

AEP OHIO EXHIBIT NO. _____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of)
Ohio Power Company for Authority to) Case No. 23-23-EL-SSO
Establish a Standard Service Offer)
Pursuant to §4928.143, Ohio Rev. Code,))
in the Form of an Electric Security Plan.)

In the Matter of the Application of)
Ohio Power Company for Approval of) Case No. 23-24-EL-AAM
Certain Accounting Authority)

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

Filed: January 6, 2023

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EXHIBITS TO DIRECT TESTIMONY

<u>Exhibit</u>	<u>Description</u>
AMM-1	Qualifications of Adrien M. McKenzie
AMM-2	Summary of Results
AMM-3	Regulatory Mechanisms – Utility Group
AMM-4	DCF Model – Utility Group
AMM-5	BR + SV Growth Rate – Utility Group
AMM-6	CAPM – Utility Group
AMM-7	Empirical CAPM – Utility Group
AMM-8	Risk Premium – Utility Group
AMM-9	Expected Earnings – Utility Group
AMM-10	Flotation Cost Study
AMM-11	DCF Model – Non-Utility Group

GLOSSARY

AEP	American Electric Power Company, Inc.
AEP Ohio or the Company	Ohio Power Company
CAPM	Capital Asset Pricing Model
CPI	Consumer Price Index
DCF	Discounted Cash Flow
DIR	Distribution Investment Rider
DPS	dividends per share
ECAPM	Empirical Capital Asset Pricing Model
EPS	earnings per share
ESP	Electric Security Plan
FERC	Federal Energy Regulatory Commission
FINCAP, Inc.	Financial Concepts and Applications, Inc.
Fitch	Fitch Ratings, Inc.
FOMC	Federal Open Market Committee
Moody's	Moody's Investors Service
MW	megawatts
PCE	Personal Consumption Expenditures
PJM	PJM Interconnection, LLC
PUCO	Public Utilities Commission of Ohio
ROE	return on equity
RRA	S&P Global Market Intelligence, RRA Regulatory Focus
S&P	S&P Global Ratings
Value Line	The Value Line Investment Survey
Zacks	Zacks Investment Research

**BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO
DIRECT TESTIMONY OF
ADRIEN M. MCKENZIE, CFA
ON BEHALF OF
OHIO POWER COMPANY**

I. INTRODUCTION

Q1. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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

Q2. IN WHAT CAPACITY ARE YOU EMPLOYED?

A2. I am President of FINCAP, Inc., a firm providing financial, economic, and policy consulting services 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 AEP Ohio, which is an operating subsidiary of AEP.

A. Overview

Q5. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS CASE?

A5. The purpose of my testimony is to present to the PUCO my independent assessment of the fair ROE for AEP Ohio.

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 – Utility Group
- Exhibit AMM-4 DCF Model – Utility Group

- Exhibit AMM-5 BR + SV Growth Rate – Utility Group
- Exhibit AMM-6 CAPM – Utility Group
- Exhibit AMM-7 Empirical CAPM – Utility Group
- Exhibit AMM-8 Risk Premium – Utility Group
- Exhibit AMM-9 Expected Earnings – Utility Group
- Exhibit AMM-10 Flotation Cost Study
- Exhibit AMM-11 DCF Model – Non-Utility Group

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

A7. To prepare my testimony, I use information from a variety of sources that would normally be relied upon by a person in my capacity. I am familiar with the Company's organization, finances, and operations from my participation in prior proceedings before the PUCO. In connection with the present filing, I consider and rely upon discussions with corporate management, publicly available financial reports, and prior regulatory filings relating to AEP Ohio. I also review information relating generally to current capital market conditions and specifically to investor perceptions, requirements, and expectations for AEP Ohio's electric utility operations. These sources, coupled with my experience in the fields of finance and utility regulation, have given me a working knowledge of the issues relevant to investors' required return for AEP Ohio, and they form the basis of my analyses and conclusions.

Q8. HOW IS YOUR TESTIMONY ORGANIZED?

A8. I first briefly review AEP Ohio's operations and finances. I then explain the development of the proxy group of electric utilities used as the basis for my quantitative analyses, including the implications of the Company's regulatory mechanisms. Next, I

1 discuss current conditions in the capital markets and their implications in evaluating a
2 just and reasonable return for the Company. With this as a background, I discuss well-
3 accepted quantitative analyses to estimate the current cost of equity for the proxy group
4 of electric utilities. These include the DCF model, the CAPM, the ECAPM, an equity
5 risk premium approach based on allowed equity returns, and reference to expected
6 earned rates of return for electric utilities, which are all methods that are commonly
7 relied on in regulatory proceedings.

8 Based on the results of my analyses, I determine a just and reasonable cost of
9 equity for AEP Ohio. My evaluation considers the specific risks for the Company's
10 electric operations in Ohio and AEP Ohio's requirements for financial strength. Further,
11 consistent with the fact that utilities must compete for capital with firms outside their
12 own industry, I corroborate my utility quantitative analyses by applying the DCF model
13 to a group of low-risk non-utility firms.

14 **B. Summary and Conclusions**

15 **Q9. WHAT IS YOUR RECOMMENDED ROE FOR AEP OHIO?**

16 A9. I apply the DCF, CAPM, ECAPM, risk premium, and expected earnings analyses to a
17 proxy group of electric utilities, with the results being summarized on Exhibit AMM-2.
18 As shown there, based on the results of my analysis, I recommend a cost of equity range
19 for the Company's electric operations of 9.8% to 11.3%, or 9.9% to 11.4% after
20 adjusting for the impact of common equity flotation costs. It is my conclusion that the
21 10.65% midpoint of this range represents a just and reasonable cost of equity that is
22 adequate to compensate AEP Ohio's investors, while maintaining the Company's
23 financial integrity and ability to attract capital on reasonable terms.

II. FUNDAMENTAL ANALYSES

1 **Q10. WHAT IS THE PURPOSE OF THIS SECTION?**

2 A10. My objective is to evaluate and recommend a just and reasonable ROE for AEP Ohio.
3 Much of my work is predicated on a comparison of the Company with the utility
4 industry, and more specifically to a proxy group of publicly traded electric utilities. As
5 a foundation for my opinions and subsequent quantitative analyses, this section briefly
6 reviews the operations and finances of AEP Ohio. In addition, I explain the basis for
7 the proxy group I used to estimate the cost of equity and examine alternative objective
8 indicators of investment risk for these firms. I also compare the investment risks of
9 AEP Ohio with my reference group and examine specific conditions impacting today's
10 capital markets. An understanding of the fundamental factors driving the risks and
11 prospects of electric utilities is essential in developing an informed opinion of investors'
12 expectations and requirements, which form the basis of a just and reasonable ROE.

