6.00% | 5.67% | n/a | 5.84% | 9.85% | 10.02% | 10.19% |
| Alliant Energy Corporation | LNT | $1.71 | $59.27 | 2.89% | 2.97% | 4.50% | 6.10% | 6.10% | 5.57% | 7.45% | 8.53% | 9.07% |
| Ameren Corporation | AEE | $2.36 | $87.24 | 2.71% | 2.80% | 6.50% | 7.40% | 7.20% | 7.03% | 9.29% | 9.83% | 10.21% |
| American Electric Power Company, Inc. | AEP | $3.12 | $89.41 | 3.49% | 3.60% | 6.50% | 6.10% | 5.80% | 6.13% | 9.39% | 9.73% | 10.10% |
| Duke Energy Corporation | DUK | $3.94 | $103.21 | 3.82% | 3.94% | 7.00% | 5.85% | 6.10% | 6.32% | 9.78% | 10.25% | 10.95% |
| Entergy Corporation | ETR | $4.04 | $108.85 | 3.71% | 3.80% | 3.00% | 6.00% | 6.00% | 5.00% | 6.77% | 8.80% | 9.82% |
| Evergy, Inc. | EVRG | $2.29 | $65.13 | 3.52% | 3.63% | 7.50% | 5.12% | 6.10% | 6.24% | 8.73% | 9.87% | 11.15% |
| IDACORP, Inc. | IDA | $3.00 | $109.01 | 2.75% | 2.81% | 4.00% | 4.40% | 4.30% | 4.23% | 6.81% | 7.04% | 7.21% |
| NextEra Energy, Inc | NEE | $1.70 | $83.19 | 2.04% | 2.14% | 11.00% | 9.95% | 8.80% | 9.92% | 10.93% | 12.06% | 13.16% |
| NorthWestern Corporation | NWE | $2.52 | $57.75 | 4.36% | 4.43% | 2.00% | 4.50% | 3.10% | 3.20% | 6.41% | 7.63% | 8.96% |
| OGE Energy Corporation | OGE | $1.64 | $37.44 | 4.38% | 4.48% | 6.50% | 3.90% | 3.50% | 4.63% | 7.96% | 9.12% | 11.02% |
| Otter Tail Corporation | OTTR | $1.65 | $64.39 | 2.56% | 2.65% | 4.50% | 9.00% | n/a | 6.75% | 7.12% | 9.40% | 11.68% |
| Portland General Electric Company | POR | $1.72 | $52.15 | 3.30% | 3.40% | 7.00% | 7.15% | 4.60% | 6.25% | 7.97% | 9.65% | 10.57% |
| Southern Company | SO | $2.64 | $66.93 | 3.94% | 4.05% | 5.50% | 6.20% | 4.00% | 5.23% | 8.02% | 9.28% | 10.27% |
| Xcel Energy Inc. | XEL | $1.95 | $68.03 | 2.87% | 2.96% | 6.00% | 6.90% | 6.40% | 6.43% | 8.95% | 9.39% | 9.87% |
| Mean | | | | 3.36% | 3.46% | 5.83% | 6.28% | 5.54% | 5.92% | 8.36% | 9.37% | 10.28% |
| Median | | | | 3.49% | 3.60% | 6.00% | 6.10% | 6.00% | 6.13% | 8.02% | 9.40% | 10.21% |

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 90-day average as of March 31, 2022
[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 – MONTANA-DAKOTA 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 | $64.61 | 4.02% | 4.14% | 6.00% | 5.67% | n/a | 5.84% | 9.81% | 9.98% | 10.14% |
| Alliant Energy Corporation | LNT | $1.71 | $58.72 | 2.91% | 2.99% | 4.50% | 6.10% | 6.10% | 5.57% | 7.48% | 8.56% | 9.10% |
| Ameren Corporation | AEE | $2.36 | $86.15 | 2.74% | 2.84% | 6.50% | 7.40% | 7.20% | 7.03% | 9.33% | 9.87% | 10.24% |
| American Electric Power Company, Inc. | AEP | $3.12 | $87.74 | 3.56% | 3.66% | 6.50% | 6.10% | 5.80% | 6.13% | 9.46% | 9.80% | 10.17% |
| Duke Energy Corporation | DUK | $3.94 | $103.02 | 3.82% | 3.95% | 7.00% | 5.85% | 6.10% | 6.32% | 9.79% | 10.26% | 10.96% |
| Entergy Corporation | ETR | $4.04 | $107.44 | 3.76% | 3.85% | 3.00% | 6.00% | 6.00% | 5.00% | 6.82% | 8.85% | 9.87% |
| Evergy, Inc. | EVRG | $2.29 | $65.21 | 3.51% | 3.62% | 7.50% | 5.12% | 6.10% | 6.24% | 8.72% | 9.86% | 11.14% |
| IDACORP, Inc. | IDA | $3.00 | $107.01 | 2.80% | 2.86% | 4.00% | 4.40% | 4.30% | 4.23% | 6.86% | 7.10% | 7.27% |
| NextEra Energy, Inc. | NEE | $1.70 | $82.83 | 2.05% | 2.15% | 11.00% | 9.95% | 8.80% | 9.92% | 10.94% | 12.07% | 13.17% |
| NorthWestern Corporation | NWE | $2.52 | $59.06 | 4.27% | 4.34% | 2.00% | 4.50% | 3.10% | 3.20% | 6.31% | 7.54% | 8.86% |
| OGE Energy Corporation | OGE | $1.64 | $35.92 | 4.57% | 4.67% | 6.50% | 3.90% | 3.50% | 4.63% | 8.15% | 9.31% | 11.21% |
| Otter Tail Corporation | OTTR | $1.65 | $60.70 | 2.72% | 2.81% | 4.50% | 9.00% | n/a | 6.75% | 7.28% | 9.56% | 11.84% |
| Portland General Electric Company | POR | $1.72 | $50.78 | 3.39% | 3.49% | 7.00% | 7.15% | 4.60% | 6.25% | 8.07% | 9.74% | 10.66% |
| Southern Company | SO | $2.64 | $65.46 | 4.03% | 4.14% | 5.50% | 6.20% | 4.00% | 5.23% | 8.11% | 9.37% | 10.36% |
| Xcel Energy Inc. | XEL | $1.95 | $67.11 | 2.91% | 3.00% | 6.00% | 6.90% | 6.40% | 6.43% | 8.99% | 9.43% | 9.91% |
| Mean | | | | 3.40% | 3.50% | 5.83% | 6.28% | 5.54% | 5.92% | 8.41% | 9.42% | 10.33% |
| Median | | | | 3.51% | 3.62% | 6.00% | 6.10% | 6.00% | 6.13% | 8.15% | 9.56% | 10.24% |

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 180-day average as of March 31, 2022
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

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

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

| | | [1] | [2] | [3] | [4] | [5] | [6] |
|---|---|---|---|---|---|---|---|
| Company | Ticker | Current 30-day average of 30-year U.S. Treasury bond yield | Beta (β) | Market Return (Rm) | Market Risk Premium (Rm − Rf) | ROE (K) | ECAPM ROE (K) |
| ALLETE, Inc. | ALE | 2.37% | 0.90 | 12.68% | 10.31% | 11.65% | 11.91% |
| Alliant Energy Corporation | LNT | 2.37% | 0.85 | 12.68% | 10.31% | 11.13% | 11.52% |
| Ameren Corporation | AEE | 2.37% | 0.80 | 12.68% | 10.31% | 10.62% | 11.13% |
| American Electric Power Company, Inc. | AEP | 2.37% | 0.75 | 12.68% | 10.31% | 10.10% | 10.75% |
| Duke Energy Corporation | DUK | 2.37% | 0.85 | 12.68% | 10.31% | 11.13% | 11.52% |
| Entergy Corporation | ETR | 2.37% | 0.95 | 12.68% | 10.31% | 12.17% | 12.29% |
| Evergy, Inc. | EVRG | 2.37% | 0.95 | 12.68% | 10.31% | 12.17% | 12.29% |
| IDACORP, Inc. | IDA | 2.37% | 0.80 | 12.68% | 10.31% | 10.62% | 11.13% |
| NextEra Energy, Inc. | NEE | 2.37% | 0.95 | 12.68% | 10.31% | 12.17% | 12.29% |
| NorthWestern Corporation | NWE | 2.37% | 0.95 | 12.68% | 10.31% | 12.17% | 12.29% |
| OGE Energy Corporation | OGE | 2.37% | 1.05 | 12.68% | 10.31% | 13.20% | 13.07% |
| Otter Tail Corporation | OTTR | 2.37% | 0.85 | 12.68% | 10.31% | 11.13% | 11.52% |
| Portland General Electric Company | POR | 2.37% | 0.90 | 12.68% | 10.31% | 11.65% | 11.91% |
| Southern Company | SO | 2.37% | 0.95 | 12.68% | 10.31% | 12.17% | 12.29% |
| Xcel Energy Inc. | XEL | 2.37% | 0.80 | 12.68% | 10.31% | 10.62% | 11.13% |
| Mean | | | | | | 11.51% | 11.80% |
| Median | | | | | | 11.65% | 11.91% |

Notes:
[1] Source: Bloomberg Professional, as of March 31, 2022
[2] Source: Value Line
[3] Source: Schedule 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 (Q3 2022 - Q3 2023) | Beta (β) | Market Return (Rm) | Market Risk Premium (Rm − Rf) | ROE (K) | ECAPM ROE (K) |
| ALLETE, Inc. | ALE | 3.12% | 0.90 | 12.68% | 9.56% | 11.73% | 11.96% |
| Alliant Energy Corporation | LNT | 3.12% | 0.85 | 12.68% | 9.56% | 11.25% | 11.61% |
| Ameren Corporation | AEE | 3.12% | 0.80 | 12.68% | 9.56% | 10.77% | 11.25% |
| American Electric Power Company, Inc. | AEP | 3.12% | 0.75 | 12.68% | 9.56% | 10.29% | 10.89% |
| Duke Energy Corporation | DUK | 3.12% | 0.85 | 12.68% | 9.56% | 11.25% | 11.61% |
| Entergy Corporation | ETR | 3.12% | 0.95 | 12.68% | 9.56% | 12.20% | 12.32% |
| Evergy, Inc. | EVRG | 3.12% | 0.95 | 12.68% | 9.56% | 12.20% | 12.32% |
| IDACORP, Inc. | IDA | 3.12% | 0.80 | 12.68% | 9.56% | 10.77% | 11.25% |
| NextEra Energy, Inc. | NEE | 3.12% | 0.95 | 12.68% | 9.56% | 12.20% | 12.32% |
| NorthWestern Corporation | NWE | 3.12% | 0.95 | 12.68% | 9.56% | 12.20% | 12.32% |
| OGE Energy Corporation | OGE | 3.12% | 1.05 | 12.68% | 9.56% | 13.16% | 13.04% |
| Otter Tail Corporation | OTTR | 3.12% | 0.85 | 12.68% | 9.56% | 11.25% | 11.61% |
| Portland General Electric Company | POR | 3.12% | 0.90 | 12.68% | 9.56% | 11.73% | 11.96% |
| Southern Company | SO | 3.12% | 0.95 | 12.68% | 9.56% | 12.20% | 12.32% |
| Xcel Energy Inc. | XEL | 3.12% | 0.80 | 12.68% | 9.56% | 10.77% | 11.25% |
| Mean | | | | | | 11.60% | 11.87% |
| Median | | | | | | 11.73% | 11.96% |

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2
[2] Source: Value Line
[3] Source: Schedule 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

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

| Company | Ticker | [1] Projected 30-year U.S. Treasury bond yield (2023 - 2027) | [2] Beta (β) | [3] Market Return (Rm) | [4] Market Risk Premium (Rm − Rf) | [5] ROE (K) | [6] ECAPM ROE (K) |
|---|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | 3.40% | 0.90 | 12.68% | 9.28% | 11.75% | 11.99% |
| Alliant Energy Corporation | LNT | 3.40% | 0.85 | 12.68% | 9.28% | 11.29% | 11.64% |
| Ameren Corporation | AEE | 3.40% | 0.80 | 12.68% | 9.28% | 10.82% | 11.29% |
| American Electric Power Company, Inc. | AEP | 3.40% | 0.75 | 12.68% | 9.28% | 10.36% | 10.94% |
| Duke Energy Corporation | DUK | 3.40% | 0.85 | 12.68% | 9.28% | 11.29% | 11.64% |
| Entergy Corporation | ETR | 3.40% | 0.95 | 12.68% | 9.28% | 12.22% | 12.33% |
| Evergy, Inc. | EVRG | 3.40% | 0.95 | 12.68% | 9.28% | 12.22% | 12.33% |
| IDACORP, Inc. | IDA | 3.40% | 0.80 | 12.68% | 9.28% | 10.82% | 11.29% |
| NextEra Energy, Inc. | NEE | 3.40% | 0.95 | 12.68% | 9.28% | 12.22% | 12.33% |
| NorthWestern Corporation | NWE | 3.40% | 0.95 | 12.68% | 9.28% | 12.22% | 12.33% |
| OGE Energy Corporation | OGE | 3.40% | 1.05 | 12.68% | 9.28% | 13.15% | 13.03% |
| Otter Tail Corporation | OTTR | 3.40% | 0.85 | 12.68% | 9.28% | 11.29% | 11.64% |
| Portland General Electric Company | POR | 3.40% | 0.90 | 12.68% | 9.28% | 11.75% | 11.99% |
| Southern Company | SO | 3.40% | 0.95 | 12.68% | 9.28% | 12.22% | 12.33% |
| Xcel Energy Inc. | XEL | 3.40% | 0.80 | 12.68% | 9.28% | 10.82% | 11.29% |
| Mean | | | | | | 11.63% | 11.89% |
| Median | | | | | | 11.75% | 11.99% |

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
[2] Source: Value Line
[3] Source: Schedule 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

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

| 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 | 2.37% | 0.83 | 12.68% | 10.31% | 10.97% | 11.40% |
| Alliant Energy Corporation | LNT | 2.37% | 0.79 | 12.68% | 10.31% | 10.54% | 11.07% |
| Ameren Corporation | AEE | 2.37% | 0.75 | 12.68% | 10.31% | 10.12% | 10.76% |
| American Electric Power Company, Inc. | AEP | 2.37% | 0.77 | 12.68% | 10.31% | 10.27% | 10.87% |
| Duke Energy Corporation | DUK | 2.37% | 0.71 | 12.68% | 10.31% | 9.72% | 10.46% |
| Entergy Corporation | ETR | 2.37% | 0.86 | 12.68% | 10.31% | 11.25% | 11.61% |
| Evergy, Inc. | EVRG | 2.37% | 0.80 | 12.68% | 10.31% | 10.60% | 11.12% |
| IDACORP, Inc. | IDA | 2.37% | 0.82 | 12.68% | 10.31% | 10.82% | 11.29% |
| NextEra Energy, Inc. | NEE | 2.37% | 0.78 | 12.68% | 10.31% | 10.44% | 11.00% |
| NorthWestern Corporation | NWE | 2.37% | 0.89 | 12.68% | 10.31% | 11.57% | 11.85% |
| OGE Energy Corporation | OGE | 2.37% | 0.93 | 12.68% | 10.31% | 11.93% | 12.12% |
| Otter Tail Corporation | OTTR | 2.37% | 0.87 | 12.68% | 10.31% | 11.38% | 11.71% |
| Portland General Electric Company | POR | 2.37% | 0.80 | 12.68% | 10.31% | 10.64% | 11.15% |
| Southern Company | SO | 2.37% | 0.78 | 12.68% | 10.31% | 10.40% | 10.97% |
| Xcel Energy Inc. | XEL | 2.37% | 0.73 | 12.68% | 10.31% | 9.95% | 10.63% |
| Mean | | | | | | 10.71% | 11.20% |
| Median | | | | | | 10.60% | 11.12% |

