Cause No. 46038

On Behalf of Petitioner,
DUKE ENERGY INDIANA, LLC

VERIFIED DIRECT TESTIMONY OF ADRIAN M. McKENZIE

Petitioner's Exhibit 10

April 4, 2024

Cause No. 46038

VERIFIED DIRECT TESTIMONY

OF

ADRIEN M. MCKENZIE, CFA

ON BEHALF OF
DUKE ENERGY INDIANA, LLC

INCLUDING ATTACHMENTS 10-A (AMM) to 10-L (AMM)

April 4, 2024

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ATTACHMENTS TO DIRECT TESTIMONY

ATTACHMENT	DESCRIPTION
10-A (AMM)	Qualifications of Adrien M. McKenzie
10-B (AMM)	ROE Analysis—Summary of Results
10-C (AMM)	Risk Measures—Utility Group
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10-J (AMM)	Utility Risk Premium
10-K (AMM)	Expected Earnings Approach—Utility Group
10-L (AMM)	DCF Model—Non-Utility Group

I. INTRODUCTION

Q1. Please state your name and business address.

A1. Adrien M. McKenzie, 3907 Red River, Austin, Texas, 78751.

Q2. In what capacity are you employed?

A2. I am President of Financial Concepts and Applications, Inc. (FINCAP), a firm providing financial, economic, and policy consulting services to business and government.

Q3. Please describe your educational background and qualifications.

A3. A description of my background and qualifications, including a resume containing the details of my experience, is attached as Attachment 10-A (AMM).

A. Overview

Q4. What is the purpose of your testimony in this case?

A4. The purpose of my testimony is to present to the Indiana Utility Regulatory Commission ("Commission") my independent assessment of the just and reasonable return on equity ("ROE") applicable to the historical cost rate base of Duke Energy Indiana, LLC ("Duke Energy Indiana" or "the Company"). In addition, I also examine the reasonableness of Duke Energy Indiana's common equity ratio, considering both the specific risks faced by the Company and other industry guidelines.

Q5. Please summarize the information and materials you rely on to support the opinions and conclusions contained in your testimony.

A5. To prepare my testimony, I use information from a variety of sources that would normally be relied upon by a person in my capacity. In connection with this filing, I consider and rely upon corporate disclosures, publicly available financial reports and filings, and other published information relating to Duke Energy Indiana. I also review information relating generally to capital market conditions and specifically to investor perceptions, requirements and expectations for Duke Energy Indiana's electric utility operations. These sources, coupled with my experience in the fields of finance and

utility regulation, have given me a working knowledge of the issues relevant to investors' required return for Duke Energy Indiana, and they form the basis of my analyses and conclusions.

Q6. How is your testimony organized?

A6. First, I summarize my conclusions and recommendations, giving special attention to the importance of financial strength and the implications of regulatory mechanisms and other risk factors. I also comment on the reasonableness of the Company's proposed capital structure.

Next, I briefly review Duke Energy Indiana's operations and finances. I then discuss current conditions in the capital markets and their implications in evaluating a just and reasonable return for the Company. Next, I explain the development of the proxy group of electric utilities used as the basis for my quantitative analyses. With this as a background, I discuss well-accepted quantitative analyses to estimate the current cost of equity for the proxy group of electric utilities. These include the discounted cash flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the empirical CAPM ("ECAPM"), an equity risk premium approach based on allowed ROEs, and reference to expected earned rates of return for electric utilities, which are all methods that are commonly relied on in regulatory proceedings.

Based on the results of my analyses, I evaluate a fair ROE for Duke Energy Indiana. My evaluation takes into account the specific risks for the Company's electric operations in Indiana and Duke Energy Indiana's requirements for financial strength. Further, consistent with the fact that utilities must compete for capital with firms outside their own industry, I corroborate my utility quantitative analyses by applying the DCF model to a group of low-risk non-utility firms.

B. Summary and Conclusions

Q7. What is your recommended ROE for Duke Energy Indiana?

A7. I apply the DCF, CAPM, ECAPM, risk premium, and expected earnings analyses to a proxy group of electric utilities, with the results summarized on Attachment 10-B (AMM). As shown there, based on the results of my analysis, I recommend a cost of equity range for the Company's electric operations of 10.3% to 11.3%. It is my conclusion that the 10.8% midpoint of this range represents a just and reasonable cost of equity that is adequate to compensate the Company's investors, while maintaining the Company's financial integrity and ability to attract capital on reasonable terms.

As my testimony documents, the electric utilities in my proxy group operate under a wide variety of regulatory mechanisms, including decoupling and infrastructure cost trackers. Similarly, the vast majority of these proxy firms operate in regulatory jurisdictions that allow for future test years, formula rates, and multi-year rate plans. As a result, there is no basis to distinguish Duke Energy Indiana's investment risks from the proxy group used as the basis of my analyses.

Q8. Do fundamental financial principles and capital market trends justify a significant increase to Duke Energy Indiana's authorized ROE?

A8. Yes. Because investors evaluate investments against available alternatives, the cost of equity and the cost of long-term debt are inextricably linked. As my testimony documents, long-term bond yields climbed dramatically beginning in 2022 and investors anticipate that these increases will be sustained. This provides direct evidence that Duke Energy Indiana's cost of equity has also risen significantly. My ROE recommendation reflects trends in observable capital market data and the results of my analyses, both of which support a material increase to Duke Energy Indiana's allowed ROE.

II. RETURN ON EQUITY FOR DUKE ENERGY INDIANA

Q9. What is the purpose of this section?

A9. This section presents my conclusions regarding the fair ROE applicable to Duke Energy Indiana's jurisdictional electric utility operations. I also describe the relationship between ROE and preservation of a utility's financial integrity and the ability to attract capital. Finally, I discuss the reasonableness of the Company's capital structure request in this case.

A. Importance of Financial Strength

Q10. What is the role of the ROE in setting a utility's rates?

A10. The ROE is the cost of attracting and retaining common equity investment in the utility's physical plant and assets. This investment is necessary to finance the asset base needed to provide utility service. Investors commit capital only if they expect to earn a return on their investment commensurate with returns available from alternative investments with comparable risks. Moreover, a just and reasonable ROE is integral in meeting sound regulatory economics and the standards established by the U.S. Supreme Court. The *Bluefield* case set the standard against which just and reasonable rates are measured:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties. . . . The return should be reasonable, sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise money necessary for the proper discharge of its public duties.[1]

The *Hope* case expanded on the guidelines for a reasonable ROE, reemphasizing the findings in *Bluefield* and establishing that the rate-setting process must produce an end-

[1] *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923) ("*Bluefield*").

result that allows the utility a reasonable opportunity to cover its capital costs. The Supreme Court stated:

> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. . . . By that standard, the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain credit and attract capital.[2]

In summary, the Supreme Court's findings in *Hope* and *Bluefield* established that a just and reasonable ROE must be sufficient to 1) fairly compensate the utility's investors, 2) enable the utility to offer a return adequate to attract new capital on reasonable terms, and 3) maintain the utility's financial integrity. These standards should allow the utility to fulfill its obligation to provide reliable service while meeting the needs of customers through necessary system replacement and expansion, but the Supreme Court's requirements can only be met if the utility has a reasonable opportunity to actually earn its allowed ROE.

The *Hope* and *Bluefield* decisions did not establish a particular method to follow in fixing rates (or in determining the allowed ROE).[3] Rather, these and subsequent cases enshrined the importance of an end result that meets the opportunity cost standard of finance. Under this doctrine, the required return is established by investors in the capital markets based on expected returns available from comparable risk investments. Coupled with modern financial theory, which has led to the development of formal risk-return models (*e.g.*, DCF and CAPM), practical application of the *Bluefield* and *Hope* standards involves the independent, case-by-case consideration of capital market data

[2] *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("*Hope*").

[3] *Id.* at 602 (finding, "the Commission was not bound to the use of any single formula or combination of formulae in determining rates." and, "[I]t is not theory but the impact of the rate order which counts.)

in order to evaluate an ROE that will produce a balanced and fair end result for investors and customers.

Q11. Throughout your testimony you refer repeatedly to the concepts of "financial strength," "financial integrity" and "financial flexibility." Would you briefly describe what you mean by these terms?

A11. These terms are generally synonymous and refer to the utility's ability to attract and retain the capital that is necessary to provide service at reasonable cost, consistent with the Supreme Court standards. Duke Energy Indiana's plans call for a continuation of capital investments to preserve and enhance service for its customers. The Company must generate adequate cash flow from operations, together with access to capital from external sources, to fund these requirements and for repayment of maturing debt.

Rating agencies and potential debt investors tend to place significant emphasis on maintaining strong financial metrics and credit ratings that support access to debt capital markets under reasonable terms. This emphasis on financial metrics and credit ratings is shared by equity investors who also focus on cash flows, capital structure and liquidity, much like debt investors.

Q12. What part does regulation play in ensuring that Duke Energy Indiana has access to capital under reasonable terms and on a sustainable basis?

A12. Regulatory signals are a major driver of investors' risk assessment for utilities. Investors recognize that constructive regulation is a key ingredient in supporting utility credit ratings and financial integrity. Security analysts study commission orders and regulatory policy statements to advise investors about where to put their money. Moody's Investors Service ("Moody's") noted that, "An overarching consideration for regulated utilities is the regulatory environment in which they operate," and concluded that "the regulatory environment and how the utility adapts to that environment are the

most important credit considerations."[4] Similarly, S&P Global Ratings ("S&P") observed that, "Regulatory advantage is the most heavily weighted factor when S&P Global Ratings analyzes a regulated utility's business risk profile."[5] The Value Line Investment Survey ("Value Line") summarizes these sentiments:

> As we often point out, the most important factor in any utility's success, whether it provides electricity, gas, or water, is the regulatory climate in which it operates. Harsh regulatory conditions can make it nearly impossible for the best run utilities to earn a reasonable return on their investment.[6]

In addition, the ROE set by regulators impacts investor confidence in not only the jurisdictional utility, but also in the ultimate parent company that is the entity that actually issues common stock.

Q13. Do customers benefit by enhancing the utility's financial flexibility?

A13. Yes. Providing an ROE sufficient to maintain the Company's ability to attract capital under reasonable terms, even in times of financial and market stress, is not only consistent with the economic requirements embodied in the U.S. Supreme Court's *Hope* and *Bluefield* decisions, but it is also in customers' best interests. Customers enjoy the benefits that come from ensuring that the utility has the financial wherewithal to take whatever actions are required to ensure safe and reliable service.

B. Conclusions and Recommendations

Q14. What are your findings regarding the fair ROE for Duke Energy Indiana?

A14. Considering the economic requirements necessary to support continuous access to capital under reasonable terms and the results of my analysis, I recommend a 10.8% ROE for Duke Energy Indiana's electric utility operations, which is consistent with the

[4] Moody's Investors Service, *Regulated Electric and Gas Utilities*, Rating Methodology (Jun. 23, 2017).

[5] S&P Global Ratings, *Assessing U.S. Investors-Owned Utility Regulatory Environments*, RatingsExpress (Aug. 10, 2016).

[6] Value Line Investment Survey, *Water Utility Industry* (Jan. 13, 2017) at p. 1780.

case-specific evidence presented in my testimony. Support for my conclusion is summarized below:

- In order to reflect the risks and prospects associated with Duke Energy Indiana's electric utility operations, my analyses focus on a proxy group of nine other electric utilities.
- Because investors' required ROE is unobservable and no single method should be viewed in isolation, I apply the DCF, CAPM, ECAPM, and risk premium methods to estimate a just and reasonable ROE for Duke Energy Indiana, as well as referencing the expected earnings approach.
- As summarized on Attachment 10-B (AMM), considering the results of these analyses, and giving less weight to extremes at the high and low ends of the range, I conclude that the cost of equity for a regulated electric utility is in the 10.3% to 11.3% range.
- My ROE recommendation for Duke Energy Indiana's electric operations is the midpoint of this range, or 10.8%.[7]

Q15. Your testimony also presents DCF results for a select group of non-utility firms. Does this analysis support your conclusions?

A15. Yes. As shown on page 3 of Attachment 10-L (AMM), average DCF estimates for a low-risk group of firms in the competitive sector of the economy ranged from 10.5% to 11.0%. While I did not base my recommendations on these results, they confirm that an ROE of 10.8% falls in a reasonable range to maintain Duke Energy Indiana's financial integrity, provide a return commensurate with investments of comparable risk, and support the Company's ability to attract capital.

III. FUNDAMENTAL ANALYSIS

Q16. What is the purpose of this section?

A16. This section briefly reviews Duke Energy Indiana's operations and finances. As a predicate to my quantitative analyses, I also examine conditions in the capital markets and the general economy. An understanding of the fundamental factors driving the risks

[7] This ROE does not consider issuance costs associated with the sale of common stock. Flotation costs are legitimate business expenses and the lack of an upward adjustment to account for them further supports the reasonableness of my ROE recommendation.

and prospects of electric utilities is essential in developing an informed opinion of investors' expectations and requirements that are the basis of a fair rate of return.

A. Duke Energy Indiana, LLC

Q17. Briefly describe Duke Energy Indiana and its utility operations.

A17. Duke Energy Indiana is engaged in the generation, transmission, and distribution of electric energy to approximately 890,000 residential, commercial and industrial customers in portions of Indiana. Duke Energy Indiana's service area covers approximately 23,000 square miles. Duke Energy Indiana is a wholly-owned subsidiary of Duke Energy Indiana Holdco, LLC, which is majority owned by Duke Energy Corporation ("Duke Energy").[8] During 2022, residential customers accounted for approximately 30% of the Company's gigawatt-hour ("GWh") sales, with 27% coming from general service customers, and 28% from industrial consumers. Wholesale customers accounted for 15% of Duke Energy Indiana's total GWh sales during 2022.

Duke Energy Indiana owns and operates generating stations with a total capacity of 6,346 megawatts ("MW"), of which approximately 70% is coal-fired. The Company's network comprises approximately 31,900 conductor miles of distribution lines and 5,300 conductor miles of transmission lines. Duke Energy Indiana is a member of Midwest Independent System Operator, Inc. ("MISO"), a regional transmission organization approved by the Federal Energy Regulatory Commission ("FERC"). At year-end 2022, Duke Energy Indiana had total assets of $14.7 billion and total revenues of approximately $3.9 billion.

Q18. What credit ratings have been assigned to Duke Energy Indiana?

A18. Moody's has assigned the Company an issuer rating of A2, while S&P has assigned a corporate credit rating of BBB+ to Duke Energy Indiana.

[8] During 2021, GIC Private Limited, Singapore's sovereign wealth fund, purchased a 19.9% minority interest in Duke Energy Indiana Holdco, LLC.

Q19. Does Duke Energy Indiana anticipate the need for capital going forward?

A19. Yes. The Company must undertake investments for necessary maintenance and expansion of its electric utility system as it continues to provide safe and reliable service to its customers. For 2024 to 2028, Duke Energy Indiana is estimating total capital expenditures of approximately $6.5 billion.[9] This represents a substantial investment given Duke Energy Indiana's current retail rate base of approximately $10.4 billion.[10] Continued support for Duke Energy Indiana's financial integrity and flexibility will be instrumental in attracting the capital necessary to fund these projects in an effective manner. Investors are aware of the challenges posed by significant capital expenditure requirements, especially in light of potential capital market and economic uncertainties. Moody's has noted that, "credit metrics will be pressured beyond 2024 when capital expenditures are forecast to significantly increase to about $1.5 billion annually, from an already high annual average of around $900 million."[11] Moody's concluded that "the sheer size of [Duke Energy Indiana's] capital program with increase regulatory lag."[12]

B. Outlook for Capital Costs

Q20. Please summarize current economic conditions.

A20. U.S. real GDP contracted 2.2% percent during 2020, but with the easing of COVID-19 lockdowns, the economic outlook improved significantly in 2021, with GDP growing at a pace of 5.8%, though growth was more subdued in 2022 at 1.9%.[13] More recently, increases in consumer spending and federal government spending led real GDP to grow by 2.5% in 2023, according to an advance estimate.[14] Meanwhile, indicators of

[9] Duke Energy Corporation, *Earnings Review and Business Update* (Feb. 8, 2024) at 29.

[10] *Id.* at 43.

[11] Moody's Investors Service, *Duke Energy Indiana, LLC*, Credit Opinion (Jun. 30, 2023).

[12] *Id.*

[13] https://www.bea.gov/sites/default/files/2023-09/gdp2q23_3rd.pdf (last visited Jan. 31, 2024).

[14] https://www.bea.gov/news/2024/gross-domestic-product-fourth-quarter-and-year-2023-advance-estimate (last visited Jan. 31, 2024).

employment remain stable, with the national unemployment rate unchanged from the previous month at 3.7% in December 2023.[15]

The underlying risk and price pressures associated with the COVID-19 pandemic have been overshadowed by a dramatic increase in geopolitical risks following Russia's invasion of Ukraine in February 2022. These events have also been accompanied by heightened economic uncertainties as inflationary pressures due to COVID-19 supply chain disruptions were further stoked by sharp increases in global commodity prices. The substantial disruption in the energy economy and dramatic rise in inflation led to sharp declines in global equity markets as investors reacted to the related exposures.

Stimulative monetary and fiscal policies, coupled with supply-chain disruptions and rapid price rises in the energy and commodities markets, led to increasing concern that inflation would remain significantly above the Federal Reserve's longer-run benchmark of 2 percent. In June 2022, CPI inflation peaked at its highest level since November 1981. Since then, CPI inflation has gradually moderated, and it stood at 3.4% in December 2023.[16] The so-called "core" price index, which excludes more volatile energy and food costs, rose at an annual rate of 3.9% in December 2023.[17] PCE inflation rose 2.6% in December 2023, or 2.9% after excluding more volatile food and energy costs.[18] As Federal Reserve Chair Powell has noted, "inflation is still too high, ongoing progress in bringing it down is not assured, and the path forward is uncertain."[19]

Investor confidence has also been tested by turmoil in the banking sector, which led to increased volatility in bond and equity markets. The Federal Reserve and U.S.

[15] https://www.bls.gov/news.release/empsit.nr0.htm (last visited Jan. 31, 2024).

[16] https://www.bls.gov/news.release/cpi.nr0.htm (last visited Jan. 31, 2024).

