MONTANA-DAKOTA UTILITIES CO.
BEFORE THE NORTH DAKOTA PUBLIC SERVICE COMMISSION
CASE NO. PU-22-194
PREPARED REBUTTAL TESTIMONY OF
ANN E. BULKLEY

I. INTRODUCTION AND PURPOSE

Q1. Please state your name, affiliation and business address

A1. My name is Ann E. Bulkley. I am a Principal with The Brattle Group ("Brattle"). My business address is One Beacon Street, Suite 2600, Boston, Massachusetts 02108.

Q2. On whose behalf are you submitting this testimony?

A2. I am submitting this rebuttal 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").

Q3. Did you previously submit direct testimony in this proceeding?

A3. Yes. I submitted direct testimony regarding the appropriate return on equity ("ROE") and capital structure for Montana-Dakota in this proceeding on May 16, 2022.

Q4. What is the purpose of your rebuttal testimony?

A4. The purpose of my rebuttal testimony is to respond to the direct testimonies of Dr. Marie Fagan on behalf of the North Dakota Public Service Commission Advocacy Staff

("Staff"),[1] and Alex J. Kronauer on behalf of Walmart, Inc. ("Walmart"),[2] as these testimonies relate to the just and reasonable ROE and the appropriate capital structure for Montana-Dakota.

I have not attempted to respond to every argument made by the Staff and Walmart witnesses. The fact that I may not have responded to any particular argument or statement made by these witnesses does not indicate my agreement with that argument or statement.

Q5. Are you sponsoring any exhibits as part of your rebuttal testimony?

A5. Yes, I am sponsoring Exhibit No. ___(AEB-4), Schedules 1 through 8, which have been prepared by me or under my direct supervision.

Q6. How is the remainder of you rebuttal testimony organized?

A6. The remainder of my testimony is organized as follows:

- Section II provides a summary and overview of my rebuttal testimony and the important factors to be considered in establishing the authorized ROE for the Company.
- Section III discusses the comparable return standard and compares the ROE recommendation of Dr. Fagan in this proceeding to the returns of vertically-integrated electric utilities nationwide.
- Section IV provides an update to my cost of equity analyses based on market data through January 31, 2023 and discusses the changes in capital market conditions since my direct testimony was filed and the implications for the financial models used to estimate the authorized ROE in this proceeding.
- Section V provides my response to Dr. Fagan's cost of equity analysis and recommended ROE for the Company in this proceeding.
- Section VI provides my response to Mr. Kronauer's testimony as it relates to the ROE for the Company in this proceeding.

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[1] Direct Testimony of Marie Fagan, January 30, 2023 ("Fagan Direct Testimony")

[2] Direct Testimony and Exhibits of Alex Kronauer, January 31, 2023 ("Kronauer Direct Testimony")

II. SUMMARY AND OVERVIEW

Q7. What factors should be considered in evaluating the results of the cost of equity models and establishing the authorized ROE?

A7. The primary factors that should be considered are: (i) the importance of investors' actual return requirements and the critical role of judgment in selecting the appropriate ROE; (ii) the importance of providing a return that is comparable to returns on alternative investments with commensurate risk; and (iii) the need for a return that supports a utility's ability to attract needed capital at reasonable terms. Further, I consider the effect of current and expected capital market conditions on these factors.

Q8. Please provide an overview of the ROE recommendations of Dr. Fagan and Mr. Kronauer in this proceeding.

A8. Dr. Fagan relies exclusively on the CAPM to estimate the cost of equity for Montana-Dakota. Dr. Fagan indicates that she did not consider the DCF model because the model relies on earnings growth forecasts which are "overly optimistic" and thus the DCF model tends to overstate the cost of equity.[3] Dr. Fagan's CAPM results in a cost of equity of 9.42 percent, which Dr. Fagan recommends as the appropriate ROE for Montana-Dakota in this proceeding. Dr. Fagan does not oppose Montana-Dakota's proposed common equity ratio of 50.81 percent, but notes than the average allowed equity ratio for electric utilities in 2022 and the Company should "make meaningful efforts" to maintain a common equity ratio less than 50 percent.[4]

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[3] Fagan Direct Testimony, at 34-35.

[4] Fagan Direct Testimony, at 44-45.

Mr. Kronauer does not estimate the cost of equity for Montana-Dakota using any of the traditional estimation methodologies. Rather, Mr. Kronauer reviews authorized ROEs for the period from 2019 through 2023. Mr. Kronauer calculates average returns over this period, without consideration of market conditions and suggests based on the averages, that my recommended ROE is among the highest approved since 2019.[5] Further, Mr. Kronauer appears to imply that the combination of the Company's use of a future test year and existing riders reduces Montana-Dakota's risk profile.[6]

Q9. What are your key conclusions and recommendations regarding the testimonies of Dr. Fagan and Mr. Kronauer?

A9. My conclusions and recommendations regarding the testimonies of Dr. Fagan and Mr. Kronauer are as follows:

- Dr. Fagen takes a minimalist approach to estimating the cost of equity by relying on a single cost of equity estimation methodology and fails to recognize how other risks may affect the appropriate ROE for Montana-Dakota.

- Dr. Fagan's CAPM analysis is flawed for several reasons including, reliance on a historical market risk premium, and the use of inconsistent estimates of the risk-free rate – one as the risk-free rate to be used directly in the CAPM formula, and another as the risk-free rate underlying her estimate of the market risk premium.

- As a result of this error, Dr. Fagan's CAPM analysis fails to account for the inverse relationship between interest rates and the market risk premium, and thus accurately reflect current market conditions in the cost of equity estimate.

- When Dr. Fagan's CAPM analysis is corrected such that a single, consistent risk-free rate is used, Dr. Fagan's CAPM results in cost of equity estimates that are between 10.52 percent and 10.65 percent, which support my recommended ROE for the Company in this proceeding.

- The foundation of Dr. Fagan's criticism of my CAPM analysis is flawed and therefore renders her critique without merit. Dr. Fagen's critique of my recommended ROE is based entirely on my CAPM analyses, where she suggests

[5] Kronaeuer Direct Testimony, at 8-10.

[6] Kronaeuer Direct Testimony, at 5.

that the market risk premium used in my analysis is too high. However, Dr. Fagen misinterpreted my analysis, and incorrectly evaluates the *market return calculation* in my testimony as the *market risk premium*. Her entire evaluation of my *market risk premium* is in error and therefore her conclusions regarding my assumptions and results are without merit.

- Comparing the market return calculation that I developed in my direct testimony, and the updated market return calculation used in my analyses in my rebuttal testimony to the long-term historical average relied on by Dr. Fagen demonstrates that my estimate of the market return is reasonable and appropriate.

- The risk-free rate that I rely in my updated analyses is generally consistent with assumption used by Dr. Fagen. Therefore, the *market risk premium* (market return less risk-free rate), is reasonable and appropriate to be used in the CAPM.

- Both Dr. Fagan and Mr. Kronaeuer reference annual average authorized ROEs for utilities across the U.S.; however, neither has conducted a meaningful review of such authorizations. Dr. Fagan and Mr. Kronauer have not considered the necessary factors to ensure that the authorized ROEs that they cite are for risk-comparable companies, nor have they considered the differences in the market conditions that existed when those returns were authorized relative to current market conditions.

Q10. Have you updated the cost of equity analyses that you presented in your direct testimony to reflect current market conditions?

A10. As discussed in more detail herein, I have updated my cost of equity analyses based on market data through January 31, 2023.

Q11. Do the results of your updated the cost of equity analyses support your recommended ROE of 10.50 percent?

A11. Yes. The results of my cost of equity analyses when updated to reflect the most current market data continue to support that an ROE of 10.50 percent is reasonable. In addition, while the analytical results of the cost of equity estimation models provide a starting point, I continue to base my conclusion on not only the results of multiple cost of equity models,

but also other factors, including capital market conditions, the capital attraction and comparable return standards, and the Company-specific risks.

III. COMPARABLE RETURN STANDARD

Q12. How should authorized ROEs be considered in setting the ROE?

A12. The decisions of other regulatory commissions can provide a basic test of reasonableness and a benchmark that investors consider in comparing the authorized ROE in one jurisdiction to the returns available from other regulated utilities with comparable risk. The *Hope* and *Bluefield* decisions require that authorized ROEs must be comparable to other investments of commensurate risk. However, it is important to consider several factors that affect these regulatory decisions, specifically: (1) the market conditions at the time that the ROE was authorized; (2) any performance adjustments that were reflected in the authorized ROE (positive or negative) that are company specific; and (3) whether or not the ROE is established based on a regulatory construct that is consistent with the regulatory environment for the subject utility. With these factors addressed, it is reasonable to consider recently authorized ROEs as a basic test of reasonableness.

Q13. Have either Dr. Fagan or Mr. Kronauer conducted a meaningful review of previously authorized ROEs?

A13. No. Dr. Fagan notes generally that allowed ROEs in electric rate cases have declined from 2001 through 2021 with a slight increase in 2022,[7] while Mr. Kronauer states that the range of authorized ROEs from 2019 through 2022 was 7.36 percent to 10.60 percent and that

[7] Fagan Direct Testimony, at 44.

the Company's proposed ROE of 10.50 percent is counter to broader electricity trends.[8] While Dr. Fagan and Mr. Kronauer each discuss prior authorized ROEs in their testimony, neither witness provides the necessary insight to draw meaningful conclusions about the forward-looking investor-required return. Dr. Fagan and Mr. Kronauer have not considered the necessary factors to ensure that the authorized ROEs that they cite are for risk-comparable companies, nor have they considered the differences in the market conditions that existed when the returns were authorized relative to current market conditions.

Specifically, Mr. Kronauer simply relies on the average authorized returns without consideration of market conditions, and incorrectly includes the authorized returns for companies subject to formula rate plans, fair value ratemaking, and penalties applied through the authorized ROE. These data points cannot be relied upon to estimate a market-derived cost of equity or a reasonable estimate of the ROE for MDU-ND. In fact, it is two of these formulaically-set ROEs in Illinois that represent the low end of Mr. Kronauer's incorrectly cited range of prior authorized ROEs.

Dr. Fagan does not describe nor provide the data on which she relies for the historical authorized ROEs shown in Figure 24 of her testimony. However, based on the results shown, it appears that Dr. Fagan's analysis of previously authorized ROEs suffers from the same issues regarding the lack of comparability as Mr. Kronauer's analysis, and includes authorizations for companies that are not comparable to Montana-Dakota, as well as authorizations that were not market-derived ROEs.

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[8] Kronauer Direct Testimony, at 9.

Q14. Why is it important to consider capital market conditions and these other regulatory factors when evaluating previously authorized ROEs?

A14. Regulatory commissions consider a variety of factors in establishing the ROE for a utility, including the results of the cost of equity estimation methodologies, risk factors and market conditions. Therefore, when reviewing the authorized ROE data from other jurisdictions and time periods, it is important to identify and understand these factors to determine whether the authorized ROE would be reasonable in current market conditions.

Specifically, it is important to recognize that the market conditions in 2022 were significantly different from the conditions in 2020 and 2021. As discussed in my direct testimony, in 2022 markets experienced elevated inflation and the Federal Reserve's policy decisions to increase interest rates to combat that inflation. Neither of these circumstances existed in the 2020 and 2021 time period. Further, the Federal Reserve has indicated that the reduction of inflation continues to be an important policy goal and that has suggested that further increases in interest rates in 2023 should be expected to achieve that goal.[9] Therefore, considering the change in market conditions that occurred between 2021 and 2022 and the average length of time to complete a rate case (*i.e,* eight to twelve months), it is likely that authorized ROEs over the period from 2020 through the earlier months of 2022 are not reflective of the recent change in market conditions and cannot reasonably be compared to ROEs necessary to reflect the cost of equity for utilities in the current market environment without recognizing these differences.

[9] Transcript. Chair Powell Press Conference, February 1, 2023; clarification added.

Q15. Have analysts recognized that market conditions are an important factor in the authorized ROE data?

A15. Yes. Recently Moody's Investors Service ("Moody's") noted that authorized ROEs throughout 2023 could increase as a result of the increase in interest rates, but noted that regulatory lag could result in a delay in the timing of those increases.[10]

Q16. Are market conditions in 2023 expected to be different than the market conditions in 2019 through early 2022?

A16. Yes, market conditions have changed significantly since 2020. For example:

- Interest rates have increased from the 2.00 to 3.00 percent range in 2016 when the Company's current rates were found to be just and reasonable to approximately 3.50 to 4.00 percent as of December 31, 2022. Consensus estimates indicate that interest rates are expected to remain elevated for the next few years.[11]
- Inflation increased from 1.94 percent in December 2021 to a peak of 9.00 percent in June 2022 and remained at 6.35 percent in January 2023.[12]
- While increases in authorized ROEs have lagged the increase in interest rates, authorized ROEs for vertically-integrated electric utilities were significantly higher in the fourth quarter of 2022, averaging 9.93 percent.

These macroeconomic indicators demonstrate that the cost of equity is increasing and that authorized ROEs set based on market conditions over this historical period likely do not reflect the investor-required return in current and projected market conditions.

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[10] Moody's Investors Service. "Regulated Electric and Gas Utilities – US, 2023 outlook negative due to higher natural gas prices, inflation and rising interest rates." November 10, 2022, at 4.

[11] *Blue Chip Financial Forecasts*, Vol. 42, No. 2, February 1, 2023, at 2; *Blue Chip Financial Forecasts*, Vol. 41, No. 12, December 2, 2022, at 14.

[12] Bureau of Labor Statistics. Consumer Price Index for All Urban Customers. Seasonally Adjusted. February 2022.

Q17. What do equity analysts and credit rating agencies expect for the utility sector in 2023?

A17. Equity analysts and credit rating agencies project that utilities will underperform the broader market given high inflation and the recent increases in interest rates. Fidelity classifies the utility sector as underweight,[13] and *Morningstar* recently noted that many of the market conditions that supported the premium valuation of utilities over the last decade mainly low inflation, interest rates and energy prices are currently reversing.[14] Similarly, credit rating agencies have concluded that the industry overall has increased risk, have responded with close scrutiny of the financial coverage ratios of the sector, and have a negative outlook on the industry overall for 2023. Specifically, Moody's, Fitch Ratings, and Standard and Poor's ("S&P") have all highlighted challenges with the utility sector, including inflation, increasing interest rates and higher natural gas prices, which increase the pressure on customer affordability, and thus create heightened public scrutiny and the ability of utilities to promptly recover their costs.[15]

Q18. Does Mr. Kronauer's presentation of recently-authorized ROEs address the market conditions and other risk factors?

A18. No. Mr. Kronauer references authorized ROEs from 2019 through 2022; however, he does not provide the necessary insight to draw any meaningful conclusions about the forward-looking investor-required return. Specifically, Mr. Kronauer has not evaluated the risk of

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[13] Fidelity. "First Quarter 2023 Investment Research Update." February 8, 2023.

[14] Miller, Travis. "Can Utilities Maintain Growth Against Macroeconomic Headwinds?" *Morningstar*, January 3, 2023.

[15] Moody's Investors Service, Outlook. "2023 outlook negative due to higher natural gas prices, inflation and rising interest rates." November 10, 2022; Moody's Investors Service. Outlook, Sector In-Depth. "Inflation, high natural gas prices complicate prospects for supportive rate increases." November 11, 2022; Fitch Ratings. "North American Utilities, Power & Gas Outlook 2023." December 7, 2022; S&P Global Ratings. "Regulated Utilities: Credit quality has weakened and credit risks are rising." July 14, 2022.

the Company relative to comparable utilities, nor has he considered his referenced authorized ROEs in the context of current capital market conditions. Rather, Mr. Kronauer simply relies on the average authorized returns without consideration of market conditions, and incorrectly includes the authorized returns for companies subject to formula rate plans, fair value rate base, and ROE penalties that result in an authorized ROE that cannot be considered an estimate of the market-derived ROE.

For example, Mr. Kronauer states that the range of authorized ROEs from 2019 through 2022 was 7.36 percent to 10.60 percent. However, Mr. Kronauer includes the authorized returns for vertically-integrated electric utilities in Vermont and Illinois where the ROEs are established formulaically pursuant to a pre-established formula,[16] which is not consistent with the manner in which the rates are established for the Company. In fact, it is two of these formulaically-set ROEs in Illinois that incorrectly represent the low end of Mr. Kronauer's cited range.

Q19. Recognizing the limitations of previously authorized ROEs, have you analyzed recent data that reflects the cases most comparable to the Company?

A19. Yes, I analyzed recently authorized returns for vertically-integrated electric utilities; however, I have applied the following screening criteria to exclude those cases that are not comparable (*i.e.*, utilities with a similar risk profile) to Montana-Dakota and the regulatory process that the Commission uses to authorize a return for the Company:

- I included only vertically-integrated electric utilities because of the differences in risk related to generation for vertically-integrated electric utilities.

[16] *See, e.g.*, Vermont Public Utility Commission, Case No. 18-1633-PET, Order, May 24, 2019, pp. 14-16; Illinois Public Utilities Act, Section 16-108.5.

- I excluded limited-issue rider cases because these cases address only a specific issue or issues, such as the construction of generation assets and the associated incremental risk, and not a utility's entire operations. Thus, the returns authorized in such limited-issue rider cases would not be comparable to the rates being established for the Company in this proceeding.

- I excluded jurisdictions that set ROEs bases on a formula because these approaches are not consistent with the methodology that this Commission has typically considered in setting the ROE.

- I excluded returns awarded in Arizona, because it is a state that relies on fair value ratemaking. In Arizona, the ROE is adjusted to reflect the return on the fair value rate base as opposed to an original cost rate base. The Arizona Corporation Commission has recently reduced the ROE for companies to account for the return granted on the fair value increment. Therefore, recent ROEs in Arizona are not comparable to the ROEs established in states that use original cost ratemaking and thus should be excluded.

- Lastly, I excluded authorized returns that reflect a utility-specific penalty because an authorized ROE that includes a penalty is not indicative of a market-derived cost of equity.[17]

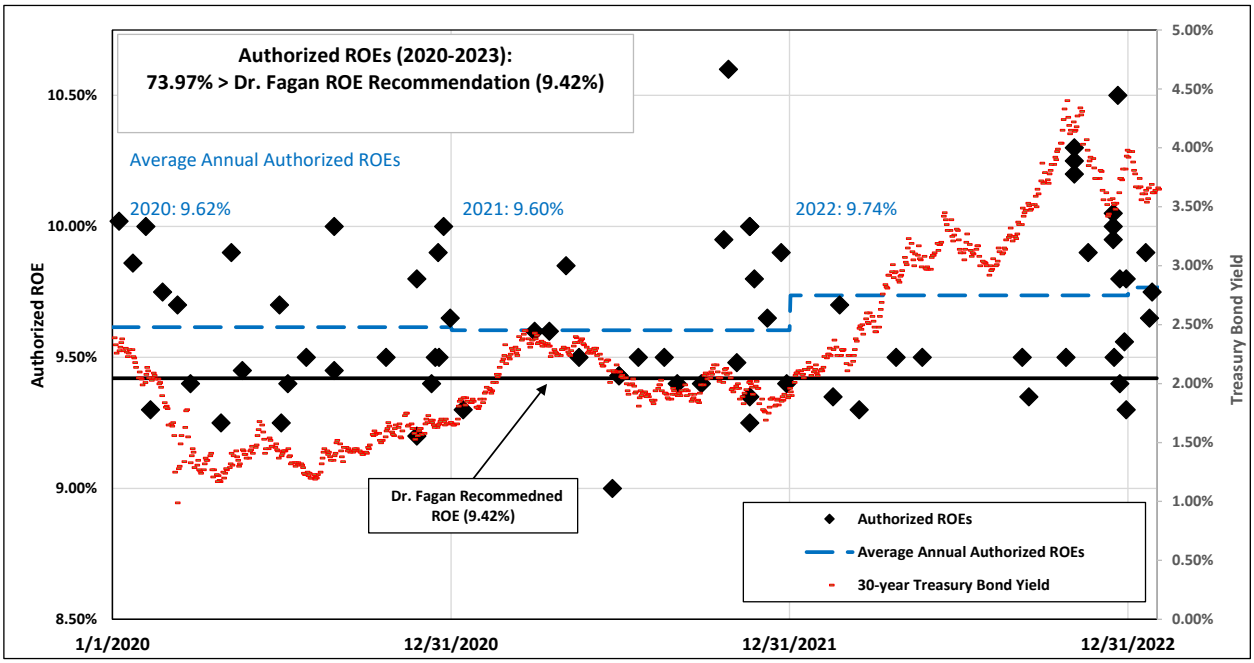
Q20. What do you conclude from this analysis?

A20. Figure 2 shows the authorized returns for vertically-integrated electric utilities in other jurisdictions across the U.S. since January 2020 compared to the return recommended by Dr. Fagan of 9.42 percent. The range of authorized ROEs has been from 9.00 percent to 10.60 percent during this period. However, as shown in Figure 2, the yield on the 30-year Treasury bond has changed significantly over this time period. Specifically, in 2020 and 2021, the yield on the 30-year Treasury bond was in the range of 1.00 percent to 2.00 percent; however, in 2022, the yield on the 30-year Treasury bond increased significantly, and currently has ranged in the 3.60 to 4.00 percent range. This change in the interest rate

[17] For example, Central Maine Power Company was authorized an ROE in 2020 of 8.25 percent that reflected a 100-basis point penalty for management inefficiency, which is not representative of a market-derived cost of equity and should be excluded from the recently authorized return data.

environment is important to consider when considering the current investor-required return and when reviewing recently authorized ROEs.

Figure 1: U.S. Authorized ROEs of Vertically-Integrated Electric Utilities, January 2020 through January 31, 2023[18]



While the range of results presented provides an indication of the investor-required return over this time period, in determining the appropriate ROE for the Company, it is necessary to consider current inflationary pressures and the expectation of interest rates to remain relatively higher over the near term as compared to the ROE authorizations since January 2020, which indicates an increase in the cost of equity for utilities going forward as compared to these prior authorizations. In fact, the average authorized ROE for vertically-integrated electric utilities in 2022 reflecting the screening criteria previously identified to

[18] S&P Capital IQ Pro.

make most comparable to Montana-Dakota was 9.74 percent and the most recent authorized ROEs were in the range of 9.80 to 10.00 percent.

Q21. Is Dr. Fagan's recommended ROE for the Company consistent with current market conditions?

A21. No. Dr. Fagan's ROE recommendation of 9.42 percent is well below the average authorized ROE in 2022, and is even below the average authorized ROEs in 2020 and 2021 when interest rates were 200 basis points lower than current interest rates. Given that Dr. Fagan's recommendation is at the lower-end of authorized ROEs even in much lower interest rate environments, it therefore cannot be determined to be reasonable in current market conditions that demonstrates a higher overall cost of capital. Further, proposing a return below the mean would indicate Dr. Fagan believes that Montana-Dakota has less risk than other comparable vertically-integrated electric utilities across the U.S.; however, Dr. Fagan has not provided any evidence to support this conclusion because she has not considered the relative risk of Montana-Dakota.

Q22. Is there additional relevant information that the Commission should consider in establishing the Company's ROE in this proceeding?

A22. Yes. Because of the significant changes that have occurred in the market in terms of inflation and interest rates in the past year, it is also important to consider what the authorized ROEs for vertically-integrated electric utilities have been when interest rates have previously approximated the levels at which they are currently. Figure 3 compares quarterly 30-year Treasury bond yields and quarterly authorized ROEs for vertically-integrated electric utilities when interest rates have been at levels approximating the current interest rates. As shown, the authorized ROEs for vertically-integrated electric utilities

have ranged from approximately 9.90 percent to 10.75 percent, consistent with my recommendation in this proceeding.

For example, as shown, in 4Q/2022, the 30-year Treasury yield was 3.89 percent, and the average authorized ROE for vertically-integrated electric utilities at that same quarter was 9.93 percent. In comparison, in 3Q/2011, the 30-year Treasury yield was 3.70 percent, which is similar to current yields, and the average authorized ROE for vertically-integrated electric utilities was 10.57 percent. Further, in Q2/2017, when Montana-Dakota's last rate proceeding was determined, the quarterly average yield on the 30-year Treasury bond was 2.90 percent, demonstrating that the return that was authorized in the Company's last case of 9.65 percent, is below the expectation in the current market environment.

Figure 2: Quarterly 30-Year Treasury Bond Yields and Quarterly U.S. Authorized ROEs of Vertically-Integrated Electric Utilities[19]

	30-Year Treasury Bond Yield	Average Authorized ROE
Q4/2008	3.64%	10.39%
Q1/2009	3.44%	10.75%
Q3/2010	3.86%	10.40%
Q3/2011	3.70%	10.57%
Q4/2013	3.79%	9.97%
Q4/2022	3.89%	9.93%

[19] S&P Capital IQ Pro.

Q23. Based on your review, what is your conclusion regarding Dr. Fagan's ROE recommendation?

A23. As outlined in *Hope* and *Bluefield*, the return authorized for the Company must be comparable to the returns on assets with comparable risk. As noted previously, the recommendation of Dr. Fagan is below the recent average authorized ROEs for vertically-integrated electric utilities, and in particular, is below the average authorized ROEs in 2020 to 2021 when interest rates, and the overall cost of equity, were lower than in the current market environment. Since interest rates increased significantly over the course of 2022, many of the authorized ROEs early in 2022 were based on data that does not reflect the current interest rate environment. Therefore, since Dr. Fagan's recommended ROE is below the average authorized ROE in 2022 for vertically-integrated electric utilities, which reflects data that lags current interest rates, Dr. Fagan's ROE recommendation is understating the forward-looking cost of equity for vertically-integrated electric utilities.

IV. UPDATED COST OF EQUITY ANALYSES

Q24. Have you updated your cost of equity analyses from your direct testimony?

A24. Yes, I have updated the results of the cost of equity analyses conducted in my direct testimony based on market data through January 31, 2023, using the same methodologies as in my Direct Testimony. Figure 4 (see also Exhibit No. ___(AEB-4), Schedules 1 through 6) summarizes the results of my updated analyses as of January 31, 2023.

Figure 3: Updated Cost of Equity Results

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.04%	9.36%	10.40%
90-Day Average	8.17%	9.49%	10.53%
180-Day Average	8.07%	9.39%	10.42%
Constant Growth Average	8.10%	9.41%	10.45%
	Median Low	Median	Median High
30-Day Average	7.98%	9.40%	10.13%
90-Day Average	8.11%	9.50%	10.24%
180-Day Average	7.94%	9.38%	10.13%
Constant Growth Average	8.01%	9.43%	10.16%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.38%	11.40%	11.41%
Bloomberg Beta	10.82%	10.84%	10.86%
Long-term Avg. Beta	10.35%	10.38%	10.40%
ECAPM			
Value Line Beta	11.66%	11.67%	11.68%
Bloomberg Beta	11.24%	11.26%	11.27%
Long-term Avg. Beta	10.89%	10.91%	10.92%
Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	10.23%	10.28%	10.32%

Q25. Do the updated results support you ROE recommendation of 10.50 percent in this proceeding?

A25. Yes. The updated results reflecting market data through January 31, 2023 continue to support my recommended ROE of 10.50 percent. The results of DCF and CAPM models are generally on balance with the results filed in my direct testimony, with certain scenarios slightly higher and other scenarios slightly lower than the results presented in my direct testimony, while the results of the Risk Premium analysis have increased.

V. RESPONSE TO DR. FAGAN

CAPM Analysis

Q26. Please summarize Dr. Fagan's cost of equity analysis?

A26. As noted, Dr. Fagan estimates the cost of equity relying on one CAPM scenario using the following assumptions:

- A risk-free rate of 3.69 percent, which reflects a projection of the 30-year Treasury bond yield. The risk-free rate is based on an average of the projected yield on the 10-year Treasury bond for 2023 through 2027 from Consensus Forecasts, plus the average historical spread between the 10-year Treasury bond yield and the 30-year Treasury bond yield.[20]

- A beta of 0.79, which reflects an average of the 3-year average betas for each of the 26 companies in Dr. Fagan's proxy group as reported by S&P.[21]

- An historical market risk premium of 7.25 percent as reported by Kroll for the period 1926 through 2020.

Based on these inputs, the result of Dr. Fagan's CAPM is 9.42 percent, which she recommends as the ROE for the Company in this proceeding.

Q27. Do you agree with Dr. Fagan's CAPM analysis?

A27. No. Dr. Fagan's reliance on a historical market risk premium is incorrect for a number of reasons, most significantly that it fails to account for current market conditions and the inverse relationship between interest rates and the market risk premium. As a result, Dr. Fagan's market risk premium is understated, which in turn understates the cost of equity produced by her CAPM analysis.

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[20] Fagan Direct Testimony, at 36-37.

[21] Fagan Direct Testimony, at 37-38.

Q28. Is the use of a historical market risk premium appropriate for estimating the forward-looking cost of equity?

A28. No. *Morningstar,* which has been the publisher of the historical market risk premium data, observed that the market risk premium is a forward-looking concept, not a historical analysis:

> It is important to note that the expected equity risk premium, as it is used in discount rates and the cost of capital analysis, is a forward-looking concept. That is, the equity risk premium that is used in the discount rate should be reflective of what investors think the risk premium will be going forward.[22]

Dr. Fagan's use of a long-term average market risk premium that is based on the average total return of large company stocks from 1926 through 2020 is reflective of the returns realized by investors under different historical market and economic conditions and is not necessarily reflective of the market return required by investors in the current and expected market environment.

As discussed previously, in 2022 interest rates have increased significantly and are expected to continue to remain relatively high as compared to the recent past for at least the next year as the Federal Reserve continues to normalize monetary policy to combat inflation. Furthermore, there is added uncertainty in the market regarding the pace and effect of the Federal Reserve's policy normalization on the economy and inflation. Recently, investors have responded to both positive and negative developments regarding the effect of inflation, the effect of the Federal Reserve's policy on the economy, and the global economic effects of the war in Ukraine. The increased uncertainty means that the overall risk in the market has increased. However, the effect of current market conditions

[22] *Morningstar Inc.*, 2010 Ibbotson Stocks, Bonds, Bills, and Inflation, Valuation Yearbook, at 55.

on investor return requirements are muted in a long-term average historical return calculation and therefore do not specifically reflect the current market risk premium. In developing the CAPM for use to establish a ratemaking ROE, the assumptions used in the CAPM analysis should reflect the current expectations of the market and the forward-looking expectations, as noted by *Morningsta*r. By relying on long-term historical averages that smooth out numerous business cycles, Dr. Fagan's historical average market risk premium fails to capture current and projected market conditions during the period in which the Company's rates will be in effect.

Q29. Please explain why the CAPM analysis prepared by Dr. Fagan fail to account for the inverse relationship between interest rates and the market risk premium?

A29. As discussed in my direct testimony, there is an inverse relationship between interest rates and the market risk premium (*i.e.*, as interest rates decrease, the market risk premium increases, and vice versa). However, Dr. Fagan's CAPM fails to account for this inverse relationship because her CAPM analysis reflects a mismatch between (1) the risk-free rate that she relies on in the CAPM equation; and (2) the risk-free rate that is used to calculate the historical market risk premium on which she relies. In other words, Dr. Fagan has relied on two different risk-free rates in her CAPM analysis that are not aligned with one another, even though the CAPM equation requires the use of <u>*one*</u> estimate of the risk-free rate. The equation does not specify the use of two different risk-free rates such as Dr. Fagan has assumed in her CAPM analysis. Specifically, the projected risk-free rate that Dr. Fagan relies on bears no relationship to the average historical interest rate underlying the calculation of the average historical market risk premium that Dr. Fagan uses in the CAPM.

Q30. Has *Kroll*, (formerly *Duff & Phelps*) the publisher of the historical data on which Dr. Fagan relies to estimate her historical market risk premium, highlighted such a potential inconsistency with relying on such historical data for a forward-looking analysis such as the CAPM?

A30. Yes. *Kroll* recognizes that historical data may not reflect the current or projected market conditions: "[i]n using a historical measure of the equity risk premium, one assumes that what has happened in the past is representative of what might be expected in the future."[23]

Q31. Does Dr. Fagen's analysis suffer from the inconsistency noted by *Kroll*?

A31. Yes. Specifically, Dr. Fagan relies on a current projected long-term government bond yield for her risk-free rate (*i.e.*, 3.69 percent) that is well below the average long-term government bond yield used in the calculation of her historical average market risk premium estimate (*i.e.*, 4.91 percent). Specifically, as shown in Exhibit No. ___(AEB-4), Schedule 7, the market risk premium for the period of 1926-2020 as reported by *Kroll* and relied on by Dr. Fagan is based on a long-term average market return of 12.16 percent less the average income-only return on long-term government bonds of 4.91 percent, which produces a long-term average market risk premium of 7.26 percent.[24]

Therefore, simply reviewing the differences in the risk-free rates demonstrates that current market conditions are not represented by the historical data that Dr. Fagen relies upon. Dr. Fagan's use of a historical market risk premium, based on a risk-free rate that is significantly higher than the risk-free rate in current market conditions has the potential to

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[23] *Kroll*, 2022 SBBI Yearbook, at 198.

[24] It appears that the historical average market risk premium of 7.25 percent reported by *Kroll* on its online Cost of Capital Navigator that Dr. Fagan relies on may be rounded from the 7.26 percent as shown in *Kroll's* annual SBBI Yearbook.

understate the market risk premium in the current market environment. As discussed previously, there is an inverse relationship between interest rates and the market risk premium. Therefore, as interest rates increase, the market risk premium decreases. Therefore, because Dr. Fagan's projected risk-free interest rate used in the CAPM analysis is well below the long-term historical average interest rate used in the calculation of the average historical market risk premium, it is reasonable to expect that the current market risk premium should be *higher than* the long-term historical average that is calculated assuming a higher interest rate environment. Therefore, Dr. Fagan's use of the long-term historical average market risk premium of 7.25 percent which is based on a risk free rate of 4.91 percent; which is 122 basis points higher than the current risk-free rate, understates the current market risk premium.

Q32. If the same risk-free rate that Dr. Fagan relies on in the CAPM equation is also used in calculating a historical market risk premium, does the result of Dr. Fagan's CAPM change?

A32. Yes. As shown on Exhibit No. ___(AEB-4), Schedule 8, I have adjusted Dr. Fagan's CAPM analysis so that her projected risk-free rate of 3.69 percent is correctly used consistently in the CAPM equation as both the risk-free rate as well as in the calculation of the market risk premium consistent with the CAPM formula. As shown in Schedule 8, even when using a historically-based instead of forward-looking market risk premium, the

result of Dr. Fagan's CAPM analysis and her recommended ROE in this proceeding would be 10.52 percent, or nearly exactly the same as my recommend ROE for the Company.[25]

Q33. Is there also evidence that the use of a historical market premium can produce counter-intuitive results?

A33. Yes. Figure 5 illustrates the problem with relying on the historical market risk premium such as Dr. Fagan has done. Specifically, the figure shows that from 2007-2009, the historical average market risk premium (*i.e.*, column [4]) decreased even as market volatility (*i.e.*, column [1], which is the primary statistical measure of risk) significantly increased. Further, as shown in column [3], this figure shows the significant swings in the annual market risk premium that are averaged into the long-term historical average calculation of the market risk premium. As shown, in 2008, the annual market risk "premium" was significantly negative, which implies a discount. However, it is incomprehensible that the perceived risk of equity was negative (*i.e.*, implying a lower required return) in the height of the financial market collapse when the overall market return as shown in column [2] was a negative 37 percent. As shown in column [4] from 2007 to 2008, this individual observation, which runs counter to the theory of the market risk premium, reduced the average market risk premium for the prior 80 years by 60 basis points (*i.e.*, 7.10 percent to 6.50 percent).

[25] Exhibit No. ___(AEB-4), Schedule 8 relies on the historical market return for 1926 through 2021 instead of the historical market return for 1926 through 2020 as used by Dr. Fagan. It is unclear why Dr. Fagan relied on data through 2020 when such data from *Kroll* was available through 2021.

Figure 4: Historical Market Risk Premium and Market Volatility

	Market Volatility	Market Return	Annual Market Risk Premium	Long-Term Historical Avg. Market Risk Premium
	[1]	[2]	[3]	[4]
2007	17.54	5.49%	0.63%	7.10%
2008	32.69	-37.00%	-41.45%	6.50%
2009	31.48	26.46%	3.47%	6.70%

The assumption that investors would expect or require a lower risk premium during periods of increased market volatility is counter-intuitive and leads to unreliable analytical results. As noted earlier, the relevant objective in the application of the CAPM is to ensure that all three components of the model (*i.e.*, the risk-free rate, the beta, and the market risk premium) are consistent with market conditions and investor perceptions. The forecasted market risk premium estimates used in my original and updated CAPM analyses specifically address that concern.

Q34. Have other regulators endorsed the calculation of the forward-looking market risk premium that is similar to the methodology you relied on?

A34. Yes. The Federal Energy Regulatory Commission ("FERC"), the Illinois Commerce Commission ("ICC"), the Pennsylvania Public Utilities Commission ("PPUC") and the Maine Public Utilities Commission ("Maine PUC") have also relied on the constant growth DCF model to estimate the market return in the CAPM analysis. In Opinion No. 569-A, the FERC continued to support the use of the constant growth DCF model to calculate the market return for the CAPM noting:

> [w]e also continue to find that the CAPM should use a one-step DCF for its risk premium. This is because the rationale for using a two-step DCF

> methodology for a specific group of utilities does not apply when conducting a DCF study of the dividend-paying companies in the S&P 500, as the Commission found in Opinion Nos. 531-B and 569.172. A long-term component is unnecessary because of the regular updates to the S&P 500, which allows it to continue to grow at a short-term growth rate and because S&P 500 companies include stocks that are both new and mature, the latter of which have a moderating effect on the short-term growth rates.[26]

Finally, as shown in Figure 6, the Staff of the ICC, the Bureau of Investigation and Enforcement ("I&E") of the PPUC and the Staff of the Maine PUC have also supported a forward-looking market risk premium. In each case, the market return was estimated using the constant growth DCF model and analysts' earnings growth rate projections, which resulted in a range of market return estimates from 11.33 percent to 13.94 percent. Furthermore, as also shown in Figure 6, the ICC, the PPUC and the Maine PUC relied on the estimated CAPM results by the Staff of the ICC, the I&E of the PPUC and the Staff of the Maine PUC, respectively, to determine the authorized ROE in each of the proceedings and did not dispute the use of the Constant Growth DCF model to calculate the market return.

[26] *Ass'n. of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 171 FERC ¶ 61,154 (2020) ("Opinion No. 569-A"), at ¶ 85.

Figure 5: Examples of Regulatory Commissions Relying on Forward-Looking Market Return and Market Risk Premia

Intervening Party	Company	Docket No.	Market Return	Date of Order	Did the Commission rely on the Party's CAPM?
Staff of the ICC	North Shore Gas Company	Docket 20-0810	CGDCF of the dividend-paying companies in the S&P 500 (11.95%)[27]	9/8/21	Yes[28]
I&E	Aqua Pennsylvania, Inc.	Docket No. R-2021-3027385	CGDCF of the Value Line Universe and S&P 500 (12.14%)[29]	5/12/22	Yes, the PPUC placed primary weight on I&E's CAPM[30]
Staff of the MPUC	Northern Utilities, Inc.	Docket No. 2019-00092	CGDCF of the dividend-paying companies in the S&P 500 (11.33%-13.49%)[31]	4/1/20	Yes[32]

Q35. How does your projected market return compare with the historical average market return relied upon by Dr. Fagen?

A35. As shown in Schedule 5, of my rebuttal testimony, the projected market return for the S&P 500 is 12.50 percent. This is reasonably consistent with the long-term historical average relied upon by Dr. Fagen in her analysis.

[27] Wisconsin Public Service Commission, Docket No. 20-0810, Order, September 8, 2021, at 71.

[28] *Id.*, at 86-87.

[29] Pennsylvania Public Utility Commission, Aqua Pennsylvania, Inc., Opinion and Order, Public Meeting held May 12, 2022, at 147.

[30] *Id.*, at 178.

[31] Maine Public Utilities Commission, Docket No. 2019-00092, Bench Analysis, October 29, 2019, at 21.

[32] New Hampshire Public Utilities Commission, Docket No. 2019-00092, Order Part II, April 1, 2020, at 58.

Q36. How would Dr. Fagen's CAPM results change if you relied on the projected market return to estimate the market risk premium and her projected risk-free rate?

A36. It is important to recognize that this analysis would be internally consistent, as it would be calculating a market return and risk-free rate for a similar forward-looking period. Therefore, this analysis would not suffer from the same inconsistencies I have outlined in Dr. Fagen's CAPM analysis. As shown in Exhibit No. ____(AEB-4), Schedule 8, relying on a projected market return of 12.50 percent and a risk-free rate of 3.69 percent results in a market risk premium of 8.81 percent. Using Dr. Fagen's estimated beta of 0.79, the CAPM result is 10.65 percent. The result of this internally consistent CAPM analysis supports the Company's requested ROE of 10.50 percent.

Q37. Please summarize Dr. Fagan's criticism of your CAPM analysis.

A37. Dr. Fagan claims that my market risk premium is 12.68 percent, and that it is "much too high" as compared to her long-term historical estimated market risk premium of 7.25 percent. Dr. Fagan states that my market risk premium implies an annual market return of approximately 16 percent, and that such a market return is much higher than what is expected by investors.[33] Dr. Fagan states that the difference in our market risk premium estimates is the primary driver of the difference between my relatively higher 10.50 percent ROE recommendation and her 9.43 percent ROE recommendation.[34] As a result, Dr. Fagan concludes that an ROE of 10.50 percent for the Company is not appropriate because of an "unjustifiably high market risk premium."[35]

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[33] Fagan Direct Testimony, at 40.

[34] Fagan Direct Testimony, at 40.

[35] *Id*.

Q38. Is Dr. Fagan's characterization of your CAPM analysis accurate?

A38. No. Dr. Fagan has incorrectly characterized the *market return* of 12.68 percent in my CAPM analysis as the *market risk premium*. As shown on Exhibit No. ___(AEB-2), Schedule 5, which presented the CAPM and ECAPM analyses in my direct testimony, the market return was 12.68 percent, not 16 percent as suggested by Dr. Fagen. As discussed previously, Dr. Fagen relies on a long-term historical market return of 12.34 percent. Therefore, the projected market return that I relied on in my direct testimony, which is updated to 12.50 percent in my rebuttal testimony, is reasonable when compared with the long-term historical average.

Depending on the risk-free rate that was used in the CAPM scenario, the market risk premium used in the CAPM analysis in my direct testimony ranged from 9.28 percent to 10.31 percent. After correcting for this mischaracterization, my market risk premia are higher than Dr. Fagan's historical average market risk premium, which is reasonable, because, as discussed in my response to Dr. Fagen's analysis, the risk-free rate is lower than the historical average, therefore the market risk premium should be higher. As shown in Exhibit No. ____ (AEB-4), Schedule 5 of my rebuttal testimony, the market risk premium in my rebuttal testimony is in the range of 8.60 percent to 8.79 percent.

Q39. Do you agree with Dr. Fagan's suggestion that your market risk premium is overstated because you rely on earnings per share growth rates in the market return calculation?

A39. No, I do not. First, as noted previously, my market return calculations are not significantly higher than the long-term historical average market return that Dr. Fagen calculates using the *Kroll* data set. Dr. Fagen uses a historical market return estimate of 12.34 percent,

whereas in my direct testimony I relied on 12.69 percent and in my rebuttal testimony I estimate a market return of 12.50 percent. Both of my market return estimates, which are reasonable when compared with the historical average Dr. Fagen has relied on, use on projected EPS growth rates in a constant growth DCF analysis. Further, I disagree with Dr. Fagan that analysts' projection of EPS growth rates tend to be inaccurate and biased towards over-estimating.[36]

Q40. Is there support for Dr. Fagan's conclusion regarding analysts' projected consensus EPS estimates?

A40. No. Dr. Fagan provides no evidence that consensus EPS estimates are biased or over-estimated. Further, this issue was addressed nearly ***20 years ago*** in the 2003 Global Analysts Research Settlement ("Global Settlement"), which served to significantly reduce if not eliminate bias in analysts' forecasts. The Global Settlement required financial institutions to insulate investment banking from analysis, prohibited analysts from participating in "road shows," and required the settling financial institutions to fund independent third-party research. In addition, analysts covering the common stock of the proxy companies certify that their analyses and recommendations are not related, either directly or indirectly, to their compensation. Hovakimian and Saenyasiri (2010), which was published seven years after the Global Settlement, found that analyst forecast bias had significantly declined or disappeared entirely since the Global Settlement:

> Introduced in 2002, the Global Settlement and related regulations had an even bigger impact than Reg FD on analyst behavior. After the Global Settlement, the mean forecast bias declined significantly, whereas the median forecast bias essentially disappeared. Although disentangling the

[36] Fagan Direct Testimony, at 40.

> impact of the Global Settlement from that or related rules and regulations aimed at mitigating analysts' conflicts of interest is impossible, forecast bias clearly declined around the time the Global Settlement was announced. These results suggest that the recent efforts of regulators have helped neutralize analysts' conflicts of interest.[37]

Lastly, while Dr. Fagan suggests that analysts' projected EPS growth rates are biased, she also relies on a consensus estimate of analysts' projections (*i.e.*, the risk-free rate) in her CAPM.

Q41. Have other regulatory commissions relied on a projected market return calculation similar to the calculation you have relied on in to estimate the market risk premium?

A41. Yes. The Federal Energy Regulatory Commission ("FERC") addressed the concern Dr. Fagan suggests about analysts' EPS growth rate forecasts in 2015 in Opinion No. 531-B, where it reaffirmed its rejection of the argument that analyst growth rates should not be used in the DCF analysis because the analysts making those projections allegedly are overly-optimistic in their growth rate projections. [38] The FERC also noted that the appropriate dividend growth rate to include in a DCF analysis is the growth rate expected by the market. In that case, the FERC indicated that while the market may be wrong in its expectations, the cost of common equity to a regulated enterprise depends upon what the market expects, not upon precisely what is actually going to happen.[39] Since its issuance of Opinion No. 531-B, the FERC has re-evaluated the appropriate methodologies to establish the ROE in subsequent opinions; however, the use of projected EPS growth rates

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[37] Hovakimian, Armen and Ekkachai Saenyasiri. "Conflicts of Interest and Analyst Behavior: Evidence from Recent Changes in Regulation." Financial Analysts Journal. Volume 66, Number 4, July/Aug, 2010.

[38] *Martha Coakley v. Bangor Hydro-Elec. Co.*, Order No. 531-B, 150 FERC ¶ 61,165 (2015) ("Opinion No. 531-B"), at ¶ 71.

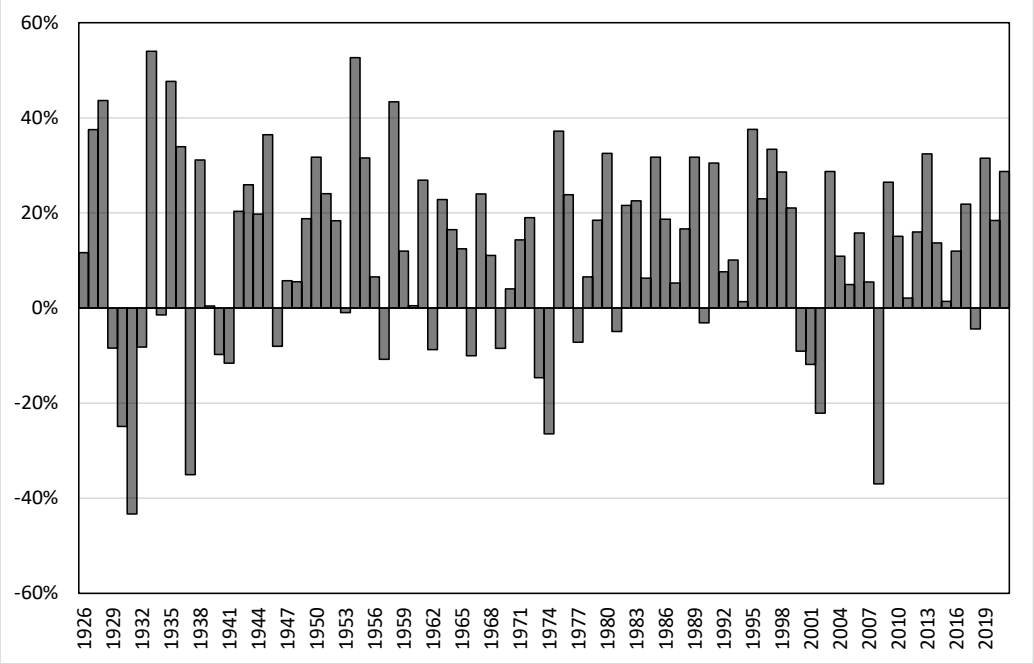
[39] *Id.*

has been consistently applied in all subsequent opinions, including most recently in Opinion No. 569-A.[40]

Q42. **How does your estimate of the projected return on the market return compare with historical actual annual market returns?**

A42. As discussed in my direct testimony, and shown in Figure 6 below, over the past 96 years, approximately the annual market return has been at the level I estimated or higher approximately half of the time. Therefore, while Dr. Fagen has misrepresented my market return analysis, the actual result of my analysis is well within the range established by the historical data set that she relies on for her market risk premium calculation.

Figure 6: Realized U.S. Equity Market Returns (1926-2021)[41]



[40] *Ass'n. of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 171 FERC ¶ 61,154 (2020).

[41] Depicts total annual returns on large company stocks, as reported in the 2022 Duff & Phelps SBBI Yearbook.

Q43. What are your conclusions regarding Dr. Fagen's CAPM analysis?

A43. Dr. Fagen's CAPM analysis is not reflecting the current and projected cost of equity, as a result of the understated market risk premium used in her analysis. As shown in Exhibit No. ___(AEB-4), Schedule 8, I have developed two scenarios that adjust Dr. Fagen's CAPM analysis to correct the market risk premium she relies on. In the first scenario, I rely on the historical market return data that she uses in her analysis and apply a consistent risk-free rate (*i.e.*, Dr. Fagen's projected risk-free rate) to be used in both the calculation of the market risk premium and as the risk-free rate in the CAPM. This analysis results in a cost of equity of 10.52 percent. In the second scenario, I rely on the projected market return that I calculate using current market data and Dr. Fagen's projected risk-free rate to develop the CAPM. That analysis is internally consistent because it relies on projected data for both the risk-free rate and the market return and it uses the same risk-free rate in the calculation of the market risk premium and the CAPM. This analysis results in a cost of equity estimate of 10.65 percent. Either of these changes to Dr. Fagen's CAPM analysis result in cost of equity estimates that support my recommended ROE of 10.50 percent.

ECAPM Analysis

Q44. What is Dr. Fagan's position regarding your ECAPM analysis?

A44. Dr. Fagan states that I have arbitrarily assigned a weight of 75 percent to the term in the ECAPM that applies the beta to the market risk premium, and 25 percent to the term in the ECAPM that is just the market risk premium, and that there is no empirical evidence to support such weights.[42]

[42] Fagan Direct Testimony, at 41.

Q45. Do you agree with Dr. Fagan's assessment regarding a lack of empirical evidence to support the weightings that you relied on in the ECAPM?

A45. No, I do not. The concept of the ECAPM and the conclusion that the risk-return relationship is flatter than predicted by the CAPM is generally accepted in financial literature. For example, Dr. Morin, in *Modern Regulatory Finance*, provides a list of studies each of which concludes that the CAPM understates the returns for companies with betas less than 1.0 and overstates the return for companies with betas greater than 1.0.[43] It is the empirical studies referenced by Dr. Morin that formed the basis of the development of alternative models such as the ECAPM that would better predict the risk return-relationship observed when reviewing actual market data.

Academics and researchers could then use Equation 2 shown below to determine the value of the constant term (α) using historical market data:

$$K_e = r_f + \alpha + \beta\left(\left(r_m - r_f\right) - \alpha\right) \quad K_e\text{-}r_f = \alpha + \beta(r_m\text{-}r_f) \quad [1]$$

Where

K_e = the required market ROE;

α = a constant term;

β = beta coefficient of an individual security;

r_f = the risk-free ROR; and

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

Dr. Morin relied on a constant term in the range of 1 to 2 percent to develop the 0.75 and 0.25 weighting factors included in the ECAPM. While I have relied on the ECAPM that is based on the constant term as estimated by Dr. Morin, it is important to note that there

[43] Morin, Dr. Roger A. Modern Regulatory Finance. Public Utilities Reports, Inc., 2021, at 206-208.

have been numerous additional studies published to estimate the value of the constant term in Equation [1]. Figure 7 provides the list of studies summarized by Dr. Morin. As shown, six out of the eight studies estimated positive values of the constant term, which indicates that the consensus among the studies is that the CAPM understates the observed return. Additionally, among the six studies that estimate only positive values of the constant term, the range was 1.63 percent to 13.56 percent, or much higher than the constant term range of 1.00 to 2.00 percent relied on by Dr. Morin to develop his 0.75 and 0.25 weighting factors for the ECAPM. Therefore, based on the range of the constant term provided in Figure 7, it would appear Dr. Morin's estimate of the constant term and his weighting factors were conservative.

Figure 7: Historical Market Risk Premium and Market Volatility

Author	Range of Alpha
Fischer (1993)	-3.6% to 3.6%
Fischer, Jensen and Scholes (1972)	-9.61% to 12.24%
Fama and McBeth (1972)	4.08% to 9.36%
Fama and French (1992)	10.08% to 13.56%
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 5.04%
Pettengill, Sundaram and Mathur (1995)	4.6%
Morin (1989)	2.0%

Q46. Is the ECAPM applicable to regulated utilities?

A46. Yes. Chrétien and Coggins (2011) studied the CAPM and its ability to estimate the risk premium for the utility industry in particular subgroups of utilities for a data set that included market data through the end of 2006.[44] Chrétien and Coggins considered the CAPM, the Fama-French three-factor model and a model similar to the ECAPM. The

[44] Chrétien, Stéphane, and Frank Coggins. "Cost Of Equity For Energy Utilities: Beyond The CAPM." *Energy Studies Review*, Vol. 18, No. 2, 2011.

study shows that the ECAPM significantly outperformed the traditional CAPM at predicting the observed risk premium for the various utility subgroups.

Q47. How do you respond to Dr. Fagen's assertion "Commissions do not universally allow such costs"?

A47. Dr. Fagen has not conducted a detailed study of the recovery of flotation costs to support her claims. Rather, she offers two examples of jurisdictions where flotation costs have not been authorized in specific cases. These examples do not suggest that the regulatory commissions have denied the concept of recovering flotation costs. Rather, these decisions are based on the facts and circumstances in the cases she reviewed. For example, in the 2019 Southern California Edison, which Dr. Fagen cites, demonstrates that the Commission would consider flotation costs with the data that the California commission deemed appropriate. That set of criteria is not universal, but rather is specific to the California commission.

Q48. Have other regulatory jurisdictions provided for the recovery of flotation costs?

A48. Yes. Both the Minnesota Public Utilities Commission the Connecticut Public Utilities Regulatory Authority have authorized the recovery of flotation costs.[45]

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[45] Minnesota Public Utilities Commission, Docket No. E-001/GR-10-276, Findings of Fact, Conclusions, and Order, at 9; Docket No. E002/GR-10-971, Findings of Fact, Conclusions, and Order, at 8; Docket No. E002/GR-08-1065, Findings of Fact, Conclusions of Law, and Order, at 10-11; Docket No. E017/GR-07-1178, Findings of Fact, Conclusions of Law, and Order, at 57-58; Docket No. G004/GR-04-1487, Findings of Fact, Conclusions of Law and Order, at 11; Docket No. G004/GR-19-511, Findings of Fact, Conclusions and Order, at 18. *See also* Connecticut Public Utilities Regulatory Authority, Docket No. 10-12-02, Application of Yankee Gas Services Company for Amended Rate Schedules (June 29, 2011), at 133–135.

Q49. Has Montana-Dakota specifically requested the recovery of flotation costs?

A49. No. While, I believe it is reasonable and appropriate to consider flotation costs in the overall cost of equity, Montana-Dakota has not specifically requested the recovery of these costs. Rather, flotation costs have been considered among the business risks faced by the Company in determining a reasonable return within the range of results that I have estimated.

Q50. Has anything that Dr. Fagen has stated regarding flotation costs changed your view on considering these costs as you have done in establishing your recommendation?

A50. No. While Dr. Fagen has identified two cases where flotation costs were not accepted, she has not demonstrated that flotation costs are universally rejected. As noted in my direct testimony, flotation costs permanently reduce the equity stock of the company. Without recovery of these costs, there is an increased that investors cannot earn their authorized ROE. Further, as noted in my rebuttal testimony, there are certain jurisdictions that routinely consider the recovery of these costs.

Q51. What is your response to Dr. Fagen regarding the business risks faced by Montana-Dakota?

A51. Similar to her cost of equity estimates, Dr. Fagen takes a minimalist approach to evaluating the business risks of Montana-Dakota as compared with the proxy group, focusing only on the business and financial risk classifications developed by S&P. While Dr. Fagen appears to suggest that the S&P business and financial risk measures are all encompassing, S&P also conducts a very detailed study of the cost recovery mechanisms that have been implemented by each of the utility operating subsidiaries of the proxy group companies. As shown in Schedule 9 to my direct testimony, this data demonstrates that many of the

proxy group companies have revenue decoupling mechanisms or some form of non-volumetric rate design that Montana-Dakota does not have.

Further, as discussed in my direct testimony, the majority of Montana-Dakota's sales in North Dakota are from the large general customer class, with particular concentration in the crude oil refining, and oil and natural gas production industries. The cyclicality of these businesses and the potential downward trend in demand resulting from national and global carbon reduction goals creates significant business risk for the Company. Figure 16 of my direct testimony demonstrates that while oil prices have increased since 2020, mining and logging employment in North Dakota are well below pre-pandemic levels, affecting electricity sales and overall economic conditions in the Montana-Dakota service territory. Dr. Fagen has ignored these jurisdictional risks in her business risk analysis.

VI. RESPONSE TO MR. KRONAUER

Q52. You previously addressed Mr. Kronauer's discussion of prior authorized ROEs. Does Mr. Kronauer have other recommendations relative to the ROE issues in this proceeding?

A52. Yes. In addition to the prior authorized ROEs by the Commission and other state commissions that I addressed previously herein, Mr. Kronauer also recommends that the Commission closely examine the Company's proposed ROE increase in light of the Company's use of a future test year and its existing rate riders, which reduce regulatory

lag. Mr. Kronauer states that he is concerned about the reasonableness of the Company's proposed ROE as a result of these factors.[46]

Q53. Does Mr. Kronauer provide any analysis regarding these factors to support his expressed concern regarding the reasonableness of the Company's proposed ROE?

A53. No. Mr. Kronauer simply notes that the Company uses a future test year and has existing rate riders but provides no further explanation or identifies such riders, and ultimately draws no specific conclusions as to these factors. However, the implication of Mr. Kronauer's testimony is that the use of a future test year and certain rate riders reduces the risk of Montana-Dakota, which should be considered in establishing the Company's ROE in this proceeding.

Q54. Is there any basis to Mr. Kronauer's implication of reduced risk for Montana-Dakota?

A54. No. As discussed in my direct testimony, any assessment of the risks of the Company needs to be done relative to those same risks of the proxy group companies. However, Mr. Kronauer provides no analysis of the relative risk of the proxy group to Montana-Dakota. In contrast, on Exhibit No. ___(AEB-2), Schedule 9 of my direct testimony, I reviewed the proxy group companies, and determined that 50% of the companies utilized a future test year. Therefore, the use of a forward test year in this proceeding does not by itself mitigate the risk of the Company relative to the proxy group. In addition, as also shown on Exhibit No. ___(AEB-2), Schedule 9, over half of the operating utility subsidiaries of the proxy group companies have some form of non-volumetric rate design or revenue stabilization

[46] Kronaeuer Direct Testimony, at 6-7.

through a decoupling mechanism, formula-based rates or straight-fixed variable rate design, while Montana-Dakota does not have such mechanisms. Additionally, the Company has not earned its authorized ROE since 2015. Accordingly, although Mr. Kronauer mentions but has made no specific recommendation in his testimony regarding a projected test year or the certain rate riders, my analysis demonstrates that there is no relative reduction in risk for the Company as a result of these factors, but rather Montana-Dakota has greater than average regulatory risk when compared to the proxy group.

Q55. Does this conclude your rebuttal testimony?

A55. Yes.

SUMMARY OF ROE ANALYSES RESULTS

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	8.04%	9.36%	10.40%
90-Day Average	8.17%	9.49%	10.53%
180-Day Average	8.07%	9.39%	10.42%
Constant Growth Average	8.10%	9.41%	10.45%
	Median Low	Median	Median High
30-Day Average	7.98%	9.40%	10.13%
90-Day Average	8.11%	9.50%	10.24%
180-Day Average	7.94%	9.38%	10.13%
Constant Growth Average	8.01%	9.43%	10.16%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.38%	11.40%	11.41%
Bloomberg Beta	10.82%	10.84%	10.86%
Long-term Avg. Beta	10.35%	10.38%	10.40%
ECAPM			
Value Line Beta	11.66%	11.67%	11.68%
Bloomberg Beta	11.24%	11.26%	11.27%
Long-term Avg. Beta	10.89%	10.91%	10.92%
Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	10.23%	10.28%	10.32%

30-DAY CONSTANT GROWTH DCF -- MONTANA-DAKOTA PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	$2.60	$64.09	4.06%	4.22%	6.00%	8.70%	9.60%	8.10%	10.18%	12.32%	13.85%
Alliant Energy Corporation	LNT	$1.81	$54.38	3.33%	3.42%	6.00%	5.55%	5.80%	5.78%	8.97%	9.21%	9.43%
Ameren Corporation	AEE	$2.36	$88.15	2.68%	2.77%	6.50%	6.64%	6.90%	6.68%	9.26%	9.45%	9.67%
American Electric Power Company, Inc.	AEP	$3.32	$94.56	3.51%	3.62%	6.50%	6.15%	6.10%	6.25%	9.72%	9.87%	10.13%
Duke Energy Corporation	DUK	$4.02	$102.85	3.91%	4.01%	5.00%	5.65%	5.50%	5.38%	9.01%	9.40%	9.67%
Entergy Corporation	ETR	$4.28	$109.55	3.91%	4.01%	4.00%	6.19%	6.00%	5.40%	7.98%	9.41%	10.22%
Evergy, Inc.	EVRG	$2.45	$62.50	3.92%	4.02%	7.50%	2.43%	5.30%	5.08%	6.40%	9.10%	11.57%
IDACORP, Inc.	IDA	$3.16	$106.55	2.97%	3.02%	4.50%	3.40%	3.40%	3.77%	6.42%	6.79%	7.53%
NextEra Energy, Inc.	NEE	$1.70	$82.50	2.06%	2.16%	10.50%	10.21%	9.00%	9.90%	11.15%	12.07%	12.67%
NorthWestern Corporation	NWE	$2.52	$57.74	4.36%	4.43%	3.50%	4.50%	1.70%	3.23%	6.10%	7.67%	8.96%
OGE Energy Corporation	OGE	$1.66	$39.21	4.22%	4.32%	6.50%	1.90%	5.00%	4.47%	6.17%	8.79%	10.86%
Otter Tail Corporation	OTTR	$1.65	$60.44	2.73%	2.82%	4.50%	9.00%	n/a	6.75%	7.29%	9.57%	11.85%
Portland General Electric Company	POR	$1.81	$48.17	3.76%	3.83%	5.00%	1.39%	5.30%	3.90%	5.17%	7.73%	9.16%
Southern Company	SO	$2.72	$69.75	3.90%	4.01%	6.50%	6.48%	4.00%	5.66%	7.98%	9.67%	10.53%
Xcel Energy Inc.	XEL	$1.95	$69.89	2.79%	2.88%	6.00%	7.01%	6.50%	6.50%	8.87%	9.38%	9.90%
Mean				3.47%	3.57%	5.90%	5.68%	5.72%	5.79%	8.04%	9.36%	10.40%
Median				3.76%	3.83%	6.00%	6.15%	5.65%	5.66%	7.98%	9.40%	10.13%

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

90-DAY CONSTANT GROWTH DCF -- MONTANA-DAKOTA PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	$2.60	$59.65	4.36%	4.54%	6.00%	8.70%	9.60%	8.10%	10.49%	12.64%	14.17%
Alliant Energy Corporation	LNT	$1.81	$53.40	3.39%	3.49%	6.00%	5.55%	5.80%	5.78%	9.03%	9.27%	9.49%
Ameren Corporation	AEE	$2.36	$84.71	2.79%	2.88%	6.50%	6.64%	6.90%	6.68%	9.38%	9.56%	9.78%
American Electric Power Company, Inc.	AEP	$3.32	$91.64	3.62%	3.74%	6.50%	6.15%	6.10%	6.25%	9.83%	9.99%	10.24%
Duke Energy Corporation	DUK	$4.02	$97.43	4.13%	4.24%	5.00%	5.65%	5.50%	5.38%	9.23%	9.62%	9.89%
Entergy Corporation	ETR	$4.28	$108.60	3.94%	4.05%	4.00%	6.19%	6.00%	5.40%	8.02%	9.44%	10.25%
Evergy, Inc.	EVRG	$2.45	$60.52	4.05%	4.15%	7.50%	2.43%	5.30%	5.08%	6.53%	9.23%	11.70%
IDACORP, Inc.	IDA	$3.16	$103.99	3.04%	3.10%	4.50%	3.40%	3.40%	3.77%	6.49%	6.86%	7.61%
NextEra Energy, Inc.	NEE	$1.70	$80.86	2.10%	2.21%	10.50%	10.21%	9.00%	9.90%	11.20%	12.11%	12.71%
NorthWestern Corporation	NWE	$2.52	$54.56	4.62%	4.69%	3.50%	4.50%	1.70%	3.23%	6.36%	7.93%	9.22%
OGE Energy Corporation	OGE	$1.66	$37.88	4.37%	4.47%	6.50%	1.90%	5.00%	4.47%	6.31%	8.94%	11.01%
Otter Tail Corporation	OTTR	$1.65	$60.40	2.73%	2.82%	4.50%	9.00%	n/a	6.75%	7.29%	9.57%	11.85%
Portland General Electric Company	POR	$1.81	$46.44	3.90%	3.97%	5.00%	1.39%	5.30%	3.90%	5.31%	7.87%	9.30%
Southern Company	SO	$2.72	$67.48	4.03%	4.14%	6.50%	6.48%	4.00%	5.66%	8.11%	9.80%	10.66%
Xcel Energy Inc.	XEL	$1.95	$67.09	2.91%	3.00%	6.00%	7.01%	6.50%	6.50%	8.99%	9.50%	10.02%
Mean				3.60%	3.70%	5.90%	5.68%	5.72%	5.79%	8.17%	9.49%	10.53%
Median				3.90%	3.97%	6.00%	6.15%	5.65%	5.66%	8.11%	9.50%	10.24%

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

180-DAY CONSTANT GROWTH DCF -- MONTANA-DAKOTA PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	$2.60	$59.39	4.38%	4.56%	6.00%	8.70%	9.60%	8.10%	10.51%	12.66%	14.19%
Alliant Energy Corporation	LNT	$1.81	$56.17	3.22%	3.32%	6.00%	5.55%	5.80%	5.78%	8.86%	9.10%	9.32%
Ameren Corporation	AEE	$2.36	$87.43	2.70%	2.79%	6.50%	6.64%	6.90%	6.68%	9.29%	9.47%	9.69%
American Electric Power Company, Inc.	AEP	$3.32	$94.51	3.51%	3.62%	6.50%	6.15%	6.10%	6.25%	9.72%	9.87%	10.13%
Duke Energy Corporation	DUK	$4.02	$101.88	3.95%	4.05%	5.00%	5.65%	5.50%	5.38%	9.04%	9.44%	9.71%
Entergy Corporation	ETR	$4.28	$111.02	3.86%	3.96%	4.00%	6.19%	6.00%	5.40%	7.93%	9.36%	10.16%
Evergy, Inc.	EVRG	$2.45	$63.35	3.87%	3.97%	7.50%	2.43%	5.30%	5.08%	6.34%	9.04%	11.51%
IDACORP, Inc.	IDA	$3.16	$105.36	3.00%	3.06%	4.50%	3.40%	3.40%	3.77%	6.45%	6.82%	7.57%
NextEra Energy, Inc.	NEE	$1.70	$80.77	2.10%	2.21%	10.50%	10.21%	9.00%	9.90%	11.20%	12.11%	12.72%
NorthWestern Corporation	NWE	$2.52	$55.02	4.58%	4.65%	3.50%	4.50%	1.70%	3.23%	6.32%	7.89%	9.18%
OGE Energy Corporation	OGE	$1.66	$38.41	4.31%	4.41%	6.50%	1.90%	5.00%	4.47%	6.25%	8.88%	10.95%
Otter Tail Corporation	OTTR	$1.65	$64.85	2.54%	2.63%	4.50%	9.00%	n/a	6.75%	7.10%	9.38%	11.66%
Portland General Electric Company	POR	$1.81	$47.85	3.78%	3.86%	5.00%	1.39%	5.30%	3.90%	5.20%	7.75%	9.18%
Southern Company	SO	$2.72	$70.50	3.86%	3.97%	6.50%	6.48%	4.00%	5.66%	7.94%	9.63%	10.48%
Xcel Energy Inc.	XEL	$1.95	$69.39	2.81%	2.90%	6.00%	7.01%	6.50%	6.50%	8.89%	9.40%	9.92%
Mean				3.50%	3.60%	5.90%	5.68%	5.72%	5.79%	8.07%	9.39%	10.42%
Median				3.78%	3.86%	6.00%	6.15%	5.65%	5.66%	7.94%	9.38%	10.13%

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
Alliant Energy Corporation	LNT	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Ameren Corporation	AEE	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
American Electric Power Company, Inc.	AEP	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Duke Energy Corporation	DUK	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Entergy Corporation	ETR	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
Evergy, Inc.	EVRG	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
IDACORP, Inc.	IDA	3.71%	0.80	12.50%	8.79%	10.74%	11.18%
NextEra Energy, Inc.	NEE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
NorthWestern Corporation	NWE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
OGE Energy Corporation	OGE	3.71%	1.00	12.50%	8.79%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Portland General Electric Company	POR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Southern Company	SO	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
Xcel Energy Inc.	XEL	3.71%	0.80	12.50%	8.79%	10.74%	11.18%
Mean						11.38%	11.66%
Median						11.18%	11.51%

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
Alliant Energy Corporation	LNT	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Ameren Corporation	AEE	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
American Electric Power Company, Inc.	AEP	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Duke Energy Corporation	DUK	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Entergy Corporation	ETR	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
Evergy, Inc.	EVRG	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
IDACORP, Inc.	IDA	3.82%	0.80	12.50%	8.68%	10.76%	11.19%
NextEra Energy, Inc.	NEE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
NorthWestern Corporation	NWE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
OGE Energy Corporation	OGE	3.82%	1.00	12.50%	8.68%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Portland General Electric Company	POR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Southern Company	SO	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
Xcel Energy Inc.	XEL	3.82%	0.80	12.50%	8.68%	10.76%	11.19%
Mean						11.40%	11.67%
Median						11.19%	11.52%

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
Alliant Energy Corporation	LNT	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Ameren Corporation	AEE	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
American Electric Power Company, Inc.	AEP	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Duke Energy Corporation	DUK	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Entergy Corporation	ETR	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
Evergy, Inc.	EVRG	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
IDACORP, Inc.	IDA	3.90%	0.80	12.50%	8.60%	10.78%	11.21%
NextEra Energy, Inc.	NEE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
NorthWestern Corporation	NWE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
OGE Energy Corporation	OGE	3.90%	1.00	12.50%	8.60%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Portland General Electric Company	POR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Southern Company	SO	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
Xcel Energy Inc.	XEL	3.90%	0.80	12.50%	8.60%	10.78%	11.21%
Mean						11.41%	11.68%
Median						11.21%	11.53%

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.71%	0.83	12.50%	8.79%	11.01%	11.38%
Alliant Energy Corporation	LNT	3.71%	0.80	12.50%	8.79%	10.71%	11.16%
Ameren Corporation	AEE	3.71%	0.76	12.50%	8.79%	10.37%	10.90%
American Electric Power Company, Inc.	AEP	3.71%	0.77	12.50%	8.79%	10.48%	10.98%
Duke Energy Corporation	DUK	3.71%	0.73	12.50%	8.79%	10.08%	10.69%
Entergy Corporation	ETR	3.71%	0.86	12.50%	8.79%	11.25%	11.56%
Evergy, Inc.	EVRG	3.71%	0.79	12.50%	8.79%	10.63%	11.10%
IDACORP, Inc.	IDA	3.71%	0.81	12.50%	8.79%	10.80%	11.22%
NextEra Energy, Inc.	NEE	3.71%	0.82	12.50%	8.79%	10.94%	11.33%
NorthWestern Corporation	NWE	3.71%	0.86	12.50%	8.79%	11.30%	11.60%
OGE Energy Corporation	OGE	3.71%	0.93	12.50%	8.79%	11.87%	12.03%
Otter Tail Corporation	OTTR	3.71%	0.88	12.50%	8.79%	11.46%	11.72%
Portland General Electric Company	POR	3.71%	0.79	12.50%	8.79%	10.62%	11.09%
Southern Company	SO	3.71%	0.78	12.50%	8.79%	10.55%	11.04%
Xcel Energy Inc.	XEL	3.71%	0.75	12.50%	8.79%	10.28%	10.84%
Mean						10.82%	11.24%
Median						10.71%	11.16%

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.82%	0.83	12.50%	8.68%	11.03%	11.40%
Alliant Energy Corporation	LNT	3.82%	0.80	12.50%	8.68%	10.73%	11.17%
Ameren Corporation	AEE	3.82%	0.76	12.50%	8.68%	10.40%	10.92%
American Electric Power Company, Inc.	AEP	3.82%	0.77	12.50%	8.68%	10.50%	11.00%
Duke Energy Corporation	DUK	3.82%	0.73	12.50%	8.68%	10.11%	10.71%
Entergy Corporation	ETR	3.82%	0.86	12.50%	8.68%	11.26%	11.57%
Evergy, Inc.	EVRG	3.82%	0.79	12.50%	8.68%	10.65%	11.11%
IDACORP, Inc.	IDA	3.82%	0.81	12.50%	8.68%	10.82%	11.24%
NextEra Energy, Inc.	NEE	3.82%	0.82	12.50%	8.68%	10.96%	11.34%
NorthWestern Corporation	NWE	3.82%	0.86	12.50%	8.68%	11.31%	11.61%
OGE Energy Corporation	OGE	3.82%	0.93	12.50%	8.68%	11.88%	12.03%
Otter Tail Corporation	OTTR	3.82%	0.88	12.50%	8.68%	11.48%	11.73%
Portland General Electric Company	POR	3.82%	0.79	12.50%	8.68%	10.64%	11.11%
Southern Company	SO	3.82%	0.78	12.50%	8.68%	10.58%	11.06%
Xcel Energy Inc.	XEL	3.82%	0.75	12.50%	8.68%	10.31%	10.86%
Mean						10.84%	11.26%
Median						10.73%	11.17%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2023, at 2
[2] Source: Bloomberg Professional, based on 10-year weekly returns, as of January 31, 2023
[3] Source: Schedule 5
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.90%	0.83	12.50%	8.60%	11.05%	11.41%
Alliant Energy Corporation	LNT	3.90%	0.80	12.50%	8.60%	10.75%	11.19%
Ameren Corporation	AEE	3.90%	0.76	12.50%	8.60%	10.42%	10.94%
American Electric Power Company, Inc.	AEP	3.90%	0.77	12.50%	8.60%	10.52%	11.01%
Duke Energy Corporation	DUK	3.90%	0.73	12.50%	8.60%	10.13%	10.73%
Entergy Corporation	ETR	3.90%	0.86	12.50%	8.60%	11.27%	11.58%
Evergy, Inc.	EVRG	3.90%	0.79	12.50%	8.60%	10.67%	11.13%
IDACORP, Inc.	IDA	3.90%	0.81	12.50%	8.60%	10.84%	11.25%
NextEra Energy, Inc.	NEE	3.90%	0.82	12.50%	8.60%	10.97%	11.35%
NorthWestern Corporation	NWE	3.90%	0.86	12.50%	8.60%	11.32%	11.62%
OGE Energy Corporation	OGE	3.90%	0.93	12.50%	8.60%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.90%	0.88	12.50%	8.60%	11.48%	11.74%
Portland General Electric Company	POR	3.90%	0.79	12.50%	8.60%	10.66%	11.12%
Southern Company	SO	3.90%	0.78	12.50%	8.60%	10.60%	11.07%
Xcel Energy Inc.	XEL	3.90%	0.75	12.50%	8.60%	10.33%	10.87%
Mean						10.86%	11.27%
Median						10.75%	11.19%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
[2] Source: Bloomberg Professional, based on 10-year weekly returns, as of January 31, 2023
[3] Source: Schedule 5
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

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

Company	Ticker	[1] Current 30-day average of 30-year U.S. Treasury bond yield	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
ALLETE, Inc.	ALE	3.71%	0.79	12.50%	8.79%	10.61%	11.08%
Alliant Energy Corporation	LNT	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Ameren Corporation	AEE	3.71%	0.73	12.50%	8.79%	10.08%	10.68%
American Electric Power Company, Inc.	AEP	3.71%	0.68	12.50%	8.79%	9.64%	10.35%
Duke Energy Corporation	DUK	3.71%	0.67	12.50%	8.79%	9.55%	10.29%
Entergy Corporation	ETR	3.71%	0.75	12.50%	8.79%	10.26%	10.82%
Evergy, Inc.	EVRG	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
IDACORP, Inc.	IDA	3.71%	0.73	12.50%	8.79%	10.12%	10.72%
NextEra Energy, Inc.	NEE	3.71%	0.73	12.50%	8.79%	10.12%	10.72%
NorthWestern Corporation	NWE	3.71%	0.75	12.50%	8.79%	10.26%	10.82%
OGE Energy Corporation	OGE	3.71%	0.93	12.50%	8.79%	11.88%	12.03%
Otter Tail Corporation	OTTR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Portland General Electric Company	POR	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Southern Company	SO	3.71%	0.66	12.50%	8.79%	9.46%	10.22%
Xcel Energy Inc.	XEL	3.71%	0.66	12.50%	8.79%	9.46%	10.22%
Mean						10.35%	10.89%
Median						10.26%	10.82%

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

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

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

Company	Ticker	[1] Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2 2024)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
ALLETE, Inc.	ALE	3.82%	0.79	12.50%	8.68%	10.63%	11.10%
Alliant Energy Corporation	LNT	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Ameren Corporation	AEE	3.82%	0.73	12.50%	8.68%	10.11%	10.71%
American Electric Power Company, Inc.	AEP	3.82%	0.68	12.50%	8.68%	9.68%	10.38%
Duke Energy Corporation	DUK	3.82%	0.67	12.50%	8.68%	9.59%	10.32%
Entergy Corporation	ETR	3.82%	0.75	12.50%	8.68%	10.28%	10.84%
Evergy, Inc.	EVRG	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
IDACORP, Inc.	IDA	3.82%	0.73	12.50%	8.68%	10.15%	10.74%
NextEra Energy, Inc.	NEE	3.82%	0.73	12.50%	8.68%	10.15%	10.74%
NorthWestern Corporation	NWE	3.82%	0.75	12.50%	8.68%	10.28%	10.84%
OGE Energy Corporation	OGE	3.82%	0.93	12.50%	8.68%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Portland General Electric Company	POR	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Southern Company	SO	3.82%	0.66	12.50%	8.68%	9.50%	10.25%
Xcel Energy Inc.	XEL	3.82%	0.66	12.50%	8.68%	9.50%	10.25%
Mean						10.38%	10.91%
Median						10.28%	10.84%

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm − Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.90%	0.79	12.50%	8.60%	10.65%	11.11%
Alliant Energy Corporation	LNT	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Ameren Corporation	AEE	3.90%	0.73	12.50%	8.60%	10.13%	10.72%
American Electric Power Company, Inc.	AEP	3.90%	0.68	12.50%	8.60%	9.70%	10.40%
Duke Energy Corporation	DUK	3.90%	0.67	12.50%	8.60%	9.62%	10.34%
Entergy Corporation	ETR	3.90%	0.75	12.50%	8.60%	10.30%	10.85%
Evergy, Inc.	EVRG	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
IDACORP, Inc.	IDA	3.90%	0.73	12.50%	8.60%	10.18%	10.76%
NextEra Energy, Inc.	NEE	3.90%	0.73	12.50%	8.60%	10.18%	10.76%
NorthWestern Corporation	NWE	3.90%	0.75	12.50%	8.60%	10.30%	10.85%
OGE Energy Corporation	OGE	3.90%	0.93	12.50%	8.60%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Portland General Electric Company	POR	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Southern Company	SO	3.90%	0.66	12.50%	8.60%	9.53%	10.27%
Xcel Energy Inc.	XEL	3.90%	0.66	12.50%	8.60%	9.53%	10.27%
Mean						10.40%	10.92%
Median						10.30%	10.85%

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

HISTORICAL BETA - 2013 - 2022

Company	Ticker	[1] 12/31/2013	[2] 12/31/2014	[3] 12/31/2015	[4] 12/31/2016	[5] 12/31/2017	[6] 12/31/2018	[7] 12/31/2019	[8] 12/31/2020	[9] 12/31/2021	[10] 12/31/2022	[11] Average
ALLETE, Inc.	ALE	0.75	0.80	0.80	0.75	0.80	0.65	0.65	0.85	0.90	0.90	0.79
Alliant Energy Corporation	LNT	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.85	0.85	0.75
Ameren Corporation	AEE	0.80	0.75	0.75	0.65	0.70	0.55	0.55	0.85	0.80	0.85	0.73
American Electric Power Company, Inc.	AEP	0.70	0.70	0.70	0.65	0.65	0.55	0.55	0.75	0.75	0.75	0.68
Duke Energy Corporation	DUK	0.65	0.60	0.65	0.60	0.60	0.50	0.50	0.85	0.85	0.85	0.67
Entergy Corporation	ETR	0.70	0.70	0.70	0.65	0.65	0.60	0.60	0.95	0.95	0.95	0.75
Evergy, Inc.	EVRG						NMF	NMF	1.00	0.95	0.90	0.95
IDACORP, Inc.	IDA	0.75	0.80	0.80	0.75	0.70	0.55	0.55	0.80	0.80	0.80	0.73
NextEra Energy, Inc.	NEE	0.70	0.70	0.75	0.65	0.65	0.55	0.55	0.90	0.90	0.95	0.73
NorthWestern Corporation	NWE	0.70	0.70	0.70	0.70	0.70	0.55	0.60	0.95	0.95	0.90	0.75
OGE Energy Corporation	OGE	0.85	0.90	0.95	0.90	0.95	0.85	0.75	1.10	1.05	1.00	0.93
Otter Tail Corporation	OTTR	0.95	0.90	0.85	0.85	0.90	0.75	0.70	0.85	0.90	0.85	0.85
Portland General Electric Company	POR	0.75	0.80	0.80	0.70	0.70	0.60	0.55	0.85	0.90	0.85	0.75
Southern Company	SO	0.55	0.55	0.60	0.55	0.55	0.50	0.50	0.90	0.95	0.90	0.66
Xcel Energy Inc.	XEL	0.65	0.65	0.65	0.60	0.60	0.50	0.50	0.80	0.80	0.80	0.66
Mean		0.73	0.74	0.75	0.69	0.70	0.59	0.58	0.88	0.89	0.87	0.76

Notes:

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

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

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

STANDARD AND POOR'S 500 INDEX

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

STANDARD AND POOR'S 500 INDEX

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

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Cboe Global Markets Inc	CBOE	106.08	122.88	13,035.36	0.05%	1.63%	0.00%	10.00%	0.00%
Laboratory Corp of America Holdings	LH	88.60	252.12	22,337.83	0.08%	1.14%	0.00%	1.50%	0.00%
Newmont Corp	NEM	793.74	52.93	42,012.61	0.15%	4.16%	0.01%	9.50%	0.01%
NIKE Inc	NKE	1,245.67	127.33	158,610.65		1.07%		24.00%	
NiSource Inc	NI	406.13	27.75	11,270.22	0.04%	3.60%	0.00%	9.50%	0.00%
Norfolk Southern Corp	NSC	228.08	245.81	56,063.36	0.20%	2.20%	0.00%	10.00%	0.02%
Principal Financial Group Inc	PFG	244.68	92.55	22,645.41	0.08%	2.77%	0.00%	6.50%	0.01%
Eversource Energy	ES	348.31	82.33	28,676.12	0.10%	3.10%	0.00%	6.50%	0.01%
Northrop Grumman Corp	NOC	153.05	448.04	68,573.87	0.24%	1.54%	0.00%	6.50%	0.02%
Wells Fargo & Co	WFC	3,833.80	46.87	179,690.21	0.64%	2.56%	0.02%	12.00%	0.08%
Nucor Corp	NUE	256.54	169.02	43,361.07	0.15%	1.21%	0.00%	2.50%	0.00%
Occidental Petroleum Corp	OXY	908.91	64.79	58,888.54		0.80%			
Omnicom Group Inc	OMC	203.92	85.99	17,534.74	0.06%	3.26%	0.00%	6.50%	0.00%
ONEOK Inc	OKE	446.95	68.48	30,607.41	0.11%	5.58%	0.01%	11.50%	0.01%
Raymond James Financial Inc	RJF	215.00	112.77	24,245.55	0.09%	1.49%	0.00%	15.00%	0.01%
PG&E Corp	PCG	1,987.70	15.90	31,604.43	0.11%			7.50%	0.01%
Parker-Hannifin Corp	PH	128.41	326.00	41,860.36	0.15%	1.63%	0.00%	15.50%	0.02%
Rollins Inc	ROL	492.47	36.40	17,925.98	0.06%	1.43%	0.00%	10.50%	0.01%
PPL Corp	PPL	736.32	29.60	21,795.01	0.08%	3.04%	0.00%	3.00%	0.00%
ConocoPhillips	COP	1,246.07	121.87	151,858.67	0.54%	0.57%	0.00%	20.00%	0.11%
PulteGroup Inc	PHM	227.82	56.89	12,960.68	0.05%	1.12%	0.00%	7.00%	0.00%
Pinnacle West Capital Corp	PNW	113.14	74.55	8,434.59	0.03%	4.64%	0.00%	0.50%	0.00%
PNC Financial Services Group Inc/The	PNC	401.00	165.43	66,337.43	0.23%	3.63%	0.01%	12.00%	0.03%
PPG Industries Inc	PPG	235.03	130.34	30,633.42	0.11%	1.90%	0.00%	4.00%	0.00%
Progressive Corp/The	PGR	584.90	136.35	79,751.12	0.28%	0.29%	0.00%	6.50%	0.02%
Public Service Enterprise Group Inc	PEG	498.95	61.93	30,899.97	0.11%	3.49%	0.00%	4.50%	0.00%
Robert Half International Inc	RHI	108.50	83.96	9,109.58	0.03%	2.05%	0.00%	10.50%	0.00%
Edison International	EIX	381.88	68.90	26,311.19	0.09%	4.28%	0.00%	16.00%	0.01%
Schlumberger Ltd	SLB	1,420.19	56.98	80,922.31		1.76%		28.50%	
Charles Schwab Corp/The	SCHW	1,815.85	77.42	140,582.80	0.50%	1.29%	0.01%	9.00%	0.04%
Sherwin-Williams Co/The	SHW	259.14	236.59	61,310.64	0.22%	1.01%	0.00%	11.50%	0.02%
West Pharmaceutical Services Inc	WST	74.03	265.60	19,663.16	0.07%	0.29%	0.00%	17.00%	0.01%
J M Smucker Co/The	SJM	106.64	152.80	16,294.44	0.06%	2.67%	0.00%	4.00%	0.00%
Snap-on Inc	SNA	53.16	248.73	13,221.24	0.05%	2.61%	0.00%	4.50%	0.00%
AMETEK Inc	AME	229.65	144.92	33,281.46	0.12%	0.61%	0.00%	10.00%	0.01%
Southern Co/The	SO	1,088.67	67.68	73,681.39	0.26%	4.02%	0.01%	6.50%	0.02%
Truist Financial Corp	TFC	1,326.83	49.39	65,532.08	0.23%	4.21%	0.01%	5.50%	0.01%
Southwest Airlines Co	LUV	593.75	35.77	21,238.51		2.01%			
W R Berkley Corp	WRB	264.55	70.14	18,555.26	0.07%	0.57%	0.00%	15.50%	0.01%
Stanley Black & Decker Inc	SWK	147.94	89.31	13,212.70	0.05%	3.58%	0.00%	6.00%	0.00%
Public Storage	PSA	175.64	304.34	53,453.67	0.19%	2.63%	0.00%	8.00%	0.02%
Arista Networks Inc	ANET	305.57	126.02	38,508.31	0.14%			10.00%	0.01%
Sysco Corp	SYY	506.77	77.46	39,254.25		2.53%		21.50%	
Corteva Inc	CTVA	718.60	64.45	46,313.77	0.16%	0.93%	0.00%	16.50%	0.03%
Texas Instruments Inc	TXN	906.00	177.21	160,552.26	0.57%	2.80%	0.02%	7.50%	0.04%
Textron Inc	TXT	208.77	72.85	15,208.97	0.05%	0.11%	0.00%	10.50%	0.01%
Thermo Fisher Scientific Inc	TMO	392.20	570.33	223,681.14	0.79%	0.21%	0.00%	11.00%	0.09%
TJX Cos Inc/The	TJX	1,155.50	81.86	94,589.56	0.33%	1.44%	0.00%	17.00%	0.06%
Globe Life Inc	GL	97.27	120.85	11,755.08	0.04%	0.69%	0.00%	8.50%	0.00%
Johnson Controls International plc	JCI	687.21	69.57	47,809.48	0.17%	2.01%	0.00%	12.50%	0.02%
Ulta Beauty Inc	ULTA	50.88	513.96	26,150.80	0.09%			16.50%	0.02%
Union Pacific Corp	UNP	614.80	204.19	125,536.22	0.44%	2.55%	0.01%	9.50%	0.04%
Keysight Technologies Inc	KEYS	178.34	179.35	31,986.00	0.11%			13.00%	0.01%
UnitedHealth Group Inc	UNH	934.35	499.19	466,417.68	1.65%	1.32%	0.02%	12.00%	0.20%
Marathon Oil Corp	MRO	635.07	27.47	17,445.32		1.46%			
Bio-Rad Laboratories Inc	BIO	24.75	467.46	11,569.17	0.04%			11.50%	0.00%
Ventas Inc	VTR	399.72	51.81	20,709.39	0.07%	3.47%	0.00%	10.50%	0.01%
VF Corp	VFC	388.57	30.94	12,022.23	0.04%	6.59%	0.00%	9.00%	0.00%
Vulcan Materials Co	VMC	132.91	183.33	24,365.84	0.09%	0.87%	0.00%	8.50%	0.01%
Weyerhaeuser Co	WY	732.79	34.43	25,230.10	0.09%	2.09%	0.00%	7.00%	0.01%
Whirlpool Corp	WHR	54.00	155.59	8,401.86	0.03%	4.50%	0.00%	6.00%	0.00%
Williams Cos Inc/The	WMB	1,218.34	32.24	39,279.28	0.14%	5.55%	0.01%	12.00%	0.02%
Constellation Energy Corp	CEG	326.66	85.36	27,884.04		0.66%			
WEC Energy Group Inc	WEC	315.44	93.99	29,647.74	0.10%	3.32%	0.00%	6.00%	0.01%
Adobe Inc	ADBE	457.80	370.34	169,541.65	0.60%			13.00%	0.08%
AES Corp/The	AES	667.95	27.41	18,308.51	0.06%	2.42%	0.00%	14.00%	0.01%
Amgen Inc	AMGN	533.58	252.40	134,675.34	0.48%	3.38%	0.02%	5.50%	0.03%
Apple Inc	AAPL	15,836.21	144.29	2,285,007.17	8.08%	0.64%	0.05%	13.50%	1.09%
Autodesk Inc	ADSK	215.77	215.16	46,424.43	0.16%			14.00%	0.02%
Cintas Corp	CTAS	101.62	443.74	45,092.86	0.16%	1.04%	0.00%	14.00%	0.02%
Comcast Corp	CMCSA	4,313.96	39.35	169,754.48	0.60%	2.95%	0.02%	9.00%	0.05%
Molson Coors Beverage Co	TAP	200.15	52.58	10,523.62		2.89%		49.50%	
KLA Corp	KLAC	138.48	392.48	54,350.63	0.19%	1.32%	0.00%	20.00%	0.04%
Marriott International Inc/MD	MAR	316.54	174.18	55,134.94	0.19%	0.92%	0.00%	17.50%	0.03%
McCormick & Co Inc/MD	MKC	250.72	75.12	18,834.16	0.07%	2.08%	0.00%	4.50%	0.00%
PACCAR Inc	PCAR	348.00	109.31	38,039.88	0.13%	0.91%	0.00%	5.00%	0.01%
Costco Wholesale Corp	COST	443.73	511.14	226,807.64	0.80%	0.70%	0.01%	10.50%	0.08%
First Republic Bank/CA	FRC	182.93	140.88	25,770.47	0.09%	0.77%	0.00%	11.50%	0.01%
Stryker Corp	SYK	378.43	253.81	96,049.32	0.34%	1.18%	0.00%	8.50%	0.03%
Tyson Foods Inc	TSN	287.82	65.75	18,923.90	0.07%	2.92%	0.00%	6.00%	0.00%
Lamb Weston Holdings Inc	LW	143.87	99.89	14,371.27	0.05%	1.12%	0.00%	11.50%	0.01%
Applied Materials Inc	AMAT	843.08	111.49	93,994.77	0.33%	0.93%	0.00%	13.50%	0.04%
American Airlines Group Inc	AAL	649.90	16.14	10,489.40					
Cardinal Health Inc	CAH	262.13	77.25	20,249.85	0.07%	2.57%	0.00%	5.00%	0.00%
Cincinnati Financial Corp	CINF	157.18	113.15	17,785.37	0.06%	2.65%	0.00%	9.00%	0.01%
Paramount Global	PARA	608.47	23.16	14,092.17	0.05%	4.15%	0.00%	4.50%	0.00%
DR Horton Inc	DHI	343.39	98.69	33,889.46	0.12%	1.01%	0.00%	0.50%	0.00%
Electronic Arts Inc	EA	276.08	128.68	35,525.97	0.13%	0.59%	0.00%	13.00%	0.02%
Expeditors International of Washington Inc	EXPD	159.14	108.15	17,210.56	0.06%	1.24%	0.00%	10.00%	0.01%

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.
Fastenal Co	FAST	570.81	50.20	28,654.76	0.10%	2.79%	0.00%	8.50%	0.01%
M&T Bank Corp	MTB	172.61	156.00	26,927.63	0.10%	3.08%	0.00%	9.00%	0.01%
Xcel Energy Inc	XEL	547.25	68.77	37,634.24	0.13%	2.84%	0.00%	6.00%	0.01%
Fiserv Inc	FISV	635.03	106.68	67,744.79	0.24%			11.00%	0.03%
Fifth Third Bancorp	FITB	683.39	36.29	24,800.08	0.09%	3.64%	0.00%	9.50%	0.01%
Gilead Sciences Inc	GILD	1,254.24	83.94	105,281.24	0.37%	3.48%	0.01%	12.00%	0.04%
Hasbro Inc	HAS	138.11	59.17	8,172.21	0.03%	4.73%	0.00%	7.50%	0.00%
Huntington Bancshares Inc/OH	HBAN	1,442.73	15.17	21,886.27	0.08%	4.09%	0.00%	12.50%	0.01%
Welltower Inc	WELL	472.52	75.04	35,457.98	0.13%	3.25%	0.00%	2.50%	0.00%
Biogen Inc	BIIB	144.00	290.90	41,889.89				-10.50%	
Northern Trust Corp	NTRS	208.89	96.97	20,256.45	0.07%	3.09%	0.00%	8.00%	0.01%
Packaging Corp of America	PKG	92.53	142.70	13,204.60	0.05%	3.50%	0.00%	11.00%	0.01%
Paychex Inc	PAYX	360.47	115.86	41,763.71	0.15%	2.73%	0.00%	10.50%	0.02%
QUALCOMM Inc	QCOM	1,117.19	133.21	148,821.15	0.53%	2.25%	0.01%	18.00%	0.09%
Roper Technologies Inc	ROP	106.05	426.75	45,257.69	0.16%	0.64%	0.00%	3.50%	0.01%
Ross Stores Inc	ROST	344.37	118.19	40,701.21	0.14%	1.05%	0.00%	14.00%	0.02%
IDEXX Laboratories Inc	IDXX	82.82	480.50	39,793.57	0.14%			12.00%	0.02%
Starbucks Corp	SBUX	1,148.56	109.14	125,353.73	0.44%	1.94%	0.01%	16.00%	0.07%
KeyCorp	KEY	933.33	19.19	17,910.51	0.06%	4.27%	0.00%	7.50%	0.00%
Fox Corp	FOXA	302.48	33.94	10,266.00	0.04%	1.47%	0.00%	12.00%	0.00%
Fox Corp	FOX	240.22	31.70	7,614.94		1.58%			
State Street Corp	STT	349.02	91.33	31,876.36	0.11%	2.76%	0.00%	8.50%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	421.40	15.21	6,409.43					
US Bancorp	USB	1,531.00	49.80	76,243.80	0.27%	3.86%	0.01%	6.00%	0.02%
A O Smith Corp	AOS	126.87	67.70	8,589.10	0.03%	1.77%	0.00%	11.50%	0.00%
Gen Digital Inc	GEN	651.36	23.01	14,987.79	0.05%	2.17%	0.00%	10.50%	0.01%
T Rowe Price Group Inc	TROW	224.30	116.47	26,124.22	0.09%	4.12%	0.00%	4.50%	0.00%
Waste Management Inc	WM	410.48	154.73	63,513.11	0.22%	1.68%	0.00%	6.50%	0.01%
Constellation Brands Inc	STZ	184.50	231.52	42,714.98	0.15%	1.38%	0.00%	6.00%	0.01%
DENTSPLY SIRONA Inc	XRAY	214.91	36.83	7,915.21	0.03%	1.36%	0.00%	12.00%	0.00%
Zions Bancorp NA	ZION	148.66	53.16	7,902.98	0.03%	3.09%	0.00%	6.50%	0.00%
Alaska Air Group Inc	ALK	127.53	51.34	6,547.54					
Invesco Ltd	IVZ	454.80	18.51	8,418.35	0.03%	4.05%	0.00%	10.00%	0.00%
Linde PLC	LIN	492.46	330.94	162,973.72	0.58%	1.41%	0.01%	12.00%	0.07%
Intuit Inc	INTU	280.93	422.67	118,738.57	0.42%	0.74%	0.00%	16.50%	0.07%
Morgan Stanley	MS	1,690.11	97.33	164,498.31	0.58%	3.19%	0.02%	8.50%	0.05%
Microchip Technology Inc	MCHP	550.01	77.62	42,691.70	0.15%	1.69%	0.00%	10.00%	0.02%
Chubb Ltd	CB	415.05	227.49	94,419.72	0.33%	1.46%	0.00%	14.50%	0.05%
Hologic Inc	HOLX	246.55	81.37	20,061.85				25.00%	
Citizens Financial Group Inc	CFG	492.49	43.32	21,334.71	0.08%	3.88%	0.00%	8.00%	0.01%
O'Reilly Automotive Inc	ORLY	62.58	792.35	49,582.09	0.18%			13.00%	0.02%
Allstate Corp/The	ALL	265.21	128.47	34,071.53	0.12%	2.65%	0.00%	2.50%	0.00%
Equity Residential	EQR	377.92	63.65	24,054.54		3.93%		-6.00%	
BorgWarner Inc	BWA	234.15	47.28	11,070.80	0.04%	1.44%	0.00%	9.50%	0.00%
Keurig Dr Pepper Inc	KDP	1,416.25	35.28	49,965.34	0.18%	2.27%	0.00%	11.50%	0.02%
Organon & Co	OGN	254.36	30.13	7,663.99		3.72%			
Host Hotels & Resorts Inc	HST	715.03	18.85	13,478.28		2.55%		59.50%	
Incyte Corp	INCY	222.48	85.14	18,941.52				25.50%	
Simon Property Group Inc	SPG	326.95	128.46	41,999.48	0.15%	5.60%	0.01%	3.00%	0.00%
Eastman Chemical Co	EMN	119.99	88.17	10,579.52	0.04%	3.58%	0.00%	7.00%	0.00%
AvalonBay Communities Inc	AVB	139.90	177.44	24,823.32	0.09%	3.58%	0.00%	9.00%	0.01%
Prudential Financial Inc	PRU	368.00	104.94	38,617.92	0.14%	4.57%	0.01%	5.00%	0.01%
United Parcel Service Inc	UPS	729.82	185.23	135,184.74	0.48%	3.50%	0.02%	11.50%	0.05%
Walgreens Boots Alliance Inc	WBA	862.50	36.86	31,791.90	0.11%	5.21%	0.01%	3.00%	0.00%
STERIS PLC	STE	99.82	206.51	20,614.45	0.07%	0.91%	0.00%	10.00%	0.01%
McKesson Corp	MCK	141.79	378.68	53,694.17	0.19%	0.57%	0.00%	10.00%	0.02%
Lockheed Martin Corp	LMT	255.30	463.26	118,268.89	0.42%	2.59%	0.01%	8.00%	0.03%
AmerisourceBergen Corp	ABC	202.24	168.96	34,169.79	0.12%	1.15%	0.00%	8.50%	0.01%
Capital One Financial Corp	COF	381.30	119.00	45,374.70		2.02%			
Waters Corp	WAT	59.41	328.58	19,520.28	0.07%			6.00%	0.00%
Nordson Corp	NDSN	57.18	243.30	13,911.65	0.05%	1.07%	0.00%	12.00%	0.01%
Dollar Tree Inc	DLTR	221.18	150.18	33,217.41	0.12%			12.00%	0.01%
Darden Restaurants Inc	DRI	121.71	147.97	18,008.69		3.27%		21.50%	
Evergy Inc	EVRG	229.48	62.65	14,376.80	0.05%	3.91%	0.00%	7.50%	0.00%
Match Group Inc	MTCH	279.31	54.12	15,116.04				21.00%	
Domino's Pizza Inc	DPZ	35.40	353.00	12,495.85	0.04%	1.25%	0.00%	14.00%	0.01%
NVR Inc	NVR	3.20	5,270.00	16,842.92	0.06%			5.50%	0.00%
NetApp Inc	NTAP	215.57	66.23	14,277.40	0.05%	3.02%	0.00%	8.50%	0.00%
DXC Technology Co	DXC	230.07	28.73	6,609.77	0.02%			12.00%	0.00%
Old Dominion Freight Line Inc	ODFL	110.48	333.24	36,817.02	0.13%	0.36%	0.00%	11.50%	0.01%
DaVita Inc	DVA	90.10	82.39	7,423.34	0.03%			8.50%	0.00%
Hartford Financial Services Group Inc/The	HIG	318.10	77.61	24,687.66	0.09%	2.19%	0.00%	6.50%	0.01%
Iron Mountain Inc	IRM	290.71	54.58	15,867.17	0.06%	4.53%	0.00%	11.00%	0.01%
Estee Lauder Cos Inc/The	EL	231.27	277.08	64,080.29	0.23%	0.95%	0.00%	14.00%	0.03%
Cadence Design Systems Inc	CDNS	274.32	182.83	50,153.19	0.18%			12.00%	0.02%
Tyler Technologies Inc	TYL	41.64	322.77	13,440.14	0.05%			12.00%	0.01%
Universal Health Services Inc	UHS	64.16	148.21	9,508.71	0.03%	0.54%	0.00%	7.00%	0.00%
Skyworks Solutions Inc	SWKS	160.16	109.67	17,564.86	0.06%	2.26%	0.00%	9.00%	0.01%
Quest Diagnostics Inc	DGX	113.89	148.48	16,909.94	0.06%	1.78%	0.00%	3.50%	0.00%
Activision Blizzard Inc	ATVI	782.63	76.57	59,925.60	0.21%	0.61%	0.00%	11.50%	0.02%
Rockwell Automation Inc	ROK	114.78	282.03	32,371.97	0.11%	1.67%	0.00%	9.50%	0.01%
Kraft Heinz Co/The	KHC	1,224.93	40.53	49,646.41	0.18%	3.95%	0.01%	6.50%	0.01%
American Tower Corp	AMT	465.61	223.39	104,011.72	0.37%	2.79%	0.01%	9.00%	0.03%
Regeneron Pharmaceuticals Inc	REGN	107.08	758.47	81,220.00	0.29%			3.00%	0.01%
Amazon.com Inc	AMZN	10,201.65	103.13	1,052,096.58				26.50%	
Jack Henry & Associates Inc	JKHY	72.95	180.09	13,137.39	0.05%	1.09%	0.00%	8.50%	0.00%
Ralph Lauren Corp	RL	41.09	123.85	5,089.12	0.02%	2.42%	0.00%	12.00%	0.00%
Boston Properties Inc	BXP	156.76	74.54	11,684.52		5.26%		-1.00%	
Amphenol Corp	APH	595.10	79.77	47,470.73	0.17%	1.05%	0.00%	13.00%	0.02%

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Howmet Aerospace Inc	HWM	413.71	40.69	16,833.94	0.06%	0.39%	0.00%	12.00%	0.01%
Pioneer Natural Resources Co	PXD	237.60	230.35	54,730.93		9.92%		21.00%	
Valero Energy Corp	VLO	385.52	140.03	53,984.79	0.19%	2.91%	0.01%	11.00%	0.02%
Synopsys Inc	SNPS	152.42	353.75	53,917.51	0.19%			12.50%	0.02%
Etsy Inc	ETSY	125.69	137.58	17,292.16				24.50%	
CH Robinson Worldwide Inc	CHRW	117.71	100.17	11,790.91	0.04%	2.44%	0.00%	8.50%	0.00%
Accenture PLC	ACN	658.39	279.05	183,723.45	0.65%	1.61%	0.01%	12.50%	0.08%
TransDigm Group Inc	TDG	54.54	717.75	39,142.50	0.14%			19.50%	0.03%
Yum! Brands Inc	YUM	281.69	130.51	36,763.10	0.13%	1.75%	0.00%	10.50%	0.01%
Prologis Inc	PLD	923.08	129.28	119,335.65	0.42%	2.44%	0.01%	6.00%	0.03%
FirstEnergy Corp	FE	571.75	40.95	23,413.29	0.08%	3.81%	0.00%	3.00%	0.00%
VeriSign Inc	VRSN	106.02	218.05	23,116.79	0.08%			11.00%	0.01%
Quanta Services Inc	PWR	142.90	152.19	21,748.10	0.08%	0.21%	0.00%	16.50%	0.01%
Henry Schein Inc	HSIC	135.55	86.15	11,677.46	0.04%			7.00%	0.00%
Ameren Corp	AEE	258.37	86.87	22,444.69	0.08%	2.72%	0.00%	6.50%	0.01%
ANSYS Inc	ANSS	87.11	266.36	23,203.15	0.08%			8.50%	0.01%
FactSet Research Systems Inc	FDS	38.25	422.94	16,178.30	0.06%	0.84%	0.00%	10.50%	0.01%
NVIDIA Corp	NVDA	2,460.00	195.37	480,610.20		0.08%		23.00%	
Sealed Air Corp	SEE	144.66	54.76	7,921.47	0.03%	1.46%	0.00%	10.00%	0.00%
Cognizant Technology Solutions Corp	CTSH	513.92	66.75	34,304.23	0.12%	1.62%	0.00%	8.00%	0.01%
SVB Financial Group	SIVB	59.17	302.44	17,895.98	0.06%			8.50%	0.01%
Intuitive Surgical Inc	ISRG	353.39	245.69	86,823.16	0.31%			12.50%	0.04%
Take-Two Interactive Software Inc	TTWO	167.82	113.23	19,002.15	0.07%			3.00%	0.00%
Republic Services Inc	RSG	316.00	124.82	39,443.24	0.14%	1.59%	0.00%	12.50%	0.02%
eBay Inc	EBAY	542.66	49.50	26,861.62	0.09%	1.78%	0.00%	12.50%	0.01%
Goldman Sachs Group Inc/The	GS	334.92	365.81	122,515.62	0.43%	2.73%	0.01%	5.00%	0.02%
SBA Communications Corp	SBAC	107.97	297.53	32,123.12		0.95%		35.50%	
Sempra Energy	SRE	314.33	160.33	50,397.01	0.18%	2.86%	0.01%	7.50%	0.01%
Moody's Corp	MCO	183.20	322.75	59,127.80	0.21%	0.95%	0.00%	4.00%	0.01%
ON Semiconductor Corp	ON	432.42	73.45	31,761.54				22.50%	
Booking Holdings Inc	BKNG	38.79	2,434.10	94,416.30				22.00%	
F5 Inc	FFIV	60.12	147.66	8,877.02	0.03%			10.00%	0.00%
Akamai Technologies Inc	AKAM	157.24	88.95	13,986.68	0.05%			5.50%	0.00%
Charles River Laboratories International Inc	CRL	50.88	243.25	12,376.32	0.04%			12.00%	0.01%
MarketAxess Holdings Inc	MKTX	37.64	363.85	13,694.22	0.05%	0.79%	0.00%	10.00%	0.00%
Devon Energy Corp	DVN	653.70	63.24	41,339.99		8.54%		33.50%	
Bio-Techne Corp	TECH	156.97	79.66	12,504.23	0.04%	0.40%	0.00%	14.50%	0.01%
Alphabet Inc	GOOGL	5,973.00	98.84	590,371.32					
Teleflex Inc	TFX	46.91	243.42	11,417.86	0.04%	0.56%	0.00%	10.00%	0.00%
Netflix Inc	NFLX	445.35	353.86	157,590.49	0.56%			14.50%	0.08%
Allegion plc	ALLE	87.85	117.55	10,326.18	0.04%	1.40%	0.00%	11.00%	0.00%
Agilent Technologies Inc	A	296.07	152.08	45,026.63	0.16%	0.59%	0.00%	12.00%	0.02%
Warner Bros Discovery Inc	WBD	2,428.40	14.82	35,988.83					
Elevance Health Inc	ELV	238.83	499.99	119,411.61	0.42%	1.18%	0.00%	12.50%	0.05%
Trimble Inc	TRMB	246.63	58.06	14,319.05	0.05%			10.00%	0.01%
CME Group Inc	CME	359.73	176.66	63,549.02	0.22%	2.26%	0.01%	8.50%	0.02%
Juniper Networks Inc	JNPR	324.56	32.30	10,483.16	0.04%	2.72%	0.00%	10.50%	0.00%
BlackRock Inc	BLK	150.20	759.21	114,030.31	0.40%	2.63%	0.01%	8.50%	0.03%
DTE Energy Co	DTE	193.74	116.37	22,545.76	0.08%	3.27%	0.00%	4.50%	0.00%
Nasdaq Inc	NDAQ	491.28	60.19	29,570.14	0.10%	1.33%	0.00%	8.50%	0.01%
Celanese Corp	CE	108.43	123.20	13,358.33	0.05%	2.27%	0.00%	7.50%	0.00%
Philip Morris International Inc	PM	1,550.20	104.24	161,593.06	0.57%	4.87%	0.03%	5.00%	0.03%
Salesforce Inc	CRM	1,000.00	167.97	167,970.00	0.59%			19.50%	0.12%
Ingersoll Rand Inc	IR	404.93	56.00	22,675.86		0.14%			
Huntington Ingalls Industries Inc	HII	39.90	220.54	8,800.43	0.03%	2.25%	0.00%	10.00%	0.00%
MetLife Inc	MET	784.61	73.02	57,291.93	0.20%	2.74%	0.01%	5.00%	0.01%
Tapestry Inc	TPR	240.96	45.57	10,980.59	0.04%	2.63%	0.00%	13.50%	0.01%
CSX Corp	CSX	2,102.41	30.92	65,006.49	0.23%	1.29%	0.00%	10.50%	0.02%
Edwards Lifesciences Corp	EW	618.26	76.70	47,420.54	0.17%			11.00%	0.02%
Ameriprise Financial Inc	AMP	106.42	350.12	37,258.72	0.13%	1.43%	0.00%	13.50%	0.02%
Zebra Technologies Corp	ZBRA	51.63	316.18	16,324.37	0.06%			11.50%	0.01%
Zimmer Biomet Holdings Inc	ZBH	209.85	127.34	26,722.55	0.09%	0.75%	0.00%	5.50%	0.01%
CBRE Group Inc	CBRE	315.95	85.51	27,016.80	0.10%			8.50%	0.01%
Camden Property Trust	CPT	106.53	123.21	13,125.31	0.05%	3.05%	0.00%	3.50%	0.00%
Mastercard Inc	MA	948.00	370.60	351,328.80	1.24%	0.62%	0.01%	18.50%	0.23%
CarMax Inc	KMX	158.02	70.45	11,132.72				-3.00%	
Intercontinental Exchange Inc	ICE	558.55	107.55	60,072.27	0.21%	1.41%	0.00%	7.00%	0.01%
Fidelity National Information Services Inc	FIS	593.38	75.04	44,527.16		2.51%		52.00%	
Chipotle Mexican Grill Inc	CMG	27.72	1,646.38	45,639.30				23.00%	
Wynn Resorts Ltd	WYNN	113.31	103.64	11,743.86				27.00%	
Live Nation Entertainment Inc	LYV	230.88	80.49	18,583.53					
Assurant Inc	AIZ	52.83	132.59	7,004.86	0.02%	2.11%	0.00%	15.50%	0.00%
NRG Energy Inc	NRG	213.39	34.22	7,302.17		4.41%		-10.50%	
Regions Financial Corp	RF	934.45	23.54	21,996.86	0.08%	3.40%	0.00%	11.50%	0.01%
Monster Beverage Corp	MNST	521.74	104.08	54,303.12	0.19%			10.50%	0.02%
Mosaic Co/The	MOS	340.48	49.54	16,867.43		1.61%		38.00%	
Baker Hughes Co	BKR	1,001.47	31.74	31,786.59		2.39%			
Expedia Group Inc	EXPE	150.57	114.30	17,209.81					
CF Industries Holdings Inc	CF	196.19	84.70	16,617.21		1.89%		32.00%	
Leidos Holdings Inc	LDOS	136.69	98.84	13,510.44	0.05%	1.46%	0.00%	8.50%	0.00%
APA Corp	APA	321.51	44.33	14,252.63		2.26%			
Alphabet Inc	GOOG	6,086.00	99.87	607,808.82	2.15%			18.50%	0.40%
First Solar Inc	FSLR	106.61	177.60	18,933.23				20.50%	
TE Connectivity Ltd	TEL	316.46	127.15	40,237.51	0.14%	1.76%	0.00%	10.50%	0.01%
Cooper Cos Inc/The	COO	49.43	348.93	17,245.87	0.06%	0.02%	0.00%	14.00%	0.01%
Discover Financial Services	DFS	267.00	116.73	31,166.91	0.11%	2.06%	0.00%	8.50%	0.01%
Visa Inc	V	1,624.95	230.21	374,080.66	1.32%	0.78%	0.01%	13.50%	0.18%
Mid-America Apartment Communities Inc	MAA	115.48	166.72	19,252.33		3.36%		-14.50%	
Xylem Inc/NY	XYL	180.26	104.01	18,748.43	0.07%	1.15%	0.00%	9.00%	0.01%

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.
Marathon Petroleum Corp	MPC	468.66	128.52	60,232.31		2.33%			
Tractor Supply Co	TSCO	110.46	227.99	25,184.46	0.09%	1.61%	0.00%	13.00%	0.01%
Advanced Micro Devices Inc	AMD	1,612.36	75.15	121,168.55				25.50%	
ResMed Inc	RMD	146.91	228.37	33,549.61	0.12%	0.77%	0.00%	8.50%	0.01%
Mettler-Toledo International Inc	MTD	22.29	1,532.92	34,174.92	0.12%			13.50%	0.02%
VICI Properties Inc	VICI	1,033.99	34.18	35,341.88	0.12%	4.56%	0.01%	8.50%	0.01%
Copart Inc	CPRT	476.30	66.61	31,726.34	0.11%			7.00%	0.01%
Jacobs Solutions Inc	J	126.61	123.55	15,642.79	0.06%	0.84%	0.00%	12.00%	0.01%
Albemarle Corp	ALB	117.15	281.45	32,972.71		0.56%		21.50%	
Fortinet Inc	FTNT	781.24	52.34	40,889.89				21.50%	
Moderna Inc	MRNA	384.18	176.06	67,638.73				-2.50%	
Essex Property Trust Inc	ESS	64.75	226.07	14,638.94		3.89%		-4.00%	
CoStar Group Inc	CSGP	406.69	77.90	31,681.15	0.11%			13.00%	0.01%
Realty Income Corp	O	627.15	67.83	42,539.86	0.15%	4.40%	0.01%	6.00%	0.01%
Westrock Co	WRK	254.52	39.24	9,987.29	0.04%	2.80%	0.00%	15.00%	0.01%
Westinghouse Air Brake Technologies Corp	WAB	181.87	103.81	18,879.72	0.07%	0.58%	0.00%	9.50%	0.01%
Pool Corp	POOL	39.05	385.61	15,058.46	0.05%	1.04%	0.00%	14.00%	0.01%
Western Digital Corp	WDC	317.65	43.95	13,960.72	0.05%			6.50%	0.00%
PepsiCo Inc	PEP	1,377.71	171.02	235,615.79	0.83%	2.69%	0.02%	6.50%	0.05%
Diamondback Energy Inc	FANG	181.86	146.12	26,573.24		6.19%			
ServiceNow Inc	NOW	203.00	455.13	92,391.39				45.50%	
Church & Dwight Co Inc	CHD	243.87	80.86	19,719.17	0.07%	1.30%	0.00%	6.00%	0.00%
Federal Realty Investment Trust	FRT	81.21	111.53	9,057.24	0.03%	3.87%	0.00%	2.50%	0.00%
MGM Resorts International	MGM	384.02	41.41	15,902.27		0.02%		25.00%	
American Electric Power Co Inc	AEP	513.86	93.96	48,282.66	0.17%	3.53%	0.01%	6.50%	0.01%
SolarEdge Technologies Inc	SEDG	55.90	319.13	17,837.77				22.00%	
Invitation Homes Inc	INVH	611.41	32.50	19,870.83		2.71%			
PTC Inc	PTC	118.15	134.88	15,936.61				29.00%	
JB Hunt Transport Services Inc	JBHT	103.54	189.05	19,573.67	0.07%	0.89%	0.00%	11.50%	0.01%
Lam Research Corp	LRCX	134.94	500.10	67,481.49	0.24%	1.38%	0.00%	14.00%	0.03%
Mohawk Industries Inc	MHK	63.53	120.06	7,627.89	0.03%			10.00%	0.00%
Pentair PLC	PNR	164.50	55.38	9,109.90	0.03%	1.59%	0.00%	12.00%	0.00%
GE HealthCare Technologies Inc	GEHC	453.93	69.52	31,556.94					
Vertex Pharmaceuticals Inc	VRTX	256.69	323.10	82,936.86	0.29%			12.50%	0.04%
Amcor PLC	AMCR	1,489.02	12.06	17,957.58	0.06%	4.06%	0.00%	14.50%	0.01%
Meta Platforms Inc	META	2,255.32	148.97	335,975.17	1.19%			11.00%	0.13%
T-Mobile US Inc	TMUS	1,244.15	149.31	185,764.63	0.66%			16.50%	0.11%
United Rentals Inc	URI	69.36	440.95	30,584.29	0.11%	1.34%	0.00%	18.00%	0.02%
Honeywell International Inc	HON	672.32	208.48	140,165.69	0.50%	1.98%	0.01%	12.00%	0.06%
Alexandria Real Estate Equities Inc	ARE	173.09	160.74	27,822.00	0.10%	3.01%	0.00%	10.00%	0.01%
Delta Air Lines Inc	DAL	641.19	39.10	25,070.45					
Seagate Technology Holdings PLC	STX	206.48	67.78	13,995.49	0.05%	4.13%	0.00%	11.50%	0.01%
United Airlines Holdings Inc	UAL	326.73	48.96	15,996.65					
News Corp	NWS	193.28	20.44	3,950.56		0.98%			
Centene Corp	CNC	566.26	76.24	43,171.66	0.15%			10.00%	0.02%
Martin Marietta Materials Inc	MLM	62.09	359.64	22,330.41	0.08%	0.73%	0.00%	4.50%	0.00%
Teradyne Inc	TER	155.76	101.70	15,840.39	0.06%	0.43%	0.00%	11.50%	0.01%
PayPal Holdings Inc	PYPL	1,140.03	81.49	92,900.88	0.33%			12.00%	0.04%
Tesla Inc	TSLA	3,164.10	173.22	548,085.92				51.50%	
Arch Capital Group Ltd	ACGL	369.87	64.35	23,801.33	0.08%			19.50%	0.02%
DISH Network Corp	DISH	292.27	14.39	4,205.78				-1.50%	
Dow Inc	DOW	703.76	59.35	41,768.10	0.15%	4.72%	0.01%	15.00%	0.02%
Everest Re Group Ltd	RE	39.17	349.69	13,695.61	0.05%	1.89%	0.00%	9.50%	0.00%
Teledyne Technologies Inc	TDY	46.87	424.26	19,885.49	0.07%			11.50%	0.01%
News Corp	NWSA	382.35	20.26	7,746.43		0.99%			
Exelon Corp	EXC	991.76	42.19	41,842.23		3.20%			
Global Payments Inc	GPN	270.40	112.72	30,479.60	0.11%	0.89%	0.00%	17.00%	0.02%
Crown Castle Inc	CCI	433.00	148.11	64,131.63	0.23%	4.23%	0.01%	12.00%	0.03%
Aptiv PLC	APTV	270.95	113.09	30,641.74				26.00%	
Advance Auto Parts Inc	AAP	59.25	152.28	9,023.20	0.03%	3.94%	0.00%	12.00%	0.00%
Align Technology Inc	ALGN	78.11	269.73	21,069.15	0.07%			17.00%	0.01%
Illumina Inc	ILMN	157.30	214.20	33,693.66	0.12%			6.50%	0.01%
Targa Resources Corp	TRGP	226.38	75.02	16,982.65		1.87%			
LKQ Corp	LKQ	267.18	58.96	15,752.64	0.06%	1.87%	0.00%	13.00%	0.01%
Zoetis Inc	ZTS	466.07	165.49	77,130.26	0.27%	0.91%	0.00%	11.00%	0.03%
Equinix Inc	EQIX	92.54	738.13	68,305.07	0.24%	1.68%	0.00%	15.00%	0.04%
Digital Realty Trust Inc	DLR	287.52	114.62	32,955.77		4.26%		-3.50%	
Las Vegas Sands Corp	LVS	764.17	59.00	45,085.79					
Molina Healthcare Inc	MOH	58.40	311.83	18,210.87	0.06%			11.00%	0.01%

Notes:

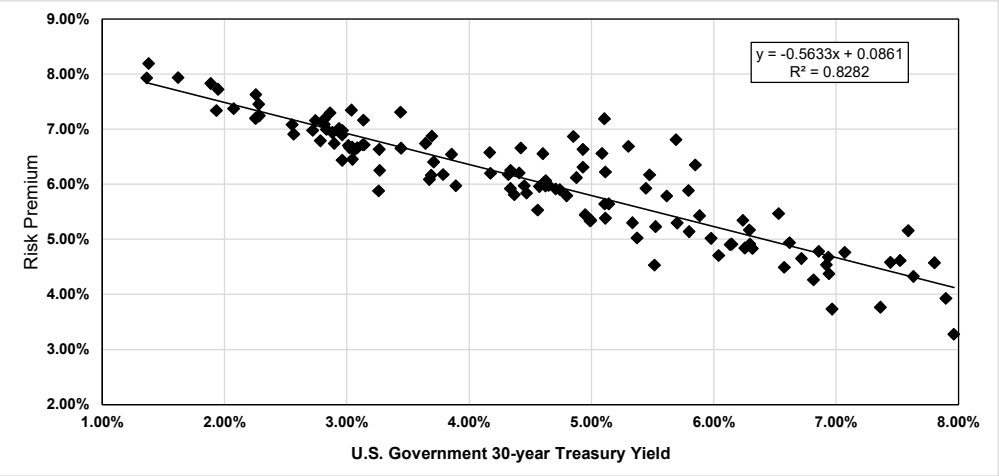
[1] Equals sum of Col. [9]
[2] Equals sum of Col. [11]
[3] Equals ([1] x (1 + (0.5 x [2]))) + [2]
[4] Source: Bloomberg Professional as of January 31, 2023
[5] Source: Bloomberg Professional as of January 31, 2023
[6] Equals [4] x [5]
[7] Equals weight in S&P 500 based on market capitalization [6] if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

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%

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
Quarter	Average Authorized VI Electric ROE	U.S. Govt. 30-year Treasury	Risk Premium
2008.2	10.54%	4.57%	5.96%
2008.3	10.43%	4.45%	5.98%
2008.4	10.39%	3.64%	6.74%
2009.1	10.75%	3.44%	7.31%
2009.2	10.75%	4.17%	6.58%
2009.3	10.50%	4.32%	6.18%
2009.4	10.59%	4.34%	6.25%
2010.1	10.59%	4.62%	5.97%
2010.2	10.18%	4.37%	5.81%
2010.3	10.40%	3.86%	6.55%
2010.4	10.38%	4.17%	6.20%
2011.1	10.09%	4.56%	5.53%
2011.2	10.26%	4.34%	5.92%
2011.3	10.57%	3.70%	6.88%
2011.4	10.39%	3.04%	7.35%
2012.1	10.30%	3.14%	7.17%
2012.2	9.95%	2.94%	7.01%
2012.3	9.90%	2.74%	7.16%
2012.4	10.16%	2.86%	7.30%
2013.1	9.85%	3.13%	6.72%
2013.2	9.86%	3.14%	6.72%
2013.3	10.12%	3.71%	6.41%
2013.4	9.97%	3.79%	6.18%
2014.1	9.86%	3.69%	6.16%
2014.2	10.10%	3.44%	6.66%
2014.3	9.90%	3.27%	6.63%
2014.4	9.94%	2.96%	6.98%
2015.1	9.64%	2.55%	7.08%
2015.2	9.83%	2.88%	6.94%
2015.3	9.40%	2.96%	6.44%
2015.4	9.86%	2.96%	6.90%
2016.1	9.70%	2.72%	6.98%
2016.2	9.48%	2.57%	6.91%
2016.3	9.74%	2.28%	7.46%
2016.4	9.83%	2.83%	7.00%
2017.1	9.72%	3.05%	6.67%
2017.2	9.64%	2.90%	6.75%
2017.3	10.00%	2.82%	7.18%
2017.4	9.91%	2.82%	7.09%
2018.1	9.69%	3.02%	6.66%
2018.2	9.75%	3.09%	6.66%
2018.3	9.69%	3.06%	6.63%
2018.4	9.52%	3.27%	6.25%
2019.1	9.72%	3.01%	6.70%
2019.2	9.58%	2.78%	6.79%
2019.3	9.53%	2.29%	7.25%
2019.4	9.89%	2.26%	7.63%
2020.1	9.72%	1.89%	7.83%
2020.2	9.58%	1.38%	8.19%
2020.3	9.30%	1.37%	7.93%
2020.4	9.56%	1.62%	7.94%
2021.1	9.45%	2.07%	7.38%
2021.2	9.47%	2.26%	7.21%
2021.3	9.27%	1.93%	7.34%
2021.4	9.67%	1.95%	7.73%
2022.1	9.45%	2.25%	7.20%
2022.2	9.50%	3.05%	6.45%
2022.3	9.14%	3.26%	5.88%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.910038
R Square	0.828170
Adjusted R Square	0.826773
Standard Error	0.004259
Observations	125

ANOVA

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

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0861	0.00112	76.96	0.000000	0.083911	0.088341	0.083911	0.088341
U.S. Govt. 30-year Treasury	(0.5633)	0.02313	(24.35)	0.000000	(0.609070)	(0.517484)	(0.609070)	(0.517484)

	[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]	3.71%	6.52%	10.23%
Blue Chip Near-Term Projected Forecast (Q2 2023 - Q4 2024) [5]	3.82%	6.46%	10.28%
Blue Chip Long-Term Projected Forecast (2024-2028) [6]	3.90%	6.42%	10.32%
AVERAGE			10.28%

Notes:
[1] Source: Regulatory Research Associates, rate cases through January 31, 2023
[2] Source: S&P Capital IQ Pro, quarterly bond yields are the average of each trading day in the quarter
[3] Equals Column [1] − Column [2]
[4] Source: Bloomberg Professional, 30-day average as of December 31, 2022
[5] Source: Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2023, at 2
[6] Source: Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
[7] See notes [4], [5] & [6]
[8] Equals 0.086126 + (-0.563277 x Column [7])
[9] Equals Column [7] + Column [8]

Historical Equity Market Returns and Equity Risk Premia

Year	Large Co Stock Total Return Table A-1	Income Only Returns LT Govt Table A-7	Observed Equity Premium
1926	11.62%	3.73%	7.89%
1927	37.49%	3.41%	34.08%
1928	43.61%	3.22%	40.39%
1929	-8.42%	3.47%	-11.89%
1930	-24.90%	3.32%	-28.22%
1931	-43.34%	3.33%	-46.67%
1932	-8.19%	3.69%	-11.88%
1933	53.99%	3.12%	50.87%
1934	-1.44%	3.18%	-4.62%
1935	47.67%	2.81%	44.86%
1936	33.92%	2.77%	31.15%
1937	-35.03%	2.66%	-37.69%
1938	31.12%	2.64%	28.48%
1939	0.41%	2.40%	-1.99%
1940	-9.78%	2.23%	-12.01%
1941	-11.59%	1.94%	-13.53%
1942	20.34%	2.46%	17.88%
1943	25.90%	2.44%	23.46%
1944	19.75%	2.46%	17.29%
1945	36.44%	2.34%	34.10%
1946	-8.07%	2.04%	-10.11%
1947	5.71%	2.13%	3.58%
1948	5.50%	2.40%	3.10%
1949	18.79%	2.25%	16.54%
1950	31.71%	2.12%	29.59%
1951	24.02%	2.38%	21.64%
1952	18.37%	2.66%	15.71%
1953	-0.99%	2.84%	-3.83%
1954	52.62%	2.79%	49.83%
1955	31.56%	2.75%	28.81%

1956	6.56%	2.99%	3.57%
1957	-10.78%	3.44%	-14.22%
1958	43.36%	3.27%	40.09%
1959	11.96%	4.01%	7.95%
1960	0.47%	4.26%	-3.79%
1961	26.89%	3.83%	23.06%
1962	-8.73%	4.00%	-12.73%
1963	22.80%	3.89%	18.91%
1964	16.48%	4.15%	12.33%
1965	12.45%	4.20%	8.25%
1966	-10.06%	4.49%	-14.55%
1967	23.98%	4.59%	19.39%
1968	11.06%	5.50%	5.56%
1969	-8.50%	5.95%	-14.45%
1970	4.01%	6.74%	-2.73%
1971	14.31%	6.32%	7.99%
1972	18.98%	5.87%	13.11%
1973	-14.66%	6.51%	-21.17%
1974	-26.47%	7.27%	-33.74%
1975	37.20%	7.99%	29.21%
1976	23.84%	7.89%	15.95%
1977	-7.18%	7.14%	-14.32%
1978	6.56%	7.90%	-1.34%
1979	18.44%	8.86%	9.58%
1980	32.50%	9.97%	22.53%
1981	-4.92%	11.55%	-16.47%
1982	21.55%	13.50%	8.05%
1983	22.56%	10.38%	12.18%
1984	6.27%	11.74%	-5.47%
1985	31.73%	11.25%	20.48%
1986	18.67%	8.98%	9.69%
1987	5.25%	7.92%	-2.67%
1988	16.61%	8.97%	7.64%
1989	31.69%	8.81%	22.88%
1990	-3.11%	8.19%	-11.30%
1991	30.47%	8.22%	22.25%
1992	7.62%	7.26%	0.36%
1993	10.08%	7.17%	2.91%

1994	1.32%	6.59%	-5.27%
1995	37.58%	7.60%	29.98%
1996	22.96%	6.18%	16.78%
1997	33.36%	6.64%	26.72%
1998	28.58%	5.83%	22.75%
1999	21.04%	5.57%	15.47%
2000	-9.10%	6.50%	-15.60%
2001	-11.89%	5.53%	-17.42%
2002	-22.10%	5.59%	-27.69%
2003	28.68%	4.80%	23.88%
2004	10.88%	5.02%	5.86%
2005	4.91%	4.69%	0.22%
2006	15.79%	4.68%	11.11%
2007	5.49%	4.86%	0.63%
2008	-37.00%	4.45%	-41.45%
2009	26.46%	3.47%	22.99%
2010	15.06%	4.25%	10.81%
2011	2.11%	3.82%	-1.71%
2012	16.00%	2.46%	13.54%
2013	32.39%	2.88%	29.51%
2014	13.69%	3.41%	10.28%
2015	1.38%	2.47%	-1.09%
2016	11.96%	2.30%	9.66%
2017	21.83%	2.67%	19.16%
2018	-4.38%	2.82%	-7.20%
2019	31.49%	2.55%	28.94%
2020	18.40%	1.53%	16.87%
2021	28.70%	1.73%	26.97%
Avg. (1926-**2020**) - All Observs.	**12.16%**	**4.91%**	**7.26%**
Avg. (1926-**2021**) - All Observs.	**12.34%**	**4.87%**	**7.46%**

Source: Kroll, 2022 SBBI Yearbook.

Dr. Fagan's CAPM Analysis
As Adjusted to Reflect Consistent Risk-Free Rate

	Note	Amount
Dr. Fagan Risk-Free Rate	[1]	3.69%
Long-Term Historical Average Market Return (1926-2021)	[2]	12.34%
Dr. Fagan Risk-Free Rate	[3]	3.69%
Market Risk Premium	[4]	8.65%
Dr. Fagan Beta Estimate	[5]	0.79
CAPM Result	[6]	**10.52%**

Notes
[1] Fagan Direct Testimony, at 36-37.
[2] Exhibit No. ___(AEB-4), Schedule 7.
[3] Equals [1].
[4] Equals [2] - [3].
[5] Fagan Direct Testimony, at 38.
[6] Equals [1] + ([4] x [5]).

Dr. Fagan's CAPM Analysis
As Adjusted to Reflect Projected Market Risk Premium

Projected Market Return	[1]	12.50%
Dr. Fagan Risk-Free Rate	[2]	3.69%
Market Risk Premium	[3]	8.81%
Dr. Fagan Beta Estimate	[4]	0.79
CAPM Result	[5]	**10.65%**

Notes
[1] Exhibit No. ___(AEB-4), Schedule 5.
[2] Fagan Direct Testimony, at 36-37.
[3] Equals [1]-[2]
[4] Fagan Direct Testimony, at 38.
[5] Equals [2]+([4] x [3])