EXHIBIT NO. _____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Ohio Power Company for an Increase in Electric Distribution Rates.	)))	Case No. 20-585-EL-AIR
In the Matter of the Application of Ohio Power Company for Tariff Approval.	)))	Case No. 20-586-EL-ATA
In the Matter of the Application of Ohio Power Company for Approval to Change Accounting Methods.	)))	Case No. 20-587-EL-AAM

DIRECT TESTIMONY OF
ADRIEN M. MCKENZIE, CFA
ON BEHALF OF
OHIO POWER COMPANY

Management Policies, Practices & Organizations

Operating Income

Rate Base

Allocations

X Rate of Return

Rates and Tariffs

Other

Filed: June 15th, 2020

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BEFORE
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DIRECT TESTIMONY OF
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ON BEHALF OF
OHIO POWER COMPANY

I. INTRODUCTION

Q1. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A1. My name is Adrien M. McKenzie, and my business address is 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 engaged in financial, economic, and policy consulting to business and government.

Q3. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A3. A description of my background and qualifications, including a resume containing the details of my experience, is attached as Exhibit AMM-1.

Q4. FOR WHOM ARE YOU TESTIFYING IN THIS CASE?

A4. I am testifying on behalf of Ohio Power Company ("AEP Ohio" or "the Company"), which is an operating subsidiary of American Electric Power Company, Inc. ("AEP").

A. Overview

Q5. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A5. The purpose of my testimony is to present to the Public Utilities Commission of Ohio ("PUCO") my independent assessment of the fair rate of return on equity ("ROE") for AEP Ohio. In addition, I also examine the reasonableness of the Company's capital structure, considering both the specific risks faced by the Company and other industry guidelines.

Q6. ARE YOU SPONSORING ANY EXHIBITS?

A6. Yes. I am sponsoring the following exhibits:

- Exhibit AMM-1 Qualifications of Adrien M. McKenzie
- Exhibit AMM-2 ROE Analyses – Summary of Results
- Exhibit AMM-3 Regulatory Mechanisms – Electric Group
- Exhibit AMM-4 DCF Model – Electric Group
- Exhibit AMM-5 Sustainable Growth Rate – Electric Group
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- Exhibit AMM-10 Flotation Cost Study
- Exhibit AMM-11 DCF Model – Non-Utility Group
- Exhibit AMM-12 Capital Structure

Q7. PLEASE SUMMARIZE THE INFORMATION AND MATERIALS YOU RELIED ON TO SUPPORT THE OPINIONS AND CONCLUSION CONTAINED IN YOUR TESTIMONY.

A7. To prepare my testimony, I reference information from a variety of sources that would normally be relied upon by a person in my capacity. I am familiar with the organization, finances, and operations of AEP Ohio from my participation in prior proceedings before the PUCO. In connection with this filing, I consider and rely on corporate disclosures, publicly available financial reports and filings, and other published information relating to the Company. I also review information relating generally to capital market conditions and specifically to investor perceptions, requirements, and expectations for utilities. 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 AEP Ohio, and they form the basis of my analyses and conclusions.

Q8. HOW IS YOUR TESTIMONY ORGANIZED?

A8. 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 review AEP Ohio's operations and finances. I then examine current conditions in the capital markets and their implications in evaluating a fair and reasonable ROE for the Company. With this as a background, I conduct well-accepted quantitative analyses to estimate the current cost of equity for a reference group of comparable-risk electric utilities. These include the discounted cash flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the empirical form of Capital Asset Pricing Model ("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. In addition, I discuss the issue of stock flotation expenses and the implications of these legitimate costs on the estimation of a reasonable ROE for the Company.

Based on the cost of equity estimates indicated by my analyses, I evaluate a fair ROE for AEP Ohio. My ROE evaluation takes into account the specific risks for its jurisdictional utility operations in Ohio and the Company's requirements for financial strength, as well as flotation costs, which are properly considered in setting a fair and reasonable ROE. Finally, 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.

Q9. WHAT IS YOUR RECOMMENDED ROE FOR AEP OHIO?

A9. Based on the results of my analyses, and considering recent dislocations in the capital markets and the economic requirements necessary to support continuous access to capital, I recommend an ROE of 10.15% for AEP Ohio.

II. RETURN ON EQUITY FOR AEP OHIO

Q10. WHAT IS THE PURPOSE OF THIS SECTION?

A10. This section presents my conclusions regarding the fair ROE applicable to AEP Ohio's electric utility operations. I also describe the relationship between ROE and preservation of a utility's financial integrity and the ability to attract capital. In addition, I discuss the impact of regulatory mechanisms.

A. Importance of Financial Strength

Q11. WHAT IS THE ROLE OF THE ROE IN SETTING A UTILITY'S RATES?

A11. 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 fair and reasonable ROE is integral in meeting sound regulatory economics and the standards set forth 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 as to a reasonable ROE, reemphasizing the findings in *Bluefield* and establishing that the rate-setting process must produce an end-result that allows the utility a reasonable opportunity to cover its capital costs. The 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.

While the *Hope* and *Bluefield* decisions did not establish a particular method to be followed in fixing rates (or in determining the allowed ROE),[3] 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

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

[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.")

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

Q12. 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?

A12. 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. AEP Ohio's plans call for a continuation of capital investments in the distribution system and technology to preserve and enhance service reliability for its customers. The Company must generate adequate cash flow from operations to fund these requirements and for repayment of maturing debt, together with access to capital from external sources under reasonable terms, on a sustainable basis.

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. Investors understand the important role that a supportive regulatory environment plays in establishing a sound financial profile that will permit the utility access to debt and equity capital markets on reasonable terms in both favorable financial markets and during times of potential disruption and crisis.

Q13. WHAT PART DOES REGULATION PLAY IN ENSURING THAT AEP OHIO HAS ACCESS TO CAPITAL UNDER REASONABLE TERMS AND ON A SUSTAINABLE BASIS?

A13. 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, particularly during times of adverse conditions. Security analysts study commission orders and regulatory policy statements to advise investors about where to put their money. As Moody's Investors Service ("Moody's") noted, "the regulatory environment is the most important driver of our outlook because it sets the pace for cost recovery."[4] Similarly, S&P Global Ratings ("S&P") observed that, "[r]egulatory 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]

More recently, the investment community has emphasized the need for supportive regulatory actions to bolster cash flows in response to concerns over the negative impact of the Tax Cuts and Jobs Act of 2017 ("TCJA") for utilities' financial strength.[7] In addition, the ROE set by regulators impacts investor confidence in not only the

[4] Moody's Investors Service, *Regulation Will Keep Cash Flow Stable As Major Tax Break Ends*, Industry Outlook (Feb. 19, 2014).
[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.
[7] Moody's cited the loss of bonus depreciation as a key factor leading to weakened credit metrics for AEP Ohio. Moody's Investors Service, *Ohio Power Company*, Credit Opinion (Mar. 11, 2020).

jurisdictional utility, but also in the ultimate parent company that is the entity that actually issues common stock.

Q14. DO CUSTOMERS BENEFIT BY ENHANCING THE UTILITY'S FINANCIAL FLEXIBILITY?

A14. Yes. Providing an ROE that is sufficient to maintain AEP Ohio'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, 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. Implications of Regulatory Mechanisms

Q15. DO YOU CONSIDER THE IMPLICATIONS OF COST RECOVERY MECHANISMS IN EVALUATING A FAIR ROE FOR AEP OHIO?

A15. Yes. Adjustment mechanisms, cost trackers, and future test years have become increasingly prevalent in the utility industry in recent years, along with alternatives to traditional ratemaking such as formula rates. In response to the increasing risk sensitivity of investors to uncertainty 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 some of the cost recovery uncertainty and align the interest of utilities and their customers through a variety of adjustment mechanisms. Based largely on the expanded use of ratemaking mechanisms to address operational risks and investment recovery, Moody's upgraded most regulated utilities in January 2014.[8] This is consistent with the view that investors perceive the impact of regulatory mechanisms to have an across-the-board impact on risk perceptions for virtually all utilities.

[8] Moody's Investors Service, *US utility sector upgrades driven by stable and transparent regulatory frameworks*, Sector Comment (Feb. 3, 2014).

Reflective of this trend, companies in the electric utility industry operate under a wide variety of cost adjustment mechanisms, in addition to the standard fuel cost recovery clauses that they all have. These enhanced tools encompass revenue decoupling and adjustment clauses designed to address capital investment outside of a traditional rate case, as well as riders to recover environmental compliance costs, bad debt expenses, certain taxes and fees, and post-retirement employee benefit costs. *RRA Regulatory Focus* 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 capacity or delivery infrastructure to be reflected in rates, effectively including these items in rate base without 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 and 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 utilize some type of decoupling mechanism.[9]

Q16. HAVE SIMILAR REGULATORY MECHANISMS BEEN APPROVED FOR AEP OHIO?

A16. Yes. Under the terms of its Electric Security Plan ("ESP") in effect until 2024, the Company operates under a number of riders designed to more efficiently recover certain expenses necessary to provide service, including costs related to infrastructure investment, conservation programs, and renewable energy. Furthermore, AEP Ohio operates under a decoupling mechanism for residential and commercial customers, and benefits from a rider to recover the costs of a legacy power purchase agreement.[10]

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[9] S&P Global Market Intelligence, *Adjustment Clauses, A State-by-State Overview*, RRA Regulatory Focus (Nov. 12, 2019).

[10] The PUCO's approval of various approved riders was appealed in 2018, and ultimately affirmed by the Ohio Supreme Court in January 2020. Similarly, a legal appeal of the PUCO's decision to approve legacy purchased power costs was initiated in 2017. The Ohio Supreme Court unanimously affirmed the PUCO's decision in November 2018.

Q17. DO THE COMPANY'S REGULATORY MECHANISMS SET IT APART FROM OTHER FIRMS OPERATING IN THE UTILITY INDUSTRY?

A17. No. A broad array of adjustment mechanisms are also available to the companies in my proxy group of electric utilities.[11] As summarized on page 1 of Exhibit AMM-3, these mechanisms are ubiquitous and wide ranging. For example, 11 of the 14 firms in my proxy group have utilities that operate under some form of decoupling mechanism that accounts for the impact of various factors affecting sales volumes and revenues. Most of the companies also have adjustment clauses to effectively recover certain capital expenditures, conservation program impacts, renewable energy outlays, environmental compliance costs, and transmission-related charges.

As detailed on pages 2-3 of Exhibit AMM-3, 29 of the 50 operating utilities owned by the firms in the Electric Group benefit from capital cost trackers that allow for recovery of new capital investment in generation facilities or other infrastructure outside of a traditional rate case. In addition, almost half of all the operating utilities[12] operate under a full or partial decoupling mechanism that accounts for various factors affecting sales volumes and revenues and 30 operate in jurisdictions that allow for some form of future test period. Other mechanisms automatically recover storm, pension, and bad debt costs, along with various taxes and franchise fees.

Q18. WHAT OTHER CONSIDERATIONS ARE RELEVANT TO INVESTORS' ASSESSMENT OF AEP OHIO?

A18. While recognizing that the regulatory framework is generally credit supportive for AEP Ohio, investors are also exposed to considerable uncertainty due to the propensity for legal review of the PUCO's decisions. For example, Moody's cited a 2018 appeal filed with the Ohio Supreme Court challenging various riders approved for the Company, which was not

[11] Because this information is widely referenced by the investment community, it is also directly relevant to an evaluation of the risks and prospects that determine the cost of equity.

[12] Of the 50 operating companies represented on pages 2-3 of Exhibit AMM-3, 24 of them have some form of decoupling mechanism.

resolved until January 2020.[13] Moody's has recognized that appeals to the Ohio Supreme Court are lengthy and can undermine regulatory certainty for the state's utilities.[14] As S&P Global Market Intelligence noted, "the tendency for commission rulings to come before the courts and for extensive litigation as appeals go through several layers of court review may add an untenable degree of uncertainty to the regulatory process."[15] S&P cited AEP Ohio's lack of regulatory diversity as a factor contributing to the Company's business risk,[16] while Moody's emphasized the importance of supportive regulatory treatment in forestalling a potential downgrade for AEP Ohio.[17]

C. Recommended ROE

Q19. PLEASE SUMMARIZE THE RESULTS OF YOUR ANALYSES.

A19. In order to reflect the risks and prospects associated with AEP Ohio's jurisdictional utility operations, my analyses focuses on a proxy group of 14 other electric utilities with comparable investment risks. 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 fair ROE for AEP Ohio, as well as referencing the expected earnings approach. As summarized in Exhibit AMM-2, considering these results, and giving less weight to extremes at the high and low ends of the range, I conclude that my analyses support a cost of equity in the 9.2% to 10.3% range, or 9.3% to 10.4% after

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[13] Moody's Investors Service, *Ohio Power Company, Update following negative outlook*, Credit Opinion (Mar. 11, 2020).

[14] Moody's Investors Service, *Moody's affirms DPL and Dayton Power & Light ratings; changes outlooks to stable from positive*, Rating Action (Jun. 27, 2019) (noting that "uncertainty has arisen after the Ohio Supreme Court las week ruled that the Public Utilities Commission of Ohio (PUCO) had improperly authorized the neighboring utility subsidiaries of FirstEnergy Corp. (Baa3 stable) to collect DMR charges, ending their collection from ratepayers. . .").

[15] S&P Global Market Intelligence, *State Regulatory Evaluations*, RRA Regulatory Focus (Mar. 25, 2020).

[16] S&P Global Ratings, *Ohio Power Co.*, RatingsDirect (Apr. 7, 2020).

[17] Moody's Investors Service, *Ohio Power Company, Update following negative outlook*, Credit Opinion (Mar. 11, 2020).

incorporating an adjustment to account for the impact of common equity flotation costs. The midpoint of this range is 9.85%.

Q20. DO YOUR QUANTITATIVE RESULTS FULLY REFLECT THE IMPLICATIONS OF THE CORONAVIRUS PANDEMIC ("COVID-19")?

A20. No. The threat posed by the global pandemic has clearly led to a fundamental reevaluation of risks and required returns, including for utility common stocks, but the high degree of uncertainty, extreme short-term volatility, and lack of consistent data greatly complicates any ability to account for this heightened risk through the application of standard market-based methods (e.g., DCF, CAPM) at this time. For example, the Federal Energy Regulatory Commission ("FERC") noted that dislocations in the economy and capital markets can undermine the reliability of quantitative methodologies used to estimate the cost of equity, concluding that "any DCF analysis may be affected by potentially unrepresentative financial inputs to the DCF formula, including those produced by historically anomalous capital market conditions."[18]

The steps taken to combat the coronavirus pandemic are unprecedented in scope, as are the economic implications and the resulting fiscal and monetary policy measures. Thus, while investors are clearly demanding significantly higher returns to compensate for the unprecedented risks associated with the global threat to economic growth and financial stability posed by the coronavirus pandemic, my analyses do not fully consider this impact. As additional information becomes available over the pendency of this proceeding, I will revise my ROE recommendation for AEP Ohio as necessary.

[18] *Coakley, Mass. Attorney Gen. v. Bangor Hydro-Electric Co.*, Opinion No. 531, 147 F.E.R.C. ¶ 61,234, 41 (2014) ("*Coakley*").

Q21. QUANTITATIVE METHODS SUCH AS THE DCF MODEL AND CAPM ARE ALREADY FORWARD-LOOKING. WHY SHOULD THE PUCO ALSO CONSIDER EXPECTED TRENDS IN LONG-TERM CAPITAL COSTS?

A21. While I agree that investors' future expectations are reflected in current capital market data, this does not provide a rationale for ignoring evidence that suggests long-term capital costs are expected to increase. In fact, the application of financial models to estimate the cost of equity is concerned only with investors' forward-looking expectations and this process inherently involves relying on projections (e.g., EPS growth rates, market returns) which might differ from what actually transpires. Securities are priced based on expectations over the foreseeable horizon, which includes future prospects for interest rates.

Investors would certainly consider current yields as one guide, but expectations of future trends are what ultimately shape the prices paid for common stock and the underlying cost of equity. Moreover, investors recognize that bond yields can and do shift over time with changes in underlying economic and capital market conditions, which supports consideration of interest rate forecasts in evaluating the cost of equity. The fact that recognized research organizations such as IHS Markit, Blue Chip Financial Forecasts, and Value Line devote considerable expertise and resources to evaluating future trends in capital markets, and investors' reliance on such services, evidences the relevance of projected interest rates in applying the financial models presented in my testimony. This is particularly the case in light of the unprecedented monetary policy measures taken by the Federal Reserve in response to the coronavirus pandemic, which serve to artificially suppress interest rates in an effort to address near-term economic risks.

Q22. WHAT IS YOUR CONCLUSION REGARDING THE FAIR ROE FOR AEP OHIO?

A22. I recommend an ROE of 10.15% for AEP Ohio's electric utility operations. The bases for my conclusion are summarized below:

- The turmoil in financial markets has resulted in a fundamental shift in investors' risk perceptions, which has increased the cost of capital for utilities such as AEP Ohio:
  - The dramatic sell-off in common stocks associated with the coronavirus pandemic is indicative of a significant revision in investors' willingness to assume risks, which has led to higher costs for long-term capital.
  - Widening yield spreads between bonds of differing risk indicate that the cost investors require to assume additional risk has increased.
  - Rising beta values supports the view that the forward-looking risks of electric utility stocks have increased, which implies a higher ROE.
  - Because of the "flight to quality", government bond yields have fallen sharply at the same time that the required returns for common stocks have moved sharply higher to compensate for increased perceptions of risk. As a result trends in Treasury bond yields have virtually no relevance in evaluating long-term capital costs for AEP Ohio in the current capital market climate.
- Unprecedented Federal Reserve monetary policies have placed downward pressure on interest rates, and emphasize the need to consider the impact of projected bond yields in evaluating the results of quantitative methods.
- Investors recognize that constructive regulation is a key ingredient in supporting utility credit standing and financial integrity and providing AEP Ohio with the opportunity to earn a return that adequately reflects its risks is an essential ingredient to support the Company's financial position, which ultimately benefits customers by ensuring reliable service at lower long-run costs.
- Continued support for AEP Ohio's financial integrity is imperative to ensure that the Company has the capability to confronting potential challenges associated with funding infrastructure development necessary to meet the needs of its customers, even during times of capital market turmoil.
- In order to consider these factors, I recommend an ROE for AEP Ohio of 10.15%, which falls approximately at the midpoint of the upper end of my recommended range, or 30 basis points above the 9.85% midpoint.

Q23. WHAT DO THE DCF RESULTS FOR YOUR SELECT GROUP OF NON-UTILITY FIRMS INDICATE WITH RESPECT TO YOUR EVALUATION?

A23. Average and midpoint DCF estimates for a low-risk group of firms in the competitive sector of the economy range from 9.5% to 10.8%, before consideration of flotation costs.[19] While

[19] Exhibit AMM-12, page 3.

I do not base my recommendation directly on these results, they confirm that a 10.15% ROE falls in a reasonable range to maintain AEP Ohio's financial integrity, provide a return commensurate with investments of comparable risk, and support the Company's ability to attract capital.

III. FUNDAMENTAL ANALYSES

Q24. WHAT IS THE PURPOSE OF THIS SECTION?

A24. As a predicate to subsequent quantitative analyses, this section briefly reviews the operations and finances of AEP Ohio. In addition, it examines conditions in the capital markets and the general economy. An understanding of the fundamental factors driving the risks 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. Ohio Power Company

Q25. BRIEFLY DESCRIBE AEP OHIO AND ITS ELECTRIC UTILITY OPERATIONS.

A25. AEP Ohio, a wholly-owned subsidiary of AEP, is engaged in the transmission and distribution of electric power to nearly 1.5 million customers in the northwestern, east central, eastern, and southern sections of Ohio. At December 31, 2019, AEP Ohio had total assets of $8.0 billion. During 2019, sales to residential customers generated approximately 53% of total revenues, with 26% coming from commercial customers, and 10% from industrial consumers. Wholesale sales accounted for 5% of AEP Ohio's 2019 revenues, while revenues from other sources contributed 6%. The Company's transmission and distribution facilities consist of approximately 45,000 miles of transmission and distribution lines. AEP Ohio is a member of PJM Interconnection, LLC ("PJM"), a Federal Energy Regulatory Commission ("FERC")-approved transmission organization, and provides regional transmission service pursuant to the PJM Open Access Transmission Tariff.

Q26. PLEASE DESCRIBE THE AEP SYSTEM.

A26. AEP delivers electricity to more than 5 million customers across eleven states. AEP is one of the largest electric utilities in the U.S., with its combined utility system including approximately 26,000 MW of generating capacity, 40,000 miles of transmission lines, and 221,000 miles of distribution lines. Coal-fired power plants account for approximately 45% of AEP's generating capacity, while natural gas represents 28% and nuclear 7%. The remaining capacity comes from wind, hydro, pumped storage and other sources, including energy efficiency. AEP's revenues totaled approximately $15.6 billion in the most recent fiscal year, with total assets at year-end 2019 of $75.9 billion.

Q27. WHERE DOES AEP OHIO OBTAIN THE CAPITAL USED TO FINANCE ITS INVESTMENT IN ELECTRIC UTILITY PLANT?

A27. As a wholly-owned subsidiary of AEP, the Company obtains common equity capital solely from its parent, whose common stock is publicly traded on the New York Stock Exchange. In addition to capital supplied by AEP, AEP Ohio also issues debt securities directly under its own name.

Q28. WHAT CREDIT RATINGS HAVE BEEN ASSIGNED TO THE COMPANY?

A28. AEP Ohio is assigned an issuer credit rating of "A-" by S&P. While Moody's currently assigns the Company a long-term issuer rating of "A2," on March 6, 2020, Moody's revised the outlook for AEP Ohio's ratings from "stable" to "negative," warning investors of a potential downgrade.[20] Meanwhile, Fitch Ratings, Inc. ("Fitch") has assigned the Company a long-term issuer default rating of "A-."

Q29. DOES AEP OHIO ANTICIPATE THE NEED FOR ADDITIONAL CAPITAL GOING FORWARD?

A29. Yes. AEP Ohio will require capital investment to provide for necessary maintenance and replacements of its utility infrastructure, as well as to fund investment in new facilities.