[17] *Id.*

[18] https://www.bea.gov/news/2024/personal-income-and-outlays-december-2023 (last visited Jan. 31, 2024).

[19] Federal Reserve, *Transcript of Chair Powell's Press Conference* (Dec. 13, 2023), https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20231213.pdf.

Treasury took quick and dramatic action to shore up banks' liquidity needs and strengthen public confidence in the banking system, but as Moody's noted, "bank stress has added uncertainty to the outlook."[20] More recently, heightened geopolitical tensions in the Middle East have led to concerns over possible disruptions in crude oil supplies and attendant price volatility that could deliver another shock to the world economy.

Q21. How have these developments impacted the Federal Reserve's monetary policies?

A21. Beginning in March 2022, the FOMC has responded to concerns over accelerating inflation by steadily raising the benchmark range for the federal funds rate.[21] Chair Powell noted that, "Since early last year, the FOMC has significantly tightened the stance of monetary policy. We have raised our policy interest rate by 5¼ percentage points and have continued to reduce our securities holdings at a brisk pace."[22] Chair Powell has surmised that the significant draw-down of its balance sheet holdings that began in June 2022 could be the equivalent of another one quarter percent rate hike over the course of a year.[23]

Q22. What impact do inflation expectations have on the return that equity investors require from Duke Energy Indiana?

A22. Implicit in the required rate of return for long-term capital—whether debt or common equity—is compensation for expected inflation. This is highlighted in the textbook, *Financial Management, Theory and Practice*:

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[20] Moody's Investors Service, *Baseline US macro forecasts unchanged but outlook more uncertain*, Sector Comment (Apr. 12, 2023).

[21] The FOMC is a committee composed of twelve members that serves as the monetary policymaking body of the Federal Reserve System.

[22] Federal Reserve, *Transcript of Chair Powell's Press Conference* (Dec. 13,, 2023), https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20231213.pdf.

[23] Federal Reserve, *Transcript of Chair Powell's Press Conference* (May 4, 2022), https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20220504.pdf.

> The four most fundamental factors affecting the cost of money are (1) production opportunities, (2) time preferences for consumption, (3) risk, and (4) inflation.[24]

In other words, a part of investors' required return is intended to compensate for the erosion of purchasing power due to rising price levels. This inflation premium is added to the real rate of return (pure risk-free rate plus risk premium) to determine the nominal required return. As a result, higher inflation expectations lead to an increase in the cost of equity capital.

Q23. Have these developments impacted the risks faced by utilities and their investors?

A23. Yes. S&P recently revised its outlook for the utility sector to "negative," noting that:

> Credit quality for North American investor-owned regulated utilities has weakened over the past four years, with downgrades outpacing upgrades by more than three times. We expect downgrades to again surpass upgrades in 2024 for the fifth consecutive year.[25]

S&P cited rising physical risks, as well as weakening financial measures due to rising capital spending and cash flow deficits, and observed that "much of the industry operates with minimal financial cushion from their downgrade threshold."[26]

Meanwhile, Fitch Ratings, Inc. noted that its deteriorating outlook for utilities "reflects continuing macroeconomic headwinds and elevated capex that are putting pressure on credit metrics in the high-cost funding environment."[27] Value Line echoed these sentiments for electric utilities, concluding that:

[24] Eugene F. Brigham, Louis C. Gapenski, and Michael C. Ehrhardt, *Financial Management, Theory and Practice*, Ninth Edition (1999) at 126.

[25] S&P Global Ratings, *Rising Risks: Outlook For North American Investor-Owned Regulated Utilities Weakens*, Comments (Feb. 14, 2024).

[26] *Id.*

[27] Fitch Ratings, Inc., *North American Utilities, Power & Gas Outlook 2024* (Dec. 6, 2023).

A Challenging Macroeconomic Backdrop Remains

> Inflationary pressure, rising interest rates, and high energy and raw material prices will likely remain a significant burden for most utilities. Inflationary headwinds are raising operating and maintenance costs, as well as fuel prices. Meanwhile, the rising interest rate environment is leading income-oriented investors to the bond market, as well as increasing borrowing costs, which is especially significant for utilities as the usually have low returns on total capital and rely heavily on debt borrowings. We think many of these companies will continue to struggle with the higher costs related to the challenging macroeconomic climate in the near term.[28]

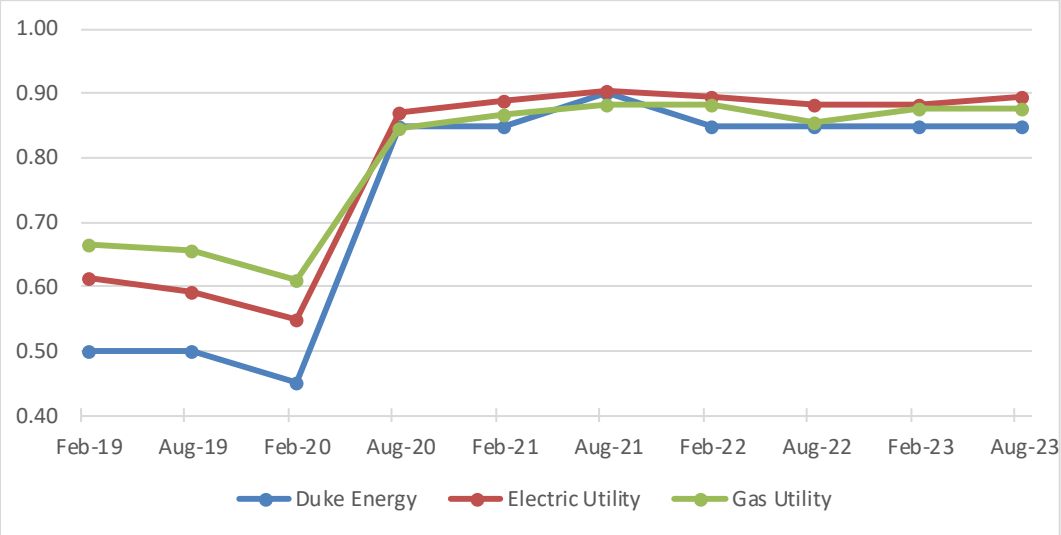
Q24. Do changes in utility company beta values corroborate an increase in industry risk?

A24. Yes. Beta measures a stock's price volatility relative to the overall market and reflects the tendency of a stock's price to follow changes in the market. The investment community relies on beta as an important guide to investors' risk perceptions. A stock that tends to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00. Generally, a higher beta means the market perceives the stock to be riskier than a stock with a lower beta.

The significant shift in pre- and post-pandemic beta values for utilities is illustrated in Figure 1 below. As illustrated there, beta values for Duke Energy, and for the electric and gas utilities covered by Value Line, increased significantly with the beginning of the pandemic in March 2020, continued to increase during 2021, and have remained elevated. This dramatic increase in a primary gauge of investors' risk perceptions is further proof of the higher risk of utility common stocks.

[28] The Value Line Investment Survey, *Electric Utility (Central) Industry* (Sep. 8, 2023) (emphasis original).

FIGURE 1
UTILITY BETA VALUES



Q25. Do trends in bond yields also indicate that the cost of equity has increased?

A25. Yes. While the cost of equity is not directly observable, yields on long-term bonds provide a widely referenced benchmark for the direction of capital costs, including required returns on common stocks. Table 1 below compares the average yields on Treasury securities and Baa-rated public utility bonds during December 2023 with those prevailing in June 2020 when the Commission concluded that the unadjusted cost of equity for Duke Energy Indiana was 9.75%.[29]

TABLE 1
BOND YIELD TRENDS

Series	December 2023	June 2020	Change (bps)
10-Year Treasury Bonds	4.02%	0.73%	329
30-Year Treasury Bonds	4.14%	1.49%	265
Baa Utility Bonds	5.68%	3.44%	224

Source: https://fred.stlouisfed.org/series/GS30; Moody's Credit Trends.

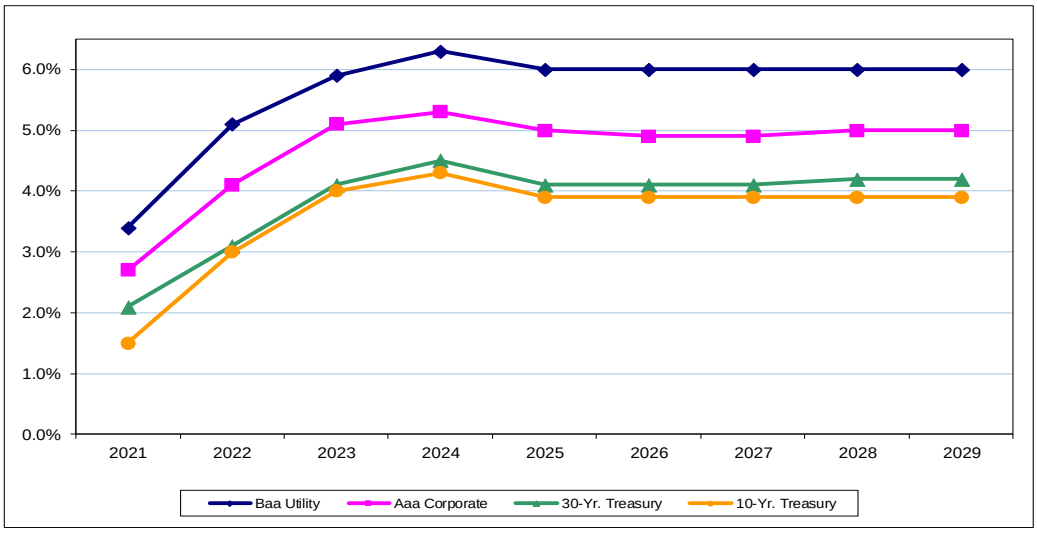
[29] Indiana Utility Regulatory Commission, Cause No. 45253, *Order of the Commission* (Jun. 29, 2020) at 58.

As shown above, trends in bond yields since Duke Energy Indiana's last rate proceeding document a substantial increase in the returns on long-term capital demanded by investors. With respect to utility bond yields—which are the most relevant indicator in gauging the implications for the Company's common equity investors—average yields in December 2023 exceed June 2020 levels by more than 220 basis points.

Q26. Do investors anticipate that these higher bond yields will be sustained?

A26. Yes. As illustrated in Figure 2 below, the most recent long-term consensus projections from top economists published by Blue Chip document that long-term bond yields are expected to remain elevated when compared to recent historical levels.

FIGURE 2
PROJECTED INTEREST RATES



Source: Wolters Kluwer, Blue Chip Financial Forecasts (Dec. 1, 2023); Moody's Investors Service; https://fred.stlouisfed.org/.

This evidence shows that long-term capital costs—including the ROE—have increased substantially, and that investors expect these higher capital costs to be sustained at least through 2029.

Q27. Does the prospect for changes in monetary policy alter this conclusion?

A27. No. At the conclusion of the FOMC's December 2023 meeting, Federal Reserve Chair Jerome Powell indicated that the participants anticipate that the appropriate level of the Federal funds rate will be 4.6% at the end of 2024, declining to 2.9% by the end of 2026.[30] This easing of monetary policy presumably reflects the FOMC's view that inflation will be sustainably reduced to its target level of 2%. But as Chair Powell has repeatedly noted, "Longer-term inflation expectations appear to remain well anchored."[31] In other words, expected inflation rates incorporated into long-term bond and equity costs did not approach the levels reached in recent months, and the impact of any moderation in the Federal Reserve's policy rate would be subdued. This is consistent with the forecasts of leading economists illustrated in Figure 2.

Moreover, while Chair Powell observed that the Federal Funds rate "is likely at or near its peak for this tightening cycle," he also stressed that "the economy has surprised forecasters in many ways" and reiterated that "ongoing progress toward our 2 percent inflation objective is not assured."[32] Reuters reported that Federal Reserve Bank of New York President John Williams has concluded "it's still too soon to call for rate cuts as the central bank still has some distance to go in getting inflation back to its 2% target."[33] Meanwhile, consumer prices rose more than expected in December 2023,

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[30] Federal Reserve, *Transcript of Chair Powell's Press Conference* (Dec. 13, 2023). https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20231213.pdf.

[31] *Id. See also,* Federal Reserve, *Transcript of Chair Powell's Press Conference* (Dec. 14, 2022, Sep. 21, 2022). https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

[32] Federal Reserve, *Transcript of Chair Powell's Press Conference* (Dec. 13, 2023). https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20231213.pdf.

[33] Michael S. Derby, *Fed's Williams says more work needed to bring inflation back to target*, Reuters (Jan. 10, 2024). https://www.reuters.com/markets/us/feds-williams-says-more-work-needed-bring-inflation-back-target-2024-01-10/ (last visited Jan. 14, 2024).

pushing the annual rate to 3.4%.[34] As Chair Powell concluded, "We are prepared to tighten policy further if appropriate."[35]

Q28. What are the implications of these trends in evaluating a fair ROE for Duke Energy Indiana?

A28. The upward move in interest rates suggests that long-term capital costs—including the cost of equity—have increased significantly since the Commission determined that the unadjusted cost of capital for Duke Energy Indiana was 9.75%. Exposure to rising interest rates, inflation, and capital expenditure requirements also reinforce the importance of buttressing Duke Energy Indiana's credit standing. Considering the potential for financial market instability, competition with other investment alternatives, and investors' sensitivity to risk exposures in the utility industry, credit strength is a key ingredient in maintaining access to capital at reasonable cost.

Q29. Would it be reasonable to disregard the implications of current capital market conditions in establishing a fair ROE for Duke Energy Indiana?

A29. No. Current capital market conditions reflect the reality of the situation in which Duke Energy Indiana must attract and retain capital. The standards underlying a fair rate of return require an authorized ROE for the Company that is competitive with other investments of comparable risk and sufficient to preserve its ability to maintain access to capital on reasonable terms. These standards can only be met by considering the requirements of investors over the time period when the rates established in this proceeding will be in effect. If the upward shift in investors' risk perceptions and required rates of return for long-term capital is not incorporated in the allowed ROE, the results will fail to meet the comparable earnings standard that is fundamental in

[34] Jeff Cox, *Consumer prices rose 0.3% in December, higher than expected, pushing the annual rate to 3.4%*, CNBC (Jan. 11, 2024). https://www.cnbc.com/2024/01/11/cpi-inflation-report-december-2023-consumer-prices-rose-0point3percent-in-december-higher-than-expected-pushing-the-annual-rate-to-3point4percent.html (last visited Jan. 14, 2024).

[35] Federal Reserve, *Transcript of Chair Powell's Press Conference* (Dec. 13, 2023). https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20231213.pdf.

determining the cost of capital. From a more practical perspective, failing to provide investors with the opportunity to earn a rate of return commensurate with Duke Energy Indiana's risks will weaken its financial integrity, while hampering the Company's ability to attract necessary capital.

IV. COMPARABLE RISK PROXY GROUP

Q30. What is the purpose of this section of your testimony?

A30. This section explains the basis of the proxy group of publicly traded companies I use to estimate the cost of equity, examines alternative objective indicators of investment risk for these firms, and compares the investment risks applicable to Duke Energy Indiana with my reference group.

Q31. What key principles underpin the evaluation of a proxy group?

A31. The United States Supreme Court's *Hope* and *Bluefield* decisions[36] establish a standard of comparison between a subject utility and other companies based on comparable risk. The generally accepted approach is to select a group of companies that are of similar risk to the subject utility, and then to perform various quantitative analyses based on this proxy group to estimate investors' required returns. The results of these analyses, in turn, are used to evaluate a range of reasonableness and a final recommendation for the ROE attributable to the subject utility.

Q32. As an initial matter, does the fact that Duke Energy Indiana is a wholly owned subsidiary alter these fundamental standards?

A32. No. While the Company has no publicly traded common stock and Duke Energy is ultimately Duke Energy Indiana's only shareholder, this does not change the standards governing the determination of a just and reasonable ROE for the Company. Ultimately, the common equity required to support Duke Energy Indiana's utility operations must be raised in the capital markets, where investors consider the Company's ability to offer

[36] *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923) (*Bluefield*); *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) (*Hope*).

a rate of return that is competitive with other risk-comparable alternatives. Duke Energy Indiana must compete with other investment opportunities and unless there is a reasonable expectation that investors will have the opportunity to earn returns that compensate for the underlying risks, capital will be allocated elsewhere, the Company's financial integrity will weaken, and investors will demand an even higher rate of return.

A. Determination of the Proxy Group

Q33. How do you implement quantitative methods to estimate the cost of common equity for Duke Energy Indiana?

A33. Application of quantitative methods to estimate the cost of common equity requires observable capital market data, such as stock prices and beta values. Even for a firm with publicly traded stock, the cost of common equity can only be estimated. As a result, applying quantitative models using observable market data only produces an estimate that inherently includes some degree of observation error. The accepted approach to increase confidence in the results is to apply quantitative methods to a proxy group of publicly traded companies that investors regard as risk-comparable. The results of the analysis on the sample of companies are relied upon to establish a range of reasonableness for the cost of equity for the specific company at issue.

Q34. How do you identify the proxy group of electric utilities relied on for your analyses?

A34. To reflect the risks and prospects associated with Duke Energy Indiana's jurisdictional electric operations, I begin with the following criteria to identify a proxy group of utilities:

1. Included in the Electric Utility Industry groups compiled by Value Line.[37]
2. Paid common dividends over the last six months and have not announced a dividend cut since that time.

[37] Value Line is one of the most widely available sources of investment advisory information, and its industry groups provide an objective source to identify publicly traded firms that investors would regard to be similar in operations. In addition to the companies included in Value Line's electric utility industry groups, I also considered Algonquin Power & Utilities Company and Emera, Inc, which would both be regarded as comparable utility investment opportunities by investors. Neither of these companies met my required screening criteria.

3. No ongoing involvement in a major merger or acquisition that would distort quantitative results.

In addition, my analysis also considered credit ratings from Moody's and S&P in evaluating relative risk. As noted earlier, Duke Energy Indiana is rated A2 by Moody's and BBB+ by S&P. Accordingly, I excluded any companies with corporate ratings lower than Baa1/BBB+ or higher than A2/A by Moody's and S&P, respectively. These criteria result in a proxy group composed of nine companies, which I refer to as the "Utility Group."