13 **A. AEP Ohio**

14 **Q11. BRIEFLY DESCRIBE AEP OHIO AND ITS UTILITY OPERATIONS.**

15 A11. AEP Ohio, a wholly-owned subsidiary of AEP, is engaged in the transmission and
16 distribution of electric power to approximately 1.5 million customers in a service area
17 of 10,374 square miles in the northwestern, east central, eastern, and southern sections
18 of Ohio. At December 31, 2021, AEP Ohio had total assets of \$9.3 billion. During
19 2021, sales to residential customers generated approximately 55% of total revenues,
20 with 25% coming from commercial customers, and 10% from industrial consumers.
21 Wholesale sales accounted for approximately 3% of AEP Ohio's 2021 revenues, while
22 revenues from other sources contributed 7%. The Company's transmission and
23 distribution facilities consist of approximately 45,000 miles of transmission and
24 distribution lines. AEP Ohio is a member of PJM, a FERC-approved transmission

1 organization and provides regional transmission service pursuant to the PJM Open
2 Access Transmission Tariff.

3 **Q12. PLEASE DESCRIBE THE AEP SYSTEM.**

4 A12. AEP delivers electricity to more than 5 million customers across eleven states. AEP is
5 one of the largest electric utilities in the U.S., with its combined utility system including
6 approximately 27,000 MW of generating capacity, 40,000 miles of transmission lines,
7 and 224,000 miles of distribution lines. Coal-fired power plants account for
8 approximately 42% of AEP's generating capacity, while natural gas represents 28% and
9 nuclear 8%. The remaining capacity comes from wind, hydro, pumped storage and
10 other sources, including energy efficiency. AEP's revenues totaled approximately \$16.8
11 billion in the most recent fiscal year, with total assets at year-end 2021 of \$87.7 billion.

12 **Q13. WHERE DOES AEP OHIO OBTAIN THE CAPITAL USED TO FINANCE ITS**
13 **INVESTMENT IN UTILITY PLANT?**

14 A13. As a wholly-owned subsidiary of AEP, the Company obtains common equity capital
15 solely from its parent, whose common stock is publicly traded on the NASDAQ. In
16 addition to capital supplied by AEP, AEP Ohio also issues debt securities directly under
17 its own name and has been assigned a long-term issuer rating of Baa1 by Moody's,
18 corporate credit rating of A- by S&P, and a long-term issuer default rating of A- by Fitch.

19 **Q14. DOES AEP OHIO ANTICIPATE THE NEED FOR ADDITIONAL CAPITAL**
20 **GOING FORWARD?**

21 A14. Yes. AEP Ohio will require capital investment to provide for necessary maintenance
22 and replacements of its utility infrastructure, as well as to fund investment in new
23 facilities. Capital expenditures are expected to total approximately \$788 million in 2022
24 alone.¹ In explaining its recent decision to downgrade AEP Ohio's credit ratings,
25 Moody's informed investors that, "Significant increases to debt to finance Ohio Power's

¹ American Electric Power Co., 2021 Form 10-K Report at 53 (Feb. 24, 2022).

1 high capital expenditures continue to exert negative pressure on a credit profile already
2 weakened by the loss of commission approved transition riders in 2018,” and advised
3 that supportive regulatory treatment would be needed to bolster credit metrics and
4 maintain existing ratings.² Similarly, S&P cited expected annual capital expenditures
5 on the order of \$650 million to \$1 billion over the next few years and noted that this
6 elevated capital spending is a key driver that would require access to financing in light
7 of negative discretionary cash flow.³

8 **B. Determination of the Proxy Group**

9 **Q15. HOW DO YOU IMPLEMENT QUANTITATIVE METHODS TO ESTIMATE** 10 **THE COST OF COMMON EQUITY FOR AEP OHIO?**

11 A15. Application of quantitative methods to estimate the cost of common equity requires
12 observable capital market data, such as stock prices and beta values. Moreover, even
13 for a firm with publicly traded stock, the cost of common equity can only be estimated.
14 As a result, applying quantitative models using observable market data only produces
15 an estimate that inherently includes some degree of observation error. Thus, the
16 accepted approach to increase confidence in the results is to apply quantitative methods
17 to a proxy group of publicly traded companies that investors regard as risk comparable.
18 The results of the analysis on the sample of companies are relied upon to establish a
19 range of reasonableness for the cost of equity for the specific company at issue.

20 **Q16. HOW DO YOU IDENTIFY THE PROXY GROUP OF ELECTRIC UTILITIES** 21 **RELIED ON FOR YOUR ANALYSES?**

22 A16. To reflect the risks and prospects associated with AEP Ohio’s jurisdictional electric
23 operations, I began with the following criteria to identify a proxy group of utilities:

² Moody’s Investors Service, *Moody’s downgrades Ohio Power to Baa1, outlook stable*, Rating Action (Aug. 22, 2022).

³ S&P Global Ratings, *Ohio Power Co.*, RatingsDirect (Jan. 29, 2021).

1. Included in the Electric Utility Industry groups compiled by Value Line.⁴
2. Paid common dividends over the last six months and have not announced a dividend cut since that time.
3. No ongoing involvement in a major merger or acquisition that would distort quantitative results.
4. Assigned a Value Line Safety Rank of “1” or “2”.
5. Assigned a Value Line Financial Strength Rating of “B++” or higher.

In addition, my analysis also considered credit ratings from Moody’s and S&P in evaluating relative risk. Specifically, I excluded any companies with ratings more than one “notch” higher or lower than AEP Ohio’s corporate credit ratings of Baa1 and A- assigned by Moody’s and S&P, respectively. These criteria result in a proxy group composed of twenty-one companies, which I refer to as the “Utility Group.”

C. Relative Risks of the Utility Group and AEP Ohio

Q17. DO YOU EVALUATE INVESTORS’ RISK PERCEPTIONS FOR THE UTILITY GROUP?

A17. Yes. 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

³ In addition to the companies included in Value Line’s electric utility industry groups, I also considered Algonquin Power & Utilities Company and Emera, Inc, which would both be regarded as comparable utility investment opportunities by investors. Neither of these companies met my required screening criteria.

1 referenced by investors, credit ratings are also frequently used as a primary risk indicator
2 in establishing proxy groups to estimate the cost of common equity.

3 While credit ratings provide the most widely referenced benchmark for
4 investment risks, the quality rankings published by Value Line provide an important and
5 objective assessment of relative risks that are considered by investors in forming their
6 expectations and measure the risks associated with common stocks. Value Line's
7 primary risk indicator is its Safety Rank, which ranges from "1" (Safest) to "5"
8 (Riskiest). This overall risk measure is intended to capture the total risk of a stock and
9 incorporates elements of stock price stability and financial strength. Given that Value
10 Line is perhaps the most widely available source of investment advisory information,
11 its Safety Rank provides useful guidance regarding the risk perceptions of investors.