[20] Moody's Investors Service, *Moody's revises outlook for Ohio Power Company to negative*, Rating Action (Mar. 6, 2020).

Capital expenditures are expected to total approximately $680 million in 2020 alone,[21] and Moody's informed investors that "the company's financial profile is weakening as it executes an elevated capital expenditure program," and advised that supportive regulatory treatment would be needed to bolster credit metrics and maintain existing ratings.[22] Similarly, S&P cited expected annual capital expenditures on the order of $550 to $650 million, and noted that this elevated capital spending is a key driver that would require access to financing in light of negative discretionary cash flow.[23]

B. Outlook for Capital Costs

Q30. PRIOR TO THE RECENT DISLOCATIONS RELATED TO THE CORONAVIRUS PANDEMIC, WHAT WAS THE GENERAL STATE OF ECONOMIC AND CAPITAL MARKET CONDITIONS?

A30. In the third quarter of 2019, U.S. real GDP growth continued to slow to 2.1% from its recent apex of 3.2% in the second quarter of 2018. The unemployment rate remained in the neighborhood of 3.5% toward the end of 2019, which is indicative of a strong labor market and an economy that remains at full employment. Inflation, as evidenced by the Consumer Price Index, remained steady at around 2.1% in November 2019. Investors faced uncertainty as capital markets responded to the implications of an economy at or near full employment, along with the ramifications of the Trump Administration's tariff policies. While fears of an escalating international trade war with China had eased more recently as the U.S. and China concluded the first phase of a trade agreement, uncertainty over trade policy remained elevated and investors continued to confront signs of global economic weakness. Economic activity remained weak in the Eurozone (which faces uncertain developments surrounding Brexit) and in many emerging market economies,

[21] American Electric Power Co., *2019 Form 10-K Report* 44 (Feb. 20, 2020).
[22] Moody's Investors Service, *Ohio Power Company*, Credit Opinion (Mar. 11, 2020).
[23] S&P Global Ratings, *Ohio Power Co.*, RatingsDirect (Apr. 7, 2020).

including Brazil and Mexico. These signs of softening global growth were accompanied by continued indications of an economic slowdown in China. Finally, investors were also faced with the implications of heightened geopolitical tensions in the Middle East, which led to ongoing concerns over possible disruptions in crude oil supplies and attendant price volatility.

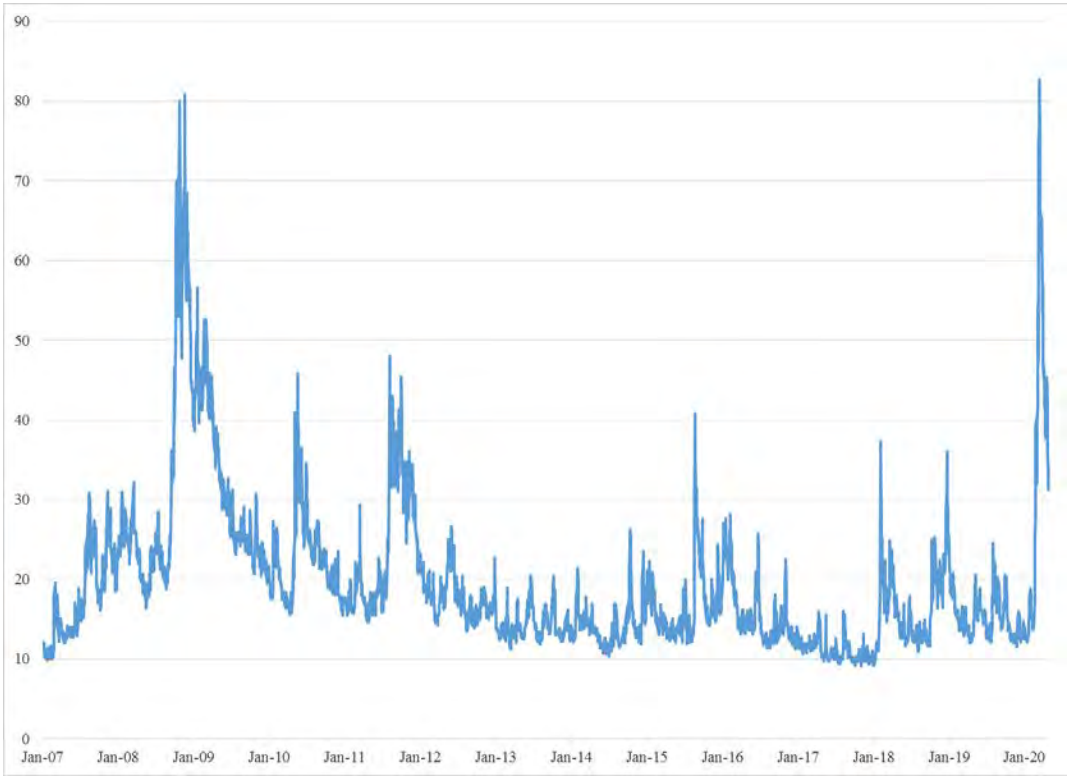
Q31. HOW HAVE COMMON EQUITY MARKETS BEEN IMPACTED BY COVID-19?

A31. The threat posed by the coronavirus pandemic has led to extreme volatility in capital markets worldwide as investors dramatically revise their risk perceptions and return requirements in the face of the severe disruptions to commerce and the economy. Simultaneously, energy markets have been roiled by the threat to demand posed by a worldwide economic slowdown and a breakdown of Russia's partnership with the Organization of the Petroleum Exporting Countries. These simultaneous demand and supply shocks have led to sharp declines in oil prices, which have further confounded investors and destabilized the economic outlook and asset prices.

Despite the actions of the world's central banks to ease market strains and bolster the economy, global financial markets have experienced precipitous declines in asset values. On March 12, 2020, the Dow Jones Industrial Average ("DJIA") suffered its worst decline since the 1987 "Black Monday" crash, falling by almost 10% in a single session, and pushing the index into a bear market, defined as a 20% drop from a previous high. On March 16, 2020, the DJIA experienced its greatest fall, point-wise, in history, ending the day with a decline of 2,997 points. Similarly, between February 19 and March 23, 2020, the S&P 500 lost more than 30% of its total value.

The Chicago Board Options Exchange Volatility Index, commonly known as the "VIX", is a key measure of expectations of near-term volatility and market sentiment based on options prices for the S&P 500 Composite Stock Index ("S&P 500"). Figure AMM-1 illustrates the dramatic increase in volatility in response to the coronavirus pandemic:

FIGURE AMM-1
CBOE VIX INDEX – 2007-2020



The VIX has moderated since peaking at levels not seen since the 2008-2009 Financial Crisis, but it remains elevated relative to recent experience. Similarly, while the S&P 500 has staged a recovery, as of late April 2020 it remained approximately 15% below the high reached in February 2020.

Q32. HAVE UTILITIES AND THEIR INVESTORS FACED SIMILAR TURMOIL?

A32. Yes. As of March 23, 2020, the Dow Jones Utility Average ("DJUA") had fallen approximately 36% from the previous high reached on February 18, 2020, demonstrating the fact that regulated utilities and their investors are not immune from the impact of financial market turmoil. As with the broader market, utility stock prices have recovered from these lows, but as of April 2020 the DJUA remains 19% below its previous high. While equity markets have recovered from the lows reached in March 2020, the pronounced selloff and ongoing volatility evidences investors' trepidation to commit

capital and marks a significant upward revision in their perceptions of risk and required returns.

Concerns over weakening credit quality prompted S&P to revise its outlook for the regulated utility industry from "stable" to "negative."[24] As S&P explained:

> Even before the current downturn and COVID-19, a confluence of factors, including the adverse impacts of tax reform, historically high capital spending, and associated increased debt, resulted in little cushion in ratings for unexpected operating challenges.[25]

While recognizing regulatory protections that should mitigate the impact of the coronavirus pandemic, S&P noted that "the timing and extent of these protections adds uncertainty to already stretched financial profiles."[26] S&P warned investors that pressure on electric utility finances "sets the stage for downgrades" that could lower the median rating to triple-B.[27] Meanwhile Moody's noted that utilities were forced to seek alternatives to volatile commercial paper markets in order to fund operations, and emphasized the importance of maintaining adequate liquidity in the sector to weather a prolonged period of financial volatility and turbulent capital markets.[28]

Q33. WHAT HAS BEEN THE RECENT DIRECTION OF FEDERAL RESERVE MONETARY POLICIES?

A33. In early 2019, the Federal Reserve indicated its intention to adopt a more patient and accommodative stance to future policy adjustments, while observing that the appropriate target range for the federal funds rate would depend on future data. In the second half of 2019, the Federal Reserve lowered the target range for its benchmark federal funds rate by

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[24] S&P Global Ratings, *COVID-10: The Outlook For North American Regulated Utilities Turns Negative*, RatingsDirect (Apr. 2, 2020).
[25] S&P Global Ratings, *North American Regulated Utilities Face Tough Financial Policy Tradeoffs To Avoid Ratings Pressure Amid The COVID-19 Pandemic*, RatingsDirect (May 11, 2020).
[26] *Id*.
[27] *Id*.
[28] Moody's Investors Service, *FAQ on credit implications of the coronavirus outbreak*, Sector Comment (Mar. 26, 2020).

75 basis points, reversing their policy of steady rate increases in 2016 and 2017. At the December 2019 meeting of the Federal Open Market Committee ("FOMC"), economic projections by Federal Reserve members and bank presidents indicated a strong expectation that the target federal funds rate would increase during the 2020–2022 time frame and beyond.

Even prior to the coronavirus pandemic, the Federal Reserve continued to exert considerable influence over capital market conditions through its massive holdings of Treasuries and mortgage-backed securities, which exceeded $3.7 trillion.[29] While beginning a gradual balance sheet normalization program in October 2017, the Federal Reserve ended the reduction in its holdings of Treasury securities in 2019 and in October 2019 had indicated its intention to purchase Treasury bills at least into the second quarter of 2020 in order to maintain ample reserve balances.

Q34. WHAT ACTIONS HAS THE FEDERAL RESERVE TAKEN IN RESPONSE TO THE THREAT TO THE ECONOMY POSED BY COVID-19?

A34. In response to the economic shock posed by the spread of the coronavirus, the FOMC announced a 50 basis point reduction in the target range for the federal funds range on March 3, 2020, noting that "the risks to the U.S. outlook have changed materially."[30] Twelve days later, on March 15, 2020, the FOMC moved to reduce the federal funds rate by a further 100 basis points, to a target range of 0% to 0.25%. In addition, the Federal Reserve has announced a broad range of unprecedented programs designed to support financial market liquidity and economic stability. To start, the quantitative easing ("QE") measures initially adopted in response to the 2008 financial crisis were reintroduced by directing the purchase of Treasury securities and agency mortgage-backed securities "in

[29] *Factors Affecting Reserve Balances*, H.4.1 (Jan. 2, 2020). https://www.federalreserve.gov/releases/h41/current/. Prior to the initiation of the stimulus program in 2009, the Federal Reserve's holdings of U.S. Treasury bonds and notes amounted to approximately $400-$500 billion.

[30] https://www.federalreserve.gov/monetarypolicy/fomcpresconf20200303.htm.

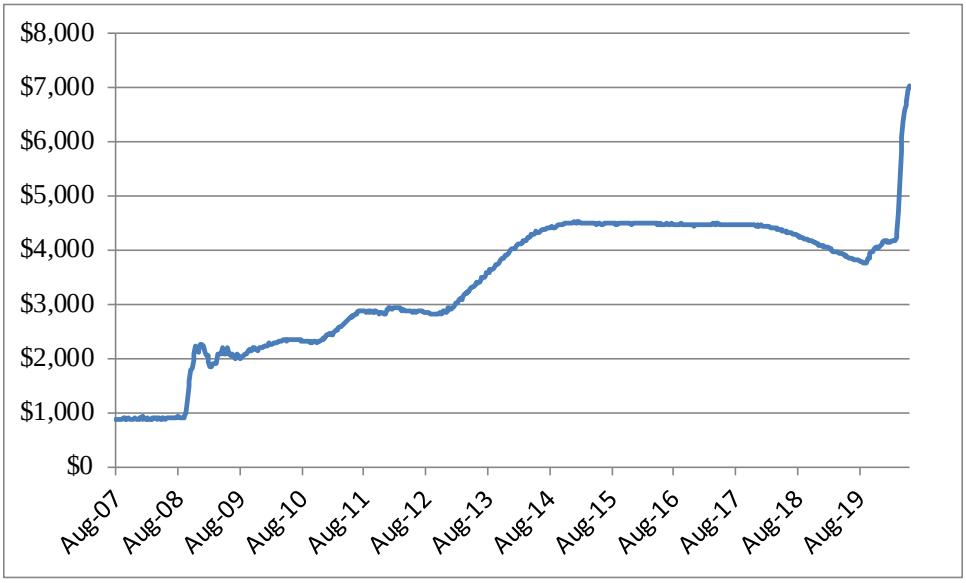
the amounts needed to support the smooth functioning of markets,"[31] while continuing to reinvest all principal payments from its existing holdings. In addition, the Federal Reserve has also announced wide-raging initiatives designed to support credit markets and ensure liquidity, including credit facilities to support households, businesses, and state and local governments, as well as the purchase of corporate bonds on the secondary market.[32]

Prior to the initiation of QE in 2009, the Federal Reserve's holdings of U.S. Treasury bonds and notes amounted to approximately $900 billion. With the implementation of its asset purchase program, balances of Treasury securities and mortgage backed instruments climbed steadily. Although the Federal Reserve had begun a process of normalizing its monetary policies by reducing its balance sheet holdings, its response to the coronavirus pandemic dramatically reversed this stance. Figure AMM-2 below charts the course of the Federal Reserve's asset purchase program:

[31] Federal Reserve, *Press Release* (Mar. 23, 2020), https://www.federalreserve.gov/monetarypolicy/files/monetary20200323a1.pdf.

[32] *See, e.g., Federal Reserve takes additional actions to provide up to $2.3 trillion in loans to support the economy*, Press Release (Apr. 9, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200409a.htm.

FIGURE AMM-2
FEDERAL RESERVE BALANCE SHEET
(BILLION $)



Source: https://www.federalreserve.gov/monetarypolicy/bst_recenttrends_accessible.htm.

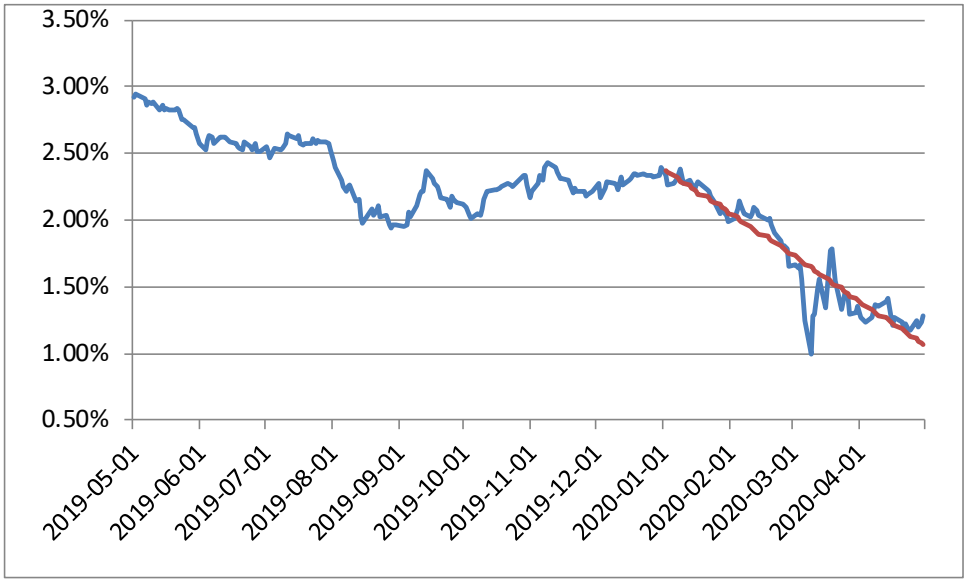
As illustrated above, the Federal Reserve's asset holdings now amount to approximately $7 trillion, which is an all-time high, and the resulting effect on capital market conditions has likely never been more pronounced. While the Federal Reserve's aggressive monetary stimulus may help to ensure market liquidity and support the economy, these actions also support financial asset prices, which in turn place artificial downward pressure on bond yields.

Q35. DO TRENDS IN THE YIELDS ON TREASURY NOTES AND BONDS ACCURATELY REFLECT THE EXPECTATIONS AND REQUIREMENTS OF AEP OHIO'S EQUITY INVESTORS?

A35. No. Not surprisingly, investors have reacted to the threat of a global economic recession and resulting equity market volatility by seeking a safe haven in U.S. government bonds. As a result of this "flight to safety," and in response to the Federal Reserve's monetary policies, Treasury bond yields have been pushed dramatically lower in the face of extreme

risks in other sectors of the capital markets. Monthly average yields on 30-year Treasury bonds are plotted in Figure AMM-3, below:

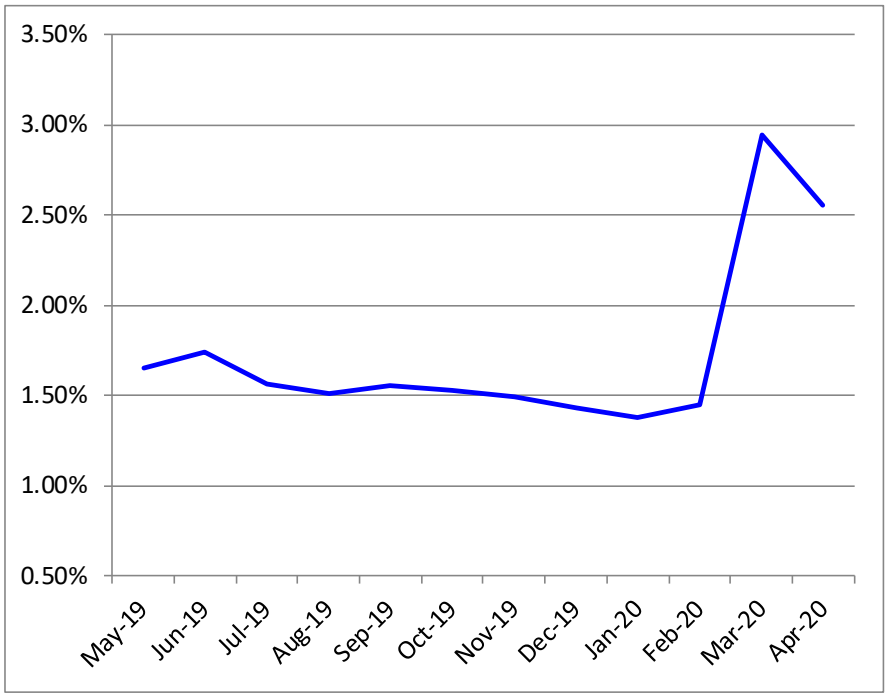
FIGURE AMM-3
30-YEAR TREASURY BOND YIELD
(MAY 2019 – APRIL 2020)



As shown above, beginning in January 2020, the yields on 30-year Treasury bonds began a general decline. In response to accelerating concerns over economic uncertainties and the Federal Reserve's actions to increase liquidity in the face of the coronavirus pandemic, the fall in Treasury bond yields became increasingly pronounced, with daily yields on 30-year notes falling below 1% in March 2020. Meanwhile, the price of 3-month Treasury bills rose high enough to push yields to 0%.

While the yields on Treasury securities have fallen significantly, the required returns for risky assets, such as common stocks, have moved sharply higher to compensate for increased perceptions of risk. This "risk-off" behavior has caused the spread between the observable yields on public utility bonds and 30-year Treasury bonds to spike dramatically. Figure AMM-4 plots the monthly spread between Moody's Baa public utility bond yields and 30-year Treasury bond yields since May 2019.

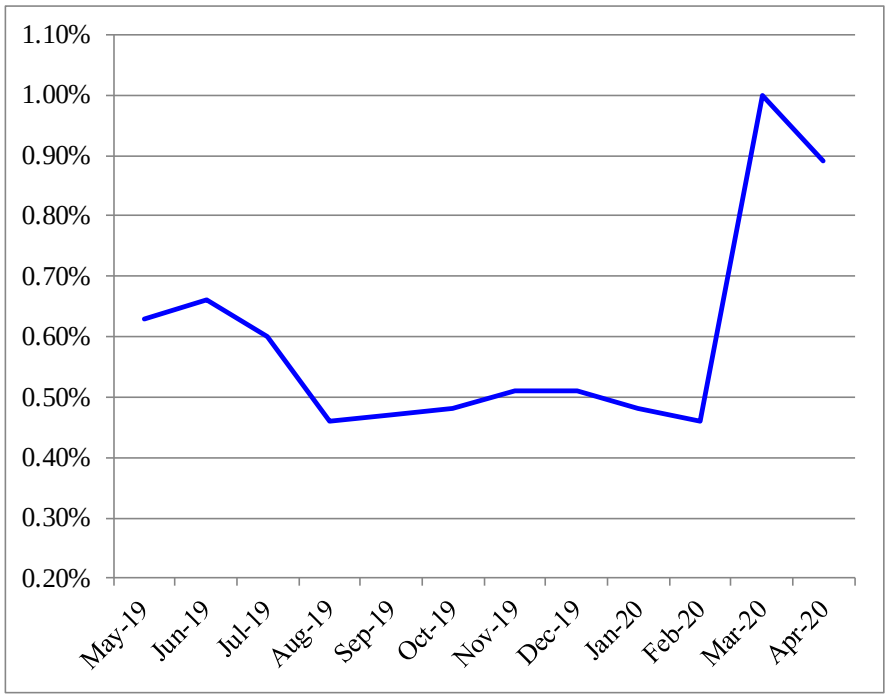
FIGURE AMM-4
YIELD SPREAD – Baa UTILITY V. 30-YEAR TREASURY BONDS
(MAY 2019 – APRIL 2020)



As illustrated above, the gap between the yields on these two debt instruments has widened significantly, reflecting the extent of the uncertainties facing investors. During January 2020, this yield spread averaged 143 basis points, versus 294 and 255 basis points in March and April of 2020. The difference (approximately 110 to 150 basis points), is the additional "cost" investors are now requiring to assume additional risk.