B. Relative Risks of the Utility Group and Duke Energy Indiana

Q35. Do you evaluate investors' risk perceptions for the Utility Group?

A35. Yes. My evaluation of relative risk considers five objective, published benchmarks that are widely relied on by investors—credit ratings from Moody's and S&P, along with Value Line's Safety Rank, Financial Strength Rating, and beta values. Credit ratings are assigned by independent rating agencies for the purpose of providing investors with a broad assessment of the creditworthiness of a firm. Ratings generally extend from triple-A (the highest) to D (in default). Other symbols (*e.g.*, "+" or "-") are used to show relative standing within a category. Because the rating agencies' evaluation includes all of the factors considered important in assessing a firm's relative credit standing, corporate credit ratings provide a broad, objective measure of overall investment risk that is readily available to investors. Widely cited in the investment community and referenced by investors, credit ratings are also frequently used as a primary risk indicator in establishing proxy groups to estimate the cost of common equity.

While credit ratings provide the most widely referenced benchmark for investment risks, Value Line is one of the most widely available source of investment advisory information and its quality rankings provide an important and objective assessment of investors' risk perceptions for common stocks. Value Line's primary risk indicator is its Safety Rank, which ranges from "1" (Safest) to "5" (Riskiest). This

overall risk measure is intended to capture the total risk of a stock and incorporates elements of stock price stability and financial strength. Meanwhile, the Financial Strength Rating is designed as a guide to overall financial strength and creditworthiness, with the key inputs including financial leverage, business volatility measures, and company size. Value Line's Financial Strength Ratings range from "A++" (strongest) down to "C" (weakest) in nine steps. These objective, published indicators incorporate consideration of a broad spectrum of risks, including financial and business position, relative size, and exposure to firm-specific factors.

Finally, beta measures a utility's stock price volatility relative to the market as a whole and reflects the tendency of a stock's price to follow changes in the market. A stock that tends to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00. Beta is the only relevant measure of investment risk under modern capital market theory and is widely cited in academics and in the investment industry as a guide to investors' risk perceptions. Moreover, in my experience Value Line is the most widely referenced source for beta in regulatory proceedings. As noted in *New Regulatory Finance*:

> Value Line is the largest and most widely circulated independent investment advisory service, and influences the expectations of a large number of institutional and individual investors. … Value Line betas are computed on a theoretically sound basis using a broadly based market index, and they are adjusted for the regression tendency of betas to converge to 1.00.[38]

Q36. How do the overall risks of your proxy group compare to Duke Energy Indiana?

A36. Attachment 10-C (AMM) compares the Utility Group to the Company across the four key indicia of investment risk discussed above. As shown there, with the exception of Duke Energy Indiana's Moody's rating, the risk measures corresponding to Duke Energy Indiana fall within the range for the Utility Group. Considered together, a

[38] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 71.

comparison of these objective measures, which incorporate a broad spectrum of risks, including financial and business position, regulatory recovery mechanisms, and exposure to company specific factors, indicates that investors would likely conclude that the overall investment risks for the firms in the Utility Group are comparable to Duke Energy Indiana.

Q37. Would investors consider the implications of regulatory mechanisms in evaluating a utility's relative risks?

A37. Yes. In response to increasing sensitivity over fluctuations in costs and the importance of advancing other public interest goals such as reliability, energy conservation, and safety, utilities and their regulators have sought to mitigate cost recovery uncertainty and align the interest of utilities and their customers. As a result, decoupling mechanisms, cost trackers, and future test years have been increasingly prevalent in the utility industry, along with alternatives to traditional ratemaking such as formula rates and multi-year rate plans. S&P Global Market Intelligence, *RRA Regulatory Focus* ("RRA") concluded in its most recent review of adjustment clauses that:

> More recently and with greater frequency, commissions have approved mechanisms that permit the costs associated with the construction of new generation or delivery infrastructure to be used, effectively including these items in rate base without the need for a full rate case. In some instances, these mechanisms may even provide the utilities a cash return on construction work in progress.
>
> . . . [C]ertain types of adjustment clauses are more prevalent than others. For example, those that address electric fuel and gas commodity charges are in place in all jurisdictions. Also, about two-thirds of all utilities have riders in place to recover costs related to energy efficiency programs, and roughly half of the utilities have some type of decoupling mechanism in place.[39]

As shown on Attachment 10-D (AMM), and reflective of this trend, the companies in my Utility Group operate under a wide variety of cost adjustment

[39] S&P Global Market Intelligence, *Adjustment Clause: A state-by-state overview*, RRA Regulatory Focus (Jul. 18, 2022).

mechanisms. These encompass future test years, multi-year rate plans, revenue decoupling and adjustment clauses designed to address rising capital investment outside of a traditional rate case, increasing costs of environmental compliance measures, as well as riders to address the costs of energy conservation programs and transmission-related charges.

Q38. Have similar regulatory mechanisms been approved for Duke Energy Indiana?

A38. Yes. The Company's rates include rate adjustment mechanisms that reflect some but not all of the Company's cost of providing retail electric service, such as changes in fuel costs, power purchase costs (including wind and solar), demand-side management costs, costs incurred to comply with environmental laws and regulations, and changes in wholesale transmission costs.

In addition, the Transmission, Distribution, and Storage System Improvement Charge ("TDSIC") provides for cost recovery outside a base rate proceeding for new or replacement electric transmission, distribution, and storage projects that a public utility undertakes for the purposes of safety, reliability, system modernization, or economic development. Provisions of the TDSIC statute require that requests for recovery include a plan of at least five years and not more than seven for eligible investments. Once a plan is approved by the Commission, 80% of eligible costs can be recovered using a periodic rate adjustment mechanism, referred to as a TDSIC mechanism. The remaining 20% of recoverable costs are deferred for future recovery in the public utility's next base rate case. The TDSIC mechanism is capped at an annual increase of 2% of total retail revenues.

Q39. Do the regulatory mechanisms approved for Duke Energy Indiana set it apart from other firms operating in the utility industry?

A39. No. A broad array of adjustment mechanisms is also available to the companies in my proxy group of electric utilities. As documented on Attachment 10-D (AMM), the majority of firms included in the Utility Group operate under revenue decoupling and

in states that allow formula rates or multiyear rate plans for utilities under their jurisdiction.

Thus, while investors would consider Duke Energy Indiana's regulatory mechanisms—including the TDSIC mechanism—to be supportive of the Company's financial integrity, this does not provide a basis to distinguish the risks of Duke Energy Indiana from the utilities in my Utility Group.

Q40. Do utilities such as Duke Energy Indiana continue to face environmental risks?

A40. Yes. Environmental concerns are leading to a profound transformation in the electric utility industry. The generation segment is undergoing material changes in fuel mix, as natural gas and renewable sources increasingly supplant coal. But even the future prospects for the continued use of natural gas remain uncertain, given various decarbonization initiatives. Over the next decade, renewable sources are widely expected to account for a rising share of the electricity generated in the U.S., including a significant expansion in distributed generation, which will accompany declining costs and increased efficiency of energy storage technologies. Accommodating this effort to decarbonize generation will also require significant investment to modernize the transmission grid. And while this disruption offers the potential for growth through increased capital investment, it also conveys higher risks, such as the potential for stranded costs. With respect to Duke Energy Indiana, the Company's clean energy transition includes achieving net-zero carbon emissions from electricity generation by 2050.

Credit rating agencies have taken note of Duke Energy Indiana's environmental risk. For example, despite approval of an environmental rider, Moody's noted that Duke Energy Indiana "has elevated carbon transition risk," including ongoing uncertainties over recovery of coal ash compliance costs.[40] S&P classes Duke Energy Indiana's

[40] Moody's Investors Service, *Duke Energy Indiana, LLC.*, Credit Opinion (Jun. 30, 2023).

reliance on fossil fuel generation and the related environmental exposures as a "key risk."[41] S&P noted that coal-fired generation "exposes the company to environmental risks, even though [Duke Energy Indiana] uses environmental riders to recover environmental costs tied to its generation fleet." [42]

C. Capital Structure

Q41. Is an evaluation of a utility's capital structure relevant in assessing its return on equity?

A41. Yes. Other things equal, a higher debt ratio and lower common equity ratio, translates into increased financial risk for all investors. A greater amount of debt means more investors have a senior claim on available cash flow, thereby reducing the certainty that each will receive their contractual payments. This increases the risks to which lenders are exposed, and they require correspondingly higher rates of interest. From a common shareholder's standpoint, a higher debt ratio means that there are proportionately more investors ahead of them, thereby increasing the uncertainty as to the amount of cash flow that will remain.

Q42. What common equity ratio is implicit in Duke Energy Indiana's capital structure?

A42. The capital structure used to compute the overall rate of return for Duke Energy Indiana includes approximately 43% common equity, which is equivalent to an equity ratio of approximately 53% after excluding cost-free items and tax credit balances.[43]

Q43. How does this compare to the average equity ratios maintained by the Utility Group?

A43. As shown on page 1 of Attachment 10-E (AMM), common equity ratios for the individual firms in the Utility Group ranged between 40.9% and 51.0% and averaged

[41] S&P Global Ratings, *Duke Energy Indiana Inc.*, Ratings Score Snapshot (Feb. 15, 2023).

[42] *Id.*

[43] This 53% equity ratio is based on Duke Energy Indiana's long-term sources of investor-supplied financing—long-term debt and common equity—which are the appropriate basis for industry comparisons. As shown on Duke Energy Indiana Attachment 10-E (AMM), common equity represents 43% of Duke Energy Indiana's ratemaking capital structure.

45.0%. Meanwhile, the three-to-five year forecasts published by Value Line result in common equity ratios ranging from 40.0% to 56.0% for the Utility Group, with an average of 46.6%.

Q44. Are there other industry benchmarks that are more relevant in evaluating Duke Energy Indiana's capital structure?

A44. Yes. Because this proceeding focuses on the ROE for the regulated electric utility operations of Duke Energy Indiana, the capital structures maintained by other operating electric utilities provide a direct guide to financing policies that are consistent with industry-specific risks and the need to maintain adequate borrowing capacity and financial flexibility.

Q45. What capitalization ratios are maintained by comparable utility operating companies?

A45. Page 2 of Attachment 10-E (AMM) display capital structure data for the group of electric utility operating companies owned by the firms in the Utility Group. As shown there, common equity ratios for these utilities range from 43.2% to 60.6% and average 53.4%. This benchmark provides a direct guide to financing policies that are consistent with industry-specific risks and the need to maintain adequate borrowing capacity and financial flexibility.

Q46. Do ongoing economic and capital market uncertainties also influence the appropriate capital structure for Duke Energy Indiana?

A46. Yes. Financial flexibility plays a crucial role in ensuring the wherewithal of a utility to meet funding needs. Utilities with higher financial leverage may be foreclosed from or have limited access to additional borrowing, especially during times of financial market stress. As Moody's observed:

> Utilities are among the largest debt issuers in the corporate universe and typically require consistent access to capital markets to assure adequate sources of funding and to maintain financial flexibility. During times of distress and when capital markets are exceedingly volatile and tight, liquidity becomes critically important because access to capital markets may be difficult.[44]

More recently, Moody's emphasized that the utility sector "is likely to continue to generate negative free cash flow and credit quality is likely to suffer unless utilities fund this negative free cash flow appropriately with a balance of debt and equity financing."[45]

S&P confirmed the financial challenges associated with funding heightened investment in the utility sector, noting that, "About one-third of the industry is strategically managing their financial performance with only minimal financial cushion," and warning that "when unexpected risks occur or base-case assumptions deviate from expectations, the utility's credit quality can weaken."[46]

As a result, the Company's capital structure must maintain adequate equity to preserve the flexibility necessary to maintain continuous access to capital even during times of unfavorable energy or financial market conditions.

Q47. What other factors do investors consider in their assessment of a company's capital structure?

A47. Utilities, including Duke Energy Indiana, are facing significant capital investment plans. Coupled with the potential for turmoil in capital markets, this warrants a stronger balance sheet to deal with an uncertain environment. As S&P noted:

[44] Moody's Investors Service, *FAQ on credit implications of the coronavirus outbreak*, Sector Comment (Mar. 26, 2020).

[45] Moody's Investors Service, *Regulate Electric and Gas Utilities – US, Rising capital expenditures will require higher annual equity funding*, Sector In-Depth (Nov. 8, 2023).

[46] S&P Global Ratings, *The Outlook For North American Regulated Utilities Turns Stable* (May 18, 2023).

> Under our base case, we expect that by 2024 the industry's capital spending will exceed $180 billion. Because of the industry's continued robust capital spending, we expect that industry will continue to generate negative discretionary cash flow. This requires that the industry has consistent access to the capital markets to finance capital spending and dividends requirements.[47]

More recently, S&P noted that, "Without a commensurate focus on balance sheet preservation through equity support of discretionary negative cash flow deficits, limited financial cushion could give rise to another round of negative rating actions."[48] Similarly, Moody's higher interest rates and the pressure of maintaining credit metrics while funding capital investments were leading to greater reliance on common equity.[49] Moody's concluded that the utility sector "is likely to continue to generate negative free cash flow and credit quality is likely to suffer unless utilities fund this negative free cash flow appropriately with a balance of debt and equity financing."[50]

In addition, the investment community also considers the impact of other considerations, such as leases, purchased power agreements, and postretirement benefit and asset retirement obligations in its evaluation of a utility's financial standing. A conservative financial profile, in the form of a reasonable common equity ratio, is consistent with the need to accommodate these uncertainties and maintain continuous access to capital under reasonable terms that is required to fund operations and necessary system investment, even during times of adverse capital market conditions.

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[47] S&P Global Ratings, *For The First Time Ever, The Median Investor-Owned Utility Ratings Falls To The 'BBB' Category*, RatingsDirect (Jan. 20, 2022).

[48] S&P Global Ratings, *Record CapEx Fuels Growth Along With Credit Risk For North American Investor-Owned Utilities*, Comments (Sep. 12, 2023).

[49] Moody's Investors Service, *Regulated Electric and Gas Utilities – US; Rising capital expenditures will require higher annual equity funding*, Sector In-Depth (Nov. 8, 2023).

[50] *Id.*

Q48. What does this evidence suggest with respect to Duke Energy Indiana's capital structure?

A48. Duke Energy Indiana's ratemaking capital structure falls within the range of capital structure ratios maintained by the proxy group and is consistent with industry benchmarks for other electric utility operating companies. While industry averages provide one benchmark for comparison, each firm must select its capitalization based on the risks and prospects it faces, as well as its specific needs to access the capital markets. Duke Energy Indiana's capital structure reflects the Company's ongoing efforts to maintain its credit standing and support access to capital on reasonable terms. The reasonableness of the Company's capital structure is reinforced by the ongoing uncertainties associated with the utility industry and the importance of supporting continued system investment, even during times of adverse industry or market conditions. Based on this evidence, I conclude that the Company's capital structure represents a reasonable mix of capital sources from which to calculate Duke Energy Indiana's overall rate of return.

V. CAPITAL MARKET ESTIMATES

Q49. What is the purpose of this section of your testimony?

A49. This section presents capital market estimates of the cost of equity. First, I address the concept of the cost of common equity, along with the risk-return tradeoff principle fundamental to capital markets. I then describe the quantitative analyses I conducted to estimate the cost of common equity for the Utility Group.

A. Economic Standards

Q50. What fundamental economic principle underlies the cost of equity concept?

A50. The concept of the cost of equity is based on the tenet that investors are risk averse. In capital markets where relatively risk-free assets are available (*e.g.*, U.S. Treasury securities), investors will hold riskier assets only if they are offered an additional return,

or risk premium, above the rate of return on a risk-free asset. Because all assets compete for investor funds, riskier assets must yield a higher expected rate of return than safer assets to induce investors to invest and hold them.

Given this risk-return tradeoff, the required rate of return (k) from an asset (i) can generally be expressed as:

$$k_i = Rf + RP_i$$

where: R_f = Risk-free rate of return, and
RP_i = Risk premium required to hold riskier asset i.

Thus, the required rate of return for a particular asset at any time is a function of: (1) the yield on risk-free assets, and (2) the asset's relative risk, with investors demanding correspondingly larger risk premiums for bearing greater risk.

Q51. Is there evidence that the risk-return tradeoff principle actually operates in the capital markets?

A51. Yes. The risk-return tradeoff can be documented in segments of the capital markets where required rates of return can be directly inferred from market data and where generally accepted measures of risk exist. Bond yields, for example, reflect investors' expected rates of return, and bond ratings measure the risk of individual bond issues. Comparing the observed yields on government securities, which are considered free of default risk, to the yields on bonds of various rating categories demonstrates that the risk-return tradeoff does, in fact, exist.

Q52. Does the risk-return tradeoff observed with fixed income securities extend to common stocks and other assets?

A52. Yes. It is widely accepted that the risk-return tradeoff evidenced with long-term debt extends to all assets. Documenting the risk-return tradeoff for assets other than fixed income securities, however, is complicated by two factors. First, there is no standard measure of risk applicable to all assets. Second, for most assets—including common stock—required rates of return cannot be observed. Nevertheless, there is every reason

to believe that investors demonstrate risk aversion in deciding whether or not to hold common stocks and other assets, just as when choosing among fixed-income securities.

Q53. Is this risk-return tradeoff limited to differences between firms?

A53. No. The risk-return tradeoff principle applies not only to investments in different firms, but also to different securities issued by the same firm. The securities issued by a utility vary considerably in risk because they have different characteristics and priorities. As noted earlier, the last investors in line are common shareholders. They share in the net earnings, if any, that remain after all other claimants have been paid. As a result, the rate of return that investors require from a utility's common stock, the most junior and riskiest of its securities, must be considerably higher than the yield offered by the utility's senior, long-term debt.

Q54. What are the challenges in determining a just and reasonable ROE for a utility?

A54. The actual return investors require is not directly observable. Different methodologies have been developed to estimate investors' expected return on capital, but these theoretical tools produce a range of estimates, based on different assumptions and inputs. The DCF method, which is frequently referenced and relied on by regulators, is only one theoretical approach to evaluate the return investors require. There are a number of other accepted methodologies for estimating the cost of capital and the ranges produced by these approaches can vary widely.

Q55. Is it customary to consider the results of multiple methods when evaluating a just and reasonable ROE?