Notes:
[1] Source: Bloomberg Professional, as of March 31, 2022
[2] Source: Bloomberg Professional, based on 10-year weekly returns, as of March 31, 2022
[3] Source: Schedule 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

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

| Company | Ticker | [1] Near-term projected 30-year U.S. Treasury bond yield (Q3 2022 - Q3 2023) | [2] Beta (β) | [3] Market Return (Rm) | [4] Market Risk Premium (Rm − Rf) | [5] ROE (K) | [6] ECAPM ROE (K) |
|---|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | 3.12% | 0.83 | 12.68% | 9.56% | 11.09% | 11.49% |
| Alliant Energy Corporation | LNT | 3.12% | 0.79 | 12.68% | 9.56% | 10.69% | 11.19% |
| Ameren Corporation | AEE | 3.12% | 0.75 | 12.68% | 9.56% | 10.31% | 10.90% |
| American Electric Power Company, Inc. | AEP | 3.12% | 0.77 | 12.68% | 9.56% | 10.45% | 11.00% |
| Duke Energy Corporation | DUK | 3.12% | 0.71 | 12.68% | 9.56% | 9.94% | 10.62% |
| Entergy Corporation | ETR | 3.12% | 0.86 | 12.68% | 9.56% | 11.36% | 11.69% |
| Evergy, Inc. | EVRG | 3.12% | 0.80 | 12.68% | 9.56% | 10.75% | 11.23% |
| IDACORP, Inc. | IDA | 3.12% | 0.82 | 12.68% | 9.56% | 10.96% | 11.39% |
| NextEra Energy, Inc. | NEE | 3.12% | 0.78 | 12.68% | 9.56% | 10.60% | 11.12% |
| NorthWestern Corporation | NWE | 3.12% | 0.89 | 12.68% | 9.56% | 11.65% | 11.91% |
| OGE Energy Corporation | OGE | 3.12% | 0.93 | 12.68% | 9.56% | 11.99% | 12.16% |
| Otter Tail Corporation | OTTR | 3.12% | 0.87 | 12.68% | 9.56% | 11.48% | 11.78% |
| Portland General Electric Company | POR | 3.12% | 0.80 | 12.68% | 9.56% | 10.79% | 11.26% |
| Southern Company | SO | 3.12% | 0.78 | 12.68% | 9.56% | 10.57% | 11.10% |
| Xcel Energy Inc. | XEL | 3.12% | 0.73 | 12.68% | 9.56% | 10.15% | 10.78% |
| Mean | | | | | | 10.85% | 11.31% |
| Median | | | | | | 10.75% | 11.23% |

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2
[2] Source: Bloomberg Professional, based on 10-year weekly returns, as of March 31, 202
[3] Source: Schedule 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

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

| Company | Ticker | [1] Projected 30-year U.S. Treasury bond yield (2023 - 2027) | [2] Beta (β) | [3] Market Return (Rm) | [4] Market Risk Premium (Rm − Rf) | [5] ROE (K) | [6] ECAPM ROE (K) |
|---|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | 3.40% | 0.83 | 12.68% | 9.28% | 11.14% | 11.53% |
| Alliant Energy Corporation | LNT | 3.40% | 0.79 | 12.68% | 9.28% | 10.75% | 11.23% |
| Ameren Corporation | AEE | 3.40% | 0.75 | 12.68% | 9.28% | 10.38% | 10.95% |
| American Electric Power Company, Inc. | AEP | 3.40% | 0.77 | 12.68% | 9.28% | 10.51% | 11.05% |
| Duke Energy Corporation | DUK | 3.40% | 0.71 | 12.68% | 9.28% | 10.02% | 10.68% |
| Entergy Corporation | ETR | 3.40% | 0.86 | 12.68% | 9.28% | 11.40% | 11.72% |
| Evergy, Inc. | EVRG | 3.40% | 0.80 | 12.68% | 9.28% | 10.80% | 11.27% |
| IDACORP, Inc. | IDA | 3.40% | 0.82 | 12.68% | 9.28% | 11.01% | 11.43% |
| NextEra Energy, Inc. | NEE | 3.40% | 0.78 | 12.68% | 9.28% | 10.66% | 11.17% |
| NorthWestern Corporation | NWE | 3.40% | 0.89 | 12.68% | 9.28% | 11.68% | 11.93% |
| OGE Energy Corporation | OGE | 3.40% | 0.93 | 12.68% | 9.28% | 12.01% | 12.18% |
| Otter Tail Corporation | OTTR | 3.40% | 0.87 | 12.68% | 9.28% | 11.51% | 11.80% |
| Portland General Electric Company | POR | 3.40% | 0.80 | 12.68% | 9.28% | 10.84% | 11.30% |
| Southern Company | SO | 3.40% | 0.78 | 12.68% | 9.28% | 10.63% | 11.14% |
| Xcel Energy Inc. | XEL | 3.40% | 0.73 | 12.68% | 9.28% | 10.22% | 10.84% |
| Mean | | | | | | 10.90% | 11.35% |
| Median | | | | | | 10.80% | 11.27% |

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
[2] Source: Bloomberg Professional, based on 10-year weekly returns, as of March 31, 202
[3] Source: Schedule 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 | 2.37% | 0.77 | 12.68% | 10.31% | 10.33% | 10.92% |
| Alliant Energy Corporation | LNT | 2.37% | 0.74 | 12.68% | 10.31% | 9.99% | 10.66% |
| Ameren Corporation | AEE | 2.37% | 0.71 | 12.68% | 10.31% | 9.70% | 10.45% |
| American Electric Power Company, Inc. | AEP | 2.37% | 0.67 | 12.68% | 10.31% | 9.24% | 10.10% |
| Duke Energy Corporation | DUK | 2.37% | 0.64 | 12.68% | 10.31% | 9.02% | 9.93% |
| Entergy Corporation | ETR | 2.37% | 0.72 | 12.68% | 10.31% | 9.82% | 10.53% |
| Evergy, Inc. | EVRG | 2.37% | 0.98 | 12.68% | 10.31% | 12.42% | 12.49% |
| IDACORP, Inc. | IDA | 2.37% | 0.72 | 12.68% | 10.31% | 9.82% | 10.53% |
| NextEra Energy, Inc. | NEE | 2.37% | 0.71 | 12.68% | 10.31% | 9.65% | 10.40% |
| NorthWestern Corporation | NWE | 2.37% | 0.73 | 12.68% | 10.31% | 9.87% | 10.58% |
| OGE Energy Corporation | OGE | 2.37% | 0.92 | 12.68% | 10.31% | 11.88% | 12.08% |
| Otter Tail Corporation | OTTR | 2.37% | 0.85 | 12.68% | 10.31% | 11.13% | 11.52% |
| Portland General Electric Company | POR | 2.37% | 0.74 | 12.68% | 10.31% | 9.99% | 10.66% |
| Southern Company | SO | 2.37% | 0.63 | 12.68% | 10.31% | 8.84% | 9.80% |
| Xcel Energy Inc. | XEL | 2.37% | 0.64 | 12.68% | 10.31% | 8.96% | 9.89% |
| Mean | | | | | | 10.04% | 10.70% |
| Median | | | | | | 9.82% | 10.53% |

Notes:
[1] Source: Bloomberg Professional, as of March 31, 2022
[2] Source: Schedule 6
[3] Source: Schedule 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 (Q3 2022 - Q3 2023) | [2] Beta (β) | [3] Market Return (Rm) | [4] Market Risk Premium (Rm − Rf) | [5] ROE (K) | [6] ECAPM ROE (K) |
|---|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | 3.12% | 0.77 | 12.68% | 9.56% | 10.50% | 11.05% |
| Alliant Energy Corporation | LNT | 3.12% | 0.74 | 12.68% | 9.56% | 10.18% | 10.81% |
| Ameren Corporation | AEE | 3.12% | 0.71 | 12.68% | 9.56% | 9.92% | 10.61% |
| American Electric Power Company, Inc. | AEP | 3.12% | 0.67 | 12.68% | 9.56% | 9.49% | 10.29% |
| Duke Energy Corporation | DUK | 3.12% | 0.64 | 12.68% | 9.56% | 9.28% | 10.13% |
| Entergy Corporation | ETR | 3.12% | 0.72 | 12.68% | 9.56% | 10.03% | 10.69% |
| Evergy, Inc. | EVRG | 3.12% | 0.98 | 12.68% | 9.56% | 12.44% | 12.50% |
| IDACORP, Inc. | IDA | 3.12% | 0.72 | 12.68% | 9.56% | 10.03% | 10.69% |
| NextEra Energy, Inc. | NEE | 3.12% | 0.71 | 12.68% | 9.56% | 9.87% | 10.57% |
| NorthWestern Corporation | NWE | 3.12% | 0.73 | 12.68% | 9.56% | 10.08% | 10.73% |
| OGE Energy Corporation | OGE | 3.12% | 0.92 | 12.68% | 9.56% | 11.94% | 12.12% |
| Otter Tail Corporation | OTTR | 3.12% | 0.85 | 12.68% | 9.56% | 11.25% | 11.61% |
| Portland General Electric Company | POR | 3.12% | 0.74 | 12.68% | 9.56% | 10.18% | 10.81% |
| Southern Company | SO | 3.12% | 0.63 | 12.68% | 9.56% | 9.12% | 10.01% |
| Xcel Energy Inc. | XEL | 3.12% | 0.64 | 12.68% | 9.56% | 9.23% | 10.09% |
| Mean | | | | | | 10.24% | 10.85% |
| Median | | | | | | 10.03% | 10.69% |

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2
[2] Source: Schedule 6
[3] Source: Schedule 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

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

| Company | Ticker | [1] Projected 30-year U.S. Treasury bond yield (2023 - 2027) | [2] Beta (β) | [3] Market Return (Rm) | [4] Market Risk Premium (Rm − Rf) | [5] ROE (K) | [6] ECAPM ROE (K) |
|---|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | 3.40% | 0.77 | 12.68% | 9.28% | 10.57% | 11.10% |
| Alliant Energy Corporation | LNT | 3.40% | 0.74 | 12.68% | 9.28% | 10.26% | 10.86% |
| Ameren Corporation | AEE | 3.40% | 0.71 | 12.68% | 9.28% | 10.00% | 10.67% |
| American Electric Power Company, Inc. | AEP | 3.40% | 0.67 | 12.68% | 9.28% | 9.59% | 10.36% |
| Duke Energy Corporation | DUK | 3.40% | 0.64 | 12.68% | 9.28% | 9.38% | 10.21% |
| Entergy Corporation | ETR | 3.40% | 0.72 | 12.68% | 9.28% | 10.10% | 10.75% |
| Evergy, Inc. | EVRG | 3.40% | 0.98 | 12.68% | 9.28% | 12.45% | 12.51% |
| IDACORP, Inc. | IDA | 3.40% | 0.72 | 12.68% | 9.28% | 10.10% | 10.75% |
| NextEra Energy, Inc. | NEE | 3.40% | 0.71 | 12.68% | 9.28% | 9.95% | 10.63% |
| NorthWestern Corporation | NWE | 3.40% | 0.73 | 12.68% | 9.28% | 10.15% | 10.79% |
| OGE Energy Corporation | OGE | 3.40% | 0.92 | 12.68% | 9.28% | 11.96% | 12.14% |
| Otter Tail Corporation | OTTR | 3.40% | 0.85 | 12.68% | 9.28% | 11.29% | 11.64% |
| Portland General Electric Company | POR | 3.40% | 0.74 | 12.68% | 9.28% | 10.26% | 10.86% |
| Southern Company | SO | 3.40% | 0.63 | 12.68% | 9.28% | 9.23% | 10.09% |
| Xcel Energy Inc. | XEL | 3.40% | 0.64 | 12.68% | 9.28% | 9.33% | 10.17% |
| Mean | | | | | | 10.31% | 10.90% |
| Median | | | | | | 10.10% | 10.75% |

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
[2] Source: Schedule 6
[3] Source: Schedule 7
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4]

HISTORICAL BETA - 2013 - 2021

| 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] Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | 0.75 | 0.80 | 0.80 | 0.75 | 0.80 | 0.65 | 0.65 | 0.85 | 0.90 | 0.77 |
| Alliant Energy Corporation | LNT | 0.75 | 0.80 | 0.80 | 0.70 | 0.70 | 0.60 | 0.60 | 0.85 | 0.85 | 0.74 |
| Ameren Corporation | AEE | 0.80 | 0.75 | 0.75 | 0.65 | 0.70 | 0.55 | 0.55 | 0.85 | 0.80 | 0.71 |
| American Electric Power Company, Inc. | AEP | 0.70 | 0.70 | 0.70 | 0.65 | 0.65 | 0.55 | 0.55 | 0.75 | 0.75 | 0.67 |
| Duke Energy Corporation | DUK | 0.65 | 0.60 | 0.65 | 0.60 | 0.60 | 0.50 | 0.50 | 0.85 | 0.85 | 0.64 |
| Entergy Corporation | ETR | 0.70 | 0.70 | 0.70 | 0.65 | 0.65 | 0.60 | 0.60 | 0.95 | 0.95 | 0.72 |
| Evergy, Inc. | EVRG | | | | | | NMF | NMF | 1.00 | 0.95 | 0.98 |
| IDACORP, Inc. | IDA | 0.75 | 0.80 | 0.80 | 0.75 | 0.70 | 0.55 | 0.55 | 0.80 | 0.80 | 0.72 |
| NextEra Energy, Inc. | NEE | 0.70 | 0.70 | 0.75 | 0.65 | 0.65 | 0.55 | 0.55 | 0.90 | 0.90 | 0.71 |
| NorthWestern Corporation | NWE | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.55 | 0.60 | 0.95 | 0.95 | 0.73 |
| OGE Energy Corporation | OGE | 0.85 | 0.90 | 0.95 | 0.90 | 0.95 | 0.85 | 0.75 | 1.10 | 1.05 | 0.92 |
| Otter Tail Corporation | OTTR | 0.95 | 0.90 | 0.85 | 0.85 | 0.90 | 0.75 | 0.70 | 0.85 | 0.90 | 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 | 0.74 |
| Southern Company | SO | 0.55 | 0.55 | 0.60 | 0.55 | 0.55 | 0.50 | 0.50 | 0.90 | 0.95 | 0.63 |
| Xcel Energy Inc. | XEL | 0.65 | 0.65 | 0.65 | 0.60 | 0.60 | 0.50 | 0.50 | 0.80 | 0.80 | 0.64 |
| Mean | | 0.73 | 0.74 | 0.75 | 0.69 | 0.70 | 0.59 | 0.58 | 0.88 | 0.89 | 0.74 |

Notes:

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

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

| | |
|---|---|
| [1] Estimated Weighted Average Dividend Yield | 1.61% |
| [2] Estimated Weighted Average Long-Term Growth Rate | 10.99% |
| [3] S&P 500 Estimated Required Market Return | 12.68% |