While the cost of equity cannot be directly observed in capital markets like the yields on bonds, there is every reason to believe that the required return to attract risk capital to utilities has increased relative to the yield on utility bonds. As illustrated below in Figure AMM-5, the spread between public utility bonds of different ratings has also expanded:

FIGURE AMM-5
YIELD SPREAD – BBB / AA UTILITY BONDS
(MAY 2019 – APRIL 2020)



Source: Moody's Investors Service.

If investors require additional return to bear the risk of BBB bonds relative to AA bonds, it is likely that they also require an even greater additional premium to shift from the relative safety of bonds to the higher risk of utility equity.

Q36. WHAT DOES THIS IMPLY WITH RESPECT TO THE ROE FOR A UTILITY SUCH AS AEP OHIO?

A36. Focusing solely on the decrease in Treasury bond yields since the start of the coronavirus pandemic might suggest that investors' required returns have fallen, but the exact opposite is true. Widening spreads between the yields on utility bonds and Treasury securities supports a conclusion that increased perceptions of risk have pushed required returns for common stocks higher at the same time that Treasury bond yields have declined because of a "flight to quality." The fact that prices of Treasury bonds have been driven sharply

higher is the mirror image of higher, not lower returns for more risky asset classes, such as the common stock of utilities like AEP Ohio.

Q37. DOES THE PROSPECT OF ECONOMIC RECESSION IMPLY LOWER CAPITAL COSTS?

A37. No. Investors' required rates of return for AEP Ohio and other financial assets are a function of risk, with greater exposure to uncertainty requiring higher—not lower—rates of return to induce long-term investment. With respect to credit markets, S&P observed that conditions "look set to remain extraordinarily difficult for borrowers at least into the second half of the year, with the economic stop associated with coronavirus-containment measures continuing with no clear end in sight."[33] And while regulated utilities are favorably positioned relative to other industry sectors, S&P nevertheless noted that "access to the equity markets remains extraordinarily challenging."[34]

It is important not to confuse investors' expectations for future growth and cash flows, which is one consideration in estimating the cost of common equity, with their required rate of return. In fact, trends in growth rates say nothing at all about investors' overall risk perceptions. The fact that investors' required rates of return for long-term capital can rise in tandem with expectations of declining growth that might accompany an economic slowdown is demonstrated in the equity markets, where perceptions of greater risks led investors to sharply reevaluate what they are willing to pay for common stocks. While the precipitous decline in utility stock prices may in part be attributed to somewhat diminished expectations of future cash flows, there is also every indication that investors' discount rate, or cost of common equity, has moved significantly higher to accommodate the greater risks they now associate with equity investments.

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[33] S&P Global Ratings, *Credit Conditions North America: Unprecedented Uncertainty Slams Credit* (Mar. 31, 2020).

[34] S&P Global Ratings, *COVID-19: The Outlook For North American Regulated Utilities Turns Negative*, RatingsDirect (Apr. 2, 2020).

Q38. IS THERE ANY DIRECT EVIDENCE THAT THE RISKS ASSOCIATED WITH ELECTRIC UTILITY COMMON STOCKS HAVE INCREASED AS A RESULT OF RECENT MARKET TURMOIL?

A38. Yes. Beta is a widely-referenced measure of equity risk that is based on the relative volatility of a utility's common stock price 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.

While beta values are typically calculated based on historical price movements over a five-year period, this backward-looking view can obscure the implications of more current data affecting investors' forward-looking assessment of risk. Table AMM-1, below, compares beta values measured using a one-year lookback period as of April 30, 2020 with those as of December 31, 2019 for the thirty-seven companies included in Value Line's electric utility industry groups:

TABLE AMM-1
COMPARISON OF BETA VALUES

Company	Year ended Mar. 31, 2020	Year ended Dec. 31, 2019
ALLETE	1.02	0.62
Alliant Energy	1.06	0.46
Ameren Corp.	1.00	0.57
American Elec Pwr	1.03	0.55
Avangrid, Inc.	0.75	0.57
Avista Corp.	1.02	0.52
Black Hills Corp.	1.24	0.56
CenterPoint Energy	1.37	0.80
CMS Energy Corp.	1.02	0.43
Consolidated Edison	0.81	0.45
Dominion Energy	0.87	0.45
DTE Energy Co.	1.10	0.55
Duke Energy Corp.	1.07	0.43
Edison International	1.10	0.53
El Paso Electric Co.	0.45	0.76
Entergy Corp.	1.19	0.42
Evergy Inc.	1.13	0.45
Eversource Energy	1.06	0.54
Exelon Corp.	1.08	0.75
FirstEnergy Corp.	1.00	0.59
Fortis Inc.	0.76	0.35
Hawaiian Elec.	0.77	0.51
IDACORP, Inc.	1.11	0.44
MGE Energy	0.66	0.60
NextEra Energy, Inc.	1.05	0.33
NorthWestern Corp.	1.26	0.60
OGE Energy Corp.	1.23	0.67
Otter Tail Corp.	1.12	0.83
Pinnacle West Capital	1.14	0.47
PNM Resources	1.45	0.57
Portland General Elec.	1.11	0.49
PPL Corp.	1.39	0.80
Pub Sv Enterprise Grp.	1.10	0.63
Sempra Energy	1.07	0.51
Southern Company	1.11	0.49
WEC Energy Group	1.08	0.42
Xcel Energy Inc.	1.04	0.54
Average	**1.05**	**0.55**

Source: Bloomberg Terminal. Based on weekly price changes relative to the NYSE Composite, including Blume adjustment.

As illustrated above, beta values measured using current data have increased substantially from those indicated at year-end 2019. In fact, with an average beta greater than 1.00, price movements for electric utility stocks as a whole over this more time period suggest that the industry is as risky as the NYSE Composite Index as a whole.

Q39. HOW DO INTEREST RATES ON LONG-TERM BONDS COMPARE WITH THOSE PROJECTED FOR THE NEXT FEW YEARS?

A39. Table AMM-2 below compares current interest rates on 10-year and 30-year Treasury bonds, triple-A rated corporate bonds, and double-A rated utility bonds with the average of near-term projections from the Blue Chip Financial Forecasts, Energy Information Administration ("EIA"), IHS Markit, and The Value Line Investment Survey ("Value Line"):

TABLE AMM-2
INTEREST RATE TRENDS

	Apr. 2020	Average 2021-25	Change (bp)
10-Yr. Treasury	0.66%	2.93%	227
30-Yr. Treasury	1.27%	3.25%	198
Aaa Corporate	2.43%	3.92%	149
Aa Utility	2.93%	4.45%	152

Source:
Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020).
IHS Markit, Long-Term Macro Forecast - Baseline (Apr. 8, 2020).
Value Line Investment Survey, Forecast for the U.S. Economy (Feb. 28, 2020).
Wolters Kluwer, Blue Chip Financial Forecasts (Dec. 1, 2019).

As evidenced above, there is a clear consensus that the cost of permanent capital will be higher in the 2021-2025 timeframe than it is currently. As a result, current cost of capital estimates are likely to understate investors' requirements during the time the rates set in this proceeding are effective.

Q40. WOULD IT BE REASONABLE TO DISREGARD THE IMPLICATIONS OF CURRENT CAPITAL MARKET CONDITIONS IN ESTABLISHING A FAIR ROE FOR AEP OHIO?

A40. No. Current capital market conditions reflect the reality of the situation in which AEP Ohio and other businesses must attract and retain capital. The standards underlying a fair rate of return require that AEP Ohio's authorized ROE reflect a return competitive with other investments of comparable risk and preserve the Company's ability to maintain access to capital on reasonable terms. These standards can only be met by considering the requirements of investors in today's capital markets. As S&P concluded, challenges posed by the coronavirus crisis "have the potential to significantly impact the financial performance of the investor-owned utilities, increasing the overall level of investor risk, and will have to be addressed by state regulators."[35]

The events since early March 2020 undoubtedly mark a significant transition in investors' expectations, and there has been little indication that the challenges confronting the economy and financial markets will be resolved quickly. While market dislocations may complicate the evaluation of the cost of common equity, this provides no basis to ignore the upward shift in investors' risk perceptions and required rates of return for long-term capital. If the increase in investors' required rate of return is not incorporated in the allowed ROE, the results will fail to meet the comparable earnings standard that is fundamental in 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 AEP Ohio's risks will only serve to weaken its financial integrity, while hampering the Company's ability to attract the capital needed to meet the economic and reliability needs of its service area.

[35] S&P Global Market Intelligence, *State Regulatory Evaluations*, RRA Regulatory Focus (Mar. 25, 2020).

Q41. IS IT POSSIBLE THAT THE ECONOMIC DISLOCATION CAUSED BY THE CORONAVIRUS PANDEMIC IS A TEMPORARY ABERRATION THAT WILL SOON ABATE?

A41. No one knows the future of our complex global economy. Although there is continued hope for a swift economic rebound as COVID-19 containment measures are gradually lifted, residual impacts of the unprecedented economic and health crisis could linger indefinitely. In any event, it would be imprudent to gamble the interests of customers and the economy of Ohio in the hope that the harsh economic reality will suddenly be resolved. AEP Ohio must raise capital in the real world of financial markets. To ignore the current reality would be unwise given the importance of reliable electric power for customers and the economy.

IV. COMPARABLE RISK PROXY GROUP

Q42. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A42. This section describes the procedures underlying my identification of a proxy group of publicly traded companies.

Q43. CAN QUANTITATIVE METHODS BE APPLIED DIRECTLY TO AEP OHIO TO ESTIMATE THE COST OF EQUITY?

A43. No. Application of quantitative methods to estimate the cost of common equity requires observable capital market data, such as stock prices and beta values. Moreover, 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. Thus, 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.

Q44. HOW DO YOU IDENTIFY THE PROXY GROUP OF ELECTRIC UTILITIES RELIED ON FOR YOUR ANALYSES?

A44. In order to reflect the risks and prospects associated with AEP Ohio's jurisdictional utility operations, I began with the following criteria to identify a proxy group of utilities:

1. Companies that are included in the Electric Utility Industry groups compiled by Value Line.
2. Electric utilities that paid common dividends over the last six months and have not announced a dividend cut since that time.
3. Electric utilities with no ongoing involvement in a major merger or acquisition that would distort quantitative results.

In addition, my analysis also considered credit ratings from S&P and Moody's, along with Value Line's Safety Rank in evaluating relative risk. Specifically, I limited the proxy group to those companies with ratings from Moody's or S&P that fall within one "notch" higher or lower than AEP Ohio. As noted earlier, the Company has been assigned a corporate credit rating of A- by S&P, which results in a ratings range of BBB+ to A. Meanwhile, because only two utilities fell within a comparable risk band based on AEP Ohio's A2 rating from Moody's, I expanded the Moody's ratings range to two notches, or Baa1 to Aa3. Finally, I also limited the proxy group to include only those utilities with a Value Line Safety Rank of "1" or "2". These criteria result in a proxy group composed of 14 companies, which I refer to as the "Electric Group."

Q45. HOW DO YOU EVALUATE THE RISKS OF THE ELECTRIC GROUP RELATIVE TO AEP OHIO?

A45. My evaluation of relative risk considers four objective, published benchmarks that are widely relied on in the investment community. 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 normally

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, other quality rankings published by investment advisory services also provide relative assessments of risks that are considered by investors in forming their expectations 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. Given that Value Line is perhaps the most widely available source of investment advisory information, its Safety Rank provides useful guidance regarding the risk perceptions of investors.

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.[36]

Q46. HOW DO THE OVERALL RISKS OF YOUR PROXY GROUP COMPARE TO AEP OHIO?

A46. Table AMM-3 compares the Electric Group with AEP Ohio across the four key indices of investment risk discussed above. Because AEP Ohio has no publicly traded common stock, the Value Line risk measures shown reflect those published for its parent, AEP:

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

TABLE AMM-3
COMPARISON OF RISK INDICATORS

		(a)	(b)	(c)		
		S&P	**Moody's**	**Value Line**		
	Company	**Corporate Rating**	**Long-term Rating**	**Safety Rank**	**Financial Strength**	**Beta**
1	Ameren Corp.	BBB+	Baa1	2	A	0.50
2	American Elec Pwr	A-	Baa1	1	A+	0.50
3	Avangrid, Inc.	BBB+	Baa1	2	B++	0.40
4	CMS Energy Corp.	BBB+	Baa1	2	B++	0.50
5	Duke Energy Corp.	A-	Baa1	2	A	0.45
6	Eversource Energy	A-	Baa1	1	A	0.55
7	NextEra Energy, Inc.	A-	Baa1	1	A+	0.50
8	OGE Energy Corp.	BBB+	Baa1	2	A	0.70
9	Pinnacle West Capital	A-	A3	1	A+	0.45
10	Portland General Elec.	BBB+	A3	2	B++	0.55
11	Pub Sv Enterprise Grp.	BBB+	Baa1	1	A++	0.60
12	Sempra Energy	BBB+	Baa1	2	A	0.65
13	WEC Energy Group	A-	Baa1	1	A+	0.45
14	Xcel Energy Inc.	A-	Baa1	1	A+	0.45
	Range	**BBB+ to A-**	**Baa1 to A3**	**1 to 2**	**B++ to A++**	**0.40 to 0.70**
	AEP Ohio	**A-**	**A2**	**1**	**A+**	**0.55**

(a) Issuer credit rating from www.standardandpoors.com (retrieved May 1, 2020).
(b) Long-term rating from www.moodys.com (retrieved May 1, 2020).
(c) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).

Q47. WHAT DOES THIS COMPARISON INDICATE REGARDING INVESTORS' ASSESSMENT OF THE RELATIVE RISKS ASSOCIATED WITH YOUR ELECTRIC GROUP?

A47. As shown above, AEP Ohio's A- rating from S&P is consistent with the range maintained by the Electric Group, while the Company's A2 rating from Moody's (now on negative outlook) is one notch higher than the proxy group range. With respect to Value Line's Safety Rank, Financial Strength and beta measures, the values for AEP Ohio are consistent with the range applicable to the Electric Group. Considered together, a comparison of these objective measures, which incorporate a broad spectrum of risks, including financial and business position, relative size, and exposure to company specific factors, indicates that

investors would likely conclude that the overall investment risks for AEP Ohio are comparable to those of the firms in the Electric Group.

V. CAPITAL MARKET ESTIMATES

Q48. WHAT IS THE PURPOSE OF THIS SECTION?

A48. 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. Next, I describe various quantitative analyses conducted to estimate the cost of common equity for the proxy group of comparable risk utilities. Finally, I examine flotation costs, which are properly considered in evaluating a fair and reasonable rate of return on equity.

A. Economic Standards

Q49. WHAT FUNDAMENTAL ECONOMIC PRINCIPLE UNDERLIES THE COST OF EQUITY CONCEPT?

A49. The fundamental economic principle underlying the cost of equity concept is the notion that investors are risk averse. In capital markets where relatively risk-free assets are available (*e.g.*, U.S. Treasury securities), investors can be induced to hold riskier assets only if they are offered a premium, or additional return, above the rate of return on a risk-free asset. Because all assets compete with each other 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:

$$k_i = R_f + RP_i$$

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.

Q50. IS THERE EVIDENCE THAT THE RISK-RETURN TRADEOFF PRINCIPLE ACTUALLY OPERATES IN THE CAPITAL MARKETS?

A50. Yes. The risk-return tradeoff can be readily 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.

Q51. DOES THE RISK-RETURN TRADEOFF OBSERVED WITH FIXED INCOME SECURITIES EXTEND TO COMMON STOCKS AND OTHER ASSETS?

A51. 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 directly observed. Yet there is every reason to believe that investors exhibit risk aversion in deciding whether or not to hold common stocks and other assets, just as when choosing among fixed-income securities.

Q52. IS THIS RISK-RETURN TRADEOFF LIMITED TO DIFFERENCES BETWEEN FIRMS?

A52. 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, common shareholders are the last in line and they receive only the net revenues, if any, remaining 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.

Q53. WHAT ARE THE CHALLENGES IN DETERMINING A JUST AND REASONABLE ROE FOR A REGULATED ENTERPRISE?

A53. The actual return investors require is unobservable. Different methodologies have been developed to estimate investors' expected and required return on capital, but all such methodologies are merely theoretical tools and generally 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 gain insight into the return investors require; there are numerous other methodologies for estimating the cost of capital and the ranges produced by the different approaches can vary widely.

Q54. IS IT CUSTOMARY TO CONSIDER THE RESULTS OF MULTIPLE APPROACHES WHEN EVALUATING A JUST AND REASONABLE ROE?

A54. Yes. In my experience, financial analysts and regulators routinely consider the results of alternative approaches in determining allowed ROEs. It is widely recognized that no single method can be regarded as failsafe; with all approaches having advantages and shortcomings. As the 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."[37] 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.[38]

As this treatise succinctly observed, "no single model is so inherently precise that it can be relied on solely to the exclusion of other theoretically sound models."[39] 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.[40]

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

> 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

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

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

[39] *Id*.

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

> 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.[41]

More recently, the FERC recognized the potential for any application of the DCF model to produce unreliable results.[42]

As this discussion indicates, consideration of the results of alternative approaches reduces the potential for error associated with any single quantitative 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.

Q55. DOES THE FACT THAT AEP OHIO IS A SUBSIDIARY OF AEP IN ANY WAY ALTER THESE FUNDAMENTAL STANDARDS UNDERLYING A FAIR AND REASONABLE ROE?

A55. No. While the Company has no publicly traded common stock and AEP is AEP Ohio's only shareholder, this does not change the standards governing the determination of a fair ROE for the Company. Ultimately, the common equity that is required to support the utility operations of AEP Ohio must be raised in the capital markets, where investors consider the Company's ability to offer a rate of return that is competitive with other risk-comparable alternatives. AEP Ohio must compete with other investment opportunities and unless there is a reasonable expectation that investors will have the opportunity to earn returns commensurate with the underlying risks, capital will be allocated elsewhere, the Company's financial integrity will be weakened, and investors will demand an even higher

[41] *Ind. Michigan Power Co.*, Cause No. 38728, 116 PUR4th, 1, 17-18 (IURC 8/24/1990).
[42] *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234 at P 41 (2014).

rate of return. AEP Ohio's ability to offer a reasonable return on investment is a necessary ingredient in ensuring that customers continue to enjoy economical rates and reliable service.

Q56. WHAT DOES THE ABOVE DISCUSSION IMPLY WITH RESPECT TO ESTIMATING THE COST OF COMMON EQUITY FOR A UTILITY?

A56. Although the cost of common equity cannot be observed directly, it is a function of the returns available from other investment alternatives and the risks to which the equity capital is exposed. Because it is not readily observable, the cost of common equity 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 various quantitative methods that focus on investors' required rates of return. These various quantitative methods typically attempt to infer investors' required rates of return from stock prices, interest rates, or other capital market data.

B. Discounted Cash Flow Analyses

Q57. HOW IS THE DCF MODEL USED TO ESTIMATE THE COST OF COMMON EQUITY?

A57. DCF models are based on the assumption 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:

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

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.

Q58. WHAT STEPS ARE REQUIRED TO APPLY THE CONSTANT GROWTH DCF MODEL?

A58. The first step in implementing the constant growth DCF model 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 sum 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 YIELD FOR THE ELECTRIC GROUP?

A59. Estimates of dividends to be paid by each of these utilities over the next twelve months, obtained from Value Line, serve as D_1. This annual dividend is then divided by a 30-day average stock price as of May 1, 2020 for each utility to arrive at the expected dividend yield. The expected dividends, stock prices, and resulting dividend yields for the firms in the Electric Group are presented on page 1 of Exhibit AMM-4. As shown there, dividend yields for the firms in the Electric Group range from 2.4% to 5.3%, and average 3.5%.

Q60. WHAT IS THE NEXT STEP IN APPLYING THE CONSTANT GROWTH DCF MODEL?

A60. The next step is to evaluate 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 wide 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 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. This is because utilities have significantly altered their dividend policies in response to more accentuated business risks and capital requirements in the industry, with the payout ratio for electric utilities falling significantly from historical levels. As a result, dividend growth in the utility industry has lagged growth in earnings as utilities conserve financial resources.

A measure that plays a pivotal role in determining investors' long-term growth expectations are 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 CONSIDER HISTORICAL TRENDS?

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

Q63. DID PROFESSOR MYRON J. GORDON, A PIONEER OF THE DCF APPROACH, RECOGNIZE THE PIVOTAL ROLE THAT EARNINGS PLAY IN FORMING INVESTORS' EXPECTATIONS?

A63. Yes. Dr. Gordon specifically recognized that "it is the growth that investors expect that should be used" in applying the DCF model and he concluded:

> A number of considerations suggest that investors may, in fact, use earnings growth as a measure of expected future growth."[43]

Q64. ARE ANALYSTS' ASSESSMENTS OF GROWTH RATES APPROPRIATE FOR ESTIMATING INVESTORS' REQUIRED RETURN USING THE DCF MODEL?

A64. Yes. In applying the DCF model to estimate the cost of common equity, the only relevant growth rate is the forward-looking expectations of investors that are captured in current stock prices. Investors, just like securities analysts and others in the investment community, do not know how the future will actually turn out. They can only make investment decisions based on their best estimate of what the future holds in the way of

[43] Gordon, Myron J., "The Cost of Capital to a Public Utility," *MSU Public Utilities Studies* at 89 (1974).

long-term growth for a particular stock, and securities prices are constantly adjusting to reflect their assessment of available information.

Any claims that analysts' estimates are not relied upon by investors are illogical given the reality of a competitive market for investment advice. If financial analysts' forecasts do not add value to investors' decision making, then it is irrational for investors to pay for these estimates. Similarly, those financial analysts who fail to provide reliable forecasts will lose out in competitive markets relative to those analysts whose forecasts investors find more credible. The reality that analyst estimates are routinely referenced in the financial media and in investment advisory publications, as well as the continued success of services such as Thomson Reuters and Value Line, implies that investors use them as a basis for their expectations.