A55. Yes. In my experience, financial analysts and regulators routinely consider the results of alternative approaches in evaluating a fair ROE. No single method can be regarded as failsafe, with all approaches having advantages and shortcomings. As FERC has noted, "[t]he determination of rate of return on equity starts from the premise that there

is no single approach or methodology for determining the correct rate of return."[51] Similarly, a publication of the Society of Utility and Regulatory Financial Analysts concluded that:

> Each model requires the exercise of judgment as to the reasonableness of the underlying assumptions of the methodology and on the reasonableness of the proxies used to validate the theory. Each model has its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises, most of which cannot be validated empirically. Investors clearly do not subscribe to any singular method, nor does the stock price reflect the application of any one single method by investors.[52]

As this treatise observed, "no single model is so inherently precise that it can be relied on solely to the exclusion of other theoretically sound models."[53] Similarly, *New Regulatory Finance* concluded that:

> There is no single model that conclusively determines or estimates the expected return for an individual firm. Each methodology possesses its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises that cannot be validated empirically. Investors do not necessarily subscribe to any one method, nor does the stock price reflect the application of any one single method by the price-setting investor. There is no monopoly as to which method is used by investors. In the absence of any hard evidence as to which method outdoes the other, all relevant evidence should be used and weighted equally, in order to minimize judgmental error, measurement error, and conceptual infirmities.[54]

Thus, while the DCF model is a recognized approach, it is not without shortcomings and does not otherwise eliminate the need to ensure that the "end result" is fair. The Commission has recognized this principle:

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[51] *Northwest Pipeline Co.*, Opinion No. 396-C, 81 FERC ¶ 61,036 at 4 (1997).

[52] David C. Parcell, *The Cost of Capital – A Practitioner's Guide*, Society of Utility and Regulatory Financial Analysts (2010) at 84.

[53] *Id*.

[54] Roger A. Morin, *New Regulatory Finance*, Pub. Utils. Reports, Inc. (2006) at 429.

> There are three principal reasons for our unwillingness to place a great deal of weight on the results of any DCF analysis. One is. . . the failure of the DCF model to conform to reality. The second is the undeniable fact that rarely if ever do two expert witnesses agree on the terms of a DCF equation for the same utility – for example, as we shall see in more detail below, projections of future dividend cash flow and anticipated price appreciation of the stock can vary widely. And, the third reason is that the unadjusted DCF result is almost always well below what any informed financial analysis would regard as defensible, and therefore require an upward adjustment based largely on the expert witness's judgment. In these circumstances, we find it difficult to regard the results of a DCF computation as any more than suggestive.[55]

More recently, FERC recognized the potential for any application of the DCF model to produce unreliable results.[56]

As this discussion indicates, consideration of the results of alternative approaches reduces the potential for error associated with any single method. Just as investors inform their decisions through the use of a variety of methodologies, my evaluation of a fair ROE for the Company considered the results of multiple financial models.

Q56. What does this discussion imply with respect to estimating the ROE for a utility?

A56. Although the ROE cannot be observed directly, it is a function of the returns available from other alternatives and the risks of the investment. Because it is not readily observable, the ROE for a particular utility must be estimated by analyzing information about capital market conditions generally, assessing the relative risks of the company specifically, and employing alternative quantitative methods that focus on investors' required rates of return. These methods typically attempt to infer investors' required rates of return from stock prices, interest rates, or other capital market data.

[55] *Ind. Michigan Power Co.*, Cause No. 38728, 116 PUR4th, 1, 17-18 (IURC 8/24/1990).

[56] *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234 at P 41 (2014).

B. Discounted Cash Flow Analysis

Q57. How is the DCF model used to estimate the cost of common equity?

A57. DCF models assume that the price of a share of common stock is equal to the present value of the expected cash flows (*i.e.*, future dividends and stock price) that will be received while holding the stock, discounted at investors' required rate of return. Rather than developing annual estimates of cash flows into perpetuity, the DCF model can be simplified to a "constant growth" form:[57]

$$P_0 = \frac{D_1}{k_e - g}$$

where: P_0 = Current price per share;
D_1 = Expected dividend per share in the coming year;
k_e = Cost of equity; and,
g = Investors' long-term growth expectations.

The cost of common equity (k_e) can be isolated by rearranging terms within the equation:

$$k_e = \frac{D_1}{P_0} + g$$

This constant growth form of the DCF model recognizes that the rate of return to stockholders consists of two parts: 1) dividend yield (D_1/P_0); and 2) growth (g). In other words, investors expect to receive a portion of their total return in the form of current dividends and the remainder through price appreciation.

[57] The constant growth DCF model is dependent on a number of strict assumptions, which in practice are never met. These include a constant growth rate for both dividends and earnings; a stable dividend payout ratio; the discount rate exceeds the growth rate; a constant growth rate for book value and price; a constant earned rate of return on book value; no sales of stock at a price above or below book value; a constant price-earnings ratio; a constant discount rate (*i.e.*, no changes in risk or interest rate levels and a flat yield curve); and all of the above extend to infinity. Nevertheless, the DCF method provides a workable and practical approach to estimate investors' required return that is widely referenced in utility ratemaking.

Q58. What steps are required to apply the constant growth DCF model?

A58. The first step is to determine the expected dividend yield (D_1/P_0) for the firm in question. This is usually calculated based on an estimate of dividends to be paid in the coming year divided by the current price of the stock. The second, and more controversial, step is to estimate investors' long-term growth expectations (*g*) for the firm. The final step is to add the firm's dividend yield and estimated growth rate to arrive at an estimate of its cost of common equity.

Q59. How do you determine the dividend yields for the Utility Group?

A59. I rely on Value Line's estimates of dividends to be paid by each of these utilities over the next twelve months as D_1. This annual dividend is then divided by a 30-day average stock price for each utility to arrive at the expected dividend yield. The expected dividends, stock prices, and resulting dividend yields for the firms in the Utility Group are presented on page 1 of Attachment 10-F (AMM). As shown there, dividend yields for the firms in the Utility Group range from 3.3% to 4.8% and averaged 4.0%.

Q60. What is the next step in applying the constant growth DCF model?

A60. The next step is to evaluate long-term growth expectations, or "*g*", for the firm in question. In constant growth DCF theory, earnings, dividends, book value, and market price are all assumed to grow in lockstep, and the growth horizon of the DCF model is infinite. But implementation of the DCF model is more than just a theoretical exercise; it is an attempt to replicate the mechanism investors used to arrive at observable stock prices. A variety of techniques can be used to derive growth rates, but the only "*g*" that matters in applying the DCF model is the value that investors expect.

Q61. What are investors most likely to consider in developing their long-term growth expectations?

A61. Implementation of the DCF model is solely concerned with replicating the forward-looking evaluation of real-world investors. In the case of utilities, dividend growth rates are not likely to provide a meaningful guide to investors' current growth expectations.

Utility dividend policies reflect the need to accommodate business risks and investment requirements in the industry, as well as potential uncertainties in the capital markets. As a result, dividend growth in the utility industry generally lags growth in earnings as utilities conserve financial resources.

A measure that plays a pivotal role in determining investors' long-term growth expectations is future trends in earnings per share ("EPS"), which provide the source for future dividends and ultimately support share prices. The importance of earnings in evaluating investors' expectations and requirements is well accepted in the investment community, and surveys of analytical techniques relied on by professional analysts indicate that growth in earnings is far more influential than trends in dividends per share ("DPS").

The availability of projected EPS growth rates also is key to investors relying on this measure as compared to future trends in DPS. Apart from Value Line, investment advisory services do not generally publish comprehensive DPS growth projections, and this scarcity of dividend growth rates relative to the abundance of earnings forecasts attests to their relative influence. The fact that securities analysts focus on EPS growth, and that DPS growth rates are not routinely published, indicates that projected EPS growth rates are likely to provide a superior indicator of the future long-term growth expected by investors.

Q62. Do the growth rate projections of security analysts also consider historical trends?

A62. Yes. Professional security analysts study historical trends extensively in developing their projections of future earnings. To the extent there is any useful information in historical patterns, that information is incorporated into analysts' growth forecasts.

Q63. What growth rates are security analysts currently projecting for the firms in the proxy group?

A63. The EPS growth projections for the firms in the Utility Group reported by Value Line, IBES,[58] and Zacks Investment Research ("Zacks") are displayed on page 2 of Attachment 10-F (AMM).

Q64. How else are investors' expectations of future long-term growth prospects sometimes estimated when applying the constant growth DCF model?

A64. In constant growth theory, growth in book equity will be equal to the product of the earnings retention ratio (one minus the dividend payout ratio) and the earned rate of return on book equity. Furthermore, if the earned rate of return and the payout ratio are constant over time, growth in earnings and dividends will be equal to growth in book value. Despite the fact that these conditions are never met in practice, this "sustainable growth" approach may provide a rough guide for evaluating a firm's growth prospects and is frequently proposed in regulatory proceedings.

The sustainable growth rate is calculated by the formula, g = br+sv, where "b" is the expected retention ratio, "r" is the expected earned return on equity, "s" is the percent of common equity expected to be issued annually as new common stock, and "v" is the equity accretion rate. Under DCF theory, the "sv" factor is a component of the growth rate designed to capture the impact of issuing new common stock at a price above, or below, book value. The sustainable, "br+sv" growth rates for each firm in the proxy group are summarized on page 2 of Attachment 10-F (AMM), with the underlying details being presented on Attachment 10-G (AMM).

The sustainable growth rate analysis shown on Attachment 10-G (AMM) incorporates an "adjustment factor" because Value Line's reported returns are based on year-end book values. Since earnings is a flow over the year while book value is

[58] Formerly Institutional Brokers Estimate System, IBES growth rates are now compiled and published by Refinitiv.

determined at a given point in time, the measurement of earnings and book value are distinct concepts. It is this fundamental difference between a flow (earnings) and point estimate (book value) that makes it necessary to adjust to mid-year in calculating the ROE. Given that book value will increase or decrease over the year, using year-end book value (as Value Line does) understates or overstates the average investment that corresponds to the flow of earnings. To address this concern, earnings must be matched with a corresponding representative measure of book value, or the resulting ROE will be distorted. The adjustment factor determined in Attachment 10-G (AMM) is solely a means of converting Value Line's end-of-period values to an average return over the year, and the formula for this adjustment is supported in recognized textbooks and has been adopted by other regulators.[59]

Q65. Are there significant shortcomings associated with the "br+sv" growth rate?

A65. Yes. First, in order to calculate the sustainable growth rate, it is necessary to develop estimates of investors' expectations for four separate variables; namely, "b", "r", "s", and "v." Given the inherent difficulty in forecasting each parameter and the difficulty of estimating the expectations of investors, the potential for measurement error is significantly increased when using four variables, as opposed to referencing a direct projection for EPS growth. Second, empirical research in the finance literature indicates that sustainable growth rates are not as significantly correlated to measures of value, such as share prices, as are analysts' EPS growth forecasts.[60] The "sustainable growth" approach is included for completeness, but evidence indicates that analysts' forecasts provide a superior and more direct guide to investors' growth expectations. Accordingly, I give less weight to cost of equity estimates based on br+sv growth rates in evaluating the results of the DCF model.

[59] *See,* Roger A. Morin, *New Regulatory Finance*, Pub. Utils. Reports, Inc. (2006) at 305-306; *Bangor Hydro-Electric Co. et al*., 122 FERC ¶ 61,265 at n.12 (2008).

[60] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 307.

Q66. What cost of common equity estimates are implied for the Utility Group using the DCF model?

A66. After combining the dividend yields and respective growth projections for each utility, the resulting cost of common equity estimates are shown on page 3 of Attachment 10-F (AMM).

Q67. In evaluating the results of the constant growth DCF model, is it appropriate to eliminate illogical estimates?

A67. Yes. It is essential that the cost of equity estimates produced by quantitative methods pass fundamental tests of reasonableness and economic logic. Accordingly, DCF estimates that are implausibly low or high should be eliminated.

Q68. How do you evaluate DCF estimates at the low end of the range?

A68. My evaluation of DCF estimates at the low end of the range is based on the fundamental risk-return tradeoff, which holds that investors will only take on more risk if they expect to earn a higher rate of return to compensate them for the greater uncertainly. Because common stocks lack the protections associated with an investment in long-term bonds, a utility's common stock imposes far greater risks on investors. As a result, the rate of return that investors require from a utility's common stock is considerably higher than the yield offered by senior, long-term debt. Consistent with this principle, DCF results that are not sufficiently higher than the yield available on less risky utility bonds must be eliminated.

Q69. Have similar tests been applied by other regulators?

A69. Yes. FERC has noted that adjustments are justified where applications of the DCF approach and other methods produce illogical results. FERC evaluates low-end results against observable yields on long-term public utility debt and has recognized that it is appropriate to eliminate estimates that do not sufficiently exceed this threshold.[61]

[61] *See, e.g.*, *Southern California Edison Co*., 131 FERC ¶ 61,020 at P 55 (2010).

FERC's current practice is to exclude low-end cost of estimates that fall below the six-month average yield on Baa-rated utility bonds, plus 20% of the CAPM market risk premium.[62] In addition, FERC also excludes estimates that are "irrationally or anomalously high."[63] Similarly, the Staff of the Maryland Public Service Commission has also eliminated DCF values where they do not offer a sufficient premium above the cost of debt to be attractive to an equity investor.[64]

Q70. Do you exclude any estimates at the low or high end of the range of DCF results?

A70. Yes. As highlighted on page 3 of Attachment 10-F (AMM), after considering these benchmarks and the distribution of individual estimates, I eliminate four low-end DCF estimates ranging from -7.5% to 7.3%, as well as a high-end DCF result of 20.9%. After removing these illogical values, the lower end of the DCF results is set by a cost of equity estimate of 7.6%, while the upper end is established by a cost of equity estimate of 13.0%. While a 13.0% cost of equity estimate may exceed the other values, low-end DCF estimates in the 7.6% to 8.4% range are assuredly far below investors' required rate of return. Taken together and considered along with the balance of the results, the remaining values provide a reasonable basis on which to frame the range of plausible DCF estimates and evaluate investors' required rate of return.

Q71. What cost of equity estimates are implied by your DCF results for the Utility Group?

A71. As shown on page 3 of Attachment 10-F (AMM) and summarized in Table 2, below, after eliminating illogical values, application of the constant growth DCF model resulted in the following ROE estimates:

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[62] Based on the six-month average yield at December 2023 of 6.08% and the 7.3% market risk premium shown on Attachment 10-H (AMM), this implies a current low-end threshold of approximately 7.5%.

[63] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc*., 171 FERC ¶ 61,154 at P 152 (2020).

[64] See, *e.g.*, Maryland Public Service Commission, Case No. 9702, *Direct Testimony and Exhibits of Anson R. Justi* (Dec. 15, 2023) at 33.

TABLE 2
DCF RESULTS – UTILITY GROUP

Growth Rate	Average	Midpoint
Value Line	10.6%	11.3%
IBES	10.0%	10.4%
Zacks	10.3%	10.0%
br + sv	9.1%	9.1%

C. Capital Asset Pricing Model

Q72. Please describe the CAPM.

A72. The CAPM is a theory of market equilibrium that measures risk using the beta coefficient. Assuming investors are fully diversified, the relevant risk of an individual asset (*e.g.*, common stock) is its volatility relative to the market as a whole, with beta reflecting the tendency of a firm's stock price to follow changes in the market. A stock that tends to respond less to market movements has a beta of less than 1.0, while stocks that tend to move more than the market have betas greater than 1.0. The CAPM is mathematically expressed as:

$$R_j = R_f + \beta_j(R_m - R_f)$$

where: R_j = required rate of return for stock j;
R_f = risk-free rate;
R_m = expected return on the market portfolio; and,
β_j = beta, or systematic risk, for stock j.

Under the CAPM formula above, a stock's required return is a function of the risk-free rate (R_f), plus a risk premium that is scaled to reflect the relative volatility of a firm's stock price, as measured by beta (β). Like the DCF model, the CAPM is an *ex-ante,* or forward-looking model based on expectations of the future. As a result, in order to produce a meaningful estimate of investors' required rate of return, the CAPM must be applied using estimates that reflect the expectations of actual investors in the market, not with backward-looking, historical data.

Q73. Why is the CAPM approach relevant when evaluating the cost of equity for Duke Energy Indiana?

A73. The CAPM approach (which also forms the foundation of the ECAPM) generally is considered to be the most widely referenced method for estimating the cost of equity among academicians and professional practitioners, with the pioneering researchers of this method receiving the Nobel Prize in 1990. Because this is the dominant model for estimating the cost of equity outside the regulatory sphere, the CAPM (and ECAPM) provides important insight into investors' required rate of return for utility stocks.

Q74. How do you apply the CAPM to estimate the ROE?

A74. Application of the CAPM to the Utility Group based on a forward-looking estimate for investors' required rate of return from common stocks is presented in Attachment 10-H (AMM). To capture the expectations of today's investors in current capital markets, the expected market rate of return is estimated by conducting a DCF analysis on the dividend paying firms in the S&P 500.

The dividend yield for each firm is obtained from Value Line, and the growth rate is equal to the average of the earnings growth projections for each firm published by IBES, Value Line, and Zacks, with each firm's dividend yield and growth rate being weighted by its proportionate share of total market value. After removing companies with growth rates that were negative or greater than 20%, the weighted average of the projections for the individual firms implies an average growth rate over the next five years of 9.7%. Combining this average growth rate with a year-ahead dividend yield of 2.0% results in a current cost of common equity estimate for the market as a whole (R_m) of 11.7%. Subtracting a 4.4% risk-free rate based on the average yield on 30-year Treasury bonds for the six-months ending December 2023 produces a market equity risk premium of 7.3%.

Q75. What beta values do you use?

A75. As indicated earlier in my discussion of risk measures for the proxy group, I relied on the beta values reported by Value Line, which in my experience is the most widely referenced source for beta in regulatory proceedings.

Q76. What else should be considered when applying the CAPM?