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. |
| Agilent Technologies Inc | A | 300.11 | 132.33 | 39,713.95 | 0.14% | 0.63% | 0.00% | 11.50% | 0.02% |
| American Airlines Group Inc | AAL | 649.16 | 18.25 | 11,847.17 | | | | | |
| Advance Auto Parts Inc | AAP | 61.10 | 206.96 | 12,644.84 | 0.04% | 2.90% | 0.00% | 11.00% | 0.00% |
| Apple Inc | AAPL | 16,319.44 | 174.61 | 2,849,537.59 | 9.70% | 0.50% | 0.05% | 14.00% | 1.36% |
| AbbVie Inc | ABBV | 1,766.29 | 162.11 | 286,332.46 | 0.97% | 3.48% | 0.03% | 4.50% | 0.04% |
| AmerisourceBergen Corp | ABC | 209.14 | 154.71 | 32,355.59 | 0.11% | 1.19% | 0.00% | 6.50% | 0.01% |
| ABIOMED Inc | ABMD | 45.52 | 331.24 | 15,076.72 | 0.05% | | | 7.50% | 0.00% |
| Abbott Laboratories | ABT | 1,763.48 | 118.36 | 208,725.73 | 0.71% | 1.59% | 0.01% | 10.00% | 0.07% |
| Accenture PLC | ACN | 662.43 | 337.23 | 223,392.62 | 0.76% | 1.15% | 0.01% | 12.00% | 0.09% |
| Adobe Inc | ADBE | 472.50 | 455.62 | 215,280.45 | 0.73% | | | 15.50% | 0.11% |
| Analog Devices Inc | ADI | 523.32 | 165.18 | 86,441.17 | 0.29% | 1.84% | 0.01% | 11.00% | 0.03% |
| Archer-Daniels-Midland Co | ADM | 562.48 | 90.26 | 50,769.17 | 0.17% | 1.77% | 0.00% | 12.50% | 0.02% |
| Automatic Data Processing Inc | ADP | 420.05 | 227.54 | 95,577.04 | 0.33% | 1.83% | 0.01% | 9.00% | 0.03% |
| Autodesk Inc | ADSK | 217.31 | 214.35 | 46,579.97 | 0.16% | | | 18.00% | 0.03% |
| Ameren Corp | AEE | 258.09 | 93.76 | 24,198.71 | 0.08% | 2.52% | 0.00% | 6.50% | 0.01% |
| American Electric Power Co Inc | AEP | 504.55 | 99.77 | 50,338.65 | 0.17% | 3.13% | 0.01% | 6.50% | 0.01% |
| AES Corp/The | AES | 667.40 | 25.73 | 17,172.07 | 0.06% | 2.46% | 0.00% | 14.00% | 0.01% |
| Aflac Inc | AFL | 649.37 | 64.39 | 41,812.81 | 0.14% | 2.48% | 0.00% | 9.00% | 0.01% |
| American International Group Inc | AIG | 806.25 | 62.77 | 50,608.19 | | 2.04% | | 31.50% | |
| Assurant Inc | AIZ | 57.71 | 181.83 | 10,493.05 | 0.04% | 1.50% | 0.00% | 15.50% | 0.01% |
| Arthur J Gallagher & Co | AJG | 209.61 | 174.60 | 36,598.60 | 0.12% | 1.17% | 0.00% | 14.50% | 0.02% |
| Akamai Technologies Inc | AKAM | 160.90 | 119.39 | 19,209.73 | 0.07% | | | 9.50% | 0.01% |
| Albemarle Corp | ALB | 117.11 | 221.15 | 25,899.32 | 0.09% | 0.71% | 0.00% | 6.50% | 0.01% |
| Align Technology Inc | ALGN | 78.80 | 436.00 | 34,354.62 | 0.12% | | | 17.00% | 0.02% |
| Alaska Air Group Inc | ALK | 126.09 | 58.01 | 7,314.31 | | | | | |
| Allstate Corp/The | ALL | 278.35 | 138.51 | 38,553.70 | 0.13% | 2.45% | 0.00% | 5.00% | 0.01% |
| Allegion plc | ALLE | 88.23 | 109.78 | 9,685.89 | 0.03% | 1.49% | 0.00% | 10.50% | 0.00% |
| Applied Materials Inc | AMAT | 883.40 | 131.80 | 116,431.46 | 0.40% | 0.79% | 0.00% | 14.50% | 0.06% |
| Amcor PLC | AMCR | 1,513.73 | 11.33 | 17,150.53 | 0.06% | 4.24% | 0.00% | 15.00% | 0.01% |
| Advanced Micro Devices Inc | AMD | 1,627.37 | 109.34 | 177,936.09 | 0.61% | | | 17.50% | 0.11% |
| AMETEK Inc | AME | 231.17 | 133.18 | 30,787.35 | 0.10% | 0.66% | 0.00% | 9.00% | 0.01% |
| Amgen Inc | AMGN | 557.03 | 241.82 | 134,700.75 | 0.46% | 3.21% | 0.01% | 5.50% | 0.03% |
| Ameriprise Financial Inc | AMP | 110.58 | 300.36 | 33,212.91 | 0.11% | 1.50% | 0.00% | 13.50% | 0.02% |
| American Tower Corp | AMT | 455.89 | 251.22 | 114,527.43 | 0.39% | 2.23% | 0.01% | 9.00% | 0.04% |
| Amazon.com Inc | AMZN | 508.84 | 3,259.95 | 1,658,806.00 | | | | 26.50% | |
| Arista Networks Inc | ANET | 307.77 | 138.98 | 42,773.46 | 0.15% | | | 4.50% | 0.01% |
| ANSYS Inc | ANSS | 87.03 | 317.65 | 27,643.81 | 0.09% | | | 8.50% | 0.01% |
| Anthem Inc | ANTM | 241.30 | 491.22 | 118,533.35 | 0.40% | 1.04% | 0.00% | 12.50% | 0.05% |
| Aon PLC | AON | 213.94 | 325.63 | 69,666.58 | 0.24% | 0.63% | 0.00% | 7.00% | 0.02% |
| A O Smith Corp | AOS | 131.05 | 63.89 | 8,372.72 | 0.03% | 1.75% | 0.00% | 10.00% | 0.00% |
| APA Corp | APA | 346.78 | 41.33 | 14,332.25 | | 1.21% | | | |
| Air Products and Chemicals Inc | APD | 221.72 | 249.91 | 55,409.30 | 0.19% | 2.59% | 0.00% | 12.00% | 0.02% |
| Amphenol Corp | APH | 598.94 | 75.35 | 45,130.13 | 0.15% | 1.06% | 0.00% | 12.00% | 0.02% |
| Aptiv PLC | APTV | 270.92 | 119.71 | 32,431.23 | | | | 21.50% | |
| Alexandria Real Estate Equities Inc | ARE | 159.94 | 201.25 | 32,188.53 | 0.11% | 2.29% | 0.00% | 9.00% | 0.01% |
| Atmos Energy Corp | ATO | 135.43 | 119.49 | 16,182.77 | 0.06% | 2.28% | 0.00% | 7.50% | 0.00% |
| Activision Blizzard Inc | ATVI | 780.92 | 80.11 | 62,559.74 | 0.21% | 0.59% | 0.00% | 15.00% | 0.03% |
| AvalonBay Communities Inc | AVB | 139.75 | 248.37 | 34,710.20 | 0.12% | 2.56% | 0.00% | 6.50% | 0.01% |
| Broadcom Inc | AVGO | 408.28 | 629.68 | 257,086.38 | | 2.60% | | 23.00% | |
| Avery Dennison Corp | AVY | 82.36 | 173.97 | 14,327.30 | 0.05% | 1.56% | 0.00% | 9.00% | 0.00% |
| American Water Works Co Inc | AWK | 181.75 | 165.53 | 30,085.57 | 0.10% | 1.46% | 0.00% | 8.50% | 0.01% |
| American Express Co | AXP | 757.29 | 187.00 | 141,613.04 | 0.48% | 1.11% | 0.01% | 12.00% | 0.06% |
| AutoZone Inc | AZO | 19.85 | 2,044.58 | 40,582.87 | 0.14% | | | 16.50% | 0.02% |
| Boeing Co/The | BA | 590.39 | 191.50 | 113,058.73 | | | | | |
| Bank of America Corp | BAC | 8,064.86 | 41.22 | 332,433.32 | 1.13% | 2.04% | 0.02% | 7.50% | 0.08% |
| Baxter International Inc | BAX | 503.20 | 77.54 | 39,017.90 | 0.13% | 1.44% | 0.00% | 9.50% | 0.01% |
| Bath & Body Works Inc | BBWI | 238.91 | 47.80 | 11,419.90 | | 1.67% | | 26.00% | |
| Best Buy Co Inc | BBY | 225.23 | 90.90 | 20,473.23 | 0.07% | 3.87% | 0.00% | 8.50% | 0.01% |
| Becton Dickinson and Co | BDX | 284.77 | 259.33 | 73,850.80 | 0.25% | 1.34% | 0.00% | 6.00% | 0.02% |
| Franklin Resources Inc | BEN | 502.12 | 27.92 | 14,019.30 | 0.05% | 4.15% | 0.00% | 11.00% | 0.01% |
| Brown-Forman Corp | BF/B | 309.80 | 67.02 | 20,762.46 | 0.07% | 1.13% | 0.00% | 13.00% | 0.01% |
| Biogen Inc | BIIB | 146.96 | 210.60 | 30,950.41 | | | | -10.50% | |
| Bio-Rad Laboratories Inc | BIO | 24.86 | 563.23 | 14,003.59 | 0.05% | | | 9.50% | 0.00% |
| Bank of New York Mellon Corp/The | BK | 807.11 | 49.63 | 40,056.67 | 0.14% | 2.74% | 0.00% | 5.00% | 0.01% |
| Booking Holdings Inc | BKNG | 40.89 | 2,348.45 | 96,023.42 | 0.33% | | | 14.00% | 0.05% |
| Baker Hughes Co | BKR | 953.34 | 36.41 | 34,711.15 | | 1.98% | | | |
| BlackRock Inc | BLK | 152.04 | 764.17 | 116,185.94 | 0.40% | 2.55% | 0.01% | 11.00% | 0.04% |
| Ball Corp | BLL | 321.21 | 90.00 | 28,909.08 | | 0.89% | | 21.00% | |
| Bristol-Myers Squibb Co | BMY | 2,125.20 | 73.03 | 155,203.58 | | 2.96% | | | |
| Broadridge Financial Solutions Inc | BR | 116.77 | 155.71 | 18,182.72 | 0.06% | 1.64% | 0.00% | 9.00% | 0.01% |
| Berkshire Hathaway Inc | BRK/B | 1,287.63 | 352.91 | 454,418.91 | 1.55% | | | 6.00% | 0.09% |
| Brown & Brown Inc | BRO | 282.22 | 72.27 | 20,395.75 | 0.07% | 0.57% | 0.00% | 10.50% | 0.01% |
| Boston Scientific Corp | BSX | 1,429.45 | 44.29 | 63,310.21 | 0.22% | | | 16.00% | 0.03% |
| BorgWarner Inc | BWA | 239.97 | 38.90 | 9,334.95 | 0.03% | 1.75% | 0.00% | 9.50% | 0.00% |
| Boston Properties Inc | BXP | 156.68 | 128.80 | 20,179.87 | | 3.04% | | -1.50% | |
| Citigroup Inc | C | 1,972.47 | 53.40 | 105,330.11 | 0.36% | 3.82% | 0.01% | 7.00% | 0.03% |
| Conagra Brands Inc | CAG | 479.70 | 33.57 | 16,103.46 | 0.05% | 3.72% | 0.00% | 4.50% | 0.00% |
| Cardinal Health Inc | CAH | 277.06 | 56.70 | 15,709.36 | 0.05% | 3.46% | 0.00% | 5.00% | 0.00% |
| Carrier Global Corp | CARR | 853.01 | 45.87 | 39,127.43 | | 1.31% | | | |
| Caterpillar Inc | CAT | 535.89 | 222.82 | 119,406.56 | 0.41% | 1.99% | 0.01% | 8.00% | 0.03% |