While the projections of securities analysts may be proven optimistic or pessimistic in hindsight, this is irrelevant in assessing the expected growth that investors have incorporated into current stock prices, and any bias in analysts' forecasts – whether pessimistic or optimistic – is irrelevant if investors share analysts' views. Earnings growth projections of security analysts provide the most frequently referenced guide to investors' views and are widely accepted in applying the DCF model. As explained in *New Regulatory Finance*:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of *g* [growth]. The accuracy of these forecasts in the sense of whether they turn out to be correct is not an issue here, as long as they reflect widely held expectations.[44]

[44] Roger A. Morin, *New Regulatory Finance, Pub. Util. Reports, Inc.* (2006) at 298 (emphasis added).

Q65. HAVE REGULATORS ALSO RECOGNIZED THAT ANALYSTS' GROWTH RATE ESTIMATES ARE AN IMPORTANT AND MEANINGFUL GUIDE TO INVESTORS' EXPECTATIONS?

A65. Yes. The Kentucky Public Service Commission has indicated its preference for relying on analysts' projections in establishing investors' expectations:

> KU's argument concerning the appropriateness of using investors' expectations in performing a DCF analysis is more persuasive than the AG's argument that analysts' projections should be rejected in favor of historical results. The Commission agrees that analysts' projections of growth will be relatively more compelling in forming investors' forward-looking expectations than relying on historical performance, especially given the current state of the economy.[45]

Similarly, the FERC has expressed a clear preference for projected EPS growth rates in applying the DCF model to estimate the cost of equity for both electric and natural gas pipeline utilities:

> Opinion No. 414-A held that the IBES five-year growth forecasts for each company in the proxy group are the best available evidence of the short-term growth rates expected by the investment community. It cited evidence that (1) those forecasts are provided to IBES by professional security analysts, (2) IBES reports the forecast for each firm as a service to investors, and (3) the IBES reports are well known in the investment community and used by investors. The Commission has also rejected the suggestion that the IBES analysts are biased and stated that "in fact the analysts have a significant incentive to make their analyses as accurate as possible to meet the needs of their clients since those investors will not utilize brokerage firms whose analysts repeatedly overstate the growth potential of companies."[46]

The Public Utility Regulatory Authority of Connecticut has also noted that "there is not growth in DPS without growth in EPS," and concluded that securities analysts' growth projections have a greater influence over investors' expectations and stock prices.[47]

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[45] *Kentucky Utilities Co.*, Case No. 2009-00548 (Ky PSC Jul. 30, 2010) at 30-31.

[46] *Kern River Gas Transmission Co.*, 126 FERC ¶ 61,034at P 121 (2009) (footnote omitted).

[47] Public Utility Regulatory Authority of Connecticut, *Decision*, Docket No. 13-02-20 (Sept. 24, 2013).

In addition, the Regulatory Commission of Alaska ("RCA") has previously determined that analysts' EPS growth rates provide a superior basis on which to estimate investors' expectations:

> We also find persuasive the testimony . . . that projected EPS returns are more indicative of investor expectations of dividend growth than historical growth data because persons making the forecasts already consider the historical numbers in their analyses.[48]

The RCA has concluded that arguments against exclusive reliance on analysts' EPS growth rates to apply the DCF model "are not convincing."[49]

Q66. WHAT ARE SECURITY ANALYSTS CURRENTLY PROJECTING IN THE WAY OF GROWTH FOR THE FIRMS IN THE ELECTRIC GROUP?

A66. The earnings growth projections for each of the firms in the Electric Group reported by Value Line, IBES,[50] and Zacks Investment Research ("Zacks") are displayed on page 2 of Exhibit AMM-4.

Q67. HOW ELSE ARE INVESTORS' EXPECTATIONS OF FUTURE GROWTH PROSPECTS OFTEN ESTIMATED WHEN APPLYING THE CONSTANT GROWTH DCF MODEL?

A67. 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.

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[48] Regulatory Commission of Alaska, U-07-76(8) at 65, n. 258.

[49] Regulatory Commission of Alaska, U-08-157(10) at 36.

[50] Formerly I/B/E/S International, Inc., IBES growth rates are now compiled and published by Thomson Reuters and made available at, for instance, https://finance.yahoo.com.

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 Electric Group are summarized on page 2 of Exhibit AMM-4, with the underlying details being presented in Exhibit AMM-5.[51]

Q68. ARE THERE SIGNIFICANT SHORTCOMINGS ASSOCIATED WITH THE "BR+SV" GROWTH RATE?

A68. 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.[52] 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.

[51] Because Value Line reports end-of-year book values, an adjustment factor is incorporated to compute an average rate of return over the year, which is consistent with the theory underlying this approach.
[52] Roger A. Morin, "New Regulatory Finance," *Public Utilities Reports, Inc.* (2006) at 307.

Q69. WHAT COST OF COMMON EQUITY ESTIMATES ARE IMPLIED FOR THE ELECTRIC GROUP USING THE DCF MODEL?

A69. 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 Exhibit AMM-4.

Q70. IN EVALUATING THE RESULTS OF THE CONSTANT GROWTH DCF MODEL, IS IT APPROPRIATE TO ELIMINATE ILLOGICAL ESTIMATES AT THE EXTREME LOW OR HIGH END OF THE RANGE?

A70. Yes. In applying quantitative methods to estimate the cost of equity, it is essential that the resulting values pass fundamental tests of reasonableness and economic logic. Accordingly, DCF estimates that are implausibly low or high should be eliminated when evaluating the results of this method.

Q71. HOW DO YOU EVALUATE DCF ESTIMATES AT THE LOW END OF THE RANGE?

A71. I base my evaluation of DCF estimates at the low end of the range 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.

Q72. HAVE SIMILAR TESTS BEEN APPLIED BY REGULATORS?

A72. Yes. The FERC has noted that adjustments are justified where applications of the DCF approach produce illogical results. The FERC evaluates DCF 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.[53] The FERC affirmed that:

> The purpose of the low-end outlier test is to exclude from the proxy group those companies whose ROE estimates are below the average bond yield or are above the average bond yield but are sufficiently low that an investor would consider the stock to yield essentially the same return as debt. In public utility ROE cases, the Commission has used 100 basis points above the cost of debt as an approximation of this threshold, but has also considered the distribution of proxy group companies to inform its decision on which companies are outliers. As the Presiding Judge explained, this is a flexible test.[54]

Q73. WHAT INTEREST RATE BENCHMARK DO YOU CONSIDER IN EVALUATING THE DCF RESULTS FOR AEP OHIO?

A73. Utility bonds rated "Baa" represent the lowest ratings grade for which Moody's publishes an index of average yields, and the closest available approximation for the risks of common stock, which are significantly greater than those of long-term debt. Monthly yields for Baa utility bonds reported by Moody's averaged 3.79% during the six-months ending April 2020. As documented earlier, current forecasts anticipate higher long-term rates over the near-term. As shown in Table AMM-4 below, forecasts of IHS Markit and the EIA imply an average Baa bond yield of approximately 5.1% over the period 2021-2025:

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

[54] *Martha Coakley et al., v. Bangor Hydro-Electric Company, et al.,* Opinion No. 531, 147 FERC ¶ 61,234 at P 122 (2014).

TABLE AMM-4
IMPLIED BAA UTILITY BOND YIELD

	2021-25
Projected Aa Utility Yield	
IHS Global Insight (a)	4.30%
EIA (b)	4.60%
Average	4.45%
Current Baa - AA Yield Spread (c)	0.64%
Implied Baa Utility Yield	**5.09%**

(a) IHS Markit, Long-Term Macro Forecast - Baseline (Apr. 8, 2020).
(b) Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020).
(c) Based on monthly average bond yields from Moody's Investors Service for the six-month period Nov. 2019 - Apr. 2020.

Q74. WHAT ELSE SHOULD BE CONSIDERED IN EVALUATING DCF ESTIMATES AT THE LOW END OF THE RANGE?

A74. While a 100 basis point spread over public utility bond yields is a starting place in evaluating low-end values, reference to a static test ignores the implications of the inverse relationship between equity risk premiums and bond yields. As discussed earlier, the premium that investors demand to bear the higher risks of common stock is not constant. As demonstrated empirically in the application of the risk premium method,[55] equity risk premiums expand when interest rates fall, and vice versa.

For example, based on a review of its precedent for evaluating low-end values, the FERC established a 100 basis point risk premium over Moody's bond yield averages as a threshold to eliminate DCF results in *SoCal Edison*, citing prior decisions in *Atlantic Path 15*,[56] *Startrans*,[57] and *Pioneer*[58] in support of this policy.[59] Because bond yields declined

[55] Exhibit AMM-8, page 4.
[56] *Atl. Path 15, LLC*, 122 FERC ¶ 61,135 (2008) ("*Atlantic Path 15*").
[57] *Startrans IO, LLC*, 122 FERC ¶ 61,306 (2008) ("*Startrans*").
[58] *Pioneer Transmission, LLC*, 126 FERC ¶ 61,281 (2009) ("*Pioneer*").
[59] *SoCal Edison* at P 54.

significantly between the time of those findings and the study period in this case, the inverse relationship implies a significant increase in the equity risk premium that investors require to accept the higher uncertainties associated with an investment in utility common stocks versus bonds. As shown on page 4 of Exhibit AMM-4, recognizing the inverse relationship between equity risk premiums and bond yields would indicate a current low-end threshold in the range of approximately 6.0% to 6.8%. The impact of widening equity risk premiums should be considered in evaluating low-end cost of equity estimates.

Q75. WHAT DO YOU CONCLUDE REGARDING THE REASONABLENESS OF DCF VALUES AT THE LOW END OF THE RANGE OF RESULTS?

A75. As highlighted on page 3 of Exhibit AMM-4, after considering this test and the distribution of individual estimates, I eliminate three low-end DCF estimates ranging from 5.6% to 6.4%. Based on my professional experience and the risk-return tradeoff principle that is fundamental to finance, it is inconceivable that investors are not requiring a substantially higher rate of return for holding common stock. As a result, consistent with the threshold established by utility bond yields, the values below the threshold provide little guidance as to the returns investors require from utility common stocks and should be excluded.

Q76. DO YOU ALSO RECOMMEND EXCLUDING ESTIMATES AT THE HIGH END OF THE RANGE OF DCF RESULTS?

A76. While I typically recommend the exclusion of high end estimates that are clearly implausible, in this case, no such values exist. The upper end of the DCF range for the Electric Group is set by a cost of equity estimate of 13.6%. While a 13.6% cost of equity estimate may exceed the majority of the remaining values, low-end DCF estimates in the 7.0% to 7.5% 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.

Q77. WHAT COST OF COMMON EQUITY ESTIMATES ARE IMPLIED BY YOUR DCF RESULTS FOR THE ELECTRIC GROUP?

A77. As shown on page 3 of Exhibit AMM-4 and summarized in Table AMM-5 below, after eliminating illogical values, application of the constant growth DCF model result in the following cost of equity estimates:

TABLE AMM-5
DCF RESULTS – ELECTRIC GROUP

Growth Rate	Average	Midpoint
Value Line	9.9%	10.5%
IBES	8.9%	8.7%
Zacks	9.1%	8.9%
br + sv	8.5%	9.0%

C. Capital Asset Pricing Model

Q78. PLEASE DESCRIBE THE CAPM.

A78. 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 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. 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.

Q79. HOW DO YOU APPLY THE CAPM TO ESTIMATE THE COST OF COMMON EQUITY?

A79. Application of the CAPM to the Electric Group based on a forward-looking estimate for investors' required rate of return from common stocks is presented in Exhibit AMM-6. In order 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.

I obtain the dividend yield for each company from Value Line. The growth rate is equal to the average of the EPS growth projections for each firm published by IBES, Value Line, and Zacks. In order to address potential concerns regarding the veracity and accuracy of the growth estimates, I removed any growth rates greater than +/- 50%. In addition, I verified all growth rates reported on *Yahoo! Finance* that were negative or greater than 20% against comparable IBES estimates published by Thomson Reuters through an alternative source.[60] In those cases where negative values or estimates greater than 20% from *Yahoo! Finance* were not confirmed by an alternative source, they were removed from the analysis. Each company's dividend yield and growth rate are then weighted by the company's proportionate share of total market value.

Based on the weighted average of the projections for the individual firms, these estimates imply an average growth rate over the next five years of 9.3%. Combining this average growth rate with a year-ahead dividend yield of 3.1% results in a current cost of common equity estimate for the market as a whole (R_m) of 12.5%. Subtracting a 1.9% risk-

[60] Thomson Reuters StockReports+, *Company in Context Report* (*available at* www.fidelity.com).

free rate based on the average yield on 30-year Treasury bonds for the six-months ending April 2020 produces a market equity risk premium of 10.6%.

Q80. WHAT IS THE SOURCE OF THE BETA VALUES YOU USED TO APPLY THE CAPM?

A80. As indicated earlier in my discussion of risk measures for the Electric Group, I rely on the beta values reported by Value Line, which in my experience is the most widely referenced source for beta in regulatory proceedings.

Q81. WHAT ELSE SHOULD BE CONSIDERED IN APPLYING THE CAPM?

A81. 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 that of a relationship between company size and return. … The relationship between company size and return cuts across the entire size spectrum; it is not restricted to the smallest stocks. … This size-rated phenomenon has prompted a revision to the CAPM, which includes a size premium.[61]

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 the theoretical CAPM cost of equity estimates to account for the level of a firm's market capitalization in determining the CAPM cost of equity.[62] Accordingly, my CAPM analyses also incorporates an adjustment

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[61] *Morningstar*, "Ibbotson SBBI 2015 Classic Yearbook," at pp. 99, 108.

[62] Originally compiled by Ibbotson Associates and published in their annual yearbook entitled, "Stocks, Bonds, Bills and Inflation," these size premia are now developed by Duff & Phelps and presented in its "Valuation Handbook – Guide to Cost of Capital."

to recognize the impact of size distinctions, as measured by the average market capitalization for the Electric Group.

Q82. ARE YOU RECOMMENDING THAT THE COMMISSION AWARD AEP OHIO A PREMIUM TO THE ROE BECAUSE OF ITS RELATIVE SIZE?

A82. No. I am not proposing to apply a general size risk premium in evaluating a fair and reasonable ROE for the Company and my recommendation does not include any adjustment related to the relative size of AEP Ohio. Rather, the 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 Electric Group. As the FERC has recognized, "[t]his type of size adjustment is a generally accepted approach to CAPM analyses."[63]

Q83. WHAT IS THE IMPLIED ROE FOR THE ELECTRIC GROUP USING THE CAPM APPROACH?

A83. As shown on page 1 of Exhibit AMM-6, after adjusting for the impact of firm size the CAPM approach implies an average and midpoint cost of equity estimates of 7.9% and 8.3%, respectively, for the Electric Group.

Q84. DO YOU ALSO APPLY THE CAPM USING FORECASTED BOND YIELDS?

A84. Yes. As discussed earlier, there is general consensus that interest rates will increase over the period when the rates established in this proceeding will be in effect. Accordingly, in addition to the use of current bond yields, I also apply the CAPM based on the forecasted long-term Treasury bond yields developed based on projections published by Value Line, IHS Global Insight and Blue Chip. As shown on page 2 of Exhibit AMM-6, incorporating a forecasted Treasury bond yield for 2021-2025 implies an average cost of equity estimate of 8.3% for the Electric Group after adjusting for the impact of relative size, with a midpoint of 8.8%.

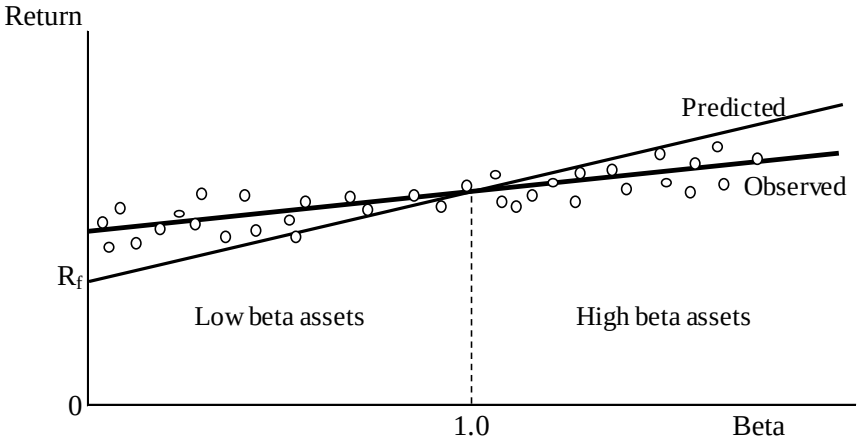
[63] Opinion No. 531-B, 150 FERC ¶ 61,165 at P 117 (2015).

D. Empirical Capital Asset Pricing Model

Q85. HOW DOES THE ECAPM APPROACH DIFFER FROM TRADITIONAL APPLICATIONS OF THE CAPM?

A85. 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 returns than predicted by the CAPM. This is illustrated graphically in the figure below:

FIGURE AMM-6
CAPM – PREDICTED VS. OBSERVED RETURNS



Because the betas of utility stocks, including those in the Electric 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.[64]

As discussed in *New Regulatory Finance*,[65] based on a review of the empirical evidence, the expected return on a security is related to its risk by the ECAPM, which 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 stocks relative volatility [$(\beta)(R_m - R_f)$] 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.

Q86. IS THE USE OF THE ECAPM CONSISTENT WITH THE USE OF VALUE LINE BETAS?

A86. Yes. Value Line beta values are adjusted for the observed tendency of beta to converge toward the mean value of 1.00 over time.[66] 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. 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 AMM-6 is flatter than predicted by the CAPM. In other words, even if a firm's beta value is estimated with perfect precision, the CAPM would

[64] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 189.
[65] *Id*. at 190.
[66] *See, e.g.*, Marshall E. Blume, *Betas and Their Regression Tendencies*, Journal of Finance, Vol. 30, No. 3 (Jun. 1975) at 785-795.

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.

Q87. HAVE OTHER REGULATORS RELIED ON THE ECAPM?

A87. Yes. The ECAPM approach has been relied on by the Staff of the Maryland Public Service Commission ("MDPSC"). For example, MDPSC Staff Witness Julie McKenna noted that "the ECAPM model adjusts for the tendency of the CAPM model to underestimate returns for low Beta stocks," and concluded that, "I believe under current economic conditions that the ECAPM gives a more realistic measure of the ROE than the CAPM model does."[67] The staff of the Colorado Public Utilities Commission has recognized that, "[t]he ECAPM is an empirical method that attempts to enhance the CAPM analysis by flattening the risk-return relationship,"[68] and relied on the exact same standard ECAPM equation presented above.[69] The New York Public Service Commission also relies on the ECAPM approach, which it refers to as the "zero-beta CAPM".[70] The Regulatory Commission of Alaska has also relied on the ECAPM, noting that:

> Tesoro averaged the results it obtained from CAPM and ECAPM while at the same time providing empirical testimony that the ECAPM results are more accurate then [sic] traditional CAPM results. The reasonable investor would be aware of these empirical results. Therefore, we adjust Tesoro's recommendation to reflect only the ECAPM result.[71]

The Wyoming Office of Consumer Advocate, an independent division of the Wyoming Public Service Commission, has also relied on this same ECAPM formula in estimating the cost of equity for a natural gas utility, as have witnesses for the Office of Arkansas

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[67] *Direct Testimony and Exhibits of Julie McKenna*, Maryland PSC Case No. 9299 (Oct. 12, 2012) at 9.
[68] Proceeding No. 13AL-0067G, *Answer Testimony and Schedules of Scott England* (July 31, 2013) at 47.
[69] *Id*. at 48.
[70] *See, e.g., Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plan,* CASE 17-E-0459 (Jun. 14, 2018) at 38.
[71] Regulatory Commission of Alaska, Order No. P-97-004(151) (Nov. 27, 2002) at 145.

Attorney General.[72] More recently, the Montana Public Service Commission determined that "[t]he evidence . . . has convinced the Commission that the Empirical Capital Asset Pricing Model ("ECAPM") should be the primary method for estimating . . . the cost of equity" for a utility under its jurisdiction.[73]

Q88. WHAT COST OF EQUITY ESTIMATES ARE INDICATED BY THE ECAPM?

A88. My applications of the ECAPM are based on the same forward-looking market rate of return, risk-free rates, and beta values discussed earlier in connections with the CAPM. As shown on page 1 of Exhibit AMM-7, applying the forward-looking ECAPM approach to the firms in the Electric Group results in an average cost of equity estimate of 8.9% after incorporating the size adjustment corresponding to the market capitalization of the individual utilities. The midpoint of the size adjusted ECAPM range is 9.3%.

As shown on page 2 of Exhibit AMM-7, incorporating a forecasted Treasury bond yield for 2021-2025 implies an average and midpoint cost of equity for the Electric Group of 9.4% and 9.7%, after adjusting for the impact of relative size

E. Utility Risk Premium

Q89. BRIEFLY DESCRIBE THE RISK PREMIUM METHOD.

A89. The risk premium method of estimating investors' required return extends to common stocks the risk-return tradeoff observed with bonds. 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 by 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

[72] Docket No. 30011-97-GR-17, *Pre-Filed Direct Testimony of Anthony J. Ornelas* (May 1, 2018) at 52-53; Docket No. 17-071-U, *Direct Testimony of Marlon F. Griffing, PH.D.* (May 29, 2018) at 33-35.
[73] Montana Public Service Commission, Docket No. D2017.9.80, Order No. 7575c (Sep. 26, 2018) at P 114.

of equity, risk premium methods directly estimate investors' required rate of return by adding an equity risk premium to observable bond yields.

Q90. IS THE RISK PREMIUM APPROACH A WIDELY ACCEPTED METHOD FOR ESTIMATING THE COST OF EQUITY?

A90. 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 AEP Ohio.

Q91. HOW DO YOU IMPLEMENT THE RISK PREMIUM METHOD?

A91. 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. Thus, 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.

Q92. IS IT CIRCULAR TO CONSIDER RISK PREMIUMS BASED ON AUTHORIZED RETURNS IN ASSESSING A FAIR ROE FOR AEP OHIO?