12 The Financial Strength Rating is designed as a guide to overall financial strength
13 and creditworthiness, with the key inputs including financial leverage, business
14 volatility measures, and company size. Value Line's Financial Strength Ratings range
15 from "A++" (strongest) down to "C" (weakest) in nine steps. These objectives,
16 published indicators incorporate consideration of a broad spectrum of risks, including
17 financial and business position, relative size, and exposure to firm-specific factors.

18 Finally, beta measures a utility's stock price volatility relative to the market as a
19 whole and reflects the tendency of a stock's price to follow changes in the market. A
20 stock that tends to respond less to market movements has a beta less than 1.00, while
21 stocks that tend to move more than the market have betas greater than 1.00. Beta is the
22 only relevant measure of investment risk under modern capital market theory and is
23 widely cited in academics and in the investment industry as a guide to investors' risk
24 perceptions. Moreover, in my experience Value Line is the most widely referenced
25 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 1.00.⁵

Q18. HOW DOES THE OVERALL RISK OF YOUR PROXY GROUP COMPARE TO AEP OHIO?

A18. Table AMM-1 compares the Utility Group to the Company across the four key indicia 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:

**TABLE AMM-1
COMPARISON OF RISK INDICATORS**

	S&P	Moody's	Value Line		
			Safety Rank	Financial Strength	Beta
Utility Group	BBB+	Baa2	2	A	0.88
AEP Ohio	A-	Baa1	2	B++	0.90

The S&P and Moody's credit ratings corresponding to the Utility Group are slightly higher than AEP Ohio's ratings, indicating somewhat less risk. The average Value Line Safety Rank for the Utility Group is identical to that corresponding to AEP Ohio, while the remaining risk measure indicate slightly less risk for the Utility Group than for the Company. Considered together, a comparison of these objective measures, which incorporate a broad spectrum of risks, including financial and business position, regulatory recovery mechanisms, and exposure to company specific factors, indicates that investors would likely conclude that the overall investment risks for the firms in the Utility Group are generally comparable to that of AEP Ohio.

⁵ Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 71.

1 **Q19. WOULD INVESTORS ALSO CONSIDER THE IMPLICATIONS OF**
2 **REGULATORY MECHANISMS IN EVALUATING A UTILITY’S RELATIVE**
3 **RISKS?**

4 A19. Yes. In response to the increasing sensitivity over fluctuations in costs and the
5 importance of advancing other public interest goals such as reliability, energy
6 conservation, and safety, utilities and their regulators have sought to mitigate cost
7 recovery uncertainty and align the interest of utilities and their customers. As a result,
8 adjustment mechanisms, cost trackers, and future test years have become increasingly
9 prevalent, along with alternatives to traditional ratemaking such as formula rates and
10 multi-year rate plans. *RRA Regulatory Focus* concluded in its most recent review of
11 adjustment clauses that:

12 More recently and with greater frequency, commissions have approved
13 mechanisms that permit the costs associated with the construction of new
14 generation or delivery infrastructure to be used, effectively including
15 these items in rate base without the need for a full rate case. In some
16 instances, these mechanisms may even provide the utilities a cash return
17 on construction work in progress.

18 . . . [C]ertain types of adjustment clauses are more prevalent than others.
19 For example, those that address electric fuel and gas commodity charges
20 are in place in all jurisdictions. Also, about two-thirds of all utilities have
21 riders in place to recover costs related to energy efficiency programs, and
22 roughly half of the utilities have some type of decoupling mechanism in
23 place.⁶

24 **Q20. HAVE SIMILAR REGULATORY MECHANISMS BEEN APPROVED FOR AEP**
25 **OHIO?**

26 A20. Yes. Under the terms of its ESP in effect until 2024, the Company operates under a
27 number of riders designed to more efficiently recover certain expenses necessary to
28 provide service, including costs related to infrastructure investment, conservation

⁶ S&P Global Market Intelligence, *Adjustment Clause: A state-by-state overview*, RRA Regulatory Focus (Jul. 18, 2022).

1 programs, and renewable energy. AEP Ohio also benefits from a rider to recover the
2 costs of a legacy power purchase agreement.⁷ While the Company previously operated
3 under a rate decoupling mechanism for residential and commercial customers, this was
4 discontinued in 2021 as part of the settlement of AEP Ohio's last rate proceeding.⁸

5 **Q21. DO AEP OHIO'S REGULATORY MECHANISMS SET IT APART FROM**
6 **OTHER FIRMS OPERATING IN THE UTILITY INDUSTRY?**

7 A21. No. A broad array of adjustment mechanisms are also available to the companies in my
8 proxy group of electric utilities.⁹ As shown on Exhibit AMM-3, the companies in the
9 Utility Group operate under a wide variety of cost adjustment mechanisms, which
10 encompass revenue decoupling and adjustment clauses designed to address rising
11 capital investment outside of a traditional rate case and increasing costs of
12 environmental compliance measures, as well as riders to recover the cost of
13 environmental compliance measures, bad debt expenses, certain taxes and fees, post-
14 retirement employee benefit costs and transmission-related charges.

15 Moreover, while AEP Ohio's regulatory mechanisms are supportive, as
16 discussed by Company witness Christine M Minton, the Company continues to
17 experience regulatory lag associated with revenue cap provisions under the DIR, which
18 limit AEP Ohio's ability to earn a fair ROE. In turn, this contributes to ongoing pressure
19 to the Company's credit metrics and its weakening financial profile, as documented by
20 Moody's.¹⁰

⁷ 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.

⁸ Case No. 20-585-EL-AIR, *Joint Stipulation and Recommendation* (Mar. 12, 2021).

⁹ 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.

¹⁰ Moody's Investors Service, *Ohio Power Company, Update following downgrade to Baa1*, Credit Opinion (Aug. 26, 2022).

1 **Q22. WHAT OTHER CONSIDERATIONS ARE RELEVANT TO INVESTORS’**
2 **ASSESSMENT OF AEP OHIO?**

3 A22. While recognizing that the regulatory framework is generally credit supportive for AEP
4 Ohio, investors are also exposed to considerable uncertainty due to the propensity for
5 legal review of the PUCO’s decisions. For example, Moody’s cited a 2018 appeal filed
6 with the Ohio Supreme Court challenging various riders approved for the Company,
7 which was not resolved until January 2020.¹¹ Moody’s has recognized that appeals to
8 the Ohio Supreme Court are lengthy and can undermine regulatory certainty for the
9 state’s utilities.¹² As S&P Global Market Intelligence noted, “the tendency for
10 commission rulings to come before the courts and for extensive litigation as appeals go
11 through several layers of court review may add an untenable degree of uncertainty to
12 the regulatory process.”¹³ S&P cited AEP Ohio’s lack of regulatory diversity as a factor
13 contributing to the Company’s business risk,¹⁴ while Moody’s emphasized the
14 importance of supportive regulatory treatment in forestalling a potential downgrade for
15 AEP Ohio.¹⁵

III. CAPITAL MARKET ESTIMATES AND ANALYSES

16 **Q23. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

17 A23. This section presents capital market estimates of the cost of equity. First, I discuss the
18 current outlook for capital costs, including expectations for interest rates. I then address

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

¹² 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 last 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. . .”).