A76. Financial research indicates that the CAPM does not fully account for observed differences in rates of return attributable to firm size. Accordingly, a modification is required to account for this size effect. As explained by Morningstar:

> One of the most remarkable discoveries of modern finance is the finding of a relationship between firm size and return. On average, small companies have higher returns than large ones. . . . The relationship between firm size and return cuts across the entire size spectrum; it is not restricted to the smallest stocks.[65]

According to the CAPM, the expected return on a security should consist of the riskless rate, plus a premium to compensate for the systematic risk of the particular security. The degree of systematic risk is represented by the beta coefficient. The need for the size adjustment arises because differences in investors' required rates of return that are related to firm size are not fully captured by beta. To account for this, researchers have developed size premiums that need to be added to account for the level of a firm's market capitalization in determining the CAPM cost of equity.[66] Accordingly, my CAPM analysis also incorporates an adjustment to recognize the impact of size distinctions, as measured by the market capitalization for the firms in the Utility Group.

Q77. What is the basis for the size adjustment?

A77. The size adjustment required in applying the CAPM is based on the finding that *after controlling for risk differences reflected in beta*, the CAPM overstates returns to

[65] Morningstar, *2015 Ibbotson SBBI Classic Yearbook*, at 99.

[66] Originally compiled by Ibbotson Associates and published in their annual yearbook entitled, *Stocks, Bonds, Bills and Inflation*, these size premia are now developed by Kroll and presented in its *Cost of Capital Navigator*.

companies with larger market capitalizations and understates returns for relatively smaller firms. The size adjustments utilized in my analysis are sourced from Kroll, who now publish the well-known compilation of capital market series originally developed by Professor Roger G. Ibbotson of the Yale School of Management. Calculation of the size adjustments involve the following steps:

1. Divide all stocks traded on the NYSE, NYSE MKT, and NASDAQ indices into deciles based on their market capitalization.
2. Using the average beta value for each decile, calculate the implied excess return over the risk-free rate using the CAPM.
3. Compare the calculated excess returns based on the CAPM to the actual excess returns for each decile, with the difference being the increment of return that is related to firm size, or "size adjustment."

New Regulatory Finance observed that "small market-cap stocks experience higher returns than large market-cap stocks with equivalent betas," and concluded that "the CAPM understates the risk of smaller utilities, and a cost of equity based purely on a CAPM beta will therefore produce too low an estimate."[67] As FERC has recognized, "[t]his type of size adjustment is a generally accepted approach to CAPM analyses."[68]

Q78. Is this size adjustment related to the relative size of Duke Energy Indiana as compared with the proxy group?

A78. No. I am not proposing to apply a general size risk premium in evaluating a just and reasonable ROE for the Company and my recommendation does not include any adjustment related to the relative size of Duke Energy Indiana. Rather, this size adjustment is specific to the CAPM and merely corrects for an observed inability of the beta measure to fully reflect the risks perceived by investors for the firms in the proxy group.

[67] Roger A. Morin, *New Regulatory Finance*, Pub. Utils. Reports, Inc. (2006) at 187.

[68] Opinion No. 531-B at P 117.

Q79. What is the implied ROE for the Utility Group using the CAPM approach?

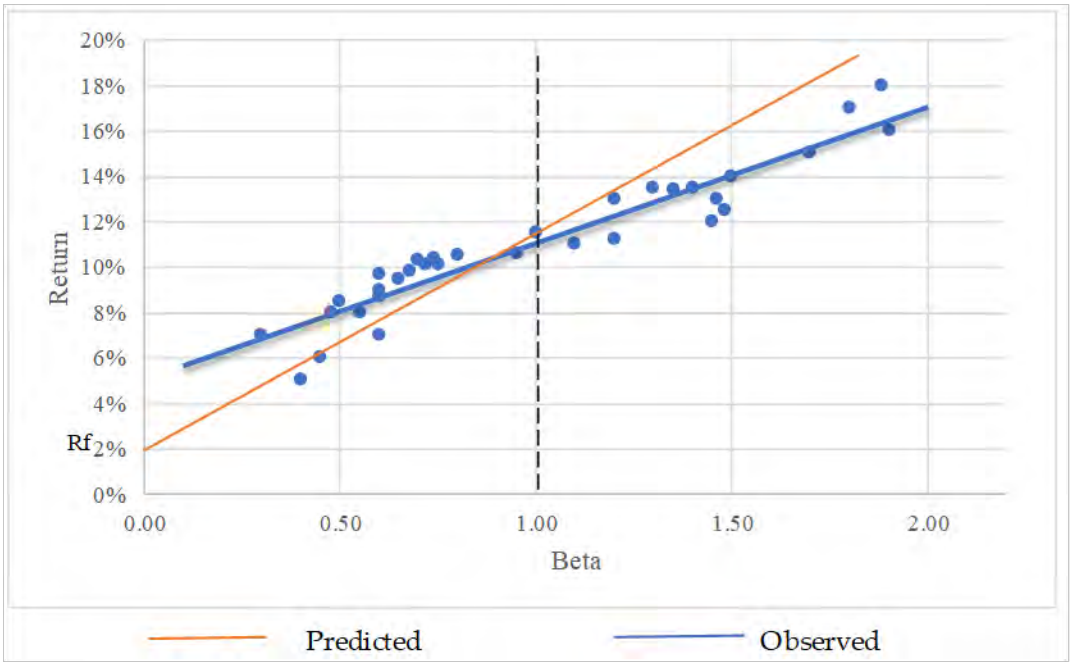
A79. As shown on Attachment 10-G (AMM), after adjusting for the impact of firm size, the CAPM approach implies an average ROE for the Utility Group of 11.5%.

D. Empirical Capital Asset Pricing Model

Q80. How does the ECAPM approach differ from traditional applications of the CAPM?

A80. Empirical tests of the CAPM have shown that low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. In other words, the CAPM tends to overstate the actual sensitivity of the cost of capital to beta, with low-beta stocks tending to have higher returns and high-beta stocks tending to have lower risk returns than predicted by the CAPM. This is illustrated graphically in the figure below:

FIGURE 3
CAPM – PREDICTED VS. OBSERVED RETURNS



Because the betas of utility stocks, including those in the Utility Group, are generally less than 1.0, this implies that cost of equity estimates based on the traditional

CAPM would understate the cost of equity. This empirical finding is widely reported in the finance literature, as summarized in *New Regulatory Finance*:

> As discussed in the previous section, several finance scholars have developed refined and expanded versions of the standard CAPM by relaxing the constraints imposed on the CAPM, such as dividend yield, size, and skewness effects. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the CAPM prediction in keeping with the actual observed risk-return relationship. The ECAPM makes use of these empirical relationships.[69]

Based on a review of the empirical evidence, *New Regulatory Finance* concluded the expected return on a security is represented by the following formula:

$$R_j = R_f + 0.25(R_m - R_f) + 0.75[\beta_j(R_m - R_f)]$$

Like the CAPM formula presented earlier, the ECAPM represents a stock's required return as a function of the risk-free rate (R_f), plus a risk premium. In the formula above, this risk premium is composed of two parts: (1) the market risk premium ($R_m - R_f$) weighted by a factor of 25%, and (2) a company-specific risk premium based on the stock's relative volatility [$\beta_j(R_m - R_f)$] weighted by 75%. This ECAPM equation, and its associated weighting factors, recognizes the observed relationship between standard CAPM estimates and the cost of capital documented in the financial research, and corrects for the understated returns that would otherwise be produced for low beta stocks.

Q81. Is the use of the ECAPM consistent with the use of Value Line betas?

A81. Yes. Value Line beta values are adjusted for the observed tendency of beta to converge toward the mean value of 1.00 over time.[70] The purpose of this adjustment is to refine beta values determined using historical data to better match forward-looking estimates of beta, which are the relevant parameter in applying the CAPM or ECAPM models.

[69] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 189.

[70] *See, e.g.,* Marshall E. Blume, *Betas and Their Regression Tendencies*, Journal of Finance (Jun. 1975), pp. 785-795.

Meanwhile, the ECAPM does not involve any adjustment to beta whatsoever. Rather, it represents a formal recognition of findings in the financial literature that the observed risk-return tradeoff illustrated in Figure 3 is flatter than predicted by the CAPM. In other words, even if a firm's beta value were estimated with perfect precision, the CAPM would still understate the return for low-beta stocks and overstate the return for high-beta stocks. The ECAPM and the use of adjusted betas represent two separate and distinct issues in estimating returns.

Q82. What cost of equity estimate is indicated by the ECAPM?

A82. My application of the ECAPM is based on the same forward-looking market rate of return, risk-free rates, and beta values discussed earlier in connection with the CAPM. As shown on Attachment 10-I (AMM), applying the forward-looking ECAPM approach to the firms in the Utility Group results in an average cost of equity estimate of 11.7%, after incorporating the size adjustment corresponding to the market capitalization of the individual utilities.

E. Utility Risk Premium

Q83. Briefly describe the risk premium method.

A83. The risk premium method extends the risk-return tradeoff observed with bonds to estimate investors' required rate of return on common stocks. The cost of equity is estimated by first determining the additional return investors require to forgo the relative safety of bonds and to bear the greater risks associated with common stock, and then adding this equity risk premium to the current yield on bonds. Like the DCF model, the risk premium method is capital market oriented. However, unlike DCF models, which indirectly impute the cost of equity, risk premium methods directly estimate investors' required rate of return by adding an equity risk premium to observable bond yields.

Q84. Is the risk premium approach a widely accepted method for estimating the cost of equity?

A84. Yes. The risk premium approach is based on the fundamental risk-return principle that is central to finance, which holds that investors will require a premium in the form of a higher return in order to assume additional risk. This method is routinely referenced by the investment community and in academia and regulatory proceedings, and provides an important tool in estimating a fair ROE for Duke Energy Indiana.

Q85. How do you implement the risk premium method?

A85. Estimates of equity risk premiums for utilities are based on surveys of previously authorized ROEs. Authorized ROEs presumably reflect regulatory commissions' best estimates of the cost of equity, however determined, at the time they issued their final order. Such ROEs should represent a balanced and impartial outcome that considers the need to maintain a utility's financial integrity and ability to attract capital. Moreover, allowed returns are an important consideration for investors and have the potential to influence other observable investment parameters, including credit ratings and borrowing costs. When considered in the context of a complete and rigorous analysis, this data provides a logical and frequently referenced basis for estimating equity risk premiums for regulated utilities.

Q86. How do you calculate the equity risk premiums based on allowed returns?

A86. The ROEs authorized for electric utilities by regulatory commissions across the U.S. are compiled by S&P Global Market Intelligence and published in its *RRA Regulatory Focus* report. On page 2 of Attachment 10-J (AMM), the average yield on public utility bonds is subtracted from the average allowed ROE for electric utilities to calculate equity risk premiums for each year between 1974 and 2023.[71] As shown there, over this

[71] My analysis encompasses the entire period for which published data is available.

period these equity risk premiums for electric utilities average 3.89%, and the yields on public utility bonds average 7.78%.

Q87. Is there any capital market relationship that must be considered when implementing the risk premium method?

A87. Yes. Equity risk premiums are not constant and tend to move inversely with interest rates. In other words, when interest rate levels are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums widen. The implication of this inverse relationship is that the cost of equity does not move as much as interest rates. Accordingly, for a 1% increase or decrease in interest rates, the cost of equity may only rise or fall some fraction of 1%. When implementing the risk premium method, adjustments are required to incorporate this inverse relationship if the current interest rate is different from the average interest rate over the study period.

Current bond yields are lower than those prevailing over the risk premium study period. Given that equity risk premiums move inversely with interest rates, these lower bond yields also imply an increase in the equity risk premium. In other words, higher required equity risk premiums offset the impact of declining interest rates on the ROE.

Q88. Is this inverse relationship confirmed by published financial research?

A88. Yes. There is considerable empirical evidence that when interest rates are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums are greater. This inverse relationship between equity risk premiums and interest rates has been widely reported in the financial literature. As summarized by *New Regulatory Finance*:

> Published studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), Morin (2005), and McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates – rising when rates fell and declining when rates rose.[72]

Other regulators have also recognized that, while the cost of equity trends in the same direction as interest rates, these variables do not move in lock-step.[73] This relationship is illustrated in the figure on page 3 of Attachment 10-J (AMM).

Q89. What ROE is implied by the risk premium method using surveys of allowed returns?

A89. Based on the regression output between the interest rates and equity risk premiums displayed on page 3 of Attachment 10-J (AMM), the equity risk premium for electric utilities increases by approximately 42 basis points for each percentage point drop in the yield on average public utility bonds. As illustrated on page 1 of Attachment 10-J (AMM) with an average yield on public utility bonds for the six-months ending December 2023 of 5.85%, this implies a current equity risk premium of 4.71% for electric utilities. Adding this equity risk premium to the average yield on Baa-rated utility bonds implies a current ROE of 10.79%.

F. Expected Earnings Approach

Q90. What other analysis do you conduct to evaluate a fair ROE for Duke Energy Indiana?

A90. I also evaluate the ROE using the expected earnings method. Reference to rates of return available from alternative investments of comparable risk can provide an important benchmark in assessing the return necessary to assure confidence in the financial integrity of a firm and its ability to attract capital. This expected earnings

[72] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 128.

[73] *See, e.g.*, California Public Utilities Commission, Decision 08-05-035 (May 29, 2008); Entergy Mississippi Formula Rate Plan FRP-7, https://www.entergy-mississippi.com/userfiles/content/price/tariffs/eml_frp.pdf (last visited Feb. 8, 2023); *Martha Coakley et al. v. Bangor Hydro-Elec. Co. et al.*, 147 FERC ¶ 61,234 at P 147 (2014).

approach is consistent with the economic underpinnings for a just and reasonable rate of return established by the U.S. Supreme Court in *Bluefield* and *Hope*. Moreover, it avoids the complexities and limitations of capital market methods and instead focuses on the returns earned on book equity, which are readily available to investors.

Q91. What economic premise underlies the expected earnings approach?

A91. The expected earnings approach is based on the concept that investors compare each investment alternative with the next best opportunity. If the utility is unable to offer a return similar to that available from other opportunities of comparable risk, investors will become unwilling to supply the capital on reasonable terms. For existing investors, denying the utility an opportunity to earn what is available from other similar risk alternatives prevents them from earning their opportunity cost of capital. This outcome would violate the *Hope* and *Bluefield* standards and undermine the utility's access to capital on reasonable terms.

Q92. How is the expected earnings approach typically implemented?

A92. The traditional comparable earnings test identifies a group of companies that are believed to be comparable in risk to the utility. The actual earnings of those companies on the book value of their investment are then compared to the allowed return of the utility. While the traditional comparable earnings test is implemented using historical data taken from the accounting records, it is also common to use projections of returns on book investment, such as those published by recognized investment advisory publications (*e.g.*, Value Line). Because these projected returns on book value equity are analogous to the forward-looking allowed ROE on a utility's rate base, this measure of opportunity costs results in a direct, "apples to apples" comparison.

Moreover, regulators do not set the returns that investors earn in the capital markets, which are a function of dividend payments and fluctuations in common stock prices—both of which are outside their control. Regulators can only establish the allowed ROE, which is applied to the book value of a utility's investment in rate base,

as determined from its accounting records. This is analogous to the expected earnings approach, which measures the return that investors expect the utility to earn on book value. As a result, the expected earnings approach provides a meaningful guide to ensure that the allowed ROE is similar to what other utilities of comparable risk will earn on invested capital. This expected earnings test does not require theoretical models to indirectly infer investors' perceptions from stock prices or other market data. As long as the proxy companies are similar in risk, their expected earned returns on invested capital provide a direct benchmark for investors' opportunity costs that is independent of fluctuating stock prices, market-to-book ratios, debates over DCF growth rates, or the limitations inherent in any theoretical model of investor behavior.

Q93. What ROE is indicated for Duke Energy Indiana based on the expected earnings approach?

A93. For the firms in the Utility Group, the year-end returns on common equity projected by Value Line over its forecast horizon are shown on Attachment 10-K (AMM). As I explained earlier in my discussion of the br+sv growth rates used in applying the DCF model, Value Line's returns on common equity are calculated using year-end equity balances, which understates the average return earned over the year.[74] Accordingly, these year-end values were converted to average returns using the same adjustment factor discussed earlier and developed on Attachment 10-G (AMM). As shown on Attachment 10-K (AMM), Value Line's projections for the Utility Group suggest an average ROE of 11.3%.

[74] For example, to compute the annual return on a passbook savings account with a beginning balance of $1,000 and an ending balance of $5,000, the interest income would be divided by the average balance of $3,000. Using the $5,000 balance at the end of the year would understate the actual return.

VI. NON-UTILITY BENCHMARK

Q94. What is the purpose of this section of your testimony?

A94. This section presents the results of my DCF analysis for a group of low-risk firms in the competitive sector, which I refer to as the "Non-Utility Group." This analysis is not directly considered to arrive at my recommended ROE range of reasonableness; however, it is my opinion that this is a relevant consideration in evaluating a fair ROE for the Company.

Q95. Do utilities have to compete with non-regulated firms for capital?

A95. Yes. The cost of capital is an opportunity cost based on the returns that investors could realize by putting their money in other alternatives. Clearly, the total capital invested in utility stocks is only a small fraction of total common stock investment, and there is an abundance of other alternatives available to investors. Utilities must compete for capital, not just against firms in their own industry, but with other investment opportunities of comparable risk. This understanding is consistent with modern portfolio theory, which is built on the assumption that rational investors will hold a diverse portfolio of stocks and not just companies in a single industry.

Q96. Is it consistent with the *Bluefield* and *Hope* cases to consider investors' required ROE for non-utility companies?

A96. Yes. The cost of equity capital in the competitive sector of the economy forms the underpinning for utility ROEs because regulation purports to serve as a substitute for the actions of competitive markets. The Supreme Court has recognized that it is the degree of risk, not the nature of the business, which is relevant in evaluating an allowed ROE for a utility. The *Bluefield* case refers to "business undertakings attended with comparable risks and uncertainties." It does not restrict consideration to other utilities. Similarly, the *Hope* case states:

> By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.[75]

As in the *Bluefield* decision, there is nothing to restrict "other enterprises" solely to the utility industry.

Q97. Does consideration of the results for the Non-Utility Group improve the reliability of DCF results?

A97. Yes. Growth estimates used in the DCF model depend on analysts' forecasts. It is possible for utility growth rates to be distorted by short-term trends in the industry, or by the industry falling into favor or disfavor by analysts. Such distortions could result in biased DCF estimates for utilities. Because the Non-Utility Group includes low risk companies from more than one industry, it helps to insulate against any possible distortion that may be present in results for a particular sector.