A92. No. In establishing authorized ROEs, regulators typically consider the results of alternative market-based approaches. Because allowed risk premiums consider objective market data (*e.g.*, stock prices dividends, beta, and interest rates), and are not based strictly on past actions of other regulators, this mitigates concerns over any potential for circularity.

Q93. HOW DO YOU CALCULATE THE EQUITY RISK PREMIUMS BASED ON ALLOWED ROES?

A93. The ROEs authorized for electric utilities by regulatory commissions across the U.S. are compiled by Regulatory Research Associates and published in its *Regulatory Focus* report. On page 3 of Exhibit AMM-8, 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 2019.[74] As shown there, over this period these equity risk premiums for electric utilities average 3.79%, and the yield on public utility bonds average 8.10%.

Q94. IS THERE ANY CAPITAL MARKET RELATIONSHIP THAT MUST BE CONSIDERED WHEN IMPLEMENTING THE RISK PREMIUM METHOD?

A94. Yes. As discussed earlier, the magnitude of equity risk premiums is not constant and financial research has documented that equity risk premiums tend to move inversely with interest rates.[75] 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, or in lockstep with, 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%. Therefore, when implementing the risk premium method, adjustments may be required to incorporate this inverse relationship if current interest rate levels have diverged from the average interest rate level represented in the data set.

Current bond yields are lower than those prevailing over the risk premium study periods. Given that equity risk premiums move inversely with interest rates, these lower bond yields also imply an increase in the equity risk premium that investors require to

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

[75] Other regulators have also recognized that the cost of equity does not move in tandem with interest rates. *See, e.g.*, California Public Utilities Commission, Decision 08-05-035 (May 29, 2008); Entergy Mississippi Formula Rate Plan Rider Schedule FRP-7; *Martha Coakley et al.*, 147 FERC ¶ 61,234 at P 147 (2014).

accept the higher uncertainties associated with an investment in utility common stocks versus bonds. In other words, higher required equity risk premiums offset the impact of declining interest rates on the ROE. This relationship is illustrated in the figure on page 4 of Exhibit AMM-8.

Q95. WHAT COST OF EQUITY IS IMPLIED BY THE RISK PREMIUM METHOD USING SURVEYS OF ALLOWED ROES?

A95. Based on the regression output between the interest rates and equity risk premiums displayed on page 4 of Exhibit AMM-8, the equity risk premium for electric utilities increased (decreased) approximately 43 basis points for each percentage point decrease (increase) in the yield on average public utility bonds. As illustrated on page 1 of Exhibit AMM-8, with an average yield on public utility bonds for the six-months ending April 2020 of 3.43%, this implies a current equity risk premium of 5.81% for electric utilities. Adding this equity risk premium to the average yield on single-A utility bonds of 3.35% implies a current cost of equity of 9.16%.

Q96. WHAT RISK PREMIUM COST OF EQUITY ESTIMATE IS PRODUCED AFTER INCORPORATING FORECASTED BOND YIELDS?

A96. As shown on page 2 of Exhibit AMM-8, incorporating a forecasted yield for 2021-2025 and adjusting for changes in interest rates since the study period implies an equity risk premium of 5.37% for electric utilities, which is less than the current equity risk premium. This lower equity risk premium is consistent with the inverse relationship I described above. Adding this equity risk premium to the implied average yield on single-A public utility bonds for 2021-2025 of 4.65% results in an implied cost of equity of 10.02%.

F. Expected Earnings Approach

Q97. WHAT OTHER ANALYSES DO YOU CONDUCT TO EVALUATE A FAIR ROE FOR AEP OHIO?

A97. 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 approach is consistent with the economic underpinnings for a fair 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, such as the DCF and CAPM methodologies, and instead focuses on the returns earned on book equity, which are readily available to investors.

Q98. WHAT ECONOMIC PREMISE UNDERLIES THE EXPECTED EARNINGS APPROACH?

A98. The simple, but powerful concept underlying the expected earnings approach is 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. Such an outcome would violate the *Hope* and *Bluefield* standards and undermine the utility's access to capital on reasonable terms.

Q99. HOW IS THE EXPECTED EARNINGS APPROACH TYPICALLY IMPLEMENTED?

A99. 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 returns on book value equity are analogous to the allowed return 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 directly 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.

Q100. WHAT ROE IS INDICATED FOR AEP OHIO BASED ON THE EXPECTED EARNINGS APPROACH?

A100. For the firms in the Electric Group, the year-end returns on common equity projected by Value Line over its forecast horizon are shown in Exhibit AMM-9. 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.[76] Accordingly, these year-end values are converted to average returns using the same adjustment factor discussed earlier and developed in Exhibit AMM-5. As shown in Exhibit AMM-9, after excluding illogical values, Value Line's projections for the Electric Group suggest an average ROE of approximately 11.2%, with a midpoint value of 11.4%.

G. Flotation Costs

Q101. WHAT OTHER CONSIDERATIONS ARE RELEVANT IN SETTING THE RETURN ON EQUITY FOR A UTILITY?

A101. The common equity used to finance the investment in utility assets is provided from either the sale of stock in the capital markets or from retained earnings not paid out as dividends. When equity is raised through the sale of common stock, there are costs associated with "floating" the new equity securities. These flotation costs include services such as legal, accounting, and printing, as well as the fees and discounts paid to compensate brokers for selling the stock to the public. Also, some argue that the "market pressure" from the additional supply of common stock and other market factors may further reduce the amount of funds a utility nets when it issues common equity. While AEP Ohio has no publicly traded stock and does not incur flotation costs directly, equity capital is provided by investors through AEP's sale of common shares. Thus, these expenses are also relevant when evaluating the fair and reasonable ROE for a wholly-owned subsidiary, such as the Company.

[76] 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.

Q102. IS THERE AN ESTABLISHED MECHANISM FOR A UTILITY TO RECOGNIZE EQUITY ISSUANCE COSTS?

A102. No. While debt flotation costs are recorded on the books of the utility, amortized over the life of the issue, and thus increase the effective cost of debt capital, there is no similar accounting treatment to ensure that equity flotation costs are recorded and ultimately recognized. No rate of return is authorized on flotation costs necessarily incurred to obtain a portion of the equity capital used to finance plant. In other words, equity flotation costs are not included in a utility's rate base because neither that portion of the gross proceeds from the sale of common stock used to pay flotation costs is available to invest in plant and equipment, nor are flotation costs capitalized as an intangible asset. Unless some provision is made to recognize these issuance costs, a utility's revenue requirements will not fully reflect all of the costs incurred for the use of investors' funds. Because there is no accounting convention to accumulate the flotation costs associated with equity issues, they must be accounted for indirectly, with an upward adjustment to the cost of equity being the most appropriate mechanism.

Q103. IS THERE ACADEMIC EVIDENCE THAT SUPPORTS A FLOTATION COST ADJUSTMENT?

A103. The financial literature and evidence in this case provides a sound theoretical and practical basis to include consideration of flotation costs for AEP Ohio. An adjustment for flotation costs associated with past equity issues is appropriate, even when the utility is not contemplating any new sales of common stock. The need for a flotation cost adjustment to compensate for past equity issues has been recognized in the financial literature. In a *Public Utilities Fortnightly* article, for example, Brigham, Aberwald, and Gapenski demonstrated that even if no further stock issues are contemplated, a flotation cost adjustment in all future years is required to keep shareholders whole, and that the flotation

cost adjustment must consider total equity, including retained earnings.[77] Similarly, *New Regulatory Finance* contains the following discussion:

> Another controversy is whether the flotation cost allowance should still be applied when the utility is not contemplating an imminent common stock issue. Some argue that flotation costs are real and should be recognized in calculating the fair rate of return on equity, but only at the time when the expenses are incurred. In other words, the flotation cost allowance should not continue indefinitely, but should be made in the year in which the sale of securities occurs, with no need for continuing compensation in future years. This argument implies that the company has already been compensated for these costs and/or the initial contributed capital was obtained freely, devoid of any flotation costs, which is an unlikely assumption, and certainly not applicable to most utilities. … The flotation cost adjustment cannot be strictly forward-looking unless all past flotation costs associated with past issues have been recovered.[78]

Q104. CAN YOU ILLUSTRATE WHY INVESTORS WILL NOT HAVE THE OPPORTUNITY TO EARN THEIR REQUIRED ROE UNLESS A FLOTATION COST ADJUSTMENT IS INCLUDED?

A104. Yes. Assume a utility sells $10 worth of common stock at the beginning of year 1. If the utility incurs flotation costs of $0.48 (5% of the net proceeds), then only $9.52 is available to invest in rate base. Assume that common shareholders' required rate of return is 10.5%, the expected dividend in year 1 is $0.50 (*i.e.*, a dividend yield of 5%), and that growth is expected to be 5.5% annually. As developed in Table AMM-6 below, if the allowed rate of return on common equity is only equal to the utility's 10.5% "bare bones" cost of equity, common stockholders will not earn their required rate of return on their $10 investment, since growth will really only be 5.25%, instead of 5.5%:

[77] E. F. Brigham, D. A. Aberwald, and L. C. Gapenski, "Common Equity Flotation Costs and Rate Making," *Public Utilities Fortnightly* (May 2, 1985).
[78] Morin, Roger A., "New Regulatory Finance," *Public Utilities Reports, Inc.* (2006) at 335.

TABLE AMM-6
NO FLOTATION COST ADJUSTMENT

Year	Common Stock	Retained Earnings	Total Equity	Market Price	M/B Ratio	Allowed ROE	EPS	DPS	Payout Ratio
1	$ 9.52	$ -	$ 9.52	$10.00	1.050	10.50%	$ 1.00	$ 0.50	50.0%
2	$ 9.52	$ 0.50	$ 10.02	$10.52	1.050	10.50%	$ 1.05	$ 0.53	50.0%
3	$ 9.52	$ 0.53	$ 10.55	$11.08	1.050	10.50%	$ 1.11	$ 0.55	50.0%
Growth			**5.25%**	**5.25%**			**5.25%**	**5.25%**	

The reason that investors never really earn 10.5% on their investment in the above example is that the $0.48 in flotation costs initially incurred to raise the common stock is not treated like debt issuance costs (*i.e.*, amortized into interest expense and therefore increasing the embedded cost of debt), nor is it included as an asset in rate base.

Including a flotation cost adjustment allows investors to be fully compensated for the impact of these costs. One commonly referenced method for calculating the flotation cost adjustment is to multiply the dividend yield by a flotation cost percentage. Thus, with a 5% dividend yield and a 5% flotation cost percentage, the flotation cost adjustment in the above example would be approximately 25 basis points. As shown in Table AMM-7 below, by allowing a rate of return on common equity of 10.75% (an 10.5% cost of equity plus a 25 basis point flotation cost adjustment), investors earn their 10.5% required rate of return, since actual growth is now equal to 5.5%:

TABLE AMM-7
INCLUDING FLOTATION COST ADJUSTMENT

Year	Common Stock	Retained Earnings	Total Equity	Market Price	M/B Ratio	Allowed ROE	EPS	DPS	Payout Ratio
1	$ 9.52	$ -	$ 9.52	$10.00	1.050	10.75%	$ 1.02	$ 0.50	48.9%
2	$ 9.52	$ 0.52	$ 10.04	$10.55	1.050	10.75%	$ 1.08	$ 0.53	48.9%
3	$ 9.52	$ 0.55	$ 10.60	$11.13	1.050	10.75%	$ 1.14	$ 0.56	48.9%
Growth			**5.50%**	**5.50%**			**5.50%**	**5.50%**	

The only way for investors to be fully compensated for issuance costs is to include an ongoing adjustment to account for past flotation costs when setting the return on common equity. This is the case regardless of whether or not the utility is expected to issue additional shares of common stock in the future.

Q105. WHAT IS THE MAGNITUDE OF THE ADJUSTMENT TO THE "BARE BONES" COST OF EQUITY TO ACCOUNT FOR ISSUANCE COSTS?

A105. The most common method used to account for flotation costs in regulatory proceedings is to apply an average flotation-cost percentage to a utility's dividend yield. In Exhibit AMM-10, I present a survey of the most recent open-market common stock issues for each company in Value Line's electric and gas utility industries. This data includes AEP's 2009 public offering where it incurred issuance costs equal to approximately 3.02% of the gross proceeds. For all companies in the electric and gas industries, flotation costs averaged 2.9%. Applying this 2.9% expense percentage to the Electric Group dividend yield of 3.54% produces a flotation cost adjustment on the order of 10 basis points.

Q106. HAVE OTHER REGULATORS RECOGNIZED FLOTATION COSTS IN EVALUATING A FAIR AND REASONABLE ROE?

A106. Yes. For example, in Docket No. UE-991606 the Washington Utilities and Transportation Commission concluded that a flotation cost adjustment of 25 basis points should be included in the allowed return on equity:

> The Commission also agrees with both Dr. Avera and Dr. Lurito that a 25 basis point markup for flotation costs should be made. This amount compensates the Company for costs incurred from past issues of common stock. Flotation costs incurred in connection with a sale of common stock are not included in a utility's rate base because the portion of gross proceeds that is used to pay these costs is not available to invest in plant and equipment.[79]

In Case No. INT-G-16-02 the staff of the Idaho Public Utilities Commission supported the use of the same flotation cost methodology that I recommend above, concluding:

> [I]s the standard equation for flotation cost adjustments and is referred to as the "conventional" approach. Its use in regulatory proceedings is

[79] *Third Supplemental Order*, WUTC Docket No. UE-991606, *et al.* (September 2000) at 95.

widespread, and the formula is outlined in several corporate finance textbooks.[80]

More recently, the Wyoming Office of Consumer Advocate, an independent division of the Wyoming Public Service Commission, recommended a 10 basis point flotation cost adjustment for a wholly-owned gas utility that, like AEP Ohio, does not issue common stock directly.[81] Similarly, the South Dakota Public Utilities Commission has recognized the impact of issuance costs, concluding that, "recovery of reasonable flotation costs is appropriate."[82] Another example of a regulator that approves common stock issuance costs is the Mississippi Public Service Commission, which routinely includes a flotation cost adjustment in its Rate Stabilization Adjustment Rider formula.[83] The Public Utilities Regulatory Authority of Connecticut,[84] the Minnesota Public Utilities Commission,[85] and the Virginia State Corporation Commission[86] have also recognized that flotation costs are a legitimate expense worthy of consideration in setting a fair and reasonable ROE.

VI. NON-UTILITY ROE BENCHMARK

Q107. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A107. This section presents the results of my DCF analysis applied to 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 in arriving at my recommended ROE range of reasonableness; however, it is my opinion that this is a relevant consideration in evaluating a fair and reasonable ROE for the Company.

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[80] Case No. INT-G-16-02, *Direct Testimony of Mark Rogers* (Dec. 16, 2016) at 18.
[81] Docket No. 30011-97-GR-17, *Pre-Filed Direct Testimony of Anthony J. Ornelas* (May 1, 2018) at 52-53.
[82] *Northern States Power Co*, EL11-019, Final Decision and Order at P 22 (2012).
[83] *See, e.g.*, Entergy Mississippi Formula Rate Plan FRP-6, https://www.entergy-mississippi.com/userfiles/content/price/tariffs/eml_frp.pdf (last visited Apr. 15, 2019).
[84] *See, e.g.*, Docket No. 14-05-06, Decision (Dec. 17, 2014) at 133-134.
[85] *See, e.g.*, Docket No. E001/GR-10-276, Findings of Fact, Conclusions, and Order at 9.
[86] Roanoke Gas Company, Case No. PUR-2018-00013, *Final Order*, (Jan. 24, 2020) at 6.

Q108. DO UTILITIES HAVE TO COMPETE WITH NON-REGULATED FIRMS FOR CAPITAL?

A108. 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 the tip of the iceberg of total common stock investment, and there are a plethora of other enterprises available to investors beyond those in the utility industry. Utilities must compete for capital, not just against firms in their own industry, but with other investment opportunities of comparable risk. Indeed, modern portfolio theory is built on the assumption that rational investors will hold a diverse portfolio of stocks, not just companies in a single industry.

Q109. IS IT CONSISTENT WITH THE *BLUEFIELD* AND *HOPE* CASES TO CONSIDER INVESTORS' REQUIRED ROE FOR NON-UTILITY COMPANIES?

A109. Yes. The cost of equity capital in the competitive sector of the economy forms the very 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.[87]

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

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

Q110. DOES CONSIDERATION OF THE RESULTS FOR THE NON-UTILITY GROUP HELP TO IMPROVE THE RELIABILITY OF DCF RESULTS?

A110. Yes. The estimates of growth from 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. The result of such distortions would be to bias the 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.

Q111. WHAT CRITERIA DO YOU APPLY TO DEVELOP THE NON-UTILITY GROUP?

A111. My comparable risk proxy group is composed of those United States companies followed by Value Line that:

1) Pay common dividends.
2) Have a Safety Rank of "1" or "2".
3) Have a Financial Strength Rating of "B++" or greater.
4) Have a beta of 0.80 or less.
5) Have investment grade credit ratings from S&P and Moody's.[88]

Q112. HOW DO THE OVERALL RISKS OF THIS NON-UTILITY GROUP COMPARE WITH THE ELECTRIC GROUP?

A112. Table AMM-8 compares the Non-Utility Group with the Electric Group and AEP Ohio across the four key risk measures discussed earlier:

[88] Credit rating firms, such as S&P, use designations consisting of upper- and lower-case letters 'A' and 'B' to identify a bond's credit quality rating. 'AAA', 'AA', 'A', and 'BBB' ratings are considered investment grade. Credit ratings for bonds below these designations ('BB', 'B', 'CCC', etc.) are considered speculative grade, and are commonly referred to as "junk bonds". The term "investment grade" refers to bonds with ratings in the 'BBB' category and above.

TABLE AMM-8
COMPARISON OF RISK INDICATORS

	S&P Corporate Rating	Moody's Long-term Rating	Value Line Safety Rank	Value Line Financial Strength	Value Line Beta
Non-Utility Group	BBB+ to AAA	Baa3 to Aaa	1 to 2	B++ to A++	0.60 to 0.80
Electric Group	BBB+ to A-	Baa1 to A3	1 to 2	B++ to A++	0.40 to 0.70
AEP Ohio	A-	A2	1	A+	0.55

As shown above, the risk indicators for the Non-Utility Group generally suggest comparable or less risk than for the proxy group and AEP Ohio.

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, Procter & Gamble, and Walmart, have long corporate histories, well-established track records, and exceedingly conservative risk profiles. Many of these companies pay dividends on par with utilities, with the average dividend yield for the group of 2.9%.[89] 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.

Q113. WHAT ARE THE RESULTS OF YOUR DCF ANALYSIS FOR THE NON-UTILITY GROUP?

A113. I apply the DCF model to the Non-Utility Group using analysts' EPS growth projections, as described earlier for the Electric Group, with the results being presented on page 3 of Exhibit AMM-11. As summarized in Table AMM-9, below, application of the constant growth DCF model results in the following cost of equity estimates:

[89] Exhibit AMM-11, page 1.

TABLE AMM-9
DCF RESULTS – NON-UTILITY GROUP

Growth Rate	Average	Midpoint
Value Line	10.5%	10.8%
IBES	9.5%	10.6%
Zacks	9.5%	10.5%

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 and reasonable ROE for AEP Ohio.

VII. CAPITAL STRUCTURE

Q114. IS AN EVALUATION OF THE CAPITAL STRUCTURE MAINTAINED BY A UTILITY RELEVANT IN ASSESSING ITS RETURN ON EQUITY?

A114. 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 his contractual payments. This increases the risks to which lenders are exposed, and they require correspondingly higher rates of interest. From common shareholders' 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.

Q115. WHAT COMMON EQUITY RATIO IS IMPLICIT IN AEP OHIO'S CAPITAL STRUCTURE?

A115. The capital structure used to compute the overall rate of return for AEP Ohio includes approximately 54.4% common equity.

Q116. HOW DOES THIS COMPARE TO THE AVERAGE EQUITY RATIOS MAINTAINED BY THE ELECTRIC GROUP?

A116. As shown on page 1 of Exhibit AMM-12, common equity ratios for the individual firms in the Electric Group range from a low of 27.8% to a high of 67.7% at year-end 2019, and averaged 47.9%. Meanwhile, the three-to-five year forecasts published by Value Line result in an average common equity ratio of 48.1% for the Electric Group, with the individual equity ratios ranging from 33.0% to 60.0%.

Q117. WHAT CAPITALIZATION RATIOS ARE MAINTAINED BY OTHER UTILITY OPERATING COMPANIES?

A117. Page 2 of Exhibit AMM-12 displays capital structure data at year-end 2019 for the group of electric utility operating companies owned by the firms in the Electric Group used to estimate the cost of equity. As shown there, common equity ratios for these utilities range from 39.4% to 62.5% and average 52.3%.

Q118. WHAT OTHER FACTORS DO INVESTORS CONSIDER IN THEIR ASSESSMENT OF A COMPANY'S CAPITAL STRUCTURE?

A118. Utilities, including AEP Ohio, 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. A conservative financial profile, in the form of a reasonable common equity ratio, is consistent with the need to accommodate these uncertainties and maintain the 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.

Q119. DO ONGOING ECONOMIC AND CAPITAL MARKET UNCERTAINTIES ALSO INFLUENCE THE APPROPRIATE CAPITAL STRUCTURE FOR AEP OHIO?

A119. Yes. Financial flexibility plays a crucial role in ensuring the wherewithal to meet funding needs, and utilities with higher financial leverage may be foreclosed or have limited access to additional borrowing, especially during times of 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.[90]

Confirming this view, S&P noted that "availability to the equity market remains extraordinarily challenging" for utilities, and concluded that "lack of access to the equity market" will also pose a risk to financial standing in the industry.[91] 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 market conditions.

Q120. WHAT DOES THIS EVIDENCE SUGGEST WITH RESPECT TO AEP OHIO'S PROPOSED CAPITAL STRUCTURE?

A120. Based on my evaluation, I conclude that AEP Ohio's actual capital structure represents a reasonable mix of capital sources from which to calculate the Company's overall rate of return. The Company's ratemaking capital structure is consistent with the industry benchmarks reflected in the capital structure ratios maintained by the Electric Group. It is well within the range of individual results, consistent with the capitalization maintained by other utility operating companies, and reflects the lower financial leverage necessary to accommodate higher expected capital expenditures.