¹³ S&P Global Market Intelligence, *State Regulatory Evaluations*, RRA Regulatory Focus (Mar. 25, 2020).

¹⁴ S&P Global Ratings, *Ohio Power Co.*, RatingsDirect (Apr. 7, 2020).

¹⁵ Moody’s Investors Service, *Ohio Power Company, Update following negative outlook*, Credit Opinion (Mar. 11, 2020).

1 the concept of the cost of common equity, along with the risk-return tradeoff principle
2 fundamental to capital markets. Next, I describe various quantitative analyses
3 conducted to estimate the cost of common equity for the proxy group of comparable
4 risk utilities.

5 **A. Outlook for Capital Costs**

6 **Q24. PLEASE SUMMARIZE CURRENT ECONOMIC CONDITIONS.**

7 A24. U.S. real GDP contracted 3.4% during 2020, but with the easing of lockdowns
8 accompanying the COVID-19 vaccine rollout, the economic outlook improved
9 significantly in 2021, with GDP growing at a pace of 5.7%. More recently, regional
10 increases in COVID-19 cases, expiration of government assistance payments, and
11 declines in wholesale trade led GDP to decrease at an annual rate of 1.6% and 0.9% in
12 the first two quarters of 2022.¹⁶ Meanwhile, indicators of employment remained stable,
13 with the national unemployment rate increasing slightly in August 2022 to 3.7%.¹⁷

14 The underlying risk and price pressures associated with the COVID-19
15 pandemic were overshadowed by Russia's full-scale invasion of Ukraine on February
16 24, 2022. The dramatic increase in geopolitical risks has also been accompanied by
17 heightened economic uncertainties as inflationary pressures due to COVID-19 supply
18 chain disruptions were further stoked by sharp increases in commodity prices stemming
19 from a wide-ranging sanctions regime targeting the Russian economy. The twin threats
20 posed by inflation and military conflict in Ukraine have led to extreme volatility in the
21 capital markets as investors have been forced to dramatically revise their risk
22 perceptions and return requirements in the face of the severe disruptions to commerce
23 and the world economy.

¹⁶ <https://www.bea.gov/news/2022/gross-domestic-product-second-quarter-2022-advance-estimate> (last visited Aug. 6, 2022).

¹⁷ <https://www.bls.gov/charts/employment-situation/civilian-unemployment-rate.htm> (last visited Aug. 25, 2022).

1 The onset of war in Ukraine and a dramatic rise in inflation has led to sharp
2 declines in global equity markets as investors come to grips with the related exposures.
3 S&P noted that the conflict “could have profound effects on macroeconomic prospects
4 and credit conditions around the world,”¹⁸ concluding that:

5 The implications of the Russia-Ukraine conflict could come in the form
6 of energy supply disruptions or price shocks, sustained inflationary
7 pressures, a drag on economic growth or policy missteps by central
8 banks, a migrant crisis in Eastern Europe, additional cyber-attacks
9 between Russia and its perceived adversaries, risk-repricing that drives
10 up borrowing costs or limits funding access, and profit erosion for certain
11 sectors.¹⁹

12 As Federal Reserve Chair Powell concluded, “The financial and economic implications
13 for the global economy and the U.S. Economy are highly uncertain.”²⁰

14 Stimulative monetary and fiscal policies, coupled with economic ramifications
15 stemming from the conflict in Ukraine, have led to increasing concern that inflation may
16 remain significantly above the 2% longer-run benchmark cited by the Federal Reserve.
17 The U.S. inflation rate as measured by the CPI was 8.3% in August 2022, after peaking
18 in June 2022, which was its highest level since November 1981.²¹ As illustrated in
19 Figure AMM-1, below, inflation has now exceeded 6% for eleven straight months. The
20 so-called “core” price index, which excludes more volatile energy and food costs, rose
21 at an annual rate of 6.3% in August 2022.

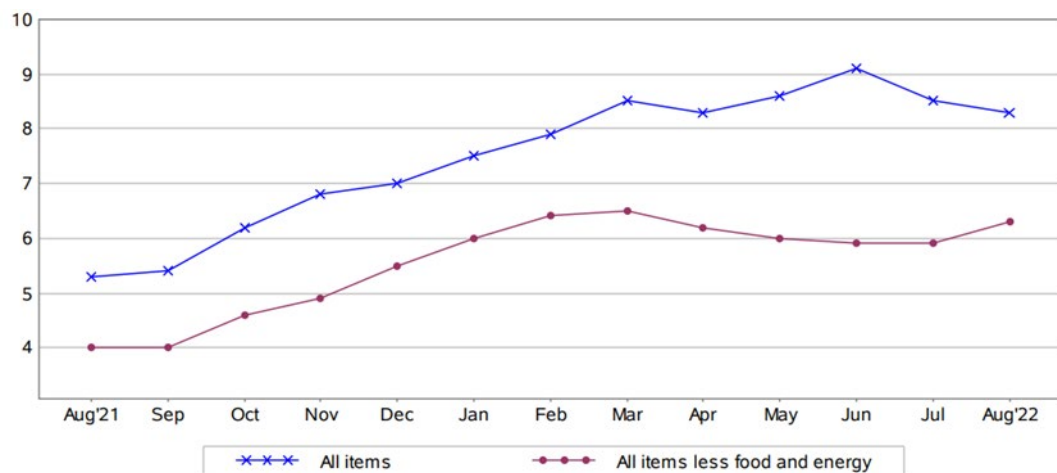
¹⁸ S&P Global Ratings, *Russia-Ukraine Military Conflict: Key takeaways From Out Articles*, Comments (Mar. 8, 2022).

¹⁹ *Id.*

²⁰ Federal Reserve, *Transcript of Chair Powell’s Press Conference* (Mar. 16, 2021), <https://www.federalreserve.gov/monetarypolicy/fomcpressconf20220316.htm>.

²¹ <https://www.bls.gov/news.release/pdf/cpi.pdf> (last visited Sep. 14, 2022).