Q98. What criteria do you apply to develop the Non-Utility Group?

A98. My comparable risk proxy group was composed of those United States companies followed by Value Line that:

1) pay common dividends;
2) have a Safety Rank of "1";
3) have a Financial Strength Rating of "A" or greater;
4) have a beta less than 1.00; and
5) have investment grade credit ratings from S&P and Moody's.

Q99. How do the overall risks of your Non-Utility Group compare to the proxy group of electric utilities?

A99. Table 3 compares the Non-Utility Group to the Utility Group across the four key indices of investment risk discussed above.

[75] *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 391 (1944) (Hope).

TABLE 3
COMPARISON OF RISK INDICATORS

			Value Line		
	S&P	Moody's	Safety Rank	Financial Strength	Beta
Non-Utility Group	A-	A2	1	A+	0.80
Utility Group	A-	Baa1	2	A	0.93

As shown above, the risk indicators for the Non-Utility Group suggest less risk than for the Utility Group.

The companies that make up the Non-Utility Group are representative of the pinnacle of corporate America. These firms, which include household names such as Coca-Cola, Home Depot, Procter & Gamble, and Walmart, have long corporate histories, well-established track records, and conservative risk profiles. Many of these companies pay dividends on a par with utilities, with the average dividend yield for the group at 2.3%.[76] Moreover, because of their significance and name recognition, these companies receive intense scrutiny by the investment community, which increases confidence that published growth estimates are representative of the consensus expectations reflected in common stock prices.

Q100. What are the results of your DCF analysis for the Non-Utility Group?

A100. I apply the DCF model to the Non-Utility Group using the same analysts' EPS growth projections described earlier for the Utility Group, with the results being presented on page 3 of Attachment 10-L (AMM). As summarized in Table 4, below, after eliminating illogical values, application of the constant growth DCF model results in the following cost of equity estimates:

[76] Attachment 10-L (AMM) at page 1.

TABLE 4
DCF RESULTS – NON-UTILITY GROUP

Growth Rate	Average	Midpoint
Value Line	10.5%	10.9%
IBES	11.0%	11.4%
Zacks	11.0%	11.6%

As discussed earlier, reference to the Non-Utility Group is consistent with established regulatory principles. Required returns for utilities should be in line with those of non-utility firms of comparable risk operating under the constraints of free competition. Because the actual cost of equity is unobservable, and DCF results inherently incorporate a degree of error, cost of equity estimates for the Non-Utility Group provide an important benchmark in evaluating a fair ROE for Duke Energy Indiana.

Q101. Does this conclude your direct testimony?

A101. Yes, it does.

VERIFICATION

I hereby verify under the penalties of perjury that the foregoing representations are true to the best of my knowledge, information and belief.

Signed: 
Adrien McKenzie

Dated: April 4, 2024

QUALIFICATIONS OF ADRIEN M. MCKENZIE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Adrien M. McKenzie. My business address is 3907 Red River Street, Austin, Texas 78751.

Q. PLEASE STATE YOUR OCCUPATION.

A. I am a principal in FINCAP, Inc., a firm engaged primarily in financial, economic, and policy consulting in the field of public utility regulation.

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I received B.A. and M.B.A. degrees with a major in finance from The University of Texas at Austin and hold the Chartered Financial Analyst (CFA®) designation. Since joining FINCAP in 1984, I have participated in consulting assignments involving a broad range of economic and financial issues, including cost of capital, cost of service, rate design, economic damages, and business valuation. I have extensive experience in economic and financial analysis for regulated industries, and in preparing and supporting expert witness testimony before courts, regulatory agencies, and legislative committees throughout the U.S. and Canada. I have personally sponsored direct and rebuttal testimony in more than 200 proceedings filed with the Federal Energy Regulatory Commission ("FERC") and regulatory agencies in Alaska, Arkansas, Colorado, District of Columbia, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Montana, Nebraska, New Mexico, Ohio, Oklahoma, Oregon, South Dakota, Texas, Virginia, Washington, West Virginia, and Wyoming. My testimony addressed the establishment of risk-comparable proxy groups, the application of alternative quantitative methods, and the consideration of regulatory standards and policy objectives in establishing a fair rate of

return on equity for regulated electric, gas, and water utility operations. In connection with these assignments, my responsibilities have included critically evaluating the positions of other parties and preparation of rebuttal testimony, representing clients in settlement negotiations and hearings, and assisting in the preparation of legal briefs.

FINCAP was formed in 1979 as an economic and financial consulting firm serving clients in both the regulated and competitive sectors. FINCAP conducts assignments ranging from broad qualitative analyses and policy consulting to technical analyses and research. The firm's experience is in the areas of public utilities, valuation of closely-held businesses, and economic evaluations (e.g., damage and cost/benefit analyses). Prior to joining FINCAP, I was employed by an oil and gas firm and was responsible for operations and accounting. I am a member of the CFA Institute. A resume containing the details of my qualifications and experience is attached below.

QUALIFICATIONS OF ADRIEN M. MCKENZIE

ADRIEN M. McKENZIE

FINCAP, INC.
Financial Concepts and Applications
Economic and Financial Counsel

3907 Red River Street
Austin, Texas 78751
(512) 923-2790
amm.fincap@outlook.com

Summary of Qualifications

Adrien McKenzie has over 35 years of experience in economic and financial analysis for regulated industries, and in preparing and supporting expert witness testimony before regulatory agencies, courts, and legislative committees throughout the U.S. and Canada. Assignments have included a broad range of economic and financial issues, including cost of capital, cost of service, rate design, economic damages, and business valuation. Mr. McKenzie holds the Chartered Financial Analyst (CFA®) designation and earned an MBA in finance from the University of Texas at Austin.

Employment

President FINCAP, Inc. (June 1984 to June 1987) (April 1988 to present)	Economic consulting firm specializing in regulated industries and valuation of closely-held businesses. Assignments have involved electric, gas, telecommunication, and water/sewer utilities, with clients including utilities, consumer groups, municipalities, regulatory agencies, and cogenerators. Areas of participation have included rate of return, revenue requirements, rate design, tariff analysis, avoided cost, forecasting, and negotiations. Develop cost of capital analyses using alternative market models for electric, gas, and telephone utilities. Prepare pre-filed direct and rebuttal testimony, participate in settlement negotiations, respond to interrogatories, evaluate opposition testimony, and assist in the areas of cross-examination and the preparations of legal briefs. Other assignments have involved preparation of technical reports, valuations, estimation of damages, industry studies, and various economic analyses in support of litigation.
Manager, McKenzie Energy Company (Jan. 1981 to May. 1984)	Responsible for operations and accounting for firm engaged in the management of working interests in oil and gas properties.

QUALIFICATIONS OF ADRIEN M. MCKENZIE

Education

M.B.A., Finance, University of Texas at Austin (Sep. 1982 to May. 1984)	Program included coursework in corporate finance, accounting, financial modeling, and statistics. Received Dean's Award for Academic Excellence and Good Neighbor Scholarship. Professional Report: *The Impact of Construction Expenditures on Investor-Owned Electric Utilities*
B.B.A., Finance, University of Texas at Austin (Jan. 1981 to May 1982)	Electives included capital market theory, portfolio management, and international economics and finance. Elected to Beta Gamma Sigma business honor society. Dean's List 1981-1982.
Simon Fraser University, Vancouver, Canada and University of Hawaii at Manoa, Honolulu, Hawaii (Jan. 1979 to Dec 1980)	Coursework in accounting, finance, economics, and liberal arts.

Professional Associations

Received Chartered Financial Analyst (CFA®) designation in 1990.

Member – CFA Institute.

Bibliography

"A Profile of State Regulatory Commissions," A Special Report by the Electricity Consumers Resource Council (ELCON), Summer 1991.

"The Impact of Regulatory Climate on Utility Capital Costs: An Alternative Test," with Bruce H. Fairchild, *Public Utilities Fortnightly* (May 25, 1989).

Presentations

"ROE at FERC: Issues and Methods," *Expert Briefing on Parallels in ROE Issues between AER, ERA, and FERC,* Jones Day (Sydney, Melbourne, and Perth, Australia) (April 15, 2014).

Cost of Capital Working Group eforum, Edison Electric Institute (April 24, 2012).

"Cost-of-Service Studies and Rate Design," General Management of Electric Utilities (A Training Program for Electric Utility Managers from Developing Countries), Austin, Texas (October 1989 and November 1990 and 1991).

QUALIFICATIONS OF ADRIEN M. MCKENZIE

Representative Assignments

- Mr. McKenzie has prepared and sponsored prefiled testimony submitted in over 200 regulatory proceedings.
- In addition to filings before regulatory agencies in Alaska, Arkansas, Colorado, District of Columbia, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Montana, Nebraska, New Mexico, Ohio, Oklahoma, Oregon, South Dakota, Texas, Virginia, Washington, West Virginia, and Wyoming, Mr. McKenzie has considerable expertise in preparing expert analyses and testimony before the Federal Energy Regulatory Commission.
- Evaluation of fair rate of return on equity for electric, gas, water, sewer, and telephone utilities, as well as natural gas pipelines.
- Analysis of capital structure issues for regulated utilities.
- Developing cost of service, cost allocation, and rate design studies.
- Design and development of explanatory models for nuclear plant capital costs in connection with prudency reviews.
- Analysis of avoided cost pricing for cogenerated power.
- Application of econometric models to analyze the impact of anti-competitive behavior, theft of trade secrets, and estimate lost profits.
- Valuation of closely-held businesses.

ROE ANALYSIS

SUMMARY OF RESULTS

Method	Average
DCF	
Value Line	10.6%
IBES	10.0%
Zacks	10.3%
Internal br + sv	9.1%
CAPM	11.5%
ECAPM	11.7%
Utility Risk Premium	10.8%
Expected Earnings	11.3%

ROE Recommendation			
Recommended Cost of Equity Range	10.3%	--	11.3%
Recommended ROE		**10.8%**	

RISK MEASURES

UTILITY GROUP

		(a)			(b)			(c)								
		Credit Ratings						**Value Line**								
	Company	**Moody's**			**S&P**			**Safety Rank**			**Financial Strength**			**Beta**		
1	Ameren Corp.	Baa1			BBB+			1			A			0.90		
2	Consolidated Edison	Baa1			A-			1			A+			0.80		
3	NextEra Energy, Inc.	Baa1			A-			2			A			1.00		
4	OGE Energy Corp.	Baa1			BBB+			2			A			1.05		
5	Pinnacle West Capital	Baa1			BBB+			2			A			0.95		
6	Portland General Elec.	A3			BBB+			2			B++			0.90		
7	PPL Corp.	Baa1			A-			3			B++			1.10		
8	WEC Energy Group	Baa1			A-			1			A+			0.85		
9	Xcel Energy Inc.	Baa1			A-			1			A+			0.85		
		Baa1	**--**	**A3**	**BBB+**	**--**	**A-**	**1**	**--**	**2**	**B++**	**--**	**A+**	**1.10**	**--**	**0.80**
	Duke Energy Indiana (d)	**A2**			**BBB+**			**2**			**A**			**0.90**		

(a) www.moodys.com (retrieved Jan. 4, 2024).
(b) www.standardandpoors.com (retrieved Jan. 4, 2024).
(c) The Value Line Investment Survey (Oct. 20, Nov. 10 and Dec. 8, 2023).
(d) Value Line ratings are for Duke Energy Indiana's parent company, Duke Energy.

REGULATORY MECHANISMS

UTILITY GROUP

		Type of Adjustment Clause (a)									(b)	(c)
			Conserv.	Decoupling		New Capital					Future	Formula
	Company	Fuel/PPA	Program Expense	Full	Partial	Trad. Generation	Renewables/ Non-Trad.	Delivery Infra.	Environ. Compliance	Trans. Costs	Test Year	Rates / MRP
1	Ameren Corp.	✓	✓	✓	✓	--	✓	✓	✓	✓	O,P	✓
2	Consolidated Edison	D	✓	✓	✓	--	✓	✓	✓	--	C,P	✓
3	NextEra Energy, Inc.	✓	✓	--	--	✓	✓	✓	✓	✓	C	✓
4	OGE Energy Corp.	✓	✓	--	✓	✓	✓	✓	✓	✓	P	✓
5	Pinnacle West Capital	✓	✓	--	✓	--	✓	--	✓	✓	--	✓
6	Portland General Elec.	✓	✓	--	--	✓	✓	--	✓	✓	C	--
7	PPL Corp.	✓	✓	✓	✓	--	--	✓	✓	✓	C,O	✓
8	WEC Energy Group	✓	✓	--	--	--	✓	--	--	--	C	--
9	Xcel Energy Inc.	✓	✓	--	✓	✓	✓	✓	✓	✓	C,O	✓

Notes

D - Delivery-only utility.

C - Fully-forecasted test years commonly used in the state listed for this operating company.

O - Fully-forecasted test years occasionally used in the state listed for this operating company.

P - Partially-forecasted test years commonly or occasionally used in the state listed for this operating company.

Source: Attachment 10-D (AMM), pages 2-5, contain operating company data that are aggregated into the parent company data on this page.

REGULATORY MECHANISMS

ELECTRIC GROUP OPERATING COS.

			Type of Adjustment Clause (a)																		(b)	(c)
					Conserv. Program		Decoupling			New Capital											Future Test	Formula Rates /
	Company	State	Fuel/PPA		Expense		Full		Partial		Trad. Generation		Renewables/ Non-Trad.		Delivery Infra.		Environ. Compliance		Trans. Costs		Year	MRP
1	**AMEREN CORP.**																					
	Ameren Illinois Co.	IL	D	*	✓		--		✓	*	--		✓		--		✓	*	✓		O	✓
	Union Electric Co.	MO	✓		✓	*	--		✓	*	--		✓	*	✓	*	--	*	✓	*	P	--
2	**CONSOLIDATED EDISON**																					
	Rockland Electric Co.	NJ	D	*	✓	*	--		✓	*	--		--		--	*	✓	*	--		P	--
	Consolidated Edison Co. of New York Inc.	NY	D	*	✓		✓		--		--		✓	*	✓	*	--		--		C	✓
	Orange & Rockland Utilities Inc.	NY	D	*	✓		✓		--		--		✓	*	--		--		--		C	✓
3	**NEXTERA ENERGY**																					
	Florida Power & Light Co.	FL	✓		✓		--		--		✓	*	✓	*	--	*	✓		--		C	✓
	Lone Star Transmission LLC	TX	D	*	--		--		--		--		--		✓		--		✓		--	✓
4	**OGE ENERGY CORP.**																					
	Oklahoma Gas & Electric Co.	AR	✓		✓		--		✓	*	✓		✓		✓		✓		✓		P	--
	Oklahoma Gas & Electric Co.	OK	✓		✓	*	--		✓	*	--		--		✓	*	✓	*	✓	*	--	✓
5	**PINNACLE WEST CAPITAL**																					
	Arizona Public Service Co.	AZ	✓		✓		--		✓	*	--		✓		--		✓		✓		--	✓
6	**PORTLAND GENERAL ELECTRIC**																					
	Portland General Electric Co.	OR	✓		✓		--		--		✓	*	✓	*	--		✓	*	✓		C	--
7	**PPL CORP.**																					
	Kentucky Utilities Co.	KY	✓		✓		--		✓	*	--		--		--		✓		--		O	--
	Louisville Gas & Electric Co.	KY	✓		✓		--		✓	*	--		--		--		✓		--		O	--
	PPL Electric Utilities Corp.	PA	D	*	✓		--		--		--		--		✓	*	--		✓		O	--
	Narragansett Electric Co.	RI	D	*	✓		✓		--		--		--		✓	*	--		✓		C	--
	Kentucky Utilities Co.	VA	✓		--		--		--		--		--		--		--		--		--	✓
8	**WEC ENERGY GROUP**																					
	Upper Michigan Energy Resources Corp.	MI	✓		✓		--	*	--		--		✓		--		--		--		C	--
	Wisconsin Electric Power Co.	WI	✓	*	--	*	--		--		--	*	✓		--	*	--		--		C	--
	Wisconsin Public Service Corp.	WI	✓	*	--	*	--		--		--	*	--		--	*	--		--		C	--

REGULATORY MECHANISMS

ELECTRIC GROUP OPERATING COS.

			Type of Adjustment Clause (a)																		(b)	(c)
					Conserv.					New Capital											Future	Formula
					Program		Decoupling			Trad.		Renewables/		Delivery		Environ.		Trans.			Test	Rates /
	Company	State	Fuel/PPA		Expense		Full	Partial		Generation		Non-Trad.		Infra.		Compliance		Costs			Year	MRP
9	**XCEL ENERGY, INC.**																					
	Public Service Co. of Colorado	CO	✓		✓		--	✓	*	--		✓		--		--		✓			--	✓
	Northern States Power Co. - Minnesota	MN	✓		✓		--	✓	*	--		✓		--		✓		✓			C	✓
	Southwestern Public Service Co.	NM	✓		✓		--	--		--		✓		--		--		--			O	--
	Northern States Power Co. - Minnesota	ND	✓		--		--	--		--		✓	*	✓	*	--	*	✓	*		O	✓
	Northern States Power Co. - Minnesota	SD	✓		✓	*	--	✓	*	✓	*	--		✓	*	✓		✓			--	--
	Southwestern Public Service Co.	TX	✓	*	✓		--	--		--	*	--		--		--		✓			--	✓
	Northern States Power Co. - Wisconsin	WI	✓	*	--	*	--	--		--	*	--		--	*	--		--			C	--

(a) S&P Global Market Intelligence, *Adjustment clauses: A state by state overview* , Regulatory Focus Topical Special Report (Jul. 18, 2022).

(b) Edison Electric Institute, *Alternative Regulation for Emerging Utility Challenges: 2015 Update* (Nov. 11, 2015).

(c) Formula rates and Multiyear Rate plans approved in the state listed for this operating company. *See* , U.S. Department of Energy, *State Performance-Based Regulation Using Multiyear Rate Plans for U.S. Electric Utilities* ,GRID Modernization Laboratory Consortium (Jul. 2017); The Brattle Group, *Exploring the Use of Alternative Regulatory Mechanisms to Establish New Base Rates* , Joint Utilities of Maryland (Mar. 29, 2018).