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. AEP Ohio's proposed 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

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

[91] S&P Global Ratings, *COVID-19: The Outlook For North American Regulated Utilities Turns Negative* (Apr. 2, 2020).

ongoing uncertainties and the importance of maintaining the financial flexibility necessary to support continued system investment, even during times of adverse industry or market conditions.

Q121. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A121. Yes.

EXHIBIT AMM-1

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 St., 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 over 130 proceedings filed with the Federal Energy Regulatory Commission ("FERC") and regulatory agencies in Alaska, Arkansas, Colorado, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, 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, the CFA Society of Austin. A resume containing the details of my qualifications and experience is attached below.

ADRIEN M. McKENZIE

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Economic and Financial Counsel

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Summary of Qualifications

Adrien McKenzie has an MBA in finance from the University of Texas at Austin and holds the Chartered Financial Analyst (CFA®) designation. He has over 30 years of 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. 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.

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.

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).

Representative Assignments

Mr. McKenzie has prepared and supported prefiled testimony submitted in over 250 regulatory proceedings. In addition to filings before regulators in over thirty state jurisdictions, Mr. McKenzie has considerable expertise in preparing expert analyses and testimony before the Federal Energy Regulatory Commission ("FERC") on the issue of rate of return on equity ("ROE"), and has broad experience in applying and evaluating the results of quantitative methods to estimate a fair ROE, including discounted cash flow approaches, the Capital Asset Pricing Model, risk premium methods, and other quantitative benchmarks. Other representative assignments have included developing cost of service and cost allocation studies, the application of econometric models to analyze the impact of anti-competitive behavior and estimate lost profits; development of explanatory models for nuclear plant capital costs in connection with prudency reviews; and the analysis of avoided cost pricing for cogenerated power.

SUMMARY OF RESULTS

Method	Average		Midpoint
DCF			
Value Line	9.9%		10.5%
IBES	8.9%		8.7%
Zacks	9.1%		8.9%
Internal br + sv	8.5%		9.0%
CAPM			
Current Bond Yield	7.9%		8.3%
Projected Bond Yield	8.3%		8.8%
Empirical CAPM			
Current Bond Yield	8.9%		9.3%
Projected Bond Yield	9.4%		9.7%
Utility Risk Premium			
Current Bond Yields		9.2%	
Projected Bond Yield		10.0%	
Expected Earnings	11.2%		11.4%
Recommended Cost of Equity Range			
Cost of Equity Range	9.2%	--	10.3%
Flotation Cost Adjustment			
Dividend Yield		3.54%	
Flotation Cost Percentage		2.90%	
Adjustment		0.10%	
Recommended ROE Range	**9.30%**	**--**	**10.40%**
Cost of Equity Range			

ELECTRIC GROUP

	Holding Company	Type of Adjustment Clause										
				Decoupling				New Capital				
		Elec. Fuel/ Purch.	Conserv. Program Expense	Full	Partial	Renew-ables Expense	Environ-mental Compliance	Gener-ation Capacity	Generic Infra-structure	Trans-mission Expense	Other*	Future Test Year
1	Ameren Corp.	✓	✓	--	✓	✓	✓	--	✓	✓	✓	O,P
2	American Elec Pwr	✓	✓	--	✓	✓	✓	✓	✓	✓	✓	C,O,P
3	Avangrid, Inc.	D	✓	✓	--	✓	--	D	--	✓	✓	C
4	CMS Energy Corp.	✓	✓	--	--	✓	--	--	--	✓		C
5	Duke Energy Corp.	✓	✓	--	✓	✓	✓	✓	✓	✓	✓	C,O,P
6	Eversource Energy	✓	✓	✓	✓	✓	--	--	✓	✓	✓	C
7	NextEra Energy, Inc.	✓	✓	--	--	--	✓	✓	✓	--	✓	C
8	OGE Energy Corp.	✓	✓	--	✓	✓	✓	✓	✓	✓	✓	P
9	Pinnacle West Capital	✓	✓	--	✓	✓	✓	--	--	✓	✓	--
10	Portland General Elec.	✓	✓	--	✓	✓	✓	✓	--	--		C
11	Pub Sv Enterprise Grp.	D	✓	--	--	✓	--	--	✓	--	✓	P
12	Sempra Energy	✓	✓	✓	--	--	--	--	✓	✓	✓	C
13	WEC Energy Group	✓	✓	--	--	✓	--	--	--	--	✓	C
14	Xcel Energy Inc.	✓	✓	--	✓	✓	✓	✓	✓	✓	✓	C,O

Sources:
Exhibit AMM-3, pages 2-3, contain operating company data that are aggregated into the parent company data on this page.

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.
* Recover mechanisms for other expenses, such as taxes, franchise fees, bad debts, storm costs, pensions, societal benefits, vegetation management, and decommissioning.

ELECTRIC GROUP OPERATING COS.

	HOLDING COMPANY/ Operating Company		Type of Adjustment Clause (a)										
					Decoupling				New Capital				
			Elec. Fuel/ Gas/ Purch. Pwr	Conserv. Program Expense	Full	Partial	Renew-ables Expense	Environ-mental Compliance	Gener-ation Capacity	Generic Infra-structure	Trans-mission Expense	Other*	Test Year (b)
1	**AMEREN CORP.**												
	Ameren Illinois	IL	D	✓	--	--	✓	✓	--	--	✓	✓	O
	Union Electric	MO	✓	✓	--	✓	✓	✓	--	✓	✓	✓	P
2	**AMERICAN ELEC PWR**												
	Southwestern Electric Power	AR	✓	✓	--	✓	--	✓	✓	--	✓	✓	P
	Southwestern Electric Power	TX	✓	✓	--	--	--	--	--	✓	✓	--	--
	Appalachian Power	VA	✓	✓	--	--	✓	--	✓	--	✓	✓	--
	Appalachian Power/Wheeling Power	WV	✓	✓	--	--	✓	--	--	--	--	✓	--
	Indiana Michigan Power	IN	✓	✓	--	✓	✓	✓	--	✓	✓	✓	--
	Kentucky Power	KY	✓	✓	--	✓	✓	✓	--	--	--	✓	O
	Southwestern Electric Power	LA	✓	✓	--	✓	--	✓	--	--	--	✓	O
	Indiana Michigan Power	MI	✓	✓	--	--	✓	--	--	--	--	✓	C
	Ohio Power	OH	D	✓	--	✓	✓	--	--	✓	✓	✓	P
	Public Service Oklahoma	OK	✓	✓	--	✓	✓	--	--	✓	✓	✓	--
	Kingsport Power	TN	✓	--	--	--	--	--	--	--	--	--	C
	AEP Texas	TX	D	✓	--	--	--	--	--	✓	✓	--	--
3	**AVANGRID**												
	United Illuminating	CT	D	✓	✓	--	--	--	--	--	✓	--	C
	Central Maine Power	ME	D	--	✓	--	--	--	--	--	--	✓	C
	New York State Electric & Gas	NY	D	--	✓	--	✓	--	--	--	--	✓	C
	Rochester Gas & Electric	NY	D	--	✓	--	✓	--	--	--	--	✓	C
4	**CMS ENERGY**												
	Consumers Energy	MI	✓	✓	--	--	✓	--	--	--	✓	--	C
5	**DUKE ENERGY**												
	Duke Energy Florida	FL	✓	✓	--	--	--	✓	✓	--	--	✓	C
	Duke Energy Indiana	IN	✓	✓	--	✓	✓	✓	✓	✓	✓	✓	--
	Duke Energy Kentucky	KY	✓	✓	--	✓	✓	✓	--	--	--	✓	O
	Duke Energy Carolinas	NC	✓	✓	--	--	✓	✓	--	--	--	--	--
	Duke Energy Progress	NC	✓	✓	--	--	✓	✓	--	--	--	--	--
	Duke Energy Ohio	OH	D	✓	--	✓	✓	--	--	✓	✓	✓	P
	Duke Energy Progress	SC	✓	✓	--	--	--	✓	--	--	--	--	--
	Duke Energy Carolinas	SC	✓	✓	--	--	--	✓	--	--	--	--	--
6	**EVERSOURCE ENERGY**												
	Connecticut Light and Power	CT	D	✓	✓	--	--	--	--	✓	✓	--	C
	NSTAR Electric	MA	D	✓	✓	--	✓	--	--	✓	✓	✓	--
	Public Service Co. of New Hampshire	NH	✓	--	--	✓	--	--	--	✓	✓	--	--

ELECTRIC GROUP OPERATING COS.

	HOLDING COMPANY/ Operating Company		Type of Adjustment Clause (a)										
					Decoupling				New Capital				
			Elec. Fuel/ Gas/ Purch. Pwr	Conserv. Program Expense	Full	Partial	Renew-ables Expense	Environ-mental Compliance	Gener-ation Capacity	Generic Infra-structure	Trans-mission Expense	Other*	Test Year (b)
7	**NEXTERA ENERGY**												
	Florida Power & Light	FL	✓	✓	--	--	--	✓	✓	--	--	✓	C
	Lone Star Transmission	TX	D	--	--	--	--	--	--	✓	--	--	--
	Gulf Power	FL	✓	✓	--	--	--	✓	✓	--	--	✓	C
8	**OGE ENERGY CORP.**												
	Oklahoma Gas & Electric	AR	✓	✓	--	✓	✓	✓	✓	--	✓	✓	P
	Oklahoma Gas & Electric	OK	✓	✓	--	✓	✓	✓	--	✓	✓	✓	--
9	**PINNACLE WEST CAPITAL**												
	Arizona Public Service	AZ	✓	✓	--	✓	✓	✓	--	--	✓	✓	--
10	**PORTLAND GENERAL ELECTRIC**												
	Portland General Electric	OR	✓	✓	--	✓	✓	✓	✓	--	--	--	C
11	**PUB SV ENTERPRISE GRP**												
	Public Service Electric & Gas	NJ	D	✓	--	--	✓	--	--	✓	--	✓	P
12	**SEMPRA ENERGY**												
	San Diego Gas & Electric	CA	✓	--	✓	--	--	--	--	--	--	✓	C
	Oncor Electric Delivery	TX	D	✓	--	--	--	--	--	✓	✓	--	--
13	**WEC ENERGY GROUP**												
	Wisconsin Electric Power	MI	✓	✓	--	--	✓	--	--	--	--	--	C
	Wisconsin Electric Power	WI	✓	--	--	--	✓	--	--	--	--	✓	C
	Wisconsin Public Service	WI	✓	--	--	--	--	--	--	--	--	✓	C
14	**XCEL ENERGY, INC.**												
	Public Service Co. of Colorado	CO	✓	✓	--	--	✓	✓	✓	✓	--	✓	--
	Northern States Power-Minnesota	MN	✓	✓	--	✓	✓	✓	--	--	✓	--	C
	Southwestern Public Service	NM	✓	✓	--	--	✓	--	--	--	--	✓	O
	Northern States Power-Minnesota	ND	✓	--	--	--	--	--	--	✓	--	✓	O
	Northern States Power-Minnesota	SD	✓	✓	--	✓	--	✓	✓	✓	--	✓	--
	Southwestern Public Service	TX	✓	✓	--	--	--	--	--	✓	✓	✓	--
	Northern States Power-Wisconsin	WI	✓	--	--	--	--	--	--	--	--	✓	C

Sources:

(a) S&P Global, Market Intelligence, RRA Regulatory Focus, *"Adjustment Clauses-A State-by-State Overview,"* Nov. 12, 2019.

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

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.

* Recover mechanisms for other expenses, such as taxes, franchise fees, bad debts, storm costs, pensions, societal benefits, vegetation management, and decommissioning.

DIVIDEND YIELD

	Company	(a) Price	(b) Dividends	Yield
1	Ameren Corp.	$ 72.87	$ 2.03	2.8%
2	American Elec Pwr	$ 80.76	$ 2.88	3.6%
3	Avangrid, Inc.	$ 43.29	$ 1.78	4.1%
4	CMS Energy Corp.	$ 57.93	$ 1.66	2.9%
5	Duke Energy Corp.	$ 82.53	$ 3.83	4.6%
6	Eversource Energy	$ 82.05	$ 2.27	2.8%
7	NextEra Energy, Inc.	$ 230.83	$ 5.65	2.4%
8	OGE Energy Corp.	$ 30.29	$ 1.62	5.3%
9	Pinnacle West Capital	$ 75.81	$ 3.22	4.2%
10	Portland General Elec.	$ 47.76	$ 1.64	3.4%
11	Pub Sv Enterprise Grp.	$ 47.99	$ 1.96	4.1%
12	Sempra Energy	$ 118.39	$ 4.26	3.6%
13	WEC Energy Group	$ 90.42	$ 2.57	2.8%
14	Xcel Energy Inc.	$ 61.56	$ 1.75	2.8%
	Average			**3.5%**

(a) Average of closing prices for 30 trading days ended May 1, 2020.
(b) The Value Line Investment Survey, Summary & Index (May 1, 2020).

GROWTH RATES

		(a)	(b)	(c)	(d)
		Earnings Growth			**br+sv**
	Company	**V Line**	**IBES**	**Zacks**	**Growth**
1	Ameren Corp.	6.0%	6.5%	6.8%	6.2%
2	American Elec Pwr	5.0%	6.0%	5.8%	4.8%
3	Avangrid, Inc.	8.5%	6.3%	5.2%	1.5%
4	CMS Energy Corp.	7.5%	7.3%	7.0%	7.0%
5	Duke Energy Corp.	6.0%	4.1%	4.6%	3.0%
6	Eversource Energy	5.5%	5.7%	6.1%	4.8%
7	NextEra Energy, Inc.	10.0%	7.7%	7.7%	5.2%
8	OGE Energy Corp.	4.5%	1.7%	3.4%	3.3%
9	Pinnacle West Capital	4.5%	5.0%	5.2%	4.3%
10	Portland General Elec.	4.0%	4.2%	5.3%	2.9%
11	Pub Sv Enterprise Grp.	6.0%	2.4%	3.4%	5.0%
12	Sempra Energy	10.0%	4.2%	6.8%	7.4%
13	WEC Energy Group	6.0%	6.0%	5.9%	4.1%
14	Xcel Energy Inc.	6.0%	5.4%	5.7%	5.0%

(a) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).
(b) www.finance.yahoo.com (retreived May 1, 2020).
(c) www.zacks.com (retrieved May 1, 2020).
(d) See Exhibit AMM-5.

COST OF EQUITY ESTIMATES

		(a)	(a)	(a)	(a)
		Earnings Growth			**br+sv**
	Company	**V Line**	**IBES**	**Zacks**	**Growth**
1	Ameren Corp.	8.8%	9.3%	9.5%	9.0%
2	American Elec Pwr	8.6%	9.6%	9.3%	8.3%
3	Avangrid, Inc.	12.6%	10.4%	9.4%	5.6%
4	CMS Energy Corp.	10.4%	10.2%	9.8%	9.9%
5	Duke Energy Corp.	10.6%	8.8%	9.3%	7.7%
6	Eversource Energy	8.3%	8.5%	8.9%	7.6%
7	NextEra Energy, Inc.	12.4%	10.2%	10.2%	7.6%
8	OGE Energy Corp.	9.8%	7.0%	8.7%	8.7%
9	Pinnacle West Capital	8.7%	9.2%	9.5%	8.6%
10	Portland General Elec.	7.4%	7.6%	8.7%	6.4%
11	Pub Sv Enterprise Grp.	10.1%	6.4%	7.5%	9.1%
12	Sempra Energy	13.6%	7.8%	10.4%	11.0%
13	WEC Energy Group	8.8%	8.8%	8.8%	7.0%
14	Xcel Energy Inc.	8.8%	8.2%	8.6%	7.8%
	Average (b)	**9.9%**	**8.9%**	**9.1%**	**8.5%**
	Midpoint (b) (c)	**10.5%**	**8.7%**	**8.9%**	**9.0%**

(a) Sum of dividend yield (Exhibit AMM-4, p. 1) and respective growth rate (Exhibit AMM-4, p. 2).
(b) Excludes highlighted figures.
(c) Average of low and high values.

LOW-END THRESHOLD ADJUSTMENT

Atlantic Path 15 / Startrans / So. Cal Edison		*Pioneer Transmission*	
Jun-07	6.54%	Apr-08	6.81%
Jul-07	6.49%	May-08	6.79%
Aug-07	6.51%	Jun-08	6.93%
Sep-07	6.45%	Jul-08	6.97%
Oct-07	6.36%	Aug-08	6.98%
Nov-07	6.27%	Sep-08	7.15%

	Current		**Projected**	
Historical Baa Bond Yield	6.69%	(a)	6.69%	(a)
Baa Bond Yield	3.79%	(b)	5.09%	(c)
Change in Bond Yield	-2.90%		-1.60%	
Risk Premium/Interest Rate Relationship	-0.43239	(d)	-0.43239	(d)
Adjustment to Low-end Threshold	1.25%		0.69%	
Baa Bond Yield	3.79%	(b)	5.09%	(c)
Original Threshold	1.00%		1.00%	
Adjustment	1.25%		0.69%	
Adjusted Low-end Threshold	**6.04%**		**6.78%**	

(a) Average Baa utility bond yield for 6-mo. periods ending Nov. 2007 and Sep. 2008.

(b) Average Baa utility bond yield for 6-months ended Apr. 2020.

(c) Average Baa utility bond yield for 2021-25 based on data from Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020), Wolters Kluwer, Blue Chip Financial Forecasts (Dec. 1, 2019), and Moody's Investors Service at www.credittrends.com.

(d) Exhibit AMM-8, page 4.

BR+SV GROWTH RATE

ELECTRIC GROUP

		(a)	(a)	(a)			(b)	(c)		(d)	(e)		
		2024					Adjustment			"sv" Factor			
	Company	EPS	DPS	BVPS	b	r	Factor	Adjusted r	br	s	v	sv	br + sv
1	Ameren Corp.	$4.50	$2.45	$44.00	45.6%	10.2%	1.0402	10.6%	4.8%	0.0356	0.3714	1.32%	6.2%
2	American Elec Pwr	$5.25	$3.55	$50.00	32.4%	10.5%	1.0294	10.8%	3.5%	0.0268	0.4737	1.27%	4.8%
3	Avangrid, Inc.	$3.00	$2.20	$53.75	26.7%	5.6%	1.0090	5.6%	1.5%	-	(0.0238)	0.00%	1.5%
4	CMS Energy Corp.	$3.50	$2.15	$25.50	38.6%	13.7%	1.0421	14.3%	5.5%	0.0262	0.5750	1.50%	7.0%
5	Duke Energy Corp.	$6.00	$4.10	$71.75	31.7%	8.4%	1.0209	8.5%	2.7%	0.0144	0.2243	0.32%	3.0%
6	Eversource Energy	$4.50	$2.85	$48.50	36.7%	9.3%	1.0338	9.6%	3.5%	0.0314	0.4121	1.29%	4.8%
7	NextEra Energy, Inc.	$12.50	$8.00	$97.50	36.0%	12.8%	1.0271	13.2%	4.7%	0.0067	0.6355	0.43%	5.2%
8	OGE Energy Corp.	$2.75	$1.95	$24.25	29.1%	11.3%	1.0168	11.5%	3.4%	(0.0002)	0.4895	-0.01%	3.3%
9	Pinnacle West Capital	$6.00	$4.00	$58.00	33.3%	10.3%	1.0233	10.6%	3.5%	0.0176	0.4476	0.79%	4.3%
10	Portland General Elec.	$3.00	$2.05	$33.75	31.7%	8.9%	1.0155	9.0%	2.9%	0.0021	0.3571	0.08%	2.9%
11	Pub Sv Enterprise Grp.	$4.25	$2.40	$38.00	43.5%	11.2%	1.0252	11.5%	5.0%	-	0.3920	0.00%	5.0%
12	Sempra Energy	$9.50	$5.60	$88.25	41.1%	10.8%	1.0529	11.3%	4.7%	0.0582	0.4652	2.71%	7.4%
13	WEC Energy Group	$4.75	$3.20	$38.25	32.6%	12.4%	1.0170	12.6%	4.1%	0.0001	0.5750	0.01%	4.1%
14	Xcel Energy Inc.	$3.50	$2.15	$32.75	38.6%	10.7%	1.0306	11.0%	4.2%	0.0161	0.4542	0.73%	5.0%

ELECTRIC GROUP

		(a)	(a)	(f)	(a)	(a)	(f)	(g)	(a)	(a)		(h)	(a)	(a)	(g)
		2019			2024			Chg	2024				Common Shares		
	Company	Eq Ratio	Tot Cap	Com Eq	Eq Ratio	Tot Cap	Com Eq	Equity	High	Low	Avg.	M/B	2019	2024	Growth
1	Ameren Corp.	47.1%	$17,116	$8,062	51.5%	$23,400	$12,051	8.4%	$80.0	$60.0	$70.0	1.591	246.20	275.00	2.24%
2	American Elec Pwr	43.9%	$44,759	$19,649	46.5%	$56,700	$26,366	6.1%	$105.0	$85.0	$95.0	1.900	494.17	530.00	1.41%
3	Avangrid, Inc.	71.5%	$21,325	$15,247	60.0%	$27,800	$16,680	1.8%	$60.0	$45.0	$52.5	0.977	309.00	309.00	0.00%
4	CMS Energy Corp.	29.4%	$17,082	$5,022	33.0%	$23,200	$7,656	8.8%	$70.0	$50.0	$60.0	2.353	283.86	300.00	1.11%
5	Duke Energy Corp.	44.5%	$101,375	$45,112	44.5%	$125,000	$55,625	4.3%	$105.0	$80.0	$92.5	1.289	733.00	775.00	1.12%
6	Eversource Energy	46.5%	$26,375	$12,264	46.0%	$37,400	$17,204	7.0%	$90.0	$75.0	$82.5	1.701	324.00	355.00	1.84%
7	NextEra Energy, Inc.	49.5%	$74,550	$36,902	50.0%	$96,800	$48,400	5.6%	$295.0	$240.0	$267.5	2.744	489.00	495.00	0.24%
8	OGE Energy Corp.	56.4%	$7,335	$4,137	54.5%	$8,975	$4,891	3.4%	$55.0	$40.0	$47.5	1.959	200.10	200.00	-0.01%
9	Pinnacle West Capital	52.9%	$10,263	$5,429	48.5%	$14,125	$6,851	4.8%	$115.0	$95.0	$105.0	1.810	112.44	118.00	0.97%
10	Portland General Elec.	48.7%	$5,323	$2,592	47.5%	$6,375	$3,028	3.2%	$60.0	$45.0	$52.5	1.556	89.39	90.00	0.14%
11	Pub Sv Enterprise Grp.	51.5%	$29,050	$14,961	49.0%	$39,300	$19,257	5.2%	$70.0	$55.0	$62.5	1.645	506.00	506.00	0.00%
12	Sempra Energy	43.4%	$40,734	$17,679	51.5%	$58,300	$30,025	11.2%	$190.0	$140.0	$165.0	1.870	291.71	340.00	3.11%
13	WEC Energy Group	47.4%	$21,355	$10,122	48.0%	$25,000	$12,000	3.5%	$100.0	$80.0	$90.0	2.353	315.43	315.50	0.00%
14	Xcel Energy Inc.	43.2%	$30,646	$13,239	43.0%	$41,800	$17,974	6.3%	$65.0	$55.0	$60.0	1.832	524.54	548.00	0.88%

(a) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).