STANDARD AND POOR'S 500 INDEX

| Name | Ticker | [4] Shares Outst'g | [5] Price | [6] Market Capitalization | [7] Weight in Index | [8] Estimated Dividend Yield | [9] Cap-Weighted Dividend Yield | [10] Value Line Long-Term Growth Est. | [11] Cap-Weighted Long-Term Growth Est. |
|---|---|---|---|---|---|---|---|---|---|
| Chubb Ltd | CB | 426.23 | 213.90 | 91,170.38 | 0.31% | 1.50% | 0.00% | 12.50% | 0.04% |
| Cboe Global Markets Inc | CBOE | 106.60 | 114.42 | 12,197.40 | 0.04% | 1.68% | 0.00% | 12.00% | 0.00% |
| CBRE Group Inc | CBRE | 332.32 | 91.52 | 30,414.20 | 0.10% | | | 10.00% | 0.01% |
| Crown Castle International Corp | CCI | 433.03 | 184.60 | 79,937.34 | 0.27% | 3.19% | 0.01% | 12.00% | 0.03% |
| Carnival Corp | CCL | 989.70 | 20.22 | 20,011.75 | | | | | |
| Ceridian HCM Holding Inc | CDAY | 150.11 | 68.36 | 10,261.45 | | | | | |
| Cadence Design Systems Inc | CDNS | 278.38 | 164.46 | 45,781.72 | 0.16% | | | 12.00% | 0.02% |
| CDW Corp/DE | CDW | 134.94 | 178.89 | 24,140.13 | 0.08% | 1.12% | 0.00% | 11.00% | 0.01% |
| Celanese Corp | CE | 108.03 | 142.87 | 15,434.10 | 0.05% | 1.90% | 0.00% | 6.50% | 0.00% |
| Constellation Energy Corp | CEG | 326.66 | 56.25 | 18,374.85 | | 1.00% | | | |
| Cerner Corp | CERN | 293.85 | 93.56 | 27,492.23 | 0.09% | 1.15% | 0.00% | 9.50% | 0.01% |
| CF Industries Holdings Inc | CF | 209.11 | 103.06 | 21,551.29 | 0.07% | 1.16% | 0.00% | 19.50% | 0.01% |
| Citizens Financial Group Inc | CFG | 422.14 | 45.33 | 19,135.74 | 0.07% | 3.44% | 0.00% | 8.50% | 0.01% |
| Church & Dwight Co Inc | CHD | 242.70 | 99.38 | 24,119.13 | 0.08% | 1.06% | 0.00% | 8.00% | 0.01% |
| CH Robinson Worldwide Inc | CHRW | 128.64 | 107.71 | 13,855.81 | 0.05% | 2.04% | 0.00% | 9.00% | 0.00% |
| Charter Communications Inc | CHTR | 191.49 | 545.52 | 104,463.26 | | | | 21.50% | |
| Cigna Corp | CI | 320.95 | 239.61 | 76,903.55 | 0.26% | 1.87% | 0.00% | 10.00% | 0.03% |
| Cincinnati Financial Corp | CINF | 160.44 | 135.96 | 21,813.29 | 0.07% | 2.03% | 0.00% | 15.00% | 0.01% |
| Colgate-Palmolive Co | CL | 840.59 | 75.83 | 63,742.17 | 0.22% | 2.48% | 0.01% | 5.00% | 0.01% |
| Clorox Co/The | CLX | 123.06 | 139.03 | 17,108.75 | 0.06% | 3.34% | 0.00% | 5.00% | 0.00% |
| Comerica Inc | CMA | 131.09 | 90.43 | 11,854.38 | 0.04% | 3.01% | 0.00% | 6.00% | 0.00% |
| Comcast Corp | CMCSA | 4,523.79 | 46.82 | 211,803.66 | 0.72% | 2.31% | 0.02% | 10.50% | 0.08% |
| CME Group Inc | CME | 359.42 | 237.86 | 85,491.40 | 0.29% | 1.68% | 0.00% | 8.50% | 0.02% |
| Chipotle Mexican Grill Inc | CMG | 28.03 | 1,582.03 | 44,347.46 | 0.15% | | | 20.00% | 0.03% |
| Cummins Inc | CMI | 142.08 | 205.11 | 29,141.00 | 0.10% | 2.83% | 0.00% | 8.00% | 0.01% |
| CMS Energy Corp | CMS | 290.14 | 69.94 | 20,292.18 | 0.07% | 2.63% | 0.00% | 6.50% | 0.00% |
| Centene Corp | CNC | 582.88 | 84.19 | 49,072.25 | 0.17% | | | 10.00% | 0.02% |
| CenterPoint Energy Inc | CNP | 629.43 | 30.64 | 19,285.80 | 0.07% | 2.22% | 0.00% | 5.00% | 0.00% |
| Capital One Financial Corp | COF | 405.67 | 131.29 | 53,260.41 | | 1.83% | | | |
| Cooper Cos Inc/The | COO | 49.30 | 417.59 | 20,588.02 | 0.07% | 0.01% | 0.00% | 19.00% | 0.01% |
| ConocoPhillips | COP | 1,296.05 | 100.00 | 129,605.10 | 0.44% | 1.84% | 0.01% | 16.50% | 0.07% |
| Costco Wholesale Corp | COST | 443.22 | 575.85 | 255,230.54 | 0.87% | 0.55% | 0.00% | 10.50% | 0.09% |
| Campbell Soup Co | CPB | 301.70 | 44.57 | 13,446.95 | 0.05% | 3.32% | 0.00% | 5.50% | 0.00% |
| Copart Inc | CPRT | 237.50 | 125.47 | 29,798.75 | 0.10% | | | 12.00% | 0.01% |
| Charles River Laboratories International Inc | CRL | 50.80 | 283.97 | 14,425.39 | 0.05% | | | 6.50% | 0.00% |
| salesforce.com Inc | CRM | 990.00 | 212.32 | 210,196.80 | 0.72% | | | 20.00% | 0.14% |
| Cisco Systems Inc | CSCO | 4,154.17 | 55.76 | 231,636.41 | 0.79% | 2.73% | 0.02% | 8.00% | 0.06% |
| CSX Corp | CSX | 2,178.58 | 37.45 | 81,587.82 | 0.28% | 1.07% | 0.00% | 10.00% | 0.03% |
| Cintas Corp | CTAS | 102.42 | 425.39 | 43,566.74 | 0.15% | 0.89% | 0.00% | 13.50% | 0.02% |
| Catalent Inc | CTLT | 179.13 | 110.90 | 19,865.30 | | | | 21.00% | |
| Coterra Energy Inc | CTRA | 810.98 | 26.97 | 21,872.10 | | 8.31% | | | |
| Cognizant Technology Solutions Corp | CTSH | 524.54 | 89.67 | 47,035.05 | 0.16% | 1.20% | 0.00% | 7.00% | 0.01% |
| Corteva Inc | CTVA | 726.77 | 57.48 | 41,774.97 | | 0.97% | | | |
| Citrix Systems Inc | CTXS | 125.91 | 100.90 | 12,704.62 | 0.04% | | | 8.00% | 0.00% |
| CVS Health Corp | CVS | 1,312.51 | 101.21 | 132,839.14 | 0.45% | 2.17% | 0.01% | 6.00% | 0.03% |
| Chevron Corp | CVX | 1,947.55 | 162.83 | 317,120.05 | | 3.49% | | 25.00% | |
| Caesars Entertainment Inc | CZR | 214.12 | 77.36 | 16,564.56 | | | | | |
| Dominion Energy Inc | D | 810.67 | 84.97 | 68,882.97 | 0.23% | 3.14% | 0.01% | 11.50% | 0.03% |
| Delta Air Lines Inc | DAL | 639.93 | 39.57 | 25,322.03 | | | | 49.00% | |
| DuPont de Nemours Inc | DD | 512.91 | 73.58 | 37,739.70 | | 1.79% | | | |
| Deere & Co | DE | 306.78 | 415.46 | 127,456.48 | | 1.01% | | 21.50% | |
| Discover Financial Services | DFS | 282.03 | 110.19 | 31,076.67 | 0.11% | 1.82% | 0.00% | 16.00% | 0.02% |
| Dollar General Corp | DG | 228.87 | 222.63 | 50,952.88 | 0.17% | 0.99% | 0.00% | 10.50% | 0.02% |
| Quest Diagnostics Inc | DGX | 119.46 | 136.86 | 16,348.61 | 0.06% | 1.93% | 0.00% | 7.50% | 0.00% |
| DR Horton Inc | DHI | 354.36 | 74.51 | 26,403.21 | 0.09% | 1.21% | 0.00% | 11.00% | 0.01% |
| Danaher Corp | DHR | 715.90 | 293.33 | 209,993.48 | | 0.34% | | 21.00% | |
| Walt Disney Co/The | DIS | 1,820.63 | 137.16 | 249,718.02 | | | | 37.50% | |
| Discovery Inc | DISCA | 171.54 | 24.92 | 4,274.85 | 0.01% | | | 13.50% | 0.00% |
| Discovery Inc | DISCK | 330.15 | 24.97 | 8,243.95 | | | | | |
| DISH Network Corp | DISH | 290.57 | 31.65 | 9,196.60 | 0.03% | | | 2.00% | 0.00% |
| Digital Realty Trust Inc | DLR | 284.47 | 141.80 | 40,337.70 | | 3.44% | | -3.50% | |
| Dollar Tree Inc | DLTR | 225.11 | 160.15 | 36,051.37 | 0.12% | | | 10.00% | 0.01% |
| Dover Corp | DOV | 144.11 | 156.90 | 22,610.23 | 0.08% | 1.27% | 0.00% | 9.00% | 0.01% |
| Dow Inc | DOW | 735.09 | 63.72 | 46,839.68 | | 4.39% | | | |
| Domino's Pizza Inc | DPZ | 36.03 | 407.01 | 14,665.79 | 0.05% | 1.08% | 0.00% | 16.50% | 0.01% |
| Duke Realty Corp | DRE | 382.77 | 58.06 | 22,223.51 | 0.08% | 1.93% | 0.00% | 2.50% | 0.00% |
| Darden Restaurants Inc | DRI | 127.72 | 132.95 | 16,980.91 | 0.06% | 3.31% | 0.00% | 15.50% | 0.01% |
| DTE Energy Co | DTE | 193.74 | 132.21 | 25,614.63 | 0.09% | 2.68% | 0.00% | 4.50% | 0.00% |
| Duke Energy Corp | DUK | 769.90 | 111.66 | 85,966.92 | 0.29% | 3.53% | 0.01% | 7.00% | 0.02% |
| DaVita Inc | DVA | 96.30 | 113.11 | 10,892.49 | 0.04% | | | 16.00% | 0.01% |
| Devon Energy Corp | DVN | 664.20 | 59.13 | 39,274.15 | | 6.76% | | 29.50% | |
| DXC Technology Co | DXC | 244.48 | 32.63 | 7,977.32 | 0.03% | | | 6.00% | 0.00% |
| Dexcom Inc | DXCM | 97.39 | 511.60 | 49,824.72 | | | | 34.00% | |
| Electronic Arts Inc | EA | 281.22 | 126.51 | 35,577.40 | 0.12% | 0.54% | 0.00% | 10.50% | 0.01% |
| eBay Inc | EBAY | 587.53 | 57.26 | 33,641.91 | 0.11% | 1.54% | 0.00% | 16.50% | 0.02% |
| Ecolab Inc | ECL | 286.30 | 176.56 | 50,548.42 | 0.17% | 1.16% | 0.00% | 8.00% | 0.01% |
| Consolidated Edison Inc | ED | 354.09 | 94.68 | 33,525.24 | 0.11% | 3.34% | 0.00% | 3.50% | 0.00% |
| Equifax Inc | EFX | 122.91 | 237.10 | 29,141.72 | 0.10% | 0.66% | 0.00% | 10.50% | 0.01% |
| Edison International | EIX | 380.80 | 70.10 | 26,693.80 | | 3.99% | | | |
| Estee Lauder Cos Inc/The | EL | 232.42 | 272.32 | 63,293.70 | 0.22% | 0.88% | 0.00% | 14.00% | 0.03% |
| Eastman Chemical Co | EMN | 128.95 | 112.06 | 14,450.14 | 0.05% | 2.71% | 0.00% | 8.00% | 0.00% |
| Emerson Electric Co | EMR | 594.00 | 98.05 | 58,241.70 | 0.20% | 2.10% | 0.00% | 11.50% | 0.02% |
| Enphase Energy Inc | ENPH | 133.94 | 201.78 | 27,025.61 | | | | 30.00% | |
| EOG Resources Inc | EOG | 585.39 | 119.23 | 69,795.93 | 0.24% | 2.52% | 0.01% | 16.00% | 0.04% |
| EPAM Systems Inc | EPAM | 56.88 | 296.61 | 16,870.88 | | | | 23.50% | |
| Equinix Inc | EQIX | 90.72 | 741.62 | 67,280.51 | 0.23% | 1.67% | 0.00% | 15.00% | 0.03% |
| Equity Residential | EQR | 375.92 | 89.92 | 33,802.46 | | 2.78% | | -2.00% | |
| Eversource Energy | ES | 344.75 | 88.19 | 30,403.15 | 0.10% | 2.89% | 0.00% | 5.50% | 0.01% |
| Essex Property Trust Inc | ESS | 65.28 | 345.48 | 22,552.59 | | 2.55% | | -2.50% | |
| Eaton Corp PLC | ETN | 399.57 | 151.76 | 60,638.74 | 0.21% | 2.13% | 0.00% | 11.50% | 0.02% |
| Entergy Corp | ETR | 203.52 | 116.75 | 23,760.38 | 0.08% | 3.46% | 0.00% | 3.00% | 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. |
|---|---|---|---|---|---|---|---|---|---|
| Etsy Inc | ETSY | 127.03 | 124.28 | 15,787.66 | | | | 29.00% | |
| Evergy Inc | EVRG | 226.99 | 68.34 | 15,512.70 | 0.05% | 3.35% | 0.00% | 7.50% | 0.00% |
| Edwards Lifesciences Corp | EW | 621.32 | 117.72 | 73,141.44 | 0.25% | | | 12.50% | 0.03% |
| Exelon Corp | EXC | 980.14 | 47.63 | 46,683.93 | | 2.83% | | | |
| Expeditors International of Washington Inc | EXPD | 167.40 | 103.16 | 17,268.78 | 0.06% | 1.12% | 0.00% | 11.50% | 0.01% |
| Expedia Group Inc | EXPE | 150.23 | 195.67 | 29,395.70 | | | | | |
| Extra Space Storage Inc | EXR | 134.15 | 205.60 | 27,581.86 | 0.09% | 2.92% | 0.00% | 6.00% | 0.01% |
| Ford Motor Co | F | 3,947.97 | 16.91 | 66,760.11 | | 2.37% | | 29.00% | |
| Diamondback Energy Inc | FANG | 177.42 | 137.08 | 24,320.05 | | 1.75% | | | |
| Fastenal Co | FAST | 575.55 | 59.40 | 34,187.91 | 0.12% | 2.09% | 0.00% | 8.50% | 0.01% |
| Meta Platforms Inc | FB | 2,309.08 | 222.36 | 513,447.03 | | | | 21.50% | |
| Fortune Brands Home & Security Inc | FBHS | 132.35 | 74.28 | 9,830.74 | 0.03% | 1.51% | 0.00% | 11.00% | 0.00% |
| Freeport-McMoRan Inc | FCX | 1,454.78 | 49.74 | 72,360.81 | | 1.21% | | 27.00% | |
| FactSet Research Systems Inc | FDS | 37.80 | 434.15 | 16,409.57 | 0.06% | 0.76% | 0.00% | 9.50% | 0.01% |
| FedEx Corp | FDX | 259.18 | 231.39 | 59,971.20 | 0.20% | 1.30% | 0.00% | 13.00% | 0.03% |
| FirstEnergy Corp | FE | 570.90 | 45.86 | 26,181.61 | 0.09% | 3.40% | 0.00% | 10.00% | 0.01% |
| F5 Inc | FFIV | 60.74 | 208.95 | 12,691.21 | 0.04% | | | 7.00% | 0.00% |
| Fidelity National Information Services Inc | FIS | 609.59 | 100.42 | 61,215.13 | | 1.87% | | 28.00% | |
| Fiserv Inc | FISV | 652.20 | 101.40 | 66,132.78 | 0.23% | | | 13.00% | 0.03% |
| Fifth Third Bancorp | FITB | 683.67 | 43.04 | 29,425.20 | 0.10% | 2.79% | 0.00% | 11.50% | 0.01% |
| FleetCor Technologies Inc | FLT | 77.89 | 249.06 | 19,398.54 | 0.07% | | | 11.00% | 0.01% |
| FMC Corp | FMC | 125.89 | 131.57 | 16,563.74 | 0.06% | 1.61% | 0.00% | 10.50% | 0.01% |
| Fox Corp | FOX | 247.10 | 36.28 | 8,964.64 | | 1.32% | | | |
| Fox Corp | FOXA | 315.81 | 39.45 | 12,458.55 | 0.04% | 1.22% | 0.00% | 10.50% | 0.00% |
| First Republic Bank/CA | FRC | 179.06 | 162.10 | 29,025.63 | 0.10% | 0.54% | 0.00% | 13.50% | 0.01% |
| Federal Realty Investment Trust | FRT | 78.69 | 122.07 | 9,605.44 | 0.03% | 3.51% | 0.00% | 2.50% | 0.00% |
| Fortinet Inc | FTNT | 160.82 | 341.74 | 54,956.92 | | | | 24.00% | |
| Fortive Corp | FTV | 359.07 | 60.93 | 21,877.89 | 0.07% | 0.46% | 0.00% | 12.00% | 0.01% |
| General Dynamics Corp | GD | 278.14 | 241.18 | 67,080.84 | 0.23% | 2.09% | 0.00% | 6.00% | 0.01% |
| General Electric Co | GE | 1,101.75 | 91.50 | 100,810.22 | 0.34% | 0.35% | 0.00% | 15.00% | 0.05% |
| Gilead Sciences Inc | GILD | 1,253.89 | 59.45 | 74,543.58 | 0.25% | 4.91% | 0.01% | 13.50% | 0.03% |
| General Mills Inc | GIS | 602.21 | 67.72 | 40,781.80 | 0.14% | 3.01% | 0.00% | 3.50% | 0.00% |
| Globe Life Inc | GL | 99.18 | 100.60 | 9,977.31 | 0.03% | 0.83% | 0.00% | 8.00% | 0.00% |
| Corning Inc | GLW | 845.65 | 36.91 | 31,212.79 | 0.11% | 2.93% | 0.00% | 20.00% | 0.02% |
| General Motors Co | GM | 1,453.02 | 43.74 | 63,555.14 | 0.22% | | | 12.00% | 0.03% |
| Generac Holdings Inc | GNRC | 63.78 | 297.26 | 18,960.43 | | | | 23.50% | |
| Alphabet Inc | GOOG | 315.64 | 2,792.99 | 881,576.57 | | | | 23.50% | |
| Alphabet Inc | GOOGL | 300.76 | 2,781.35 | 836,504.92 | | | | | |
| Genuine Parts Co | GPC | 141.95 | 126.02 | 17,888.16 | 0.06% | 2.84% | 0.00% | 8.50% | 0.01% |
| Global Payments Inc | GPN | 281.97 | 136.84 | 38,584.50 | 0.13% | 0.73% | 0.00% | 16.50% | 0.02% |
| Garmin Ltd | GRMN | 192.79 | 118.61 | 22,866.47 | 0.08% | 2.46% | 0.00% | 10.00% | 0.01% |
| Goldman Sachs Group Inc/The | GS | 341.86 | 330.10 | 112,847.66 | 0.38% | 2.42% | 0.01% | 8.50% | 0.03% |
| WW Grainger Inc | GWW | 51.10 | 515.79 | 26,357.90 | 0.09% | 1.26% | 0.00% | 7.00% | 0.01% |
| Halliburton Co | HAL | 898.57 | 37.87 | 34,028.92 | 0.12% | 1.27% | 0.00% | 9.50% | 0.01% |
| Hasbro Inc | HAS | 138.96 | 81.92 | 11,383.60 | 0.04% | 3.42% | 0.00% | 11.50% | 0.00% |
| Huntington Bancshares Inc/OH | HBAN | 1,444.83 | 14.62 | 21,123.37 | 0.07% | 4.24% | 0.00% | 12.00% | 0.01% |
| HCA Healthcare Inc | HCA | 302.02 | 250.62 | 75,691.75 | 0.26% | 0.89% | 0.00% | 12.50% | 0.03% |
| Home Depot Inc/The | HD | 1,033.35 | 299.33 | 309,312.66 | 1.05% | 2.54% | 0.03% | 10.00% | 0.11% |
| Hess Corp | HES | 309.75 | 107.04 | 33,155.21 | | 1.40% | | | |
| Hartford Financial Services Group Inc/The | HIG | 331.65 | 71.81 | 23,815.57 | 0.08% | 2.14% | 0.00% | 6.50% | 0.01% |
| Huntington Ingalls Industries Inc | HII | 40.07 | 199.44 | 7,990.96 | 0.03% | 2.37% | 0.00% | 10.00% | 0.00% |
| Hilton Worldwide Holdings Inc | HLT | 279.14 | 151.74 | 42,356.55 | | | | | |
| Hologic Inc | HOLX | 251.30 | 76.82 | 19,305.10 | | | | 25.00% | |
| Honeywell International Inc | HON | 685.48 | 194.58 | 133,381.09 | 0.45% | 2.01% | 0.01% | 11.00% | 0.05% |
| Hewlett Packard Enterprise Co | HPE | 1,300.14 | 16.71 | 21,725.27 | 0.07% | 2.87% | 0.00% | 6.50% | 0.00% |
| HP Inc | HPQ | 1,053.37 | 36.30 | 38,237.19 | 0.13% | 2.75% | 0.00% | 15.50% | 0.02% |
| Hormel Foods Corp | HRL | 545.00 | 51.54 | 28,089.20 | 0.10% | 2.02% | 0.00% | 6.50% | 0.01% |
| Henry Schein Inc | HSIC | 137.17 | 87.19 | 11,960.11 | 0.04% | | | 7.00% | 0.00% |
| Host Hotels & Resorts Inc | HST | 714.15 | 19.43 | 13,875.93 | 0.05% | 0.62% | 0.00% | 8.50% | 0.00% |
| Hershey Co/The | HSY | 145.63 | 216.63 | 31,547.39 | 0.11% | 1.66% | 0.00% | 6.00% | 0.01% |
| Humana Inc | HUM | 126.74 | 435.17 | 55,154.75 | 0.19% | 0.72% | 0.00% | 12.00% | 0.02% |
| Howmet Aerospace Inc | HWM | 418.91 | 35.94 | 15,055.45 | 0.05% | 0.22% | 0.00% | 12.50% | 0.01% |
| International Business Machines Corp | IBM | 899.31 | 130.02 | 116,928.29 | 0.40% | 5.05% | 0.02% | 0.50% | 0.00% |
| Intercontinental Exchange Inc | ICE | 560.44 | 132.12 | 74,044.80 | 0.25% | 1.15% | 0.00% | 8.00% | 0.02% |
| IDEXX Laboratories Inc | IDXX | 84.25 | 547.06 | 46,089.26 | 0.16% | | | 14.00% | 0.02% |
| IDEX Corp | IEX | 76.11 | 191.73 | 14,591.61 | 0.05% | 1.13% | 0.00% | 8.00% | 0.00% |
| International Flavors & Fragrances Inc | IFF | 254.75 | 131.33 | 33,455.66 | 0.11% | 2.41% | 0.00% | 7.00% | 0.01% |
| Illumina Inc | ILMN | 157.08 | 349.40 | 54,882.01 | 0.19% | | | 10.00% | 0.02% |
| Incyte Corp | INCY | 221.33 | 79.42 | 17,577.63 | | | | 25.50% | |
| Intel Corp | INTC | 4,088.70 | 49.56 | 202,635.77 | 0.69% | 2.95% | 0.02% | 6.00% | 0.04% |
| Intuit Inc | INTU | 282.81 | 480.84 | 135,987.32 | 0.46% | 0.57% | 0.00% | 18.50% | 0.09% |
| International Paper Co | IP | 374.89 | 46.15 | 17,301.08 | 0.06% | 4.01% | 0.00% | 12.50% | 0.01% |
| Interpublic Group of Cos Inc/The | IPG | 393.96 | 35.45 | 13,965.88 | 0.05% | 3.27% | 0.00% | 12.00% | 0.01% |
| IPG Photonics Corp | IPGP | 52.94 | 109.76 | 5,810.58 | 0.02% | | | 17.00% | 0.00% |
| IQVIA Holdings Inc | IQV | 190.91 | 231.21 | 44,140.76 | 0.15% | | | 14.50% | 0.02% |
| Ingersoll Rand Inc | IR | 407.97 | 50.35 | 20,541.19 | | 0.16% | | | |
| Iron Mountain Inc | IRM | 289.83 | 55.41 | 16,059.48 | 0.05% | 4.46% | 0.00% | 10.00% | 0.01% |
| Intuitive Surgical Inc | ISRG | 359.20 | 301.68 | 108,361.95 | 0.37% | | | 13.00% | 0.05% |
| Gartner Inc | IT | 82.29 | 297.46 | 24,477.09 | | | | 20.50% | |
| Illinois Tool Works Inc | ITW | 311.90 | 209.40 | 65,311.86 | 0.22% | 2.33% | 0.01% | 11.00% | 0.02% |
| Invesco Ltd | IVZ | 454.96 | 23.06 | 10,491.42 | 0.04% | 2.95% | 0.00% | 15.50% | 0.01% |
| Jacobs Engineering Group Inc | J | 129.22 | 137.81 | 17,807.39 | 0.06% | 0.67% | 0.00% | 15.00% | 0.01% |
| JB Hunt Transport Services Inc | JBHT | 104.85 | 200.79 | 21,052.83 | 0.07% | 0.80% | 0.00% | 11.00% | 0.01% |
| Johnson Controls International plc | JCI | 702.63 | 65.57 | 46,071.25 | 0.16% | 2.14% | 0.00% | 14.00% | 0.02% |
| Jack Henry & Associates Inc | JKHY | 72.83 | 197.05 | 14,350.17 | 0.05% | 0.99% | 0.00% | 10.50% | 0.01% |
| Johnson & Johnson | JNJ | 2,629.62 | 177.23 | 466,046.67 | 1.59% | 2.39% | 0.04% | 8.00% | 0.13% |
| Juniper Networks Inc | JNPR | 322.57 | 37.16 | 11,986.66 | 0.04% | 2.26% | 0.00% | 9.00% | 0.00% |
| JPMorgan Chase & Co | JPM | 2,952.81 | 136.32 | 402,526.92 | 1.37% | 2.93% | 0.04% | 7.50% | 0.10% |
| Kellogg Co | K | 340.16 | 64.49 | 21,936.66 | 0.07% | 3.60% | 0.00% | 3.50% | 0.00% |
| KeyCorp | KEY | 920.13 | 22.38 | 20,592.49 | 0.07% | 3.49% | 0.00% | 9.50% | 0.01% |
| Keysight Technologies Inc | KEYS | 181.98 | 157.97 | 28,746.59 | 0.10% | | | 13.00% | 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. |
|---|---|---|---|---|---|---|---|---|---|
| Kraft Heinz Co/The | KHC | 1,224.89 | 39.39 | 48,248.57 | 0.16% | 4.06% | 0.01% | 4.00% | 0.01% |
| Kimco Realty Corp | KIM | 617.92 | 24.70 | 15,262.50 | 0.05% | 3.08% | 0.00% | 8.50% | 0.00% |
| KLA Corp | KLAC | 150.72 | 366.06 | 55,170.73 | | 1.15% | | 21.00% | |
| Kimberly-Clark Corp | KMB | 336.93 | 123.16 | 41,496.05 | 0.14% | 3.77% | 0.01% | 5.50% | 0.01% |
| Kinder Morgan Inc | KMI | 2,267.49 | 18.91 | 42,878.14 | 0.15% | 5.71% | 0.01% | 19.00% | 0.03% |
| CarMax Inc | KMX | 161.68 | 96.48 | 15,598.89 | 0.05% | | | 13.50% | 0.01% |
| Coca-Cola Co/The | KO | 4,335.00 | 62.00 | 268,769.69 | 0.92% | 2.84% | 0.03% | 7.00% | 0.06% |
| Kroger Co/The | KR | 723.31 | 57.37 | 41,496.18 | 0.14% | 1.46% | 0.00% | 6.50% | 0.01% |
| Loews Corp | L | 246.39 | 64.82 | 15,971.26 | 0.05% | 0.39% | 0.00% | 12.50% | 0.01% |
| Leidos Holdings Inc | LDOS | 136.34 | 108.02 | 14,727.66 | 0.05% | 1.33% | 0.00% | 8.50% | 0.00% |
| Lennar Corp | LEN | 257.31 | 81.17 | 20,885.53 | 0.07% | 1.85% | 0.00% | 8.50% | 0.01% |
| Laboratory Corp of America Holdings | LH | 93.40 | 263.66 | 24,625.84 | 0.08% | | | 6.00% | 0.01% |
| L3Harris Technologies Inc | LHX | 193.06 | 248.47 | 47,969.62 | | 1.80% | | | |
| Linde PLC | LIN | 507.23 | 319.43 | 162,022.88 | | 1.47% | | | |
| LKQ Corp | LKQ | 284.99 | 45.41 | 12,941.40 | 0.04% | 2.20% | 0.00% | 14.00% | 0.01% |
| Eli Lilly & Co | LLY | 952.35 | 286.37 | 272,723.61 | 0.93% | 1.37% | 0.01% | 11.50% | 0.11% |
| Lockheed Martin Corp | LMT | 266.53 | 441.40 | 117,648.11 | 0.40% | 2.54% | 0.01% | 6.50% | 0.03% |
| Lincoln National Corp | LNC | 172.46 | 65.36 | 11,271.66 | 0.04% | 2.75% | 0.00% | 11.50% | 0.00% |
| Alliant Energy Corp | LNT | 250.48 | 62.48 | 15,649.93 | 0.05% | 2.74% | 0.00% | 4.50% | 0.00% |
| Lowe's Cos Inc | LOW | 661.56 | 202.19 | 133,761.02 | 0.46% | 1.58% | 0.01% | 15.50% | 0.07% |
| Lam Research Corp | LRCX | 139.50 | 537.61 | 74,996.60 | 0.26% | 1.12% | 0.00% | 17.00% | 0.04% |
| Lumen Technologies Inc | LUMN | 1,023.37 | 11.27 | 11,533.40 | 0.04% | 8.87% | 0.00% | 3.50% | 0.00% |
| Southwest Airlines Co | LUV | 592.34 | 45.80 | 27,129.26 | | | | 29.50% | |
| Las Vegas Sands Corp | LVS | 763.99 | 38.87 | 29,696.37 | 0.10% | | | 17.00% | 0.02% |
| Lamb Weston Holdings Inc | LW | 145.20 | 59.91 | 8,699.17 | 0.03% | 1.64% | 0.00% | 6.00% | 0.00% |
| LyondellBasell Industries NV | LYB | 328.01 | 102.82 | 33,725.99 | 0.11% | 4.40% | 0.01% | 5.50% | 0.01% |
| Live Nation Entertainment Inc | LYV | 224.63 | 117.64 | 26,425.00 | | | | | |
| Mastercard Inc | MA | 969.73 | 357.38 | 346,561.75 | 1.18% | 0.55% | 0.01% | 13.00% | 0.15% |
| Mid-America Apartment Communities Inc | MAA | 115.34 | 209.45 | 24,158.17 | 0.08% | 2.08% | 0.00% | 8.50% | 0.01% |
| Marriott International Inc/MD | MAR | 327.25 | 175.75 | 57,514.89 | 0.20% | | | 17.50% | 0.03% |
| Masco Corp | MAS | 236.52 | 51.00 | 12,062.72 | 0.04% | 2.20% | 0.00% | 9.00% | 0.00% |
| McDonald's Corp | MCD | 743.59 | 247.28 | 183,873.70 | 0.63% | 2.23% | 0.01% | 10.00% | 0.06% |
| Microchip Technology Inc | MCHP | 555.99 | 75.14 | 41,777.16 | 0.14% | 1.35% | 0.00% | 10.00% | 0.01% |
| McKesson Corp | MCK | 149.80 | 306.13 | 45,857.66 | 0.16% | 0.61% | 0.00% | 10.00% | 0.02% |
| Moody's Corp | MCO | 185.38 | 337.41 | 62,548.05 | 0.21% | 0.83% | 0.00% | 9.00% | 0.02% |
| Mondelez International Inc | MDLZ | 1,388.33 | 62.78 | 87,159.23 | 0.30% | 2.23% | 0.01% | 8.00% | 0.02% |
| Medtronic PLC | MDT | 1,341.54 | 110.95 | 148,843.75 | 0.51% | 2.27% | 0.01% | 8.50% | 0.04% |
| MetLife Inc | MET | 825.08 | 70.28 | 57,986.48 | 0.20% | 2.73% | 0.01% | 7.50% | 0.01% |
| MGM Resorts International | MGM | 435.33 | 41.94 | 18,257.87 | | 0.02% | | 25.00% | |
| Mohawk Industries Inc | MHK | 65.07 | 124.20 | 8,081.82 | 0.03% | | | 10.50% | 0.00% |
| McCormick & Co Inc/MD | MKC | 250.23 | 99.80 | 24,972.55 | 0.09% | 1.48% | 0.00% | 6.00% | 0.01% |
| MarketAxess Holdings Inc | MKTX | 37.84 | 340.20 | 12,871.47 | 0.04% | 0.82% | 0.00% | 14.00% | 0.01% |
| Martin Marietta Materials Inc | MLM | 62.40 | 384.89 | 24,015.21 | 0.08% | 0.63% | 0.00% | 8.50% | 0.01% |
| Marsh & McLennan Cos Inc | MMC | 502.77 | 170.42 | 85,681.38 | 0.29% | 1.26% | 0.00% | 12.00% | 0.04% |
| 3M Co | MMM | 569.17 | 148.88 | 84,738.33 | 0.29% | 4.00% | 0.01% | 6.00% | 0.02% |
| Monster Beverage Corp | MNST | 529.36 | 79.90 | 42,295.78 | 0.14% | | | 13.00% | 0.02% |
| Altria Group Inc | MO | 1,817.26 | 52.25 | 94,951.68 | 0.32% | 6.89% | 0.02% | 5.50% | 0.02% |
| Molina Healthcare Inc | MOH | 58.67 | 333.59 | 19,573.06 | 0.07% | | | 11.00% | 0.01% |
| Mosaic Co/The | MOS | 368.31 | 66.50 | 24,492.55 | | 0.68% | | 56.50% | |
| Marathon Petroleum Corp | MPC | 558.57 | 85.50 | 47,758.08 | | 2.71% | | | |
| Monolithic Power Systems Inc | MPWR | 46.51 | 485.68 | 22,588.49 | 0.08% | 0.62% | 0.00% | 18.00% | 0.01% |
| Merck & Co Inc | MRK | 2,527.73 | 82.05 | 207,400.57 | 0.71% | 3.36% | 0.02% | 8.00% | 0.06% |
| Moderna Inc | MRNA | 403.02 | 172.26 | 69,424.23 | | | | | |
| Marathon Oil Corp | MRO | 730.77 | 25.11 | 18,349.51 | | 1.12% | | | |
| Morgan Stanley | MS | 1,781.30 | 87.40 | 155,685.53 | 0.53% | 3.20% | 0.02% | 10.50% | 0.06% |
| MSCI Inc | MSCI | 81.27 | 502.88 | 40,868.05 | 0.14% | 0.83% | 0.00% | 15.50% | 0.02% |
| Microsoft Corp | MSFT | 7,496.87 | 308.31 | 2,311,358.76 | 7.87% | 0.80% | 0.06% | 17.50% | 1.38% |
| Motorola Solutions Inc | MSI | 167.45 | 242.20 | 40,555.91 | 0.14% | 1.30% | 0.00% | 8.00% | 0.01% |
| M&T Bank Corp | MTB | 129.06 | 169.50 | 21,874.99 | 0.07% | 2.83% | 0.00% | 8.00% | 0.01% |
| Match Group Inc | MTCH | 285.15 | 108.74 | 31,006.99 | 0.11% | | | 18.50% | 0.02% |
| Mettler-Toledo International Inc | MTD | 22.74 | 1,373.19 | 31,220.85 | 0.11% | | | 13.50% | 0.01% |
| Micron Technology Inc | MU | 1,116.67 | 77.89 | 86,977.19 | | 0.51% | | 24.00% | |
| Norwegian Cruise Line Holdings Ltd | NCLH | 417.09 | 21.88 | 9,125.84 | | | | | |
| Nasdaq Inc | NDAQ | 164.41 | 178.20 | 29,298.22 | 0.10% | 1.21% | 0.00% | 6.50% | 0.01% |
| Nordson Corp | NDSN | 57.94 | 227.08 | 13,157.24 | 0.04% | 0.90% | 0.00% | 13.50% | 0.01% |
| NextEra Energy Inc | NEE | 1,962.75 | 84.71 | 166,264.13 | 0.57% | 2.01% | 0.01% | 11.00% | 0.06% |
| Newmont Corp | NEM | 792.55 | 79.45 | 62,968.02 | 0.21% | 2.77% | 0.01% | 9.50% | 0.02% |
| Netflix Inc | NFLX | 443.96 | 374.59 | 166,304.10 | | | | 23.50% | |
| NiSource Inc | NI | 405.39 | 31.80 | 12,891.24 | 0.04% | 2.96% | 0.00% | 10.50% | 0.00% |
| NIKE Inc | NKE | 1,276.29 | 134.56 | 171,737.31 | | 0.91% | | 27.00% | |
| NortonLifeLock Inc | NLOK | 582.27 | 26.52 | 15,441.91 | 0.05% | 1.89% | 0.00% | 11.00% | 0.01% |
| Nielsen Holdings PLC | NLSN | 359.49 | 27.24 | 9,792.37 | | 0.88% | | | |
| Northrop Grumman Corp | NOC | 156.10 | 447.22 | 69,811.94 | 0.24% | 1.40% | 0.00% | 8.50% | 0.02% |
| ServiceNow Inc | NOW | 200.00 | 556.89 | 111,378.00 | | | | 44.50% | |
| NRG Energy Inc | NRG | 242.15 | 38.36 | 9,289.03 | | 3.65% | | -10.50% | |
| Norfolk Southern Corp | NSC | 239.78 | 285.22 | 68,389.20 | 0.23% | 1.74% | 0.00% | 10.00% | 0.02% |
| NetApp Inc | NTAP | 222.54 | 83.00 | 18,470.49 | 0.06% | 2.41% | 0.00% | 8.00% | 0.01% |
| Northern Trust Corp | NTRS | 207.94 | 116.45 | 24,215.08 | 0.08% | 2.40% | 0.00% | 8.00% | 0.01% |
| Nucor Corp | NUE | 268.41 | 148.65 | 39,898.40 | 0.14% | 1.35% | 0.00% | 12.00% | 0.02% |
| NVIDIA Corp | NVDA | 2,510.00 | 272.86 | 684,878.60 | | 0.06% | | 21.50% | |
| NVR Inc | NVR | 3.36 | 4,467.27 | 15,010.03 | 0.05% | | | 5.50% | 0.00% |
| Newell Brands Inc | NWL | 415.81 | 21.41 | 8,902.41 | | 4.30% | | | |
| News Corp | NWS | 198.48 | 22.52 | 4,469.84 | | 0.89% | | | |
| News Corp | NWSA | 390.87 | 22.15 | 8,657.86 | | 0.90% | | | |
| NXP Semiconductors NV | NXPI | 262.54 | 185.08 | 48,590.53 | 0.17% | 1.83% | 0.00% | 12.00% | 0.02% |
| Realty Income Corp | O | 597.90 | 69.30 | 41,434.54 | 0.14% | 4.28% | 0.01% | 3.50% | 0.00% |
| Old Dominion Freight Line Inc | ODFL | 114.86 | 298.68 | 34,307.58 | 0.12% | 0.40% | 0.00% | 12.00% | 0.01% |
| Organon & Co | OGN | 253.64 | 34.93 | 8,859.54 | | 3.21% | | | |
| ONEOK Inc | OKE | 446.21 | 70.63 | 31,516.02 | 0.11% | 5.30% | 0.01% | 12.00% | 0.01% |
| Omnicom Group Inc | OMC | 206.95 | 84.88 | 17,565.75 | 0.06% | 3.30% | 0.00% | 6.00% | 0.00% |
| Oracle Corp | ORCL | 2,668.16 | 82.73 | 220,736.63 | 0.75% | 1.55% | 0.01% | 10.00% | 0.08% |