FIGURE AMM-1
TREND IN CONSUMER PRICE INDEX



Similarly, PCE inflation rose 6.3% in July 2022, or 4.8% after excluding more volatile food and energy cost.²² As Federal Reserve Chair Jerome Powell recently noted:

Inflation is running well above 2 percent, and high inflation has continued to spread through the economy. While the lower inflation reading for July are welcome, a single month's improvement falls far short of what the Committee will need to see before we are confident that inflation is moving down.”²³

Q25. WHAT IMPACT DOES RISING INFLATION EXPECTATIONS HAVE ON THE RETURN THAT EQUITY INVESTORS REQUIRE FROM AEP OHIO?

A25. Implicit in the required rate of return for long-term capital—whether debt or common equity—is compensation for expected inflation. This is highlighted in the textbook, *Financial Management, Theory and Practice*:

²² <https://www.bea.gov/news/2022/personal-income-and-outlays-july-2022> (last visited Sep. 14, 2022).

²³ Chair Jerome H. Powell, *Monetary Policy and Price Stability*, Speech (Aug. 26, 2022).

<https://www.federalreserve.gov/newsevents/speech/powell20220826a.htm> (last visited Aug. 31, 2022).

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

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

9 **Q26. HOW HAVE COMMON EQUITY MARKETS BEEN IMPACTED BY**
10 **COVID-19?**

11 A26. The threats posed by the coronavirus pandemic and military conflict in Ukraine have
12 led to extreme volatility in the capital markets as investors have been forced to
13 dramatically revise their risk perceptions and return requirements in the face of the
14 severe disruptions to commerce and the world economy. Despite the actions of the
15 world's central banks to ease market strains and bolster the economy, global equity
16 markets have experienced precipitous declines as investors come to grips with the
17 related exposures.

18 The greater uncertainty faced by equity investors is confirmed by reference to
19 the VIX,²⁵ which has trended sharply higher in 2022. Similarly, the Merrill Lynch
20 Option Volatility Estimate, or "MOVE" index, which is a market-based measure of
21 uncertainty about interest rates and is often referred to as the "investor fear gauge," is
22 also elevated. So far during 2022, the average of the MOVE index is over 80% higher

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

²⁵ The VIX is one of the most widely recognized measures of expectations of near-term volatility and market sentiment referenced by the investment community.

1 than it was during 2021.²⁶ This ongoing volatility in capital markets is evidence of the
2 greater risks now faced by investors.

3 **Q27. HAVE UTILITIES AND THEIR INVESTORS ALSO FACED HEIGHTENED**
4 **LEVELS OF UNCERTAINTY?**

5 A27. Yes. Concerns over weakening credit quality prompted S&P to revise its outlook for
6 the regulated utility industry from “stable” to “negative.”²⁷ As S&P explained:

7 Even before the current downturn and COVID-19, a confluence of
8 factors, including the adverse impacts of tax reform, historically high
9 capital spending, and associated increased debt, resulted in little cushion
10 in ratings for unexpected operating challenges.²⁸

11 While recognizing that regulatory protections have helped to mitigate the worst of the
12 coronavirus pandemic, S&P concluded that credit quality in the U.S. utility industry
13 weakened during 2020 and 2021, in part due to regulatory lag attributable to
14 COVID-19.²⁹

15 Meanwhile, rising inflation expectations also pose a challenge for utilities, with
16 S&P recently noting that “the threat of inflation comes at a time when credit metrics are
17 already under pressure relative to downside ratings thresholds.”³⁰ S&P recently

²⁶ At September 14, 2022, the average value of the MOVE index for year-to-date 2022 is 113.98, whereas the average value for all of 2021 is 61.83.

<https://www.google.com/finance/quote/MOVE:INDEXNYSEGIS?sa=X&ved=2ahUKEwiWvr7E-uH0AhVcl2oFHQLTAzsQ3ecFegQIBxAc&window=MAX> (last visited Sep. 15, 2022).

²⁷ S&P Global Ratings, *COVID-19: The Outlook For North American Regulated Utilities Turns Negative*, RatingsDirect (April 2, 2020).

²⁸ 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).

²⁹ S&P Global Ratings, *Report: North American Regulated Utilities’ Credit Quality Begins The Year On A Downward Path*, RatingsDirect (Apr. 7, 2021); S&P Global Ratings, *For The First Time Ever, The Median Investor-Owned Utility Ratings Falls To The ‘BBB’ Category*, RatingsDirect (Jan. 20, 2022).

³⁰ S&P Global Ratings, *Will Rising Inflation Threaten North American Investor-Owned Regulated Utilities’ Credit Quality?* (Jul. 20, 2021).

1 affirmed its negative outlook for investor-owned utilities, noting that “risk will continue
2 to pressure the credit quality of the industry in 2022.”³¹ As S&P elaborated:

3 Recently, several new credit risks have emerged, including inflation,
4 higher interest rates, and rising commodity prices. Persistent pressure
5 from any of these risks would likely lead to a further weakening of the
6 industry’s credit quality in 2022.³²

7 **Q28. DO CHANGES IN UTILITY COMPANY BETA VALUES SINCE THE**
8 **PANDEMIC BEGAN CORROBORATE AN INCREASE IN INDUSTRY RISK?**

9 A28. Yes. As I explain later, beta is used by the investment community as an important guide
10 to investors’ risk perceptions. As shown in Table AMM-1 previously, the average beta
11 for the Utility Group is 0.87.³³ Prior to the pandemic, the average beta for the same
12 group of companies was 0.53.³⁴

13 The significant shift in pre- and post-pandemic beta values for the Utility Group
14 is further exemplified in Figure AMM-2 below. As illustrated there, the Utility Group’s
15 average beta value increased significantly with the beginning of the pandemic in March
16 2020, continued to increase during 2021, and has remained elevated in 2022. This
17 dramatic increase in a primary gauge of investors’ risk perceptions is further proof of
18 the rise in the risk of utility common stocks.