(b) Computed using the formula 2*(1+5-Yr. Change in Equity)/(2+5 Yr. Change in Equity).

(c) Product of average year-end "r" for 2024 and Adjustment Factor.

(d) Product of change in common shares outstanding and M/B Ratio.

(e) Computed as 1 - B/M Ratio.

(f) Product of total capital and equity ratio.

(g) Five-year rate of change in common equity.

(h) Average of High and Low expected market prices divided by 2024 BVPS.

CAPM - CURRENT BOND YIELD

ELECTRIC GROUP

		(a)	(b)		(c)		(d)		(d)	(e)	
		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.	3.1%	9.3%	12.5%	1.9%	10.6%	0.50	7.2%	$20,000	0.50%	7.7%
2	American Elec Pwr	3.1%	9.3%	12.5%	1.9%	10.6%	0.50	7.2%	$47,000	-0.28%	6.9%
3	Avangrid, Inc.	3.1%	9.3%	12.5%	1.9%	10.6%	0.40	6.1%	$16,000	0.50%	6.6%
4	CMS Energy Corp.	3.1%	9.3%	12.5%	1.9%	10.6%	0.50	7.2%	$18,000	0.50%	7.7%
5	Duke Energy Corp.	3.1%	9.3%	12.5%	1.9%	10.6%	0.45	6.7%	$70,000	-0.28%	6.4%
6	Eversource Energy	3.1%	9.3%	12.5%	1.9%	10.6%	0.55	7.7%	$29,000	0.50%	8.2%
7	NextEra Energy, Inc.	3.1%	9.3%	12.5%	1.9%	10.6%	0.50	7.2%	$129,000	-0.28%	6.9%
8	OGE Energy Corp.	3.1%	9.3%	12.5%	1.9%	10.6%	0.70	9.3%	$7,700	0.73%	10.0%
9	Pinnacle West Capital	3.1%	9.3%	12.5%	1.9%	10.6%	0.45	6.7%	$9,000	0.73%	7.4%
10	Portland General Elec.	3.1%	9.3%	12.5%	1.9%	10.6%	0.55	7.7%	$4,500	0.79%	8.5%
11	Pub Sv Enterprise Grp.	3.1%	9.3%	12.5%	1.9%	10.6%	0.60	8.2%	$30,000	0.50%	8.7%
12	Sempra Energy	3.1%	9.3%	12.5%	1.9%	10.6%	0.65	8.8%	$37,000	-0.28%	8.5%
13	WEC Energy Group	3.1%	9.3%	12.5%	1.9%	10.6%	0.45	6.7%	$31,000	0.50%	7.2%
14	Xcel Energy Inc.	3.1%	9.3%	12.5%	1.9%	10.6%	0.45	6.7%	$33,000	-0.28%	6.4%
	Average (f)										**7.9%**
	Midpoint (f) (g)										**8.3%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Mar. 27, 2020).
(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 http://finance.yahoo.com (retrieved Mar. 27, 2020), www.valueline.com (retrieved Mar. 27, 2020), and www.zacks.com (retrieved Mar. 27, 2020).
(c) Average yield on 30-year Treasury bonds for the six-months ending Apr. 2020 based on data from http://www.fred.stlouisfed.org.
(d) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).
(e) Duff & Phelps, 2020 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
(f) Excludes highlighted figures.
(g) Average of low and high values.

ELECTRIC GROUP

		(a)	(b)		(c)		(d)		(d)	(e)	
		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.	3.1%	9.3%	12.5%	3.2%	9.3%	0.50	7.8%	$20,000	0.50%	8.3%
2	American Elec Pwr	3.1%	9.3%	12.5%	3.2%	9.3%	0.50	7.8%	$47,000	-0.28%	7.6%
3	Avangrid, Inc.	3.1%	9.3%	12.5%	3.2%	9.3%	0.40	6.9%	$16,000	0.50%	7.4%
4	CMS Energy Corp.	3.1%	9.3%	12.5%	3.2%	9.3%	0.50	7.8%	$18,000	0.50%	8.3%
5	Duke Energy Corp.	3.1%	9.3%	12.5%	3.2%	9.3%	0.45	7.4%	$70,000	-0.28%	7.1%
6	Eversource Energy	3.1%	9.3%	12.5%	3.2%	9.3%	0.55	8.3%	$29,000	0.50%	8.8%
7	NextEra Energy, Inc.	3.1%	9.3%	12.5%	3.2%	9.3%	0.50	7.8%	$129,000	-0.28%	7.6%
8	OGE Energy Corp.	3.1%	9.3%	12.5%	3.2%	9.3%	0.70	9.7%	$7,700	0.73%	10.4%
9	Pinnacle West Capital	3.1%	9.3%	12.5%	3.2%	9.3%	0.45	7.4%	$9,000	0.73%	8.1%
10	Portland General Elec.	3.1%	9.3%	12.5%	3.2%	9.3%	0.55	8.3%	$4,500	0.79%	9.1%
11	Pub Sv Enterprise Grp.	3.1%	9.3%	12.5%	3.2%	9.3%	0.60	8.8%	$30,000	0.50%	9.3%
12	Sempra Energy	3.1%	9.3%	12.5%	3.2%	9.3%	0.65	9.2%	$37,000	-0.28%	8.9%
13	WEC Energy Group	3.1%	9.3%	12.5%	3.2%	9.3%	0.45	7.4%	$31,000	0.50%	7.9%
14	Xcel Energy Inc.	3.1%	9.3%	12.5%	3.2%	9.3%	0.45	7.4%	$33,000	-0.28%	7.1%
	Average (f)										**8.3%**
	Midpoint (f) (g)										**8.8%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Mar. 27, 2020).
(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 http://finance.yahoo.com (retrieved Mar. 27, 2020), www.valueline.com (retrieved Mar. 27, 2020), and www.zacks.com (retrieved Mar. 27, 2020).
(c) Average yield on 30-year Treasury bonds for based on data from the IHS Markit, Long-Term Macro Forecast - Baseline (Apr. 8, 2020); Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020); & Wolters Kluwer, Blue Chip Financial Forecasts (Dec. 1, 2019).
(d) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).
(e) Duff & Phelps, 2020 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
(f) Excludes highlighted figures.
(g) Average of low and high values.

EMPIRICAL CAPM - CURRENT BOND YIELD

ELECTRIC GROUP

		(a)	(b)		(c)		(d)		(e)	(d)				(e)	(f)	
		Market Return (R_m)														
	Company	**Div Yield**	**Proj. Growth**	**Cost of Equity**	**Risk-Free Rate**	**Risk Premium**	**Unadjusted RP Weight**	**RP^1**	**Beta**	**Beta Adjusted RP Weight**	**RP^2**	**Total RP**	**Unadjusted K_e**	**Market Cap**	**Size Adjustment**	**ECAPM Result**
1	Ameren Corp.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.50	75%	4.0%	6.6%	8.5%	$20,000	0.50%	9.0%
2	American Elec Pwr	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.50	75%	4.0%	6.6%	8.5%	$47,000	-0.28%	8.2%
3	Avangrid, Inc.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.40	75%	3.2%	5.8%	7.7%	$16,000	0.50%	8.2%
4	CMS Energy Corp.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.50	75%	4.0%	6.6%	8.5%	$18,000	0.50%	9.0%
5	Duke Energy Corp.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.45	75%	3.6%	6.2%	8.1%	$70,000	-0.28%	7.8%
6	Eversource Energy	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.55	75%	4.4%	7.0%	8.9%	$29,000	0.50%	9.4%
7	NextEra Energy, Inc.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.50	75%	4.0%	6.6%	8.5%	$129,000	-0.28%	8.2%
8	OGE Energy Corp.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.70	75%	5.5%	8.2%	10.1%	$7,700	0.73%	10.8%
9	Pinnacle West Capital	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.45	75%	3.6%	6.2%	8.1%	$9,000	0.73%	8.8%
10	Portland General Elec.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.55	75%	4.4%	7.0%	8.9%	$4,500	0.79%	9.7%
11	Pub Sv Enterprise Grp.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.60	75%	4.8%	7.4%	9.3%	$30,000	0.50%	9.8%
12	Sempra Energy	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.65	75%	5.2%	7.8%	9.7%	$37,000	-0.28%	9.4%
13	WEC Energy Group	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.45	75%	3.6%	6.2%	8.1%	$31,000	0.50%	8.6%
14	Xcel Energy Inc.	3.1%	9.3%	12.5%	1.9%	10.6%	25%	2.6%	0.45	75%	3.6%	6.2%	8.1%	$33,000	-0.28%	7.8%
	Average (f)															**8.9%**
	Midpoint (f) (g)															**9.3%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Mar. 27, 2020).
(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 http://finance.yahoo.com (retrieved Mar. 27, 2020), www.valueline.com (retrieved Mar. 27, 2020), and www.zacks.com (retrieved Mar. 27, 2020).
(c) Average yield on 30-year Treasury bonds for the six-months ending Apr. 2020 based on data from http://www.fred.stlouisfed.org.
(d) Roger A. Morin, "New Regulatory Finance," *Public Utilities Reports, Inc.* (2006) at 190.
(e) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).
(f) Duff & Phelps, 2020 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
(f) Excludes highlighted figures.
(g) Average of low and high values.

ELECTRIC GROUP

		(a)	(b)		(c)		(d)		(e)	(d)				(e)	(f)	
		Market Return (R_m)														
	Company	**Div Yield**	**Proj. Growth**	**Cost of Equity**	**Risk-Free Rate**	**Risk Premium**	**Unadjusted RP Weight**	**RP^1**	**Beta**	**Beta Adjusted RP Weight**	**RP^2**	**Total RP**	**Unadjusted K_e**	**Market Cap**	**Size Adjustment**	**ECAPM Result**
1	Ameren Corp.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.50	75%	3.5%	5.8%	9.0%	$20,000	0.50%	9.5%
2	American Elec Pwr	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.50	75%	3.5%	5.8%	9.0%	$47,000	-0.28%	8.7%
3	Avangrid, Inc.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.40	75%	2.8%	5.1%	8.3%	$16,000	0.50%	8.8%
4	CMS Energy Corp.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.50	75%	3.5%	5.8%	9.0%	$18,000	0.50%	9.5%
5	Duke Energy Corp.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.45	75%	3.1%	5.4%	8.6%	$70,000	-0.28%	8.4%
6	Eversource Energy	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.55	75%	3.8%	6.1%	9.3%	$29,000	0.50%	9.8%
7	NextEra Energy, Inc.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.50	75%	3.5%	5.8%	9.0%	$129,000	-0.28%	8.7%
8	OGE Energy Corp.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.70	75%	4.9%	7.2%	10.4%	$7,700	0.73%	11.1%
9	Pinnacle West Capital	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.45	75%	3.1%	5.4%	8.6%	$9,000	0.73%	9.4%
10	Portland General Elec.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.55	75%	3.8%	6.1%	9.3%	$4,500	0.79%	10.1%
11	Pub Sv Enterprise Grp.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.60	75%	4.2%	6.5%	9.7%	$30,000	0.50%	10.2%
12	Sempra Energy	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.65	75%	4.5%	6.8%	10.0%	$37,000	-0.28%	9.8%
13	WEC Energy Group	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.45	75%	3.1%	5.4%	8.6%	$31,000	0.50%	9.1%
14	Xcel Energy Inc.	3.1%	9.3%	12.5%	3.2%	9.3%	25%	2.3%	0.45	75%	3.1%	5.4%	8.6%	$33,000	-0.28%	8.4%
	Average (f)															**9.4%**
	Midpoint (f) (g)															**9.7%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Mar. 27, 2020).
(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 http://finance.yahoo.com (retrieved Mar. 27, 2020), www.valueline.com (retrieved Mar. 27, 2020), and www.zacks.com (retrieved Mar. 27, 2020).
(c) Average yield on 30-year Treasury bonds for based on data from the IHS Markit, Long-Term Macro Forecast - Baseline (Apr. 8, 2020); Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020); & Wolters Kluwer, Blue Chip Financial Forecasts (Dec. 1, 2019).
(d) Roger A. Morin, "New Regulatory Finance," *Public Utilities Reports, Inc.* (2006) at 190.
(e) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).
(f) Duff & Phelps, 2020 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
(f) Excludes highlighted figures.
(g) Average of low and high values.

CURRENT BOND YIELD

Current Equity Risk Premium	
(a) Avg. Yield over Study Period	8.10%
(b) Average Utility Bond Yield	3.43%
Change in Bond Yield	-4.67%
(c) Risk Premium/Interest Rate Relationship	-0.4324
Adjustment to Average Risk Premium	2.02%
(a) Average Risk Premium over Study Period	3.79%
Adjusted Risk Premium	**5.81%**

Implied Cost of Equity	
(b) Single-A Utility Bond Yield	3.35%
Adjusted Equity Risk Premium	5.81%
Risk Premium Cost of Equity	**9.16%**

(a) Exhibit AMM-8, page 3.
(b) Average bond yield on all utility bonds and 'A' subset for the six-months ending Apr. 2020 based on data from Moody's Investors Service at www.credittrends.com.
(c) Exhibit AMM-8, page 4.

PROJECTED BOND YIELD

Current Equity Risk Premium	
(a) Avg. Yield over Study Period	8.10%
(b) Average Utility Bond Yield 2021-2025	4.45%
Change in Bond Yield	-3.65%
(c) Risk Premium/Interest Rate Relationship	-0.4324
Adjustment to Average Risk Premium	1.58%
(a) Average Risk Premium over Study Period	3.79%
Adjusted Risk Premium	**5.37%**

Implied Cost of Equity	
(b) Single-A Utility Bond Yield 2021-2025	4.65%
Adjusted Equity Risk Premium	5.37%
Risk Premium Cost of Equity	**10.02%**

(a) Exhibit AMM-8, page 3.
(b) Yields on all utility bonds and 'A' subset based on data from Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020); Wolters Kluwer, Blue Chip Financial Forecasts (Dec. 1, 2019); & Moody's Investors Service at www.credittrends.com.
(c) Exhibit AMM-8, page 4.

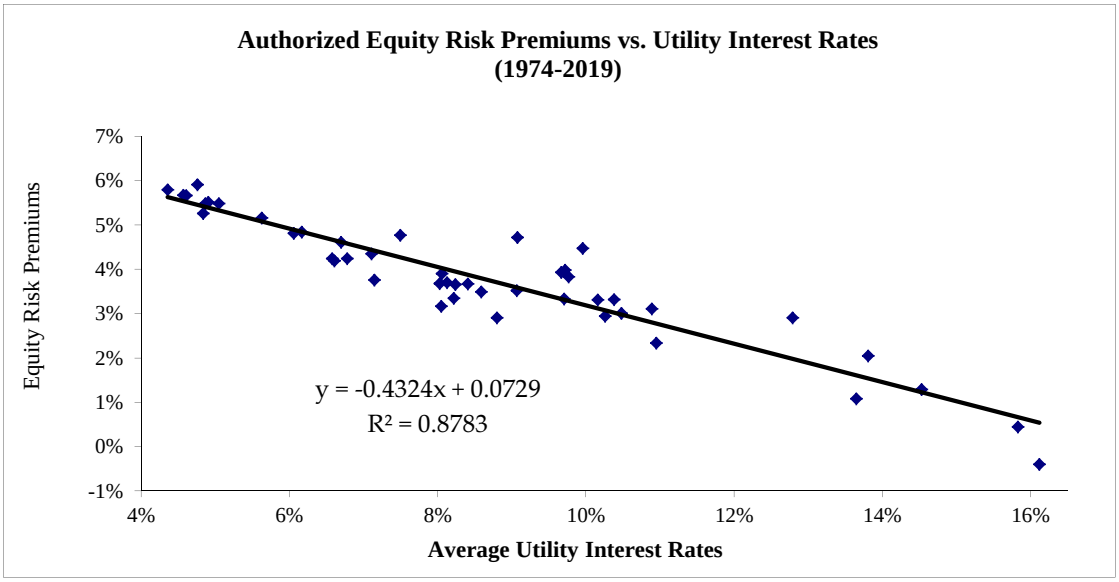
AUTHORIZED RETURNS

	(a)	(b)	
Year	**Allowed ROE**	**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	10.32%	6.08%	4.24%
2007	10.30%	6.11%	4.19%
2008	10.41%	6.65%	3.76%
2009	10.52%	6.28%	4.24%
2010	10.37%	5.56%	4.81%
2011	10.29%	5.13%	5.16%
2012	10.17%	4.26%	5.91%
2013	10.03%	4.55%	5.48%
2014	9.92%	4.41%	5.51%
2015	9.85%	4.37%	5.48%
2016	9.77%	4.11%	5.66%
2017	9.74%	4.07%	5.67%
2018	9.60%	4.34%	5.26%
2019	9.65%	3.86%	5.79%
Average	11.89%	8.10%	3.79%

(a) Major Rate Case Decisions, *Regulatory Focus* , Regulatory Research Associates; *UtilityScope Regulatory Service* , Argus.

(b) Moody's Investors Service.

REGRESSION RESULTS



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.937198678
R Square	0.878341361
Adjusted R Square	0.875576392
Standard Error	0.004891037
Observations	46

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.007599325	0.007599325	317.6677002	9.50082E-22
Residual	44	0.001052579	2.39222E-05		
Total	45	0.008651904			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.07294932	0.002093294	34.84905373	1.10828E-33	0.068730563	0.077168077	0.068730563	0.077168077
X Variable 1	-0.43238923	0.024259862	-17.82323484	9.50082E-22	-0.481281766	-0.38349669	-0.481281766	-0.383496686

UTILITY GROUP

		(a)	(b)	(c)
	Company	**Expected Return on Common Equity**	**Adjustment Factor**	**Adjusted Return on Common Equity**
1	Ameren Corp.	10.0%	1.0402	10.4%
2	American Elec Pwr	10.5%	1.0294	10.8%
3	Avangrid, Inc.	6.0%	1.0090	6.1%
4	CMS Energy Corp.	13.5%	1.0421	14.1%
5	Duke Energy Corp.	8.5%	1.0209	8.7%
6	Eversource Energy	9.5%	1.0338	9.8%
7	NextEra Energy, Inc.	13.0%	1.0271	13.4%
8	OGE Energy Corp.	11.0%	1.0168	11.2%
9	Pinnacle West Capital	10.5%	1.0233	10.7%
10	Portland General Elec.	9.0%	1.0155	9.1%
11	Pub Sv Enterprise Grp.	11.0%	1.0252	11.3%
12	Sempra Energy	11.0%	1.0529	11.6%
13	WEC Energy Group	12.5%	1.0170	12.7%
14	Xcel Energy Inc.	11.0%	1.0306	11.3%
	Average (d)	**10.8%**		**11.2%**
	Midpoint (d, e)	**11.0%**		**11.4%**

(a) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).
(b) Adjustment to convert year-end return to an average rate of return from Exhibit AMM-5.
(c) (a) x (b).
(d) Excludes highlighted figures.
(e) Average of low and high values.