Notes

D - Delivery-only utility.

C - Fully-forecasted test years commonly used in the state listed for this operating company.

O - Fully-forecasted test years occasionally used in the state listed for this operating company.

P - Partially-forecasted test years commonly or occasionally used in the state listed for this operating company.

* For additional context around the specific recovery mechanisms available to the particular operating companies in each state, see the source document.

CAPITAL STRUCTURE

UTILITY GROUP

		At Year-end 2023 (a)			Value Line Projected (b)		
	Company	**Debt**	**Preferred**	**Common Equity**	**Debt**	**Preferred**	**Common Equity**
1	Ameren Corp.	58.2%	0.0%	41.8%	51.0%	0.5%	48.5%
2	Consolidated Edison	51.2%	0.0%	48.8%	51.0%	0.0%	49.0%
3	NextEra Energy, Inc.	54.2%	0.0%	45.8%	60.0%	0.0%	40.0%
4	OGE Energy Corp.	49.0%	0.0%	51.0%	50.0%	0.0%	50.0%
5	Pinnacle West Capital	57.2%	0.0%	42.8%	56.0%	0.0%	44.0%
6	Portland General Elec.	56.4%	0.0%	43.6%	54.5%	0.0%	45.5%
7	PPL Corp.	51.2%	0.0%	48.8%	44.0%	0.0%	56.0%
8	WEC Energy Group	58.2%	0.1%	41.7%	55.5%	0.0%	44.5%
9	Xcel Energy Inc.	59.1%	0.0%	40.9%	58.0%	0.0%	42.0%
	Minimum	**49.0%**	**0.0%**	**40.9%**	**44.0%**	**0.0%**	**40.0%**
	Maximum	**59.1%**	**0.1%**	**51.0%**	**60.0%**	**0.5%**	**56.0%**
	Average	**55.0%**	**0.0%**	**45.0%**	**53.3%**	**0.1%**	**46.6%**

(a) 2023 SEC Form 10-K reports.

(b) The Value Line Investment Survey (Oct. 20, Nov. 10 and Dec. 8, 2023).

CAPITAL STRUCTURE

UTILITY GROUP OPERATING SUBSIDIARIES

	Operating Company	Debt	Preferred	Common Equity
1	**AMEREN CORP.**			
	Ameren Illinois Co.	43.4%	0.4%	56.2%
	Union Electric Co.	47.7%	0.6%	51.7%
2	**CONSOLIDATED EDISON**			
	Consolidated Edison of NY	52.4%	0.0%	47.6%
	Orange & Rockland	53.6%	0.0%	46.4%
	Rockland Electric	0.0%	0.0%	100.0%
3	**NEXTERA ENERGY**			
	Florida Power & Light	39.4%	0.0%	60.6%
4	**OGE ENERGY CORP.**			
	Oklahoma G&E	46.3%	0.0%	53.7%
5	**PINNACLE WEST CAPITAL**			
	Arizona Public Service Co.	49.8%	0.0%	50.2%
6	**PORTLAND GENERAL ELECTRIC**			
	Portland General Electric	56.8%	0.0%	43.2%
7	**PPL CORP.**			
	Kentucky Utilities Co.	42.5%	0.0%	57.5%
	Louisville Gas & Electric Co.	43.8%	0.0%	56.2%
	PPL Electric Utilities Corp.	43.6%	0.0%	56.4%
8	**WEC ENERGY GROUP**			
	Wisconsin Electric Power Co.	43.9%	0.4%	55.7%
	Wisconsin Public Service Corp.	45.2%	0.0%	54.8%
9	**XCEL ENERGY, INC.**			
	Northern States Power Co. (MN)	47.2%	0.0%	52.8%
	Northern States Power Co. (WI)	46.6%	0.0%	53.4%
	Public Service Co. of Colorado	42.8%	0.0%	57.2%
	Southwestern Public Service Co.	45.7%	0.0%	54.3%
	Minimum (b)	**39.4%**	**0.0%**	**43.2%**
	Maximum (b)	**56.8%**	**0.6%**	**60.6%**
	Average (b)	**46.5%**	**0.1%**	**53.4%**

(a) At year-end 2023 from SEC Form 10-K and FERC Form 1 reports.

(b) Excludes Rockland Electric.

DCF MODEL - UTILITY GROUP

DIVIDEND YIELD

		(a)	(b)	
	Company	**Price**	**Dividends**	**Yield**
1	Ameren Corp.	$ 77.37	$ 2.52	3.3%
2	Consolidated Edison	$ 90.36	$ 3.32	3.7%
3	NextEra Energy, Inc.	$ 57.99	$ 2.01	3.5%
4	OGE Energy Corp.	$ 34.80	$ 1.67	4.8%
5	Pinnacle West Capital	$ 73.48	$ 3.53	4.8%
6	Portland General Elec.	$ 41.30	$ 1.96	4.7%
7	PPL Corp.	$ 25.78	$ 0.96	3.7%
8	WEC Energy Group	$ 82.49	$ 3.12	3.8%
9	Xcel Energy Inc.	$ 60.37	$ 2.19	3.6%
	Average			**4.0%**

(a) Average of closing prices for 30 trading days ended Dec. 11, 2023.
(b) The Value Line Investment Survey, Summary & Index (Dec. 15, 2023).

DCF MODEL - UTILITY GROUP

GROWTH RATES

		(a)	(b)	(c)	(d)
		Earnings Growth			**br+sv**
	Company	**V Line**	**IBES**	**Zacks**	**Growth**
1	Ameren Corp.	6.5%	6.2%	6.6%	5.8%
2	Consolidated Edison	6.0%	5.7%	2.0%	3.2%
3	NextEra Energy, Inc.	9.5%	8.2%	8.2%	7.1%
4	OGE Energy Corp.	6.5%	-12.3%	3.7%	5.1%
5	Pinnacle West Capital	2.5%	5.9%	5.9%	3.8%
6	Portland General Elec.	5.0%	4.6%	6.0%	4.9%
7	PPL Corp.	8.0%	17.2%	7.4%	3.8%
8	WEC Energy Group	6.0%	5.5%	5.9%	5.1%
9	Xcel Energy Inc.	6.0%	6.8%	6.1%	4.6%

(a) The Value Line Investment Survey (Oct. 20, Nov. 10 and Dec. 8, 2023).
(b) www.finance.yahoo.com (retreived Dec. 12, 2023).
(c) www.zacks.com (retrieved Dec.12, 2023).
(d) See Attachment 10-G (AMM).

DCF MODEL - UTILITY GROUP

COST OF EQUITY ESTIMATES

	Company	(a) V Line	(a) IBES	(a) Zacks	(a) br+sv Growth
1	Ameren Corp.	9.8%	9.5%	9.9%	9.1%
2	Consolidated Edison	9.7%	9.3%	5.7%	6.9%
3	NextEra Energy, Inc.	13.0%	11.6%	11.6%	10.6%
4	OGE Energy Corp.	11.3%	-7.5%	8.4%	9.9%
5	Pinnacle West Capital	7.3%	10.7%	10.7%	8.6%
6	Portland General Elec.	9.7%	9.3%	10.8%	9.7%
7	PPL Corp.	11.7%	20.9%	11.1%	7.6%
8	WEC Energy Group	9.8%	9.2%	9.7%	8.9%
9	Xcel Energy Inc.	9.6%	10.4%	9.7%	8.2%
	Average (b)	**10.6%**	**10.0%**	**10.3%**	**9.1%**

(a) Sum of dividend yield (Attachment 10-F (AMM), p. 1) and respective growth rate (Attachment 10-F (AMM

(b) Excludes highlighted values.

BR+SV GROWTH RATE

UTILITY GROUP

		(a)	(a)	(a)	(b)	(c)	(d)	(e)		(f)	(g)		
		2027					Adjustment			"sv" Factor			
	Company	EPS	DPS	BVPS	b	r	Factor	Adjusted r	br	s	v	sv	br + sv
1	Ameren Corp.	$5.50	$3.30	$55.00	40.0%	10.0%	1.0309	10.3%	4.1%	0.0339	0.5000	1.70%	5.8%
2	Consolidated Edison	$6.15	$3.86	$67.25	37.2%	9.1%	1.0115	9.3%	3.4%	(0.0080)	0.2921	-0.23%	3.2%
3	NextEra Energy, Inc.	$4.40	$2.65	$30.00	39.8%	14.7%	1.0446	15.3%	6.1%	0.0162	0.6129	0.99%	7.1%
4	OGE Energy Corp.	$3.15	$1.85	$26.00	41.3%	12.1%	1.0102	12.2%	5.1%	-	0.3882	0.00%	5.1%
5	Pinnacle West Capital	$5.70	$3.75	$62.00	34.2%	9.2%	1.0206	9.4%	3.2%	0.0181	0.3474	0.63%	3.8%
6	Portland General Elec.	$3.65	$2.36	$38.70	35.3%	9.4%	1.0348	9.8%	3.4%	0.0419	0.3550	1.49%	4.9%
7	PPL Corp.	$2.10	$1.26	$22.45	40.0%	9.4%	1.0178	9.5%	3.8%	0.0007	0.4013	0.03%	3.8%
8	WEC Energy Group	$5.90	$3.80	$42.00	35.6%	14.0%	1.0163	14.3%	5.1%	-	0.6571	0.00%	5.1%
9	Xcel Energy Inc.	$4.25	$2.66	$38.25	37.4%	11.1%	1.0249	11.4%	4.3%	0.0071	0.4724	0.34%	4.6%

BR+SV GROWTH RATE

UTILITY GROUP

		(a)	(a)	(h)	(a)	(a)	(h)	(i)	(a)	(a)		(j)	(a)	(a)	(i)
			2022			2027		Chg		2027				Common Shares	
	Company	Eq Ratio	Tot Cap	Com Eq	Eq Ratio	Tot Cap	Com Eq	Equity	High	Low	Avg.	M/B	2022	2027	Growth
1	Ameren Corp.	43.4%	$24,193	$10,500	48.5%	$29,500	$14,308	6.4%	$120.0	$100.0	$110.0	2.000	262.00	285.00	1.70%
2	Consolidated Edison	50.7%	$40,834	$20,703	49.0%	$47,400	$23,226	2.3%	$105.0	$85.0	$95.0	1.413	354.96	345.00	-0.57%
3	NextEra Energy, Inc.	41.5%	$94,485	$39,211	40.0%	$153,100	$61,240	9.3%	$90.0	$65.0	$77.5	2.583	1987.00	2050.00	0.63%
4	OGE Energy Corp.	52.4%	$8,962	$4,696	50.0%	$10,400	$5,200	2.1%	$50.0	$35.0	$42.5	1.635	200.20	200.20	0.00%
5	Pinnacle West Capital	43.9%	$13,790	$6,054	44.0%	$16,900	$7,436	4.2%	$110.0	$80.0	$95.0	1.532	113.17	120.00	1.18%
6	Portland General Elec.	43.0%	$6,459	$2,777	45.5%	$8,650	$3,936	7.2%	$70.0	$50.0	$60.0	1.550	89.28	102.00	2.70%
7	PPL Corp.	51.9%	$26,804	$13,911	56.0%	$29,675	$16,618	3.6%	$45.0	$30.0	$37.5	1.670	736.49	738.00	0.04%
8	WEC Energy Group	44.4%	$25,368	$11,263	44.5%	$29,800	$13,261	3.3%	$135.0	$110.0	$122.5	2.917	315.43	315.43	0.00%
9	Xcel Energy Inc.	42.2%	$39,488	$16,664	42.0%	$50,900	$21,378	5.1%	$80.0	$65.0	$72.5	1.895	549.58	560.00	0.38%

(a) The Value Line Investment Survey (Oct. 20, Nov. 10 and Dec. 8, 2023).
(b) "b" is the retention ratio, computed as (EPS-DPS)/EPS.
(c) "r" is the rate of return on book equity, computed as EPS/BVPS.
(d) Computed using the formula 2*(1+5-Yr. Change in Equity)/(2+5 Yr. Change in Equity).
(e) Product of average year-end "r" for 2027 and Adjustment Factor.
(f) Product of change in common shares outstanding and M/B Ratio.
(g) Computed as 1 - B/M Ratio.
(h) Product of total capital and equity ratio.
(i) Five-year rate of change.
(j) Average of High and Low expected market prices divided by 2027 BVPS.

CAPM

UTILITY GROUP

		(a)	(b)		(c)		(d)		(e)	(f)	
		Market Return (R_m)									
	Company	**Div Yield**	**Proj. Growth**	**Cost of Equity**	**Risk-Free Rate**	**Risk Premium**	**Beta**	**Unadjusted K_e**	**Market Cap**	**Size Adjustment**	**CAPM Result**
1	Ameren Corp.	2.0%	9.7%	11.7%	4.4%	7.3%	0.90	11.0%	$20,400	0.45%	11.4%
2	Consolidated Edison	2.0%	9.7%	11.7%	4.4%	7.3%	0.80	10.2%	$30,200	0.45%	10.7%
3	NextEra Energy, Inc.	2.0%	9.7%	11.7%	4.4%	7.3%	1.00	11.7%	$116,000	-0.26%	11.4%
4	OGE Energy Corp.	2.0%	9.7%	11.7%	4.4%	7.3%	1.05	12.1%	$7,000	0.57%	12.6%
5	Pinnacle West Capital	2.0%	9.7%	11.7%	4.4%	7.3%	0.95	11.3%	$8,300	0.57%	11.9%
6	Portland General Elec.	2.0%	9.7%	11.7%	4.4%	7.3%	0.90	11.0%	$4,200	0.58%	11.6%
7	PPL Corp.	2.0%	9.7%	11.7%	4.4%	7.3%	1.10	12.4%	$18,000	0.45%	12.9%
8	WEC Energy Group	2.0%	9.7%	11.7%	4.4%	7.3%	0.85	10.6%	$25,900	0.45%	11.1%
9	Xcel Energy Inc.	2.0%	9.7%	11.7%	4.4%	7.3%	0.85	10.6%	$31,800	-0.26%	10.3%
	Average							**11.2%**			**11.5%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Nov. 30, 2023).
(b) Average of weighted average earnings growth rates from IBES, Value Line, and Zacks for dividend-paying stocks in the S&P 500 based on data from Refinitiv, as provided by fidelity.com (retrieved Nov. 30, 2023), www.valueline.com (retrieved Nov. 30, 2023), and www.zacks.com (retrieved Nov. 30, 2023). Eliminated growth rates that were greater than 20%, as well as all negative values.
(c) Average yield on 30-year Treasury bonds for six-months ending Dec. 2023 based on data from https://fred.stlouisfed.org/.
(d) The Value Line Investment Survey, Summary & Index (Dec. 15, 2023).
(e) The Value Line Investment Survey (Oct. 20, Nov. 10 and Dec. 8, 2023).
(f) Kroll, 2023 Supplementary CRSP Decile Size Study Data Exhibits.

ECAPM

UTILITY GROUP

		(a)	(b)		(c)		(d)		(e)	(d)				(f)	(g)	
		Market Return (R_m)					**Unadjusted RP**		**Beta Adjusted RP**							
	Company	**Div Yield**	**Proj. Growth**	**Cost of Equity**	**Risk-Free Rate**	**Risk Premium**	**Weight**	***RP*** ^{1}	**Beta**	**Weight**	***RP*** ^{2}	**Total RP**	**Unadjusted K_e**	**Market Cap**	**Size Adjustment**	**ECAPM Result**
1	Ameren Corp.	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	0.90	75%	4.9%	6.8%	11.2%	$20,400	0.45%	11.6%
2	Consolidated Edison	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	0.80	75%	4.4%	6.2%	10.6%	$30,200	0.45%	11.1%
3	NextEra Energy, Inc.	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	1.00	75%	5.5%	7.3%	11.7%	$116,000	-0.26%	11.4%
4	OGE Energy Corp.	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	1.05	75%	5.7%	7.6%	12.0%	$7,000	0.57%	12.5%
5	Pinnacle West Capital	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	0.95	75%	5.2%	7.0%	11.4%	$8,300	0.57%	12.0%
6	Portland General Elec.	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	0.90	75%	4.9%	6.8%	11.2%	$4,200	0.58%	11.7%
7	PPL Corp.	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	1.10	75%	6.0%	7.8%	12.2%	$18,000	0.45%	12.7%
8	WEC Energy Group	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	0.85	75%	4.7%	6.5%	10.9%	$25,900	0.45%	11.3%
9	Xcel Energy Inc.	2.0%	9.7%	11.7%	4.4%	7.3%	25%	1.8%	0.85	75%	4.7%	6.5%	10.9%	$31,800	-0.26%	10.6%
	Average												**11.3%**			**11.7%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Nov. 30, 2023).
(b) Average of weighted average earnings growth rates from IBES, Value Line, and Zacks for dividend-paying stocks in the S&P 500 based on data from Refinitiv, as provided by fidelity.com (retrieved Nov. 30, 2023), www.valueline.com (retrieved Nov. 30, 2023), and www.zacks.com (retrieved Nov. 30, 2023). Eliminated growth rates that were greater than 20%, as well as all negative values.
(c) Average yield on 30-year Treasury bonds for six-months ending Dec. 2023 based on data from https://fred.stlouisfed.org/.
(d) Roger A. Morin, *New Regulatory Finance* , Pub. Util. Reports, Inc. (2006) at 190.
(e) The Value Line Investment Survey, Summary & Index (Dec. 15, 2023).
(f) The Value Line Investment Survey (Oct. 20, Nov. 10 and Dec. 8, 2023).
(g) Kroll, 2023 Supplementary CRSP Decile Size Study Data Exhibits.

UTILITY RISK PREMIUM

COST OF EQUITY ESTIMATE

Current Equity Risk Premium	
(a) Avg. Yield over Study Period	7.78%
(b) Average Utility Bond Yield	5.85%
Change in Bond Yield	-1.93%
(c) Risk Premium/Interest Rate Relationship	-0.4238
Adjustment to Average Risk Premium	0.82%
(a) Average Risk Premium over Study Period	3.89%
Adjusted Risk Premium	**4.71%**
Implied Cost of Equity	
(b) Baa Utility Bond Yield	6.08%
Adjusted Equity Risk Premium	4.71%
Risk Premium Cost of Equity	**10.79%**

(a) Attachment 10-J (AMM), page 2.
(b) Average bond yield on all utility bonds and 'Baa' subset for six-months ending Dec. 2023 based on data from Moody's Investors Service at www.credittrends.com.
(c) Attachment 10-J (AMM), page 3.

UTILITY RISK PREMIUM

AUTHORIZED RETURNS

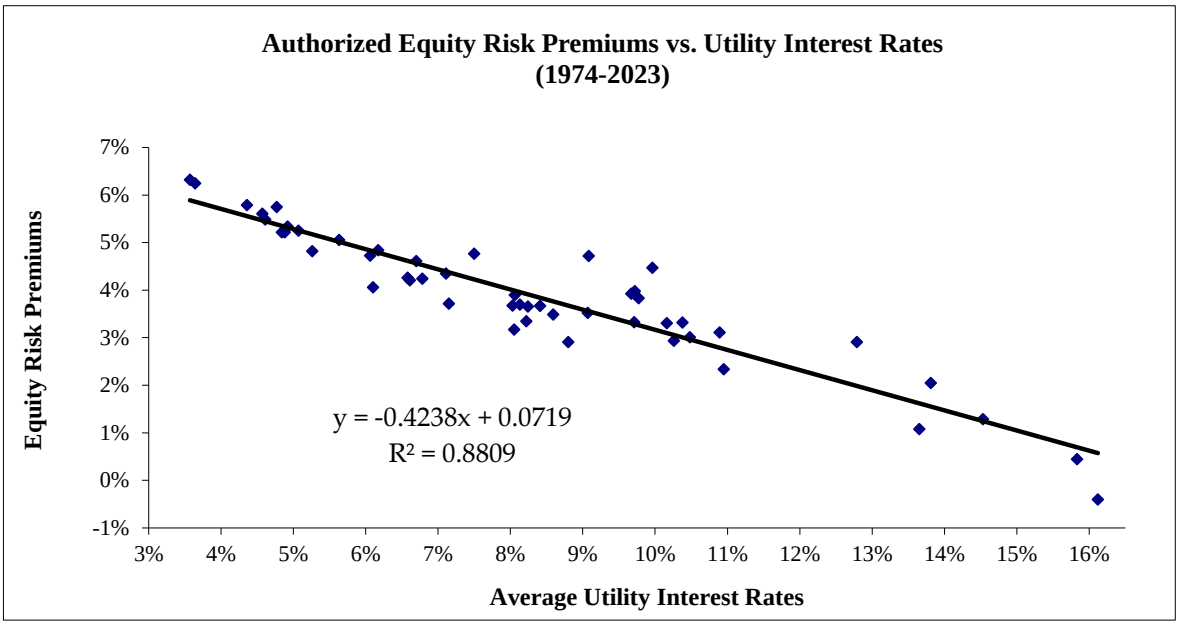
Year	(a) Allowed ROE	(b) Average Utility Bond Yield	Risk Premium
1974	13.10%	9.27%	3.83%
1975	13.20%	9.88%	3.32%
1976	13.10%	9.17%	3.93%
1977	13.30%	8.58%	4.72%
1978	13.20%	9.22%	3.98%
1979	13.50%	10.39%	3.11%
1980	14.23%	13.15%	1.08%
1981	15.22%	15.62%	-0.40%
1982	15.78%	15.33%	0.45%
1983	15.36%	13.31%	2.05%
1984	15.32%	14.03%	1.29%
1985	15.20%	12.29%	2.91%
1986	13.93%	9.46%	4.47%
1987	12.99%	9.98%	3.01%
1988	12.79%	10.45%	2.34%
1989	12.97%	9.66%	3.31%
1990	12.70%	9.76%	2.94%
1991	12.54%	9.21%	3.33%
1992	12.09%	8.57%	3.52%
1993	11.46%	7.56%	3.90%
1994	11.21%	8.30%	2.91%
1995	11.58%	7.91%	3.67%
1996	11.40%	7.74%	3.66%
1997	11.33%	7.63%	3.70%
1998	11.77%	7.00%	4.77%
1999	10.72%	7.55%	3.17%
2000	11.58%	8.09%	3.49%
2001	11.07%	7.72%	3.35%
2002	11.21%	7.53%	3.68%
2003	10.96%	6.61%	4.35%
2004	10.81%	6.20%	4.61%
2005	10.51%	5.67%	4.84%
2006	10.34%	6.08%	4.26%
2007	10.32%	6.11%	4.21%
2008	10.37%	6.65%	3.72%
2009	10.52%	6.28%	4.24%
2010	10.29%	5.56%	4.73%
2011	10.19%	5.13%	5.06%
2012	10.02%	4.27%	5.75%
2013	9.82%	4.57%	5.25%
2014	9.76%	4.42%	5.34%
2015	9.60%	4.38%	5.22%
2016	9.60%	4.11%	5.49%
2017	9.68%	4.07%	5.61%
2018	9.56%	4.34%	5.22%
2019	9.65%	3.86%	5.79%
2020	9.39%	3.07%	6.32%
2021	9.39%	3.14%	6.25%
2022	9.58%	4.76%	4.82%
2023	9.66%	5.60%	4.06%
Average	**11.68%**	**7.78%**	**3.89%**

(a) S&P Global Market Intelligence, *Major Rate Case Decisions* , RRA Regulatory Focus; *UtilityScope Regulatory Service* , Argus. Data for "general" rate cases (excluding limited-issue rider cases) beginning in 2006 (the first year such data presented by RRA).

(b) Moody's Investors Service.

UTILITY RISK PREMIUM

REGRESSION RESULTS



EXPECTED EARNINGS APPROACH

UTILITY GROUP

		(a)	(b)	(c)
	Company	**Expected Return on Common Equity**	**Adjustment Factor**	**Adjusted Return on Common Equity**
1	Ameren Corp.	10.0%	1.0309	10.3%
2	Consolidated Edison	9.0%	1.0115	9.1%
3	NextEra Energy, Inc.	14.5%	1.0446	15.1%
4	OGE Energy Corp.	13.0%	1.0102	13.1%
5	Pinnacle West Capital	9.5%	1.0206	9.7%
6	Portland General Elec.	9.5%	1.0348	9.8%
7	PPL Corp.	9.5%	1.0178	9.7%
8	WEC Energy Group	13.0%	1.0163	13.2%
9	Xcel Energy Inc.	11.0%	1.0249	11.3%
	Average	**11.0%**		**11.3%**

(a) The Value Line Investment Survey (Oct. 20, Nov. 10 and Dec. 8, 2023).
(b) Adjustment to convert year-end return to an average rate of return from Attachment 10-G (AMM).
(c) (a) x (b).

DCF MODEL - NON-UTILITY GROUP **Attachment 10-L (AMM)**
Page 1 of 3

DIVIDEND YIELD

	Company	Industry Group	(a) Price	(b) Dividends	Yield
1	Abbott Labs.	Med Supp Non-Invasive	$99.75	$ 2.04	2.0%
2	Air Products & Chem.	Chemical (Diversified)	$271.52	$ 7.00	2.6%
3	Amdocs Ltd.	IT Services	$82.59	$ 1.74	2.1%
4	Amgen	Biotechnology	$267.70	$ 8.88	3.3%
5	Archer Daniels Midl'd	Food Processing	$73.33	$ 1.80	2.5%
6	Becton, Dickinson	Med Supp Invasive	$240.58	$ 3.80	1.6%
7	Bristol-Myers Squibb	Drug	$50.49	$ 2.28	4.5%
8	Brown & Brown	Financial Svcs. (Div.)	$72.83	$ 0.52	0.7%
9	Brown-Forman 'B'	Beverage	$58.07	$ 0.87	1.5%
10	Church & Dwight	Household Products	$92.22	$ 1.09	1.2%
11	Cisco Systems	Telecom. Equipment	$50.10	$ 1.56	3.1%
12	Coca-Cola	Beverage	$57.67	$ 1.90	3.3%
13	Colgate-Palmolive	Household Products	$76.43	$ 1.95	2.6%
14	Comcast Corp.	Cable TV	$42.08	$ 1.16	2.8%
15	Costco Wholesale	Retail Store	$584.00	$ 4.08	0.7%
16	Danaher Corp.	Diversified Co.	$208.85	$ 1.08	0.5%
17	Gen'l Mills	Food Processing	$64.93	$ 2.36	3.6%
18	Gilead Sciences	Drug	$77.30	$ 3.00	3.9%
19	Hershey Co.	Food Processing	$190.03	$ 4.85	2.6%
20	Home Depot	Retail Building Supply	$306.02	$ 8.36	2.7%
21	Hormel Foods	Food Processing	$32.17	$ 1.13	3.5%
22	Intercontinental Exch.	Brokers & Exchanges	$111.28	$ 1.68	1.5%
23	Johnson & Johnson	Med Supp Non-Invasive	$151.62	$ 4.88	3.2%
24	Kimberly-Clark	Household Products	$121.33	$ 4.75	3.9%
25	Lilly (Eli)	Drug	$589.60	$ 4.52	0.8%
26	Lockheed Martin	Aerospace/Defense	$448.18	$ 12.60	2.8%
27	Marsh & McLennan	Financial Svcs. (Div.)	$196.60	$ 2.84	1.4%
28	McCormick & Co.	Food Processing	$65.60	$ 1.66	2.5%
29	McDonald's Corp.	Restaurant	$275.96	$ 6.83	2.5%
30	McKesson Corp.	Med Supp Non-Invasive	$458.04	$ 2.57	0.6%
31	Merck & Co.	Drug	$102.89	$ 3.00	2.9%
32	Microsoft Corp.	Computer Software	$367.07	$ 3.08	0.8%
33	Mondelez Int'l	Food Processing	$69.94	$ 1.70	2.4%
34	NewMarket Corp.	Chemical (Specialty)	$513.05	$ 9.00	1.8%
35	Northrop Grumman	Aerospace/Defense	$470.43	$ 7.84	1.7%
36	Oracle Corp.	Computer Software	$112.92	$ 1.60	1.4%
37	PepsiCo, Inc.	Beverage	$167.19	$ 5.20	3.1%
38	Pfizer, Inc.	Drug	$29.92	$ 1.64	5.5%
39	Procter & Gamble	Household Products	$150.32	$ 3.76	2.5%
40	Progressive Corp.	Insurance (Prop/Cas.)	$160.67	$ 0.40	0.2%
41	Republic Services	Environmental	$157.95	$ 2.14	1.4%
42	Sherwin-Williams	Retail Building Supply	$266.83	$ 2.55	1.0%
43	Smucker (J.M.)	Food Processing	$112.70	$ 4.28	3.8%
44	Texas Instruments	Semiconductor	$151.19	$ 5.20	3.4%
45	Thermo Fisher Sci.	Precision Instrument	$471.59	$ 1.40	0.3%
46	Travelers Cos.	Insurance (Prop/Cas.)	$174.36	$ 4.00	2.3%
47	Walmart Inc.	Retail Store	$159.50	$ 2.32	1.5%
48	Waste Management	Environmental	$170.54	$ 2.80	1.6%
	Average				**2.3%**

(a) Average of closing prices for 30 trading days ended Dec. 11, 2023.
(b) The Value Line Investment Survey, *Summary & Index* (Dec. 15, 2023).

DCF MODEL - NON-UTILITY GROUP **Attachment 10-L (AMM)**
Page 2 of 3

GROWTH RATES

		(a)	(b)	(c)
		Earnings Growth		
	Company	**V Line**	**IBES**	**Zacks**
1	Abbott Labs.	4.50%	-2.00%	9.00%
2	Air Products & Chem.	10.50%	10.02%	11.27%
3	Amdocs Ltd.	7.00%	9.80%	10.50%
4	Amgen	5.50%	4.84%	5.62%
5	Archer Daniels Midl'd	7.50%	-5.30%	n/a
6	Becton, Dickinson	5.00%	8.40%	9.70%
7	Bristol-Myers Squibb	n/a	-0.23%	3.13%
8	Brown & Brown	6.50%	13.22%	n/a
9	Brown-Forman 'B'	16.50%	11.00%	n/a
10	Church & Dwight	6.00%	6.70%	7.78%
11	Cisco Systems	6.50%	5.95%	6.20%
12	Coca-Cola	7.50%	5.60%	6.17%
13	Colgate-Palmolive	8.50%	7.49%	7.03%
14	Comcast Corp.	9.00%	8.62%	10.32%
15	Costco Wholesale	10.50%	8.10%	8.56%
16	Danaher Corp.	11.00%	-1.30%	12.00%
17	Gen'l Mills	5.50%	7.67%	6.64%
18	Gilead Sciences	13.50%	3.83%	11.30%
19	Hershey Co.	9.50%	8.36%	8.47%
20	Home Depot	6.50%	1.58%	8.90%
21	Hormel Foods	7.50%	8.20%	4.69%
22	Intercontinental Exch.	7.00%	5.93%	7.41%
23	Johnson & Johnson	5.00%	4.83%	4.90%
24	Kimberly-Clark	6.00%	9.84%	8.26%
25	Lilly (Eli)	19.00%	28.72%	24.87%
26	Lockheed Martin	7.00%	10.52%	8.61%
27	Marsh & McLennan	9.00%	11.00%	11.05%
28	McCormick & Co.	4.50%	8.10%	7.09%
29	McDonald's Corp.	10.50%	9.04%	9.06%
30	McKesson Corp.	9.00%	9.70%	10.48%
31	Merck & Co.	8.50%	9.33%	8.63%
32	Microsoft Corp.	11.50%	14.31%	13.49%
33	Mondelez Int'l	11.50%	8.93%	8.84%
34	NewMarket Corp.	0.50%	7.70%	n/a
35	Northrop Grumman	8.50%	1.90%	2.42%
36	Oracle Corp.	10.00%	10.02%	8.77%
37	PepsiCo, Inc.	7.00%	8.02%	8.29%
38	Pfizer, Inc.	2.00%	-11.48%	10.00%
39	Procter & Gamble	6.00%	7.24%	7.52%
40	Progressive Corp.	12.00%	26.00%	25.84%
41	Republic Services	12.50%	8.89%	9.97%
42	Sherwin-Williams	11.00%	14.17%	12.36%
43	Smucker (J.M.)	5.50%	6.53%	6.30%
44	Texas Instruments	3.00%	10.00%	9.00%
45	Thermo Fisher Sci.	9.50%	2.10%	7.65%
46	Travelers Cos.	7.50%	15.30%	10.16%
47	Walmart Inc.	6.50%	7.10%	7.32%
48	Waste Management	6.50%	10.00%	10.02%

(a) The Value Line Investment Survey (various editions as of Dec. 15, 2023).

(b) www.finance.yahoo.com (retrieved Dec. 12, 2023).

(c) www.zacks.com (retrieved Dec. 12, 2023).

DCF MODEL - NON-UTILITY GROUP **Attachment 10-L (AMM)**
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DCF COST OF EQUITY ESTIMATES

		(a)	(b)	(c)
		Earnings Growth		
	Company	**V Line**	**IBES**	**Zacks**
1	Abbott Labs.	6.5%	0.0%	11.0%
2	Air Products & Chem.	13.1%	12.6%	13.8%
3	Amdocs Ltd.	9.1%	11.9%	12.6%
4	Amgen	8.8%	8.2%	8.9%
5	Archer Daniels Midl'd	10.0%	-2.8%	n/a
6	Becton, Dickinson	6.6%	10.0%	11.3%
7	Bristol-Myers Squibb	n/a	4.3%	7.6%
8	Brown & Brown	7.2%	13.9%	n/a
9	Brown-Forman 'B'	18.0%	12.5%	n/a
10	Church & Dwight	7.2%	7.9%	9.0%
11	Cisco Systems	9.6%	9.1%	9.3%
12	Coca-Cola	10.8%	8.9%	9.5%
13	Colgate-Palmolive	11.1%	10.0%	9.6%
14	Comcast Corp.	11.8%	11.4%	13.1%
15	Costco Wholesale	11.2%	8.8%	9.3%
16	Danaher Corp.	11.5%	-0.8%	12.5%
17	Gen'l Mills	9.1%	11.3%	10.3%
18	Gilead Sciences	17.4%	7.7%	15.2%
19	Hershey Co.	12.1%	10.9%	11.0%
20	Home Depot	9.2%	4.3%	11.6%
21	Hormel Foods	11.0%	11.7%	8.2%
22	Intercontinental Exch.	8.5%	7.4%	8.9%
23	Johnson & Johnson	8.2%	8.0%	8.1%
24	Kimberly-Clark	9.9%	13.8%	12.2%
25	Lilly (Eli)	19.8%	29.5%	25.6%
26	Lockheed Martin	9.8%	13.3%	11.4%
27	Marsh & McLennan	10.4%	12.4%	12.5%
28	McCormick & Co.	7.0%	10.6%	9.6%
29	McDonald's Corp.	13.0%	11.5%	11.5%
30	McKesson Corp.	9.6%	10.3%	11.0%
31	Merck & Co.	11.4%	12.2%	11.5%
32	Microsoft Corp.	12.3%	15.1%	14.3%
33	Mondelez Int'l	13.9%	11.4%	11.3%
34	NewMarket Corp.	2.3%	9.5%	n/a
35	Northrop Grumman	10.2%	3.6%	4.1%
36	Oracle Corp.	11.4%	11.4%	10.2%
37	PepsiCo, Inc.	10.1%	11.1%	11.4%
38	Pfizer, Inc.	7.5%	-6.0%	15.5%
39	Procter & Gamble	8.5%	9.7%	10.0%
40	Progressive Corp.	12.2%	26.2%	26.1%
41	Republic Services	13.9%	10.2%	11.3%
42	Sherwin-Williams	12.0%	15.1%	13.3%
43	Smucker (J.M.)	9.3%	10.3%	10.1%
44	Texas Instruments	6.4%	13.4%	12.4%
45	Thermo Fisher Sci.	9.8%	2.4%	7.9%
46	Travelers Cos.	9.8%	17.6%	12.5%
47	Walmart Inc.	8.0%	8.6%	8.8%
48	Waste Management	8.1%	11.6%	11.7%
	Average (b)	**10.5%**	**11.0%**	**11.0%**

(a) Sum of dividend yield (p. 1) and respective growth rate (p. 2).
(b) Excludes highlighted figures.