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. |
|---|---|---|---|---|---|---|---|---|---|
| O'Reilly Automotive Inc | ORLY | 66.30 | 684.96 | 45,410.11 | 0.15% | | | 13.00% | 0.02% |
| Otis Worldwide Corp | OTIS | 424.96 | 76.95 | 32,700.83 | | 1.25% | | | |
| Occidental Petroleum Corp | OXY | 936.91 | 56.74 | 53,160.22 | | 0.92% | | 30.50% | |
| Paramount Global | PARA | 607.88 | 37.81 | 22,983.83 | 0.08% | 2.54% | 0.00% | 7.00% | 0.01% |
| Paycom Software Inc | PAYC | 60.21 | 346.38 | 20,856.93 | 0.07% | | | 20.00% | 0.01% |
| Paychex Inc | PAYX | 361.02 | 136.47 | 49,267.99 | 0.17% | 1.93% | 0.00% | 9.00% | 0.02% |
| People's United Financial Inc | PBCT | 429.67 | 19.99 | 8,589.12 | 0.03% | 3.65% | 0.00% | 2.50% | 0.00% |
| PACCAR Inc | PCAR | 347.68 | 88.07 | 30,619.74 | 0.10% | 1.54% | 0.00% | 5.00% | 0.01% |
| Healthpeak Properties Inc | PEAK | 539.50 | 34.33 | 18,521.04 | | 3.50% | | -7.50% | |
| Public Service Enterprise Group Inc | PEG | 502.08 | 70.00 | 35,145.46 | 0.12% | 3.09% | 0.00% | 4.00% | 0.00% |
| Penn National Gaming Inc | PENN | 168.32 | 42.42 | 7,140.26 | | | | 28.00% | |
| PepsiCo Inc | PEP | 1,383.25 | 167.38 | 231,528.22 | 0.79% | 2.57% | 0.02% | 6.50% | 0.05% |
| Pfizer Inc | PFE | 5,647.77 | 51.77 | 292,385.26 | 1.00% | 3.09% | 0.03% | 6.50% | 0.06% |
| Principal Financial Group Inc | PFG | 261.23 | 73.41 | 19,176.75 | 0.07% | 3.49% | 0.00% | 6.00% | 0.00% |
| Procter & Gamble Co/The | PG | 2,397.07 | 152.80 | 366,271.68 | 1.25% | 2.28% | 0.03% | 6.50% | 0.08% |
| Progressive Corp/The | PGR | 584.88 | 113.99 | 66,670.36 | 0.23% | 0.35% | 0.00% | 4.50% | 0.01% |
| Parker-Hannifin Corp | PH | 128.48 | 283.76 | 36,456.92 | 0.12% | 1.45% | 0.00% | 13.50% | 0.02% |
| PulteGroup Inc | PHM | 241.43 | 41.90 | 10,115.71 | 0.03% | 1.43% | 0.00% | 9.50% | 0.00% |
| Packaging Corp of America | PKG | 93.70 | 156.11 | 14,628.13 | 0.05% | 2.56% | 0.00% | 9.00% | 0.00% |
| PerkinElmer Inc | PKI | 126.16 | 174.46 | 22,009.35 | 0.07% | 0.16% | 0.00% | 10.00% | 0.01% |
| Prologis Inc | PLD | 739.75 | 161.48 | 119,454.02 | 0.41% | 1.96% | 0.01% | 6.00% | 0.02% |
| Philip Morris International Inc | PM | 1,550.08 | 93.94 | 145,614.70 | 0.50% | 5.32% | 0.03% | 7.00% | 0.03% |
| PNC Financial Services Group Inc/The | PNC | 418.56 | 184.45 | 77,203.39 | 0.26% | 2.71% | 0.01% | 11.50% | 0.03% |
| Pentair PLC | PNR | 165.10 | 54.21 | 8,950.02 | 0.03% | 1.55% | 0.00% | 14.00% | 0.00% |
| Pinnacle West Capital Corp | PNW | 112.93 | 78.10 | 8,819.99 | | 4.35% | | 0.00% | |
| Pool Corp | POOL | 40.13 | 422.85 | 16,967.28 | 0.06% | 0.76% | 0.00% | 17.00% | 0.01% |
| PPG Industries Inc | PPG | 236.15 | 131.07 | 30,951.92 | 0.11% | 1.80% | 0.00% | 10.00% | 0.01% |
| PPL Corp | PPL | 735.36 | 28.56 | 21,001.94 | | 2.80% | | | |
| Prudential Financial Inc | PRU | 376.43 | 118.17 | 44,482.26 | 0.15% | 4.06% | 0.01% | 5.50% | 0.01% |
| Public Storage | PSA | 175.36 | 390.28 | 68,438.33 | 0.23% | 2.05% | 0.00% | 8.00% | 0.02% |
| Phillips 66 | PSX | 438.46 | 86.39 | 37,878.73 | 0.13% | 4.26% | 0.01% | 17.00% | 0.02% |
| PTC Inc | PTC | 116.95 | 107.72 | 12,598.07 | | | | | |
| PVH Corp | PVH | 68.01 | 76.61 | 5,210.02 | 0.02% | 0.20% | 0.00% | 14.00% | 0.00% |
| Quanta Services Inc | PWR | 142.69 | 131.61 | 18,779.43 | 0.06% | 0.21% | 0.00% | 16.50% | 0.01% |
| Pioneer Natural Resources Co | PXD | 242.88 | 250.03 | 60,728.29 | | 6.05% | | 23.00% | |
| PayPal Holdings Inc | PYPL | 1,165.01 | 115.65 | 134,732.83 | 0.46% | | | 16.00% | 0.07% |
| QUALCOMM Inc | QCOM | 1,127.00 | 152.82 | 172,228.14 | 0.59% | 1.78% | 0.01% | 19.00% | 0.11% |
| Qorvo Inc | QRVO | 108.43 | 124.10 | 13,456.41 | 0.05% | | | 14.50% | 0.01% |
| Royal Caribbean Cruises Ltd | RCL | 255.00 | 83.78 | 21,364.15 | | | | | |
| Everest Re Group Ltd | RE | 39.27 | 301.38 | 11,835.80 | 0.04% | 2.06% | 0.00% | 11.00% | 0.00% |
| Regency Centers Corp | REG | 171.37 | 71.34 | 12,225.75 | 0.04% | 3.50% | 0.00% | 12.50% | 0.01% |
| Regeneron Pharmaceuticals Inc | REGN | 106.72 | 698.42 | 74,532.59 | 0.25% | | | 12.50% | 0.03% |
| Regions Financial Corp | RF | 937.15 | 22.26 | 20,860.87 | 0.07% | 3.05% | 0.00% | 10.50% | 0.01% |
| Robert Half International Inc | RHI | 110.69 | 114.18 | 12,638.13 | 0.04% | 1.51% | 0.00% | 7.50% | 0.00% |
| Raymond James Financial Inc | RJF | 207.60 | 109.91 | 22,817.54 | 0.08% | 1.24% | 0.00% | 10.50% | 0.01% |
| Ralph Lauren Corp | RL | 46.29 | 113.44 | 5,250.68 | 0.02% | 2.42% | 0.00% | 12.50% | 0.00% |
| ResMed Inc | RMD | 146.23 | 242.51 | 35,463.21 | 0.12% | 0.69% | 0.00% | 8.50% | 0.01% |
| Rockwell Automation Inc | ROK | 116.20 | 280.03 | 32,538.37 | 0.11% | 1.60% | 0.00% | 10.00% | 0.01% |
| Rollins Inc | ROL | 492.46 | 35.05 | 17,260.72 | 0.06% | 1.14% | 0.00% | 10.50% | 0.01% |
| Roper Technologies Inc | ROP | 105.60 | 472.23 | 49,868.90 | 0.17% | 0.53% | 0.00% | 8.50% | 0.01% |
| Ross Stores Inc | ROST | 350.89 | 90.46 | 31,741.69 | 0.11% | 1.37% | 0.00% | 14.00% | 0.02% |
| Republic Services Inc | RSG | 315.79 | 132.50 | 41,841.65 | 0.14% | 1.39% | 0.00% | 10.50% | 0.01% |
| Raytheon Technologies Corp | RTX | 1,490.27 | 99.07 | 147,640.85 | 0.50% | 2.06% | 0.01% | 7.50% | 0.04% |
| SBA Communications Corp | SBAC | 108.02 | 344.10 | 37,168.65 | | 0.83% | | 42.50% | |
| Signature Bank/New York NY | SBNY | 62.57 | 293.49 | 18,363.38 | 0.06% | 0.76% | 0.00% | 12.00% | 0.01% |
| Starbucks Corp | SBUX | 1,150.30 | 90.97 | 104,642.79 | 0.36% | 2.15% | 0.01% | 16.50% | 0.06% |
| Charles Schwab Corp/The | SCHW | 1,814.62 | 84.31 | 152,990.70 | 0.52% | 0.95% | 0.00% | 7.00% | 0.04% |
| SolarEdge Technologies Inc | SEDG | 55.12 | 322.37 | 17,767.42 | 0.06% | | | 19.50% | 0.01% |
| Sealed Air Corp | SEE | 148.16 | 66.96 | 9,920.66 | 0.03% | 1.19% | 0.00% | 13.50% | 0.00% |
| Sherwin-Williams Co/The | SHW | 260.55 | 249.62 | 65,037.99 | 0.22% | 0.96% | 0.00% | 11.50% | 0.03% |
| SVB Financial Group | SIVB | 58.81 | 559.45 | 32,901.25 | 0.11% | | | 5.00% | 0.01% |
| J M Smucker Co/The | SJM | 108.46 | 135.41 | 14,686.30 | 0.05% | 2.92% | 0.00% | 4.00% | 0.00% |
| Schlumberger NV | SLB | 1,413.02 | 41.31 | 58,371.81 | 0.20% | 1.21% | 0.00% | 11.50% | 0.02% |
| Snap-on Inc | SNA | 53.42 | 205.48 | 10,976.13 | 0.04% | 2.76% | 0.00% | 4.50% | 0.00% |
| Synopsys Inc | SNPS | 153.10 | 333.27 | 51,023.30 | 0.17% | | | 14.00% | 0.02% |
| Southern Co/The | SO | 1,059.80 | 72.51 | 76,846.39 | 0.26% | 3.64% | 0.01% | 5.50% | 0.01% |
| Simon Property Group Inc | SPG | 328.34 | 131.56 | 43,196.67 | 0.15% | 5.02% | 0.01% | 2.50% | 0.00% |
| S&P Global Inc | SPGI | 347.03 | 410.18 | 142,343.53 | 0.48% | 0.83% | 0.00% | 10.50% | 0.05% |
| Sempra Energy | SRE | 315.77 | 168.12 | 53,087.59 | 0.18% | 2.72% | 0.00% | 10.00% | 0.02% |
| STERIS PLC | STE | 100.13 | 241.77 | 24,207.70 | 0.08% | 0.71% | 0.00% | 11.50% | 0.01% |
| State Street Corp | STT | 366.07 | 87.12 | 31,891.76 | 0.11% | 2.62% | 0.00% | 8.00% | 0.01% |
| Seagate Technology Holdings PLC | STX | 218.90 | 89.90 | 19,678.93 | 0.07% | 3.11% | 0.00% | 16.00% | 0.01% |
| Constellation Brands Inc | STZ | 164.34 | 230.32 | 37,850.56 | 0.13% | 1.32% | 0.00% | 5.50% | 0.01% |
| Stanley Black & Decker Inc | SWK | 163.41 | 139.79 | 22,843.22 | 0.08% | 2.26% | 0.00% | 6.00% | 0.00% |
| Skyworks Solutions Inc | SWKS | 161.67 | 133.28 | 21,547.51 | 0.07% | 1.68% | 0.00% | 15.50% | 0.01% |
| Synchrony Financial | SYF | 521.27 | 34.81 | 18,145.48 | 0.06% | 2.53% | 0.00% | 9.50% | 0.01% |
| Stryker Corp | SYK | 377.70 | 267.35 | 100,978.10 | 0.34% | 1.04% | 0.00% | 8.50% | 0.03% |
| Sysco Corp | SYY | 507.45 | 81.65 | 41,433.05 | 0.14% | 2.30% | 0.00% | 17.50% | 0.02% |
| AT&T Inc | T | 7,142.89 | 23.63 | 168,786.56 | 0.57% | 4.70% | 0.03% | 3.00% | 0.02% |
| Molson Coors Beverage Co | TAP | 200.60 | 53.38 | 10,707.97 | | 2.85% | | 41.00% | |
| TransDigm Group Inc | TDG | 55.46 | 651.54 | 36,135.71 | 0.12% | | | 16.50% | 0.02% |
| Teledyne Technologies Inc | TDY | 46.77 | 472.63 | 22,103.01 | 0.08% | | | 14.50% | 0.01% |
| Bio-Techne Corp | TECH | 39.29 | 433.04 | 17,013.28 | 0.06% | 0.30% | 0.00% | 17.50% | 0.01% |
| TE Connectivity Ltd | TEL | 325.58 | 130.98 | 42,643.81 | 0.15% | 1.71% | 0.00% | 10.50% | 0.02% |
| Teradyne Inc | TER | 162.42 | 118.23 | 19,202.56 | 0.07% | 0.37% | 0.00% | 8.50% | 0.01% |
| Truist Financial Corp | TFC | 1,328.99 | 56.70 | 75,353.90 | 0.26% | 3.39% | 0.01% | 7.00% | 0.02% |
| Teleflex Inc | TFX | 46.90 | 354.83 | 16,642.24 | 0.06% | 0.38% | 0.00% | 15.00% | 0.01% |
| Target Corp | TGT | 462.42 | 212.22 | 98,134.35 | 0.33% | 1.70% | 0.01% | 15.00% | 0.05% |
| TJX Cos Inc/The | TJX | 1,175.23 | 60.58 | 71,195.31 | 0.24% | 1.95% | 0.00% | 20.00% | 0.05% |
| Thermo Fisher Scientific Inc | TMO | 391.19 | 590.65 | 231,057.55 | 0.79% | 0.20% | 0.00% | 15.50% | 0.12% |
| T-Mobile US Inc | TMUS | 1,249.29 | 128.35 | 160,346.37 | 0.55% | | | 7.50% | 0.04% |