FLOTATION COST STUDY **Exhibit AMM-10**

Page 1 of 1

VALUE LINE ELECTRIC INDUSTRY

No.	Sym	Company	(1) Date	(2) Shares Issued	(3) Offering Price	(4) Underwriting Discount (per share)	(5) Underwriting Discount	(6) Offering Expense	(7) Total Flotation Costs	(8) Gross Proceeds Before Flot. Costs	(9) Flotation Cost (%)
1	ALE	ALLETE	2/27/2014	3,220,000	$49.75	$1.74125	$5,606,825	$450,000	$6,056,825	$160,195,000	3.781%
2	LNT	Alliant Energy	11/14/2019	3,717,502	$52.63	$0.39500	$1,468,413	$500,000	$1,968,413	$195,652,130	1.006%
3	AEE	Ameren Corp.	8/5/2019	7,549,205	$74.30	$0.12000	$905,905	$750,000	$1,655,905	$560,905,932	0.295%
4	AEP	American Elec Pwr	4/2/2009	69,000,000	$24.50	$0.73500	$50,715,000	$400,000	$51,115,000	$1,690,500,000	3.024%
5	AGR	Avangrid, Inc.					N/A				
6	AVA	Avista Corp.	12/13/2006	3,162,500	$25.05	$0.48000	$1,518,000	$300,000	$1,818,000	$79,220,625	2.295%
7	BKH	Black Hills Corp.	11/19/2015	6,325,000	$40.25	$1.40875	$8,910,344	$1,200,000	$10,110,344	$254,581,250	3.971%
8	CNP	CenterPoint Energy	9/27/2018	60,550,459	$27.25	$0.75000	$45,412,844	$1,000,000	$46,412,844	$1,650,000,008	2.813%
9	CMS	CMS Energy Corp.	3/31/2005	23,000,000	$12.25	$0.42880	$9,862,400	$325,000	$10,187,400	$281,750,000	3.616%
10	ED	Consolidated Edison (a)	5/7/2019	5,800,000	$84.83	$0.59000	$3,422,000	$400,000	$3,822,000	$492,014,000	0.777%
11	D	Dominion Energy (a)	3/29/2018	20,000,000	$67.33	$1.89420	$37,884,000	$450,000	$38,334,000	$1,346,516,000	2.847%
12	DTE	DTE Energy Co.	10/29/2019	2,400,000	$126.00	$3.15000	$7,560,000	$300,000	$7,860,000	$302,400,000	2.599%
13	DUK	Duke Energy Corp. (a)	11/18/2019	25,000,000	$85.99	$2.66000	$66,500,000	$592,000	$67,092,000	$2,149,750,000	3.121%
14	EIX	Edison International	7/30/2019	28,000,000	$68.50	$1.62688	$45,552,500	$725,000	$46,277,500	$1,918,000,000	2.413%
15	EE	El Paso Electric Co.					N/A				
16	ETR	Entergy Corp.	6/8/2018	13,289,037	$75.25	$0.80000	$10,631,230	$650,000	$11,281,230	$1,000,000,034	1.128%
17	EVRG	Evergy Inc.					N/A				
18	ES	Eversource Energy	5/30/2019	15,600,000	$71.48	$1.69000	$26,364,000	$615,000	$26,979,000	$1,115,088,000	2.419%
19	EXC	Exelon Corp.	6/13/2014	57,500,000	$35.00	$1.05000	$60,375,000	$600,000	$60,975,000	$2,012,500,000	3.030%
20	FE	FirstEnergy Corp.	9/15/2003	32,200,000	$30.00	$0.97500	$31,395,000	$423,000	$31,818,000	$966,000,000	3.294%
21	FTS	Fortis Inc.					N/A				
22	HE	Hawaiian Elec.	3/20/2013	7,000,000	$26.75	$1.00312	$7,021,840	$450,000	$7,471,840	$187,250,000	3.990%
23	IDA	IDACORP, Inc.	12/10/2004	4,025,000	$30.00	$1.20000	$4,830,000	$300,000	$5,130,000	$120,750,000	4.248%
24	MGEE	MGE Energy	9/10/2004	1,265,000	$31.85	$1.03500	$1,309,275	$125,000	$1,434,275	$40,290,250	3.560%
25	NEE	NextEra Energy, Inc. (a)	11/3/2016	13,800,000	$124.00	$1.89000	$26,082,000	$750,000	$26,832,000	$1,711,200,000	1.568%
26	NWE	NorthWestern Corp. (a)	9/30/2015	1,100,000	$51.81	$1.33000	$1,463,000	$1,000,000	$2,463,000	$56,991,000	4.322%
27	OGE	OGE Energy Corp.	8/22/2003	5,324,074	$21.60	$0.79000	$4,206,018	$325,000	$4,531,018	$114,999,998	3.940%
28	OTTR	Otter Tail Corp.					N/A				
29	PNW	Pinnacle West Capital	4/9/2010	6,900,000	$38.00	$1.33000	$9,177,000	$190,000	$9,367,000	$262,200,000	3.572%
30	PNM	PNM Resources	1/7/2020	5,375,000	$47.21	$1.99000	$10,696,250	$750,000	$11,446,250	$253,753,750	4.511%
31	POR	Portland General Elec.	6/13/2013	12,765,000	$29.50	$0.95875	$12,238,444	$600,000	$12,838,444	$376,567,500	3.409%
32	PPL	PPL Corp.	5/10/2018	55,000,000	$27.00	$0.29430	$16,186,500	$1,000,000	$17,186,500	$1,485,000,000	1.157%
33	PEG	Pub Sv Enterprise Grp.	10/2/2003	9,487,500	$41.75	$1.25250	$11,883,094	$350,000	$12,233,094	$396,103,125	3.088%
34	SRE	Sempra Energy	1/5/2018	26,869,158	$107.00	$1.92600	$51,749,998	$1,500,000	$53,249,998	$2,874,999,906	1.852%
35	SO	Southern Company (a)	8/18/2016	32,500,000	$49.30	$1.66000	$53,950,000	$557,000	$54,507,000	$1,602,250,000	3.402%
36	WEC	WEC Energy Group					N/A				
37	XEL	Xcel Energy Inc. (a)	10/30/2019	10,300,000	$62.69	$0.63000	$6,489,000	$650,000	$7,139,000	$645,707,000	1.106%
		Average									**2.779%**
1	ATO	Atmos Energy Corp.	11/30/2018	7,008,087	$92.75	$0.97690	$6,846,200	$1,000,000	$7,846,200	$650,000,069	1.207%
2	CPK	Chesapeake Utilities	9/23/2016	960,488	$62.26	$2.33000	$2,237,937	$162,046	$2,399,983	$59,799,983	4.013%
3	NJR	New Jersey Resources	12/4/2019	5,700,000	$41.25	$1.23750	$7,053,750	$500,000	$7,553,750	$235,125,000	3.213%
4	NI	NiSource Inc.	5/3/2017	N/A	N/A	N/A	$10,000,000	$57,950	$10,057,950	$500,000,000	2.012%
5	NWN	Northwest Nat. Holding Co.	6/4/2019	1,250,000	$67.00	$2.17750	$2,721,875	$400,000	$3,121,875	$83,750,000	3.728%
6	OGS	ONE Gas, Inc.					N/A				
7	SJI	South Jersey Industries	4/20/2018	11,016,949	$29.50	$1.03250	$11,375,000	$700,000	$12,075,000	$324,999,996	3.715%
8	SWX	Southwest Gas	11/28/2018	3,100,000	$75.50	$2.54810	$7,899,110	$600,000	$8,499,110	$234,050,000	3.631%
9	SR	Spire Inc.	5/9/2018	2,000,000	$63.05	$2.10938	$4,218,760	$325,000	$4,543,760	$126,100,000	3.603%
10	UGI	UGI Corporation	3/18/2004	8,625,000	$32.10	$1.40440	$12,112,950	$1,149,550	$13,262,500	$276,862,500	4.790%
		Average									**3.324%**
		Average - Electric & Gas									**2.902%**

Column Notes:

(1-4) SEC Form 424B for each company.
(5) Column (2) * Column (4)
(6) SEC Form 424B for each company.
(7) Column (5) + Column (6)
(8) Column (2) * Column (3)
(9) Column (7) / Column (8)

Note (a): Underwriting discount computed as the difference between the current market price and the price offered to the issuing company by the underwriters.

DIVIDEND YIELD

	Company	Industry Group	(a) Price	(b) Dividends	Yield
1	Allstate Corp.	Insurance (Prop/Cas.)	$ 94.51	$ 2.16	2.3%
2	Amdocs Ltd.	IT Services	$ 58.04	$ 1.31	2.3%
3	Amer. Tower 'A'	Wireless Networking	$ 232.44	$ 4.58	2.0%
4	AT&T Inc.	Telecom. Services	$ 29.71	$ 2.09	7.0%
5	AvalonBay Communities	R.E.I.T.	$ 152.79	$ 6.44	4.2%
6	Bristol-Myers Squibb	Drug	$ 57.28	$ 1.80	3.1%
7	Brown-Forman 'B'	Beverage	$ 58.22	$ 0.70	1.2%
8	Campbell Soup	Food Processing	$ 48.07	$ 1.40	2.9%
9	Cboe Global Markets	Brokers & Exchanges	$ 93.51	$ 1.44	1.5%
10	Church & Dwight	Household Products	$ 67.99	$ 0.96	1.4%
11	Clorox Co.	Household Products	$ 183.19	$ 4.24	2.3%
12	CME Group	Brokers & Exchanges	$ 176.06	$ 3.40	1.9%
13	Coca-Cola	Beverage	$ 45.07	$ 1.64	3.6%
14	Colgate-Palmolive	Household Products	$ 68.53	$ 1.76	2.6%
15	Equity Residential	R.E.I.T.	$ 62.14	$ 2.43	3.9%
16	Federal Rlty. Inv. Trust	R.E.I.T.	$ 75.11	$ 4.24	5.6%
17	Gen'l Mills	Food Processing	$ 56.53	$ 1.99	3.5%
18	Hershey Co.	Food Processing	$ 136.06	$ 3.25	2.4%
19	Hormel Foods	Food Processing	$ 47.09	$ 0.98	2.1%
20	Intercontinental Exch.	Brokers & Exchanges	$ 84.22	$ 1.20	1.4%
21	Johnson & Johnson	Med Supp Non-Invasive	$ 139.85	$ 4.04	2.9%
22	Kellogg	Food Processing	$ 62.23	$ 2.30	3.7%
23	Kimberly-Clark	Household Products	$ 132.63	$ 4.28	3.2%
24	Lilly (Eli)	Drug	$ 145.21	$ 2.96	2.0%
25	Lockheed Martin	Aerospace/Defense	$ 359.49	$ 9.80	2.7%
26	McCormick & Co.	Food Processing	$ 146.23	$ 2.48	1.7%
27	McDonald's Corp.	Restaurant	$ 173.95	$ 5.10	2.9%
28	Northrop Grumman	Aerospace/Defense	$ 324.71	$ 5.28	1.6%
29	PepsiCo, Inc.	Beverage	$ 127.43	$ 4.09	3.2%
30	Procter & Gamble	Household Products	$ 114.48	$ 3.16	2.8%
31	Public Storage	R.E.I.T.	$ 191.11	$ 8.00	4.2%
32	Realty Income Corp.	R.E.I.T.	$ 51.20	$ 2.83	5.5%
33	Republic Services	Environmental	$ 76.21	$ 1.68	2.2%
34	Smucker (J.M.)	Food Processing	$ 112.83	$ 3.55	3.1%
35	Sysco Corp.	Retail/Wholesale Food	$ 47.72	$ 1.80	3.8%
36	Verizon Communic.	Telecom. Services	$ 55.77	$ 2.47	4.4%
37	Walmart Inc.	Retail Store	$ 122.18	$ 2.16	1.8%
38	Waste Management	Environmental	$ 95.96	$ 2.18	2.3%
	Average				**2.9%**

(a) Average of closing prices for 30 trading days ended May 1, 2020.

(b) The Value Line Investment Survey, *Summary & Index* (May 1, 2020).

GROWTH RATES

		(a)	(b)	(c)
		Earnings Growth		
	Company	**V Line**	**IBES**	**Zacks**
1	Allstate Corp.	9.00%	-0.74%	7.50%
2	Amdocs Ltd.	10.00%	5.60%	8.50%
3	Amer. Tower 'A'	7.50%	20.45%	14.71%
4	AT&T Inc.	5.50%	3.40%	5.53%
5	AvalonBay Communities	4.80%	2.54%	4.66%
6	Bristol-Myers Squibb	9.00%	12.15%	8.56%
7	Brown-Forman 'B'	11.00%	3.45%	n/a
8	Campbell Soup	2.00%	2.75%	7.16%
9	Cboe Global Markets	12.50%	3.24%	2.29%
10	Church & Dwight	9.00%	7.98%	8.21%
11	Clorox Co.	2.50%	4.28%	5.24%
12	CME Group	2.50%	5.13%	4.90%
13	Coca-Cola	6.50%	1.86%	5.91%
14	Colgate-Palmolive	5.50%	5.24%	5.47%
15	Equity Residential	1.20%	6.10%	5.20%
16	Federal Rlty. Inv. Trust	1.40%	6.70%	3.28%
17	Gen'l Mills	4.00%	5.69%	7.50%
18	Hershey Co.	4.50%	6.85%	7.67%
19	Hormel Foods	8.50%	4.00%	6.00%
20	Intercontinental Exch.	9.00%	9.05%	7.70%
21	Johnson & Johnson	12.00%	4.80%	6.00%
22	Kellogg	3.00%	2.16%	3.83%
23	Kimberly-Clark	7.00%	5.48%	5.04%
24	Lilly (Eli)	10.00%	12.52%	12.27%
25	Lockheed Martin	10.50%	8.78%	6.93%
26	McCormick & Co.	6.50%	2.80%	4.92%
27	McDonald's Corp.	8.00%	5.31%	7.49%
28	Northrop Grumman	10.00%	10.51%	n/a
29	PepsiCo, Inc.	6.00%	4.18%	5.61%
30	Procter & Gamble	8.50%	7.53%	7.17%
31	Public Storage	4.00%	17.00%	4.18%
32	Realty Income Corp.	6.30%	5.45%	3.23%
33	Republic Services	9.00%	7.35%	9.98%
34	Smucker (J.M.)	3.00%	1.55%	2.16%
35	Sysco Corp.	9.50%	7.40%	9.00%
36	Verizon Communic.	4.00%	1.90%	3.13%
37	Walmart Inc.	7.50%	5.68%	4.94%
38	Waste Management	8.50%	7.19%	8.47%

(a) The Value Line Investment Survey (various editions as of Apr. 24, 2020).
(b) www.finance.yahoo.com (retrieved May 2, 2020).
(c) www.zacks.com (retrieved May 2, 2019).

DCF COST OF EQUITY ESTIMATES

		(a)	(a)	(a)
		Earnings Growth		
	Company	**V Line**	**IBES**	**Zacks**
1	Allstate Corp.	11.3%	1.5%	9.8%
2	Amdocs Ltd.	12.3%	7.9%	10.8%
3	Amer. Tower 'A'	9.5%	22.4%	16.7%
4	AT&T Inc.	12.5%	10.4%	12.6%
5	AvalonBay Communities	9.0%	6.8%	8.9%
6	Bristol-Myers Squibb	12.1%	15.3%	11.7%
7	Brown-Forman 'B'	12.2%	4.7%	n/a
8	Campbell Soup	4.9%	5.7%	10.1%
9	Cboe Global Markets	14.0%	4.8%	3.8%
10	Church & Dwight	10.4%	9.4%	9.6%
11	Clorox Co.	4.8%	6.6%	7.6%
12	CME Group	4.4%	7.1%	6.8%
13	Coca-Cola	10.1%	5.5%	9.5%
14	Colgate-Palmolive	8.1%	7.8%	8.0%
15	Equity Residential	5.1%	10.0%	9.1%
16	Federal Rlty. Inv. Trust	7.0%	12.3%	8.9%
17	Gen'l Mills	7.5%	9.2%	11.0%
18	Hershey Co.	6.9%	9.2%	10.1%
19	Hormel Foods	10.6%	6.1%	8.1%
20	Intercontinental Exch.	10.4%	10.5%	9.1%
21	Johnson & Johnson	14.9%	7.7%	8.9%
22	Kellogg	6.7%	5.9%	7.5%
23	Kimberly-Clark	10.2%	8.7%	8.3%
24	Lilly (Eli)	12.0%	14.6%	14.3%
25	Lockheed Martin	13.2%	11.5%	9.7%
26	McCormick & Co.	8.2%	4.5%	6.6%
27	McDonald's Corp.	10.9%	8.2%	10.4%
28	Northrop Grumman	11.6%	12.1%	n/a
29	PepsiCo, Inc.	9.2%	7.4%	8.8%
30	Procter & Gamble	11.3%	10.3%	9.9%
31	Public Storage	8.2%	21.2%	8.4%
32	Realty Income Corp.	11.8%	11.0%	8.8%
33	Republic Services	11.2%	9.6%	12.2%
34	Smucker (J.M.)	6.1%	4.7%	5.3%
35	Sysco Corp.	13.3%	11.2%	12.8%
36	Verizon Communic.	8.4%	6.3%	7.6%
37	Walmart Inc.	9.3%	7.4%	6.7%
38	Waste Management	10.8%	9.5%	10.7%
	Average (b)	**10.5%**	**9.5%**	**9.5%**
	Midpoint (b,c)	**10.8%**	**10.6%**	**10.5%**

(a) Sum of dividend yield (p. 1) and respective growth rate (p. 2).
(b) Excludes highlighted figures.
(c) Average of low and high values.

ELECTRIC GROUP

		At Year-end 2019 (a)			Value Line Projected (b)		
	Company	**Debt**	**Preferred**	**Common Equity**	**Debt**	**Preferred**	**Common Equity**
1	Ameren Corp.	53.3%	0.0%	46.7%	48.0%	0.5%	51.5%
2	American Elec Pwr	57.3%	0.0%	42.7%	53.5%	0.0%	46.5%
3	Avangrid, Inc.	32.3%	0.0%	67.7%	40.0%	0.0%	60.0%
4	CMS Energy Corp.	72.2%	0.0%	27.8%	67.0%	0.0%	33.0%
5	Duke Energy Corp.	54.8%	0.0%	45.2%	55.0%	0.5%	44.5%
6	Eversource Energy	53.5%	0.0%	46.5%	53.5%	0.5%	46.0%
7	NextEra Energy, Inc.	49.0%	0.0%	51.0%	50.0%	0.0%	50.0%
8	OGE Energy Corp.	43.6%	0.0%	56.4%	45.5%	0.0%	54.5%
9	Pinnacle West Capital	50.4%	0.0%	49.6%	51.5%	0.0%	48.5%
10	Portland General Elec.	51.5%	0.0%	48.5%	52.5%	0.0%	47.5%
11	Pub Sv Enterprise Grp.	50.0%	0.0%	50.0%	51.0%	0.0%	49.0%
12	Sempra Energy	50.6%	0.0%	49.4%	48.5%	0.0%	51.5%
13	WEC Energy Group	53.7%	0.1%	46.1%	52.0%	0.0%	48.0%
14	Xcel Energy Inc.	57.8%	0.0%	42.2%	57.0%	0.0%	43.0%
	Average	**52.1%**	**0.0%**	**47.9%**	**51.8%**	**0.1%**	**48.1%**
	Average - Ex. High and Low	**52.1%**	**0.0%**	**47.9%**	**51.5%**	**0.1%**	**48.4%**

(a) SEC Form 10-K reports.

(b) The Value Line Investment Survey (Feb. 14, Mar. 13 and Apr. 24, 2020).

ELECTRIC GROUP OPERATING SUBSIDIARIES

Operating Company	At Year-End 2019 (a) Debt	Preferred	Common Equity
AMEREN CORP.			
Ameren Illinois Co.	46.4%	0.8%	52.8%
Union Electric Co.	49.1%	0.9%	50.0%
AMERICAN ELEC PWR			
AEP Texas, Inc.	60.6%	0.0%	39.4%
Appalachian Power Co.	51.1%	0.0%	48.9%
Indiana Michigan Power Co.	54.5%	0.0%	45.5%
Kentucky Power Co.	52.7%	0.0%	47.3%
Kingsport Power Co.	45.4%	0.0%	54.6%
Ohio Power Co.	45.4%	0.0%	54.6%
Public Service Co. of Oklahoma	50.2%	0.0%	49.8%
Southwestern Electric Pwr Co.	52.1%	0.0%	47.9%
Wheeling Power Co.	46.5%	0.0%	53.5%
AVANGRID			
Central Maine Pwr	37.5%	0.0%	62.5%
NY State E&G	51.1%	0.0%	48.9%
Rochester G&E	48.8%	0.0%	51.2%
United Illuminating	42.4%	0.0%	57.6%
CMS ENERGY			
Consumers Energy Co.	48.7%	0.2%	51.1%
DUKE ENERGY			
Duke Energy Carolinas	48.2%	0.0%	51.8%
Duke Energy Florida	54.1%	0.0%	45.9%
Duke Energy Indiana	47.0%	0.0%	53.0%
Duke Energy Ohio	41.6%	0.0%	58.4%
Duke Energy Progress	49.5%	0.0%	50.5%
Progress Energy Inc.	55.7%	0.0%	44.3%
Duke Energy Kentucky	50.6%	0.0%	49.4%
EVERSOURCE ENERGY			
Connecticut Light & Power	43.9%	1.4%	54.7%
NSTAR Electric Co.	44.3%	0.6%	55.1%
Public Service Co. of New Hampshire	52.4%	0.0%	47.6%
NEXTERA ENERGY			
Florida Power & Light	39.8%	0.0%	60.2%
Gulf Power Co.	49.7%	0.0%	50.3%
OGE ENERGY CORP.			
Oklahoma G&E	44.9%	0.0%	55.1%
PINNACLE WEST CAPITAL			
Arizona Public Service Co.	46.4%	0.0%	53.6%
PORTLAND GENERAL ELECTRIC			
Portland General Electric	50.2%	0.0%	49.8%
PUB SV ENTERPRISE GRP			
Pub Service Electric & Gas Co.	45.2%	0.0%	54.8%
SEMPRA ENERGY			
San Diego Gas & Electric	47.3%	0.0%	52.7%
Oncor Electric Delivery	43.4%	0.0%	56.6%
WEC ENERGY GROUP			
Wisconsin Electric Power Co.	43.5%	0.5%	56.0%
Wisconsin Public Service Corp.	45.4%	0.0%	54.6%
XCEL ENERGY, INC.			
Northern States Power Co. (MN)	47.8%	0.0%	52.2%
Northern States Power Co. (WI)	45.8%	0.0%	54.2%
Public Service Co. of Colorado	43.7%	0.0%	56.3%
Southwestern Public Service Co.	45.9%	0.0%	54.1%
Oklahoma G&E	44.9%	0.0%	55.1%
Minimum	**37.5%**	**0.0%**	**39.4%**
Maximum	**60.6%**	**1.4%**	**62.5%**
Average	**47.6%**	**0.1%**	**52.3%**

(a) Data from year-end 2019 Company 10-Ks and FERC Form 1 reports.

CERTIFICATE OF SERVICE

In accordance with Rule 4901-1-05, Ohio Administrative Code, the PUCO's e-filing system will electronically serve notice of the filing of this document upon the following parties. In addition, I hereby certify that a service copy of the foregoing *Direct Testimony of Adrien M. McKenzie* was sent by, or on behalf of, the undersigned counsel to the following parties of record this 15th day of June 2020, via electronic transmission.

/s/ *Steven T. Nourse*
Steven T. Nourse

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Case No(s). 20-0585-EL-AIR, 20-0586-EL-ATA, 20-0587-EL-AAM

Summary: Testimony -Direct Testimony of Adrien M. McKenzie, CFA on Behalf of Ohio Power Company electronically filed by Mr. Steven T Nourse on behalf of Ohio Power Company