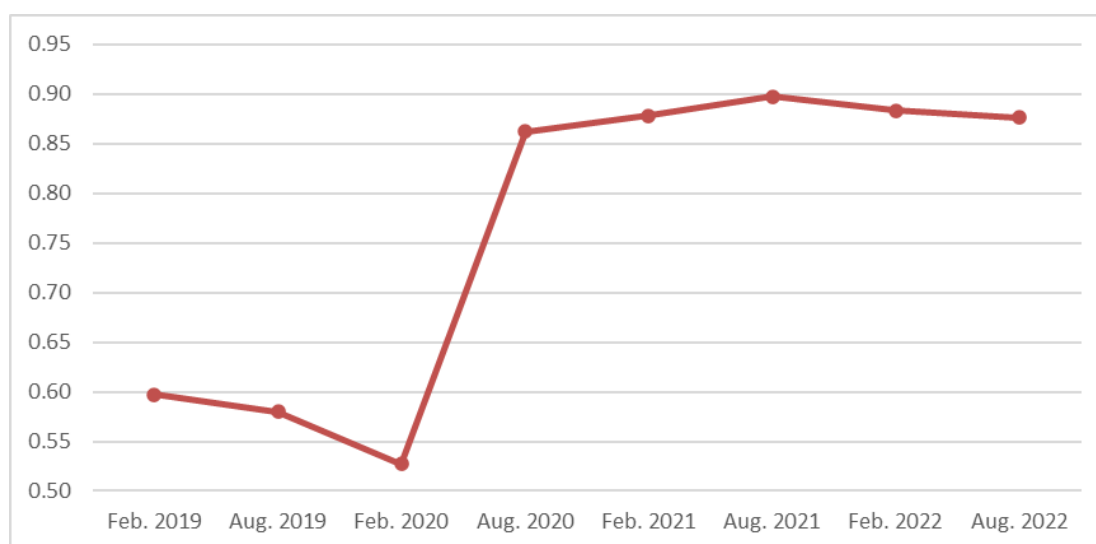
³¹ S&P Global Ratings, *For The First Time Ever, The Median Investor-Owned Utility Ratings Falls To The ‘BBB’ Category*, RatingsDirect (Jan. 20, 2022).

³² *Id.*

³³ As indicated on Exhibit AMM-6, this is based on data as of August 12, 2022.

³⁴ The Value Line Investment Survey, *Summary & Index* (Feb. 14, 2020).

FIGURE AMM-2
UTILITY GROUP BETA VALUES



Q29. HAVE INCREASED RISKS AND HIGHER INFLATION RESULTED IN HIGHER CAPITAL COSTS?

A29. Yes. While the cost of equity is unobservable, the yields on long-term bonds provide a widely referenced benchmark for the direction of capital costs, including required returns on common stocks. Table AMM-2 below compares the average yields on Treasury securities and Baa-rated public utility bonds during 2021 with those required in August 2022.

TABLE AMM-2
BOND YIELD TRENDS

Series	August 2022	2021	Change (bps)
10-Year Treasury Bonds	2.90%	1.44%	146
30-Year Treasury Bonds	3.13%	2.05%	108
Baa Utility Bonds	5.09%	3.35%	174

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

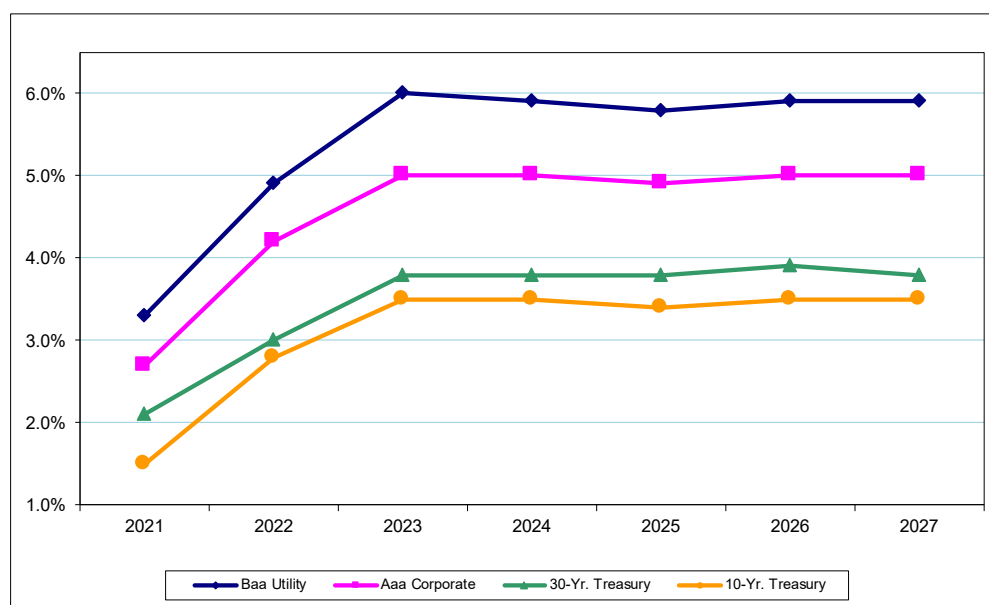
As shown above, trends in bond yields since 2021 document a substantial increase in the returns on long-term capital demanded by investors. With respect to

utility bond yields—which are the most relevant indicator in gauging the implications for the Company’s common equity investors—average yields are now over 170 basis points above 2021 levels.

Q30. ARE BOND YIELDS EXPECTED TO REMAIN ELEVATED OVER THE NEXT FEW YEARS?

A30. Yes. As illustrated in Figure AMM-3 below, economic forecasters anticipate a sustained increase in bond yields over the near-term.

**FIGURE AMM-3
INTEREST RATE TRENDS**



	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>Change (bps)</u> <u>2021-27</u>
(a) 10-Yr. Treasury	1.5%	2.8%	3.5%	3.5%	3.4%	3.5%	3.5%	200
(a) 30-Yr. Treasury	2.1%	3.0%	3.8%	3.8%	3.8%	3.9%	3.8%	170
(a) Aaa Corporate	2.7%	4.2%	5.0%	5.0%	4.9%	5.0%	5.0%	230
(b) Baa Utility	3.3%	4.9%	6.0%	5.9%	5.8%	5.9%	5.9%	260

(a) Wolters Kluwer, Blue Chip Financial Forecasts (Jun. 1, 2022).

(b) Based on projected yields on Baa corporate bonds (Wolters Kluwer, Blue Chip Financial Forecasts (Jun. 1, 2022)), adjusted for six-month average yield spreads at Aug. 2022 (Moody's Investors Service).

1 **Q31. ARE EXPECTATIONS OF HIGHER BOND YIELDS AND EXPOSURE TO**
2 **INFLATION CONSISTENT WITH RECENT FEDERAL RESERVE ACTIONS**
3 **AND THE VIEWS OF THE FOMC?**³⁵

4 A31. Yes. As of its policy meeting in September, the FOMC has responded to concerns over
5 accelerating inflation by raising the benchmark range for the federal funds rate by a total
6 of 3.00% in 2022. Chair Powell noted that:

7 At today's meeting the Committee raised the target range for the federal
8 funds rate by $\frac{3}{4}$ percentage point, bringing the target range to 3 to 3-1/4
9 percent. And we are continuing the process of significantly reducing the
10 size of our balance sheet, which plays an important role in firming the
11 stance of monetary policy. . . . Restoring price stability will likely
12 require maintaining a restrictive policy stance for some time. The
13 historical record strongly cautions against prematurely loosening
14 policy.³⁶

15 In conjunction with the September 20-21, 2022 policy meeting, the FOMC
16 submitted updated projections about where short-term interest rates are headed. The
17 results are the dot plot—a visual representation of where members think interest rates
18 will trend over the short, medium, and longer run. As shown in Figure AMM-4 below,
19 the most recent dot plot indicates that all of the FOMC participants expect its benchmark
20 interest rate to be dramatically higher than current levels by the end of 2022,³⁷ with the
21 median of the federal funds target range continuing to rise from 3.125% currently to
22 4.375%.