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. |
|---|---|---|---|---|---|---|---|---|---|
| Tapestry Inc | TPR | 263.99 | 37.15 | 9,807.23 | 0.03% | 2.69% | 0.00% | 10.00% | 0.00% |
| Trimble Inc | TRMB | 251.22 | 72.14 | 18,122.72 | 0.06% | | | 10.00% | 0.01% |
| T Rowe Price Group Inc | TROW | 227.81 | 151.19 | 34,442.59 | 0.12% | 3.17% | 0.00% | 12.00% | 0.01% |
| Travelers Cos Inc/The | TRV | 241.50 | 182.73 | 44,129.48 | 0.15% | 1.93% | 0.00% | 8.00% | 0.01% |
| Tractor Supply Co | TSCO | 112.15 | 233.37 | 26,171.51 | 0.09% | 1.58% | 0.00% | 14.50% | 0.01% |
| Tesla Inc | TSLA | 1,033.51 | 1,077.60 | 1,113,708.22 | | | | 51.50% | |
| Tyson Foods Inc | TSN | 292.46 | 89.63 | 26,212.74 | 0.09% | 2.05% | 0.00% | 6.00% | 0.01% |
| Trane Technologies PLC | TT | 233.54 | 152.70 | 35,661.25 | | 1.76% | | | |
| Take-Two Interactive Software Inc | TTWO | 115.42 | 153.74 | 17,744.06 | 0.06% | | | 15.00% | 0.01% |
| Twitter Inc | TWTR | 800.64 | 38.69 | 30,976.80 | | | | 39.00% | |
| Texas Instruments Inc | TXN | 923.55 | 183.48 | 169,452.40 | 0.58% | 2.51% | 0.01% | 8.50% | 0.05% |
| Textron Inc | TXT | 216.33 | 74.38 | 16,090.55 | 0.05% | 0.11% | 0.00% | 8.50% | 0.00% |
| Tyler Technologies Inc | TYL | 41.43 | 444.89 | 18,432.24 | 0.06% | | | 14.00% | 0.01% |
| Under Armour Inc | UA | 253.22 | 15.56 | 3,940.07 | | | | | |
| Under Armour Inc | UAA | 188.67 | 17.02 | 3,211.15 | | | | 33.00% | |
| United Airlines Holdings Inc | UAL | 323.61 | 46.36 | 15,002.61 | | | | | |
| UDR Inc | UDR | 325.40 | 57.37 | 18,668.31 | 0.06% | 2.65% | 0.00% | 10.50% | 0.01% |
| Universal Health Services Inc | UHS | 67.55 | 144.95 | 9,791.66 | 0.03% | 0.55% | 0.00% | 11.00% | 0.00% |
| Ulta Beauty Inc | ULTA | 52.33 | 398.22 | 20,837.66 | 0.07% | | | 15.50% | 0.01% |
| UnitedHealth Group Inc | UNH | 940.90 | 509.97 | 479,830.26 | 1.63% | 1.14% | 0.02% | 12.00% | 0.20% |
| Union Pacific Corp | UNP | 628.39 | 273.21 | 171,681.61 | 0.58% | 1.73% | 0.01% | 9.00% | 0.05% |
| United Parcel Service Inc | UPS | 733.44 | 214.46 | 157,293.33 | 0.54% | 2.84% | 0.02% | 11.50% | 0.06% |
| United Rentals Inc | URI | 72.19 | 355.21 | 25,643.32 | 0.09% | | | 12.50% | 0.01% |
| US Bancorp | USB | 1,485.04 | 53.15 | 78,929.82 | 0.27% | 3.46% | 0.01% | 6.50% | 0.02% |
| Visa Inc | V | 1,658.42 | 221.77 | 367,788.69 | 1.25% | 0.68% | 0.01% | 12.00% | 0.15% |
| VF Corp | VFC | 388.90 | 56.86 | 22,112.97 | 0.08% | 3.52% | 0.00% | 9.50% | 0.01% |
| Valero Energy Corp | VLO | 409.42 | 101.54 | 41,572.20 | 0.14% | 3.86% | 0.01% | 11.00% | 0.02% |
| Vulcan Materials Co | VMC | 132.89 | 183.70 | 24,412.63 | 0.08% | 0.87% | 0.00% | 8.50% | 0.01% |
| Vornado Realty Trust | VNO | 191.72 | 45.32 | 8,688.93 | | 4.68% | | -19.00% | |
| Verisk Analytics Inc | VRSK | 161.28 | 214.63 | 34,616.17 | 0.12% | 0.58% | 0.00% | 10.50% | 0.01% |
| VeriSign Inc | VRSN | 110.17 | 222.46 | 24,507.75 | 0.08% | | | 8.50% | 0.01% |
| Vertex Pharmaceuticals Inc | VRTX | 254.58 | 260.97 | 66,436.96 | 0.23% | | | 18.50% | 0.04% |
| Ventas Inc | VTR | 399.55 | 61.76 | 24,676.15 | 0.08% | 2.91% | 0.00% | 10.50% | 0.01% |
| Viatris Inc | VTRS | 1,209.58 | 10.88 | 13,160.19 | | 4.41% | | | |
| Verizon Communications Inc | VZ | 4,197.82 | 50.94 | 213,837.15 | 0.73% | 5.03% | 0.04% | 2.50% | 0.02% |
| Westinghouse Air Brake Technologies Corp | WAB | 185.29 | 96.17 | 17,819.34 | 0.06% | 0.62% | 0.00% | 9.00% | 0.01% |
| Waters Corp | WAT | 60.52 | 310.39 | 18,783.56 | 0.06% | | | 6.00% | 0.00% |
| Walgreens Boots Alliance Inc | WBA | 863.77 | 44.77 | 38,671.12 | 0.13% | 4.27% | 0.01% | 7.50% | 0.01% |
| Western Digital Corp | WDC | 312.92 | 49.65 | 15,536.38 | | | | 20.50% | |
| WEC Energy Group Inc | WEC | 315.44 | 99.81 | 31,483.57 | 0.11% | 2.92% | 0.00% | 6.00% | 0.01% |
| Welltower Inc | WELL | 447.28 | 96.14 | 43,001.50 | 0.15% | 2.54% | 0.00% | 3.50% | 0.01% |
| Wells Fargo & Co | WFC | 3,801.59 | 48.46 | 184,225.00 | 0.63% | 2.06% | 0.01% | 5.50% | 0.03% |
| Whirlpool Corp | WHR | 58.46 | 172.78 | 10,101.06 | 0.03% | 4.05% | 0.00% | 9.50% | 0.00% |
| Waste Management Inc | WM | 415.16 | 158.50 | 65,802.86 | 0.22% | 1.64% | 0.00% | 7.50% | 0.02% |
| Williams Cos Inc/The | WMB | 1,217.31 | 33.41 | 40,670.43 | 0.14% | 5.09% | 0.01% | 10.00% | 0.01% |
| Walmart Inc | WMT | 2,751.78 | 148.92 | 409,795.08 | 1.40% | 1.50% | 0.02% | 7.50% | 0.10% |
| W R Berkley Corp | WRB | 265.19 | 66.59 | 17,658.74 | 0.06% | 0.52% | 0.00% | 17.50% | 0.01% |
| Westrock Co | WRK | 263.21 | 47.03 | 12,378.95 | 0.04% | 2.13% | 0.00% | 17.00% | 0.01% |
| West Pharmaceutical Services Inc | WST | 74.28 | 410.71 | 30,508.36 | 0.10% | 0.18% | 0.00% | 17.00% | 0.02% |
| Willis Towers Watson PLC | WTW | 117.75 | 236.22 | 27,813.96 | 0.09% | 1.39% | 0.00% | 11.00% | 0.01% |
| Weyerhaeuser Co | WY | 747.08 | 37.90 | 28,314.14 | | 1.90% | | 22.00% | |
| Wynn Resorts Ltd | WYNN | 115.92 | 79.74 | 9,243.30 | | | | 27.00% | |
| Xcel Energy Inc | XEL | 544.21 | 72.17 | 39,275.92 | 0.13% | 2.70% | 0.00% | 6.00% | 0.01% |
| Exxon Mobil Corp | XOM | 4,233.59 | 82.59 | 349,652.36 | | 4.26% | | | |
| DENTSPLY SIRONA Inc | XRAY | 217.55 | 49.22 | 10,708.01 | 0.04% | 1.02% | 0.00% | 12.00% | 0.00% |
| Xylem Inc/NY | XYL | 180.09 | 85.26 | 15,354.73 | 0.05% | 1.41% | 0.00% | 6.50% | 0.00% |
| Yum! Brands Inc | YUM | 288.98 | 118.53 | 34,252.92 | 0.12% | 1.92% | 0.00% | 10.50% | 0.01% |
| Zimmer Biomet Holdings Inc | ZBH | 209.32 | 127.90 | 26,772.28 | 0.09% | 0.75% | 0.00% | 7.00% | 0.01% |
| Zebra Technologies Corp | ZBRA | 53.08 | 413.70 | 21,959.20 | 0.07% | | | 10.50% | 0.01% |
| Zions Bancorp NA | ZION | 151.90 | 65.56 | 9,958.24 | 0.03% | 2.32% | 0.00% | 7.50% | 0.00% |
| Zoetis Inc | ZTS | 471.80 | 188.59 | 88,976.76 | 0.30% | 0.69% | 0.00% | 11.00% | 0.03% |

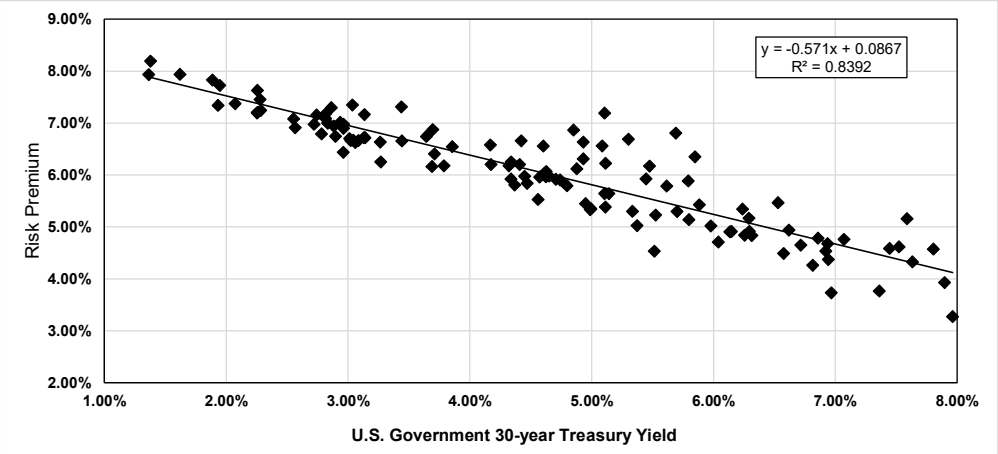
Notes:
[1] Equals sum of Col. [9]
[2] Equals sum of Col. [11]
[3] Equals ([1] x (1 + (0.5 x [2]))) + [2]
[4] Source: Bloomberg Professional as of March 31, 2022
[5] Source: Bloomberg Professional as of March 31, 2022
[6] Equals [4] x [5]
[7] Equals weight in S&P 500 based on market capitalization [6] if Growth Rate >0% and ≤20%
[8] Source: Bloomberg Professional, as of March 31, 2022
[9] Equals [7] x [8]
[10] Source: Value Line, as of March 31, 2022
[11] Equals [7] x [10]

**BOND YIELD PLUS RISK PREMIUM**

| Quarter | [1] Average Authorized VI Electric ROE | [2] U.S. Govt. 30-year Treasury | [3] Risk Premium |
|---|---|---|---|
| 1992.1 | 12.38% | 7.81% | 4.58% |
| 1992.2 | 11.83% | 7.90% | 3.93% |
| 1992.3 | 12.03% | 7.45% | 4.59% |
| 1992.4 | 12.14% | 7.52% | 4.62% |
| 1993.1 | 11.84% | 7.07% | 4.76% |
| 1993.2 | 11.64% | 6.86% | 4.78% |
| 1993.3 | 11.15% | 6.32% | 4.84% |
| 1993.4 | 11.04% | 6.14% | 4.91% |
| 1994.1 | 11.07% | 6.58% | 4.49% |
| 1994.2 | 11.13% | 7.36% | 3.77% |
| 1994.3 | 12.75% | 7.59% | 5.16% |
| 1994.4 | 11.24% | 7.96% | 3.28% |
| 1995.1 | 11.96% | 7.63% | 4.33% |
| 1995.2 | 11.32% | 6.94% | 4.37% |
| 1995.3 | 11.37% | 6.72% | 4.65% |
| 1995.4 | 11.58% | 6.24% | 5.35% |
| 1996.1 | 11.46% | 6.29% | 5.17% |
| 1996.2 | 11.46% | 6.92% | 4.54% |
| 1996.3 | 10.70% | 6.97% | 3.73% |
| 1996.4 | 11.56% | 6.62% | 4.94% |
| 1997.1 | 11.08% | 6.82% | 4.26% |
| 1997.2 | 11.62% | 6.94% | 4.68% |
| 1997.3 | 12.00% | 6.53% | 5.47% |
| 1997.4 | 11.06% | 6.15% | 4.91% |
| 1998.1 | 11.31% | 5.88% | 5.43% |
| 1998.2 | 12.20% | 5.85% | 6.35% |
| 1998.3 | 11.65% | 5.48% | 6.17% |
| 1998.4 | 12.30% | 5.11% | 7.19% |
| 1999.1 | 10.40% | 5.37% | 5.03% |
| 1999.2 | 10.94% | 5.80% | 5.14% |
| 1999.3 | 10.75% | 6.04% | 4.71% |
| 1999.4 | 11.10% | 6.26% | 4.84% |
| 2000.1 | 11.21% | 6.30% | 4.92% |
| 2000.2 | 11.00% | 5.98% | 5.02% |
| 2000.3 | 11.68% | 5.79% | 5.89% |
| 2000.4 | 12.50% | 5.69% | 6.81% |
| 2001.1 | 11.38% | 5.45% | 5.93% |
| 2001.2 | 11.00% | 5.70% | 5.30% |
| 2001.3 | 10.76% | 5.53% | 5.23% |
| 2001.4 | 11.99% | 5.30% | 6.69% |
| 2002.1 | 10.05% | 5.52% | 4.53% |
| 2002.2 | 11.41% | 5.62% | 5.79% |
| 2002.3 | 11.65% | 5.09% | 6.56% |
| 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% |

**BOND YIELD PLUS RISK PREMIUM**

| | [1] | [2] | [3] |
|---|---|---|---|
| Quarter | Average Authorized VI Electric ROE | U.S. Govt. 30-year Treasury | Risk Premium |
| 2009.1 | 10.75% | 3.44% | 7.31% |
| 2009.2 | 10.75% | 4.17% | 6.58% |
| 2009.3 | 10.50% | 4.32% | 6.18% |
| 2009.4 | 10.59% | 4.34% | 6.25% |
| 2010.1 | 10.59% | 4.62% | 5.97% |
| 2010.2 | 10.18% | 4.37% | 5.81% |
| 2010.3 | 10.40% | 3.86% | 6.55% |
| 2010.4 | 10.38% | 4.17% | 6.20% |
| 2011.1 | 10.09% | 4.56% | 5.53% |
| 2011.2 | 10.26% | 4.34% | 5.92% |
| 2011.3 | 10.57% | 3.70% | 6.88% |
| 2011.4 | 10.39% | 3.04% | 7.35% |
| 2012.1 | 10.30% | 3.14% | 7.17% |
| 2012.2 | 9.95% | 2.94% | 7.01% |
| 2012.3 | 9.90% | 2.74% | 7.16% |
| 2012.4 | 10.16% | 2.86% | 7.30% |
| 2013.1 | 9.85% | 3.13% | 6.72% |
| 2013.2 | 9.86% | 3.14% | 6.72% |
| 2013.3 | 10.12% | 3.71% | 6.41% |
| 2013.4 | 9.97% | 3.79% | 6.18% |
| 2014.1 | 9.86% | 3.69% | 6.16% |
| 2014.2 | 10.10% | 3.44% | 6.66% |
| 2014.3 | 9.90% | 3.27% | 6.63% |
| 2014.4 | 9.94% | 2.96% | 6.98% |
| 2015.1 | 9.64% | 2.55% | 7.08% |
| 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% |
| AVERAGE | 10.63% | 4.58% | 6.05% |
| MEDIAN | 10.59% | 4.62% | 6.18% |




SUMMARY OUTPUT

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.916070 |
| R Square | 0.839184 |
| Adjusted R Square | 0.837833 |
| Standard Error | 0.004186 |
| Observations | 121 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 1 | 0.010882 | 0.010882 | 620.976321 | 0.000000 |
| Residual | 119 | 0.002085 | 0.000018 | | |
| Total | 120 | 0.012967 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.0867 | 0.00112 | 77.57 | 0.000000 | 0.084453 | 0.088878 | 0.084453 | 0.088878 |
| U.S. Govt. 30-year Treasury | (0.5710) | 0.02291 | (24.92) | 0.000000 | (0.616399) | (0.525651) | (0.616399) | (0.525651) |

| | [7] U.S. Govt. 30-year Treasury | [8] Risk Premium | [9] ROE |
|---|---|---|---|
| Current 30-day average of 30-year U.S. Treasury bond yield [4] | 2.37% | 7.31% | 9.68% |
| Blue Chip Near-Term Projected Forecast (Q3 2022 - Q3 2023) [5] | 3.12% | 6.88% | 10.00% |
| Blue Chip Long-Term Projected Forecast (2023-2027) [6] | 3.40% | 6.73% | 10.13% |
| AVERAGE | | | 9.94% |

Notes:
[1] Source: Regulatory Research Associates, rate cases through March 31, 2022
[2] Source: S&P Capital IQ Pro, quarterly bond yields are the average of each trading day in the quarter
[3] Equals Column [1] − Column [2]
[4] Source: S&P Capital IQ Pro, 30-day average as of March 31, 2022
[5] Source: Blue Chip Financial Forecasts, Vol. 41, No. 4, April 1, 2022, at 2
[6] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
[7] See notes [4], [5] & [6]
[8] Equals 0.086666 + (-0.571025 x Column [7])
[9] Equals Column [7] + Column [8]

**COMPARISON OF MDU-ND AND PROXY GROUP COMPANIES**
**RISK ASSESSMENT**

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

**COMPARISON OF MDU-ND AND PROXY GROUP COMPANIES**
**RISK ASSESSMENT**

| | | | | [1] | | [2] | | [3] | | [4] | | [5] | | [6] | | [7] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Non-Volumetric Rate Design | | | | | | |
| **Proxy Group Company** | **Operating Subsidiary** | **Jurisdiction** | **Service** | **Test Year** | | **Rate Base** | | **Revenue Decoupling** | | **Formula-based rates** | | **Straight Fixed-Variable Rate Design** | | **Non-Volumetric Rate Design** | | **Capital Cost Recovery** | |
| | Southwestern Public Service Co. | Texas | Electric | Historical | | Year End | | No | | No | | No | | No | | Yes | |
| | Northern States Power Co.-Wisconsin | Wisconsin | Electric | Fully Forecast | | Average | | No | | No | | No | | No | | No | |
| | Northern States Power Co.-Wisconsin | Wisconsin | Gas | Fully Forecast | | Average | | No | | No | | No | | No | | No | |
| | | | | | | | | Revenue Decoupling | | Formula-based rates | | SFV Rates Design | | Non-Volumetric Rate Design | | CCRM | |
| Proxy Group Average | | | | Fully Forecast | 32 | Year End | 36 | Full | 2 | Yes | 16 | Yes | 3 | Yes | 44 | Yes | 44 |
| | | | | Partially Forecast | 7 | Average | 42 | Partial | 35 | No | 62 | No | 75 | No | 34 | No | 34 |
| | | | | Historical | 39 | | | No | 41 | | | | | | | | |
| | | | | Forecast | 50.00% | Year End | 46.15% | RDM | 47.44% | Yes | 20.51% | Yes | 3.85% | Yes | 56.41% | CCRM | 56.41% |
| MDU-ND [8] | | | | Fully Forecast | | Average | | No | | No | | No | | No | | Yes | |

Notes:
[1] Sources: Regulatory Research Associates, effective as of March 31, 2022
[2] Sources: Regulatory Research Associates, effective as of March 31, 2022
[3] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November 12, 2019. Operating subsidiaries not covered in this report were excluded from this exhibit. NWE Electric Montana - Company 2020 Form 10-K. PSCO Electric CO and Southern TN - S&P Capital IQ Pro.
[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 November 12, 2019. Operating subsidiaries not covered in this report were excluded from this exhibit.
[6] Equals IF( AND( [3]=No, [4]=No, [5]=No), No, Yes)
[7] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November 12, 2019. Operating subsidiaries not covered in this report were excluded from this exhibit.
[8] Data provided by MDU-ND

FLOTATION COST ADJUSTMENT -- MONTANA-DAKOTA PROXY GROUP

| Company | Date [i] | [1] Shares Issued (000) | [2] Offering Price | [3] Under-writing Discount [ii] | [4] Offering Expense ($000) | [5] Net Proceeds Per Share | [6] Total Flotation Costs ($000) | [7] Gross Equity Issue Before Costs ($000) | [8] Net Proceeds ($000) | [9] Flotation Cost Percentage |
|---|---|---|---|---|---|---|---|---|---|---|
| MDU Resources Group | 2/4/2004 | 2,300 | $ 23.32 | $ 0.7930 | $ 350 | $ 22.37 | $ 2,174 | $ 53,636 | $ 51,462 | 4.05% |
| MDU Resources Group | 11/19/2002 | 2,400 | $ 24.00 | $ 0.7200 | $ 193 | $ 23.20 | $ 1,921 | $ 57,600 | $ 55,680 | 3.33% |
| | | | | | | | $ 4,094 | $ 111,236 | $ 107,142 | 3.68% |

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

The flotation cost adjustment is derived by dividing the dividend yield by 1 − F (where F = flotation costs expressed in percentage terms), or by 0.9632, and adding that result to the constant growth rate to determine the cost of equity. Using the formulas shown previously in my testimony, the Constant Growth DCF calculation is modified as follows to accommodate an adjustment for flotation costs:

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

| Company | Ticker | [10] Annualized Dividend | [11] Stock Price | [12] Dividend Yield | [13] Expected Dividend Yield | [14] Expected Dividend Yield Adjusted for Flotation Costs | [15] Value Line Earnings Growth | [16] Yahoo! Finance Earnings Growth | [17] Zacks Earnings Growth | [18] Average Earnings Growth | [19] ROE | [20] ROE Adjusted for Flotation Costs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | $2.60 | $64.44 | 4.03% | 4.15% | 4.31% | 6.00% | 5.67% | n/a | 5.84% | 9.99% | 10.15% |
| Alliant Energy Corporation | LNT | $1.71 | $59.72 | 2.86% | 2.94% | 3.06% | 4.50% | 6.10% | 6.10% | 5.57% | 8.51% | 8.62% |
| Ameren Corporation | AEE | $2.36 | $87.98 | 2.68% | 2.78% | 2.88% | 6.50% | 7.40% | 7.20% | 7.03% | 9.81% | 9.92% |
| American Electric Power Company, Inc. | AEP | $3.12 | $93.63 | 3.33% | 3.43% | 3.57% | 6.50% | 6.10% | 5.80% | 6.13% | 9.57% | 9.70% |
| Duke Energy Corporation | DUK | $3.94 | $104.74 | 3.76% | 3.88% | 4.03% | 7.00% | 5.85% | 6.10% | 6.32% | 10.20% | 10.35% |
| Entergy Corporation | ETR | $4.04 | $109.57 | 3.69% | 3.78% | 3.92% | 3.00% | 6.00% | 6.00% | 5.00% | 8.78% | 8.92% |
| Evergy, Inc. | EVRG | $2.29 | $64.00 | 3.58% | 3.69% | 3.83% | 7.50% | 5.12% | 6.10% | 6.24% | 9.93% | 10.07% |
| IDACORP, Inc. | IDA | $3.00 | $108.85 | 2.76% | 2.81% | 2.92% | 4.00% | 4.40% | 4.30% | 4.23% | 7.05% | 7.16% |
| NextEra Energy, Inc. | NEE | $1.70 | $80.31 | 2.12% | 2.22% | 2.31% | 11.00% | 9.95% | 8.80% | 9.92% | 12.14% | 12.22% |
| NorthWestern Corporation | NWE | $2.52 | $59.44 | 4.24% | 4.31% | 4.47% | 2.00% | 4.50% | 3.10% | 3.20% | 7.51% | 7.67% |
| OGE Energy Corporation | OGE | $1.64 | $38.44 | 4.27% | 4.37% | 4.53% | 6.50% | 3.90% | 3.50% | 4.63% | 9.00% | 9.17% |
| Otter Tail Corporation | OTTR | $1.65 | $62.03 | 2.66% | 2.75% | 2.86% | 4.50% | 9.00% | n/a | 6.75% | 9.50% | 9.61% |
| Portland General Electric Company | POR | $1.72 | $52.99 | 3.25% | 3.35% | 3.48% | 7.00% | 7.15% | 4.60% | 6.25% | 9.60% | 9.73% |
| Southern Company | SO | $2.64 | $67.65 | 3.90% | 4.00% | 4.16% | 5.50% | 6.20% | 4.00% | 5.23% | 9.24% | 9.39% |
| Xcel Energy Inc. | XEL | $1.95 | $69.08 | 2.82% | 2.91% | 3.02% | 6.00% | 6.90% | 6.40% | 6.43% | 9.35% | 9.46% |
| Mean | | | | | | | | | | | 9.34% | 9.47% |
| Flotation Cost Adjustment | | | | | | | | | | | [21] | 0.13% |

Notes:
[1]-[4] Sources: MDU Resources Group - Prospectus dated February 4, 2004 and Prospectus dated November 19, 2002.
[5] Equals [8]/[1]
[6] Equals [4] + ([1] x [3])
[7] Equals [1] x [2]
[8] Equals [7] - [6]
[9] Equals [6] / [7]
[10] Source: Bloomberg Professional
[11] Source: Bloomberg Professional, equals 30-day average as of March 31, 2022
[12] Equals [10] / [11]
[13] Equals [12] x (1 + 0.5 x [18])
[14] Equals [13] / (1 − Flotation Cost)
[15] Source: Value Line
[16] Source: Yahoo! Finance
[17] Source: Zacks
[18] Equals Average ([15], [16], [17])
[19] Equals [13] + [18]
[20] Equals [14] + [18]
[21] Equals Average ([20]) − Average ([19])

CAPITAL STRUCTURE ANALYSIS

| Proxy Group Company | Ticker | Most Recent 8 Quarters (2019Q4 - 2021Q3) Common Equity Ratio | Long-Term Debt Ratio | Preferred Equity Ratio | Short-term Debt Ratio | Total Capitalization |
|---|---|---|---|---|---|---|
| ALLETE, Inc. | ALE | 56.83% | 43.11% | 0.00% | 0.06% | 100.00% |
| Alliant Energy Corporation | LNT | 50.94% | 46.17% | 1.65% | 1.24% | 100.00% |
| Ameren Corporation | AEE | 52.06% | 46.18% | 0.75% | 1.01% | 100.00% |
| American Electric Power Company, Inc. | AEP | 47.41% | 50.81% | 0.00% | 1.78% | 100.00% |
| Duke Energy Corporation | DUK | 52.14% | 46.59% | 0.00% | 1.27% | 100.00% |
| Entergy Corporation | ETR | 46.85% | 53.03% | 0.11% | 0.01% | 100.00% |
| Evergy, Inc. | EVRG | 57.78% | 39.15% | 0.00% | 3.06% | 100.00% |
| IDACORP, Inc. | IDA | 53.86% | 45.86% | 0.28% | 0.00% | 100.00% |
| NextEra Energy, Inc. | NEE | 59.91% | 38.11% | 0.00% | 1.99% | 100.00% |
| NorthWestern Corporation | NWE | 47.02% | 52.13% | 0.00% | 0.85% | 100.00% |
| OGE Energy Corporation | OGE | 53.59% | 45.72% | 0.00% | 0.69% | 100.00% |
| Otter Tail Corporation | OTTR | 52.26% | 46.13% | 0.00% | 1.62% | 100.00% |
| Portland General Electric Company | POR | 46.83% | 51.11% | 0.00% | 2.06% | 100.00% |
| Southern Company | SO | 53.97% | 44.97% | 0.57% | 0.49% | 100.00% |
| Xcel Energy Inc. | XEL | 53.73% | 45.69% | 0.00% | 0.57% | 100.00% |
| Average | | 52.35% | 46.32% | 0.22% | 1.11% | |
| Median | | 52.26% | 46.13% | 0.00% | 1.01% | |
| Maximum | | 59.91% | 53.03% | 1.65% | 3.06% | |
| Minimum | | 46.83% | 38.11% | 0.00% | 0.00% | |

Notes:

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

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