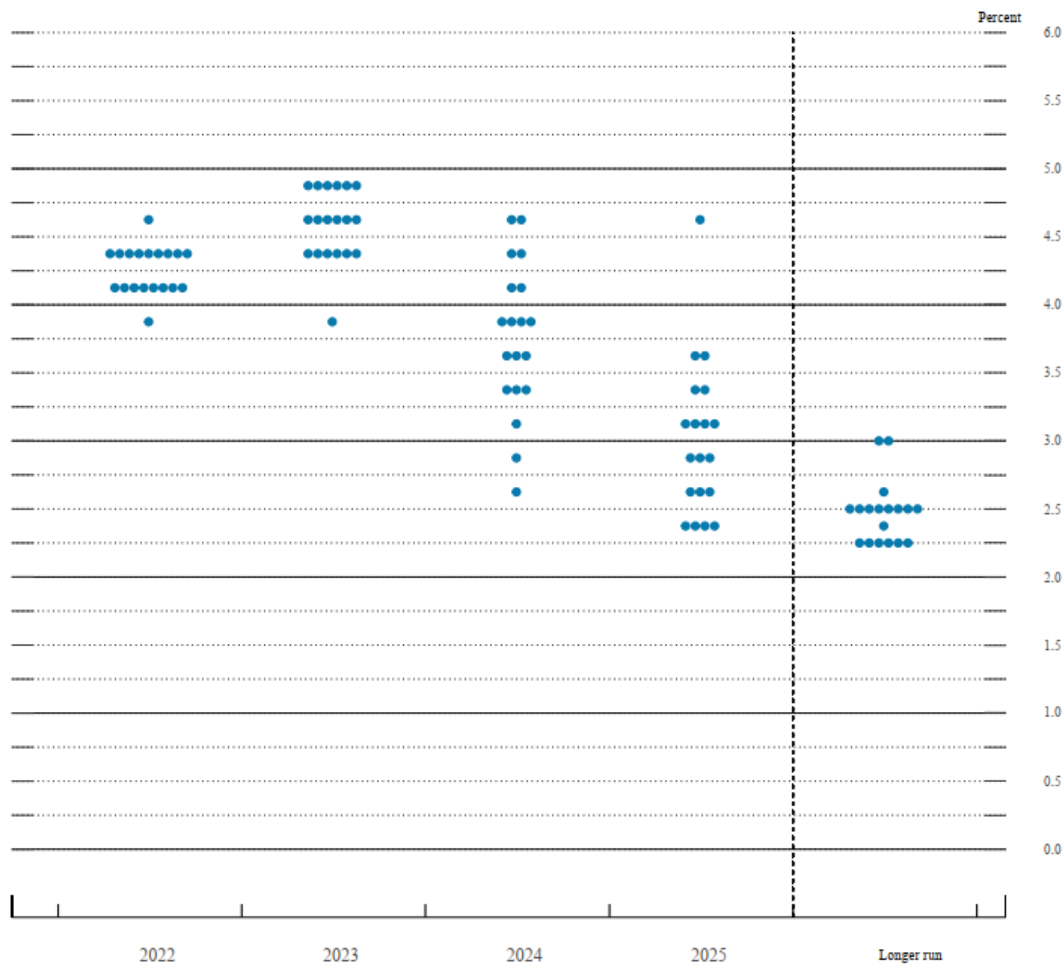
³⁵ The FOMC is a committee composed of twelve members that serves as the monetary policymaking body of the Federal Reserve System.

³⁶ <https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20220921.pdf>.

³⁷ *Summary of Economic Projections* (Jun. 15, 2022).

<https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20220316.pdf>.

**FIGURE AMM-4
FEDERAL RESERVE DOT PLOT**



In addition to these increases, Fed Chair Powell has surmised that the significant draw-down of its balance sheet holdings that began in June 2022 could be the equivalent of another one quarter percent rate hike over the course of a year.³⁸

Q32. WHAT IMPLICATIONS DO THESE FORECASTS HAVE IN EVALUATING A FAIR ROE FOR AEP OHIO?

A32. These expectations for higher interest rates suggest that long-term capital costs—including the cost of equity—will increase significantly over the intermediate term. As

³⁸ Federal Reserve, *Transcript of Chair Powell's Press Conference* (May 4, 2022), <https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20220504.pdf>.

1 a result, cost of equity estimates based on current data are likely to understate the return
2 that will be required by investors over the period when the rates established in this
3 proceeding will be in effect.

4 **Q33. WOULD IT BE REASONABLE TO DISREGARD THE IMPLICATIONS OF**
5 **CURRENT CAPITAL MARKET CONDITIONS IN ESTABLISHING A FAIR**
6 **ROE FOR AEP OHIO?**

7 A33. No. They reflect the reality of the situation in which AEP Ohio must attract and retain
8 capital. The standards underlying a fair rate of return require an authorized ROE for the
9 Company that is competitive with other investments of comparable risk and sufficient
10 to preserve its ability to maintain access to capital on reasonable terms. These standards
11 can only be met by considering the requirements of investors over the time period when
12 the rates established in this proceeding will be in effect. If the upward shift in investors'
13 risk perceptions and required rates of return for long-term capital is not incorporated in
14 the allowed ROE, the results will fail to meet the comparable earnings standard that is
15 fundamental in determining the cost of capital. From a more practical perspective,
16 failing to provide investors with the opportunity to earn a rate of return commensurate
17 with AEP Ohio's risks will weaken its financial integrity, while hampering the
18 Company's ability to attract necessary capital.

19 **B. Economic Standards**

20 **Q34. WHAT FUNDAMENTAL ECONOMIC PRINCIPLE UNDERLIES THE COST**
21 **OF EQUITY CONCEPT?**

22 A34. The fundamental economic principle underlying the cost of equity concept is the notion
23 that investors are risk averse. In capital markets where relatively risk-free assets are
24 available (e.g., U.S. Treasury securities), investors can be induced to hold riskier assets
25 only if they are offered a premium, or additional return, above the rate of return on a
26 risk-free asset. Because all assets compete for investor funds, riskier assets must yield

1 a higher expected rate of return than safer assets to induce investors to invest and hold
2 them.

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

$$k_i = R_f + RP_i$$

5
6 where: R_f = Risk-free rate of return, and
7 RP_i = Risk premium required to hold riskier asset i .

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

11 **Q35. IS THERE EVIDENCE THAT THE RISK-RETURN TRADEOFF PRINCIPLE**
12 **OPERATES IN THE CAPITAL MARKETS?**

13 A35. Yes. The risk-return tradeoff can be readily documented in segments of the capital
14 markets where required rates of return can be directly inferred from market data and
15 where generally accepted measures of risk exist. Bond yields, for example, reflect
16 investors' expected rates of return, and bond ratings measure the risk of individual bond
17 issues. Comparing the observed yields on government securities, which are considered
18 free of default risk, to the yields on bonds of various rating categories demonstrates that
19 the risk-return tradeoff does, in fact, exist.

20 **Q36. DOES THE RISK-RETURN TRADEOFF OBSERVED WITH FIXED INCOME**
21 **SECURITIES EXTEND TO COMMON STOCKS AND OTHER ASSETS?**

22 A36. It is widely accepted that the risk-return tradeoff evidenced with long-term debt extends
23 to all assets. Documenting the risk-return tradeoff for assets other than fixed income
24 securities, however, is complicated by two factors. First, there is no standard measure
25 of risk applicable to all assets. Second, for most assets – including common stock –
26 required rates of return cannot be observed. Yet there is every reason to believe that

1 investors demonstrate risk aversion in deciding whether to hold common stocks and
2 other assets, just as when choosing among fixed-income securities.

3 **Q37. IS THIS RISK-RETURN TRADEOFF LIMITED TO DIFFERENCES**
4 **BETWEEN FIRMS?**

5 A37. No. The risk-return tradeoff principle applies not only to investments in different firms,
6 but also to different securities issued by the same firm. The securities issued by a utility
7 vary considerably in risk because they have different characteristics and priorities. As
8 noted earlier, long-term debt is senior among all capital in its claim on a utility's net
9 revenues and is, therefore, the least risky. The last investors in line are common
10 shareholders: they receive only the net revenues, if any, remaining after all other
11 claimants have been paid. As a result, the rate of return that investors require from a
12 utility's common stock, the most junior and riskiest of its securities, must be
13 considerably higher than the yield offered by the utility's senior, long-term debt.

14 **Q38. WHAT ARE THE CHALLENGES IN DETERMINING A JUST AND**
15 **REASONABLE ROE FOR A REGULATED ENTERPRISE?**

16 A38. The actual return investors require is unobservable. Different methodologies have been
17 developed to estimate investors' expected and required return on capital, but all such
18 methodologies are merely theoretical tools and generally produce a range of estimates,
19 based on different assumptions and inputs. The DCF method, which is frequently
20 referenced and relied on by regulators, is only one theoretical approach to gain insight
21 into the return investors require; there are numerous other methodologies for estimating
22 the cost of capital and the ranges produced by the different approaches can vary widely.

23 **Q39. IS IT CUSTOMARY TO CONSIDER THE RESULTS OF MULTIPLE**
24 **APPROACHES WHEN EVALUATING A JUST AND REASONABLE ROE?**

25 A39. Yes. In my experience, financial analysts and regulators routinely consider the results
26 of alternative approaches in determining allowed ROEs. It is widely recognized that no

1 single method can be regarded as failsafe; with all approaches having advantages and
2 shortcomings. As FERC has noted, “[t]he determination of rate of return on equity starts
3 from the premise that there is no single approach or methodology for determining the
4 correct rate of return.”³⁹ More recently, FERC recognized the potential for any
5 application of the DCF model to produce unreliable results.⁴⁰ Similarly, a publication
6 of the Society of Utility and Regulatory Financial Analysts concluded that:

7 Each model requires the exercise of judgment as to the reasonableness
8 of the underlying assumptions of the methodology and on the
9 reasonableness of the proxies used to validate the theory. Each model
10 has its own way of examining investor behavior, its own premises, and
11 its own set of simplifications of reality. Each method proceeds from
12 different fundamental premises, most of which cannot be validated
13 empirically. Investors clearly do not subscribe to any singular method,
14 nor does the stock price reflect the application of any one single method
15 by investors.⁴¹

16 As this treatise succinctly observed, “no single model is so inherently precise
17 that it can be relied on solely to the exclusion of other theoretically sound models.”⁴²
18 Similarly, *New Regulatory Finance* concluded that:

³⁹ *Northwest Pipeline Co.*, Opinion No. 396-C, 81 FERC ¶ 61,036 at 4 (1997).

⁴⁰ *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234 at P 41 (2014).

⁴¹ David C. Parcell, *The Cost of Capital – A Practitioner’s Guide*, Society of Utility and Regulatory Financial Analysts (2010) at 84.

⁴² *Id.*

1 There is no single model that conclusively determines or estimates the
2 expected return for an individual firm. Each methodology possesses its
3 own way of examining investor behavior, its own premises, and its own
4 set of simplifications of reality. Each method proceeds from different
5 fundamental premises that cannot be validated empirically. Investors do
6 not necessarily subscribe to any one method, nor does the stock price
7 reflect the application of any one single method by the price-setting
8 investor. There is no monopoly as to which method is used by investors.
9 In the absence of any hard evidence as to which method outdoes the
10 other, all relevant evidence should be used and weighted equally, in order
11 to minimize judgmental error, measurement error, and conceptual
12 infirmities.⁴³

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

17 There are three principal reasons for our unwillingness to place a great
18 deal of weight on the results of any DCF analysis. One is. . . the failure
19 of the DCF model to conform to reality. The second is the undeniable
20 fact that rarely if ever do two expert witnesses agree on the terms of a
21 DCF equation for the same utility – for example, as we shall see in more
22 detail below, projections of future dividend cash flow and anticipated
23 price appreciation of the stock can vary widely. And, the third reason is
24 that the unadjusted DCF result is almost always well below what any
25 informed financial analysis would regard as defensible, and therefore
26 require an upward adjustment based largely on the expert witness’s
27 judgment. In these circumstances, we find it difficult to regard the results
28 of a DCF computation as any more than suggestive.⁴⁴

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

⁴³ Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 429.

⁴⁴ *Ind. Michigan Power Co.*, Cause No. 38728, 116 PUR4th, 1, 17-18 (IURC 8/24/1990).

1 **Q40. DOES THE FACT THAT AEP OHIO IS A SUBSIDIARY OF AEP IN ANY WAY**
2 **ALTER THESE FUNDAMENTAL STANDARDS UNDERLYING A JUST AND**
3 **REASONABLE ROE?**

4 A40. No. While the Company has no publicly traded common stock and AEP is AEP Ohio's
5 only shareholder, this does not change the standards governing the determination of a
6 just and reasonable ROE for the Company. Ultimately, the common equity that is
7 required to support the utility operations of AEP Ohio must be raised in the capital
8 markets, where investors consider the Company's ability to offer a rate of return that is
9 competitive with other risk-comparable alternatives. AEP Ohio must compete with
10 other investment opportunities—both external and internal—and unless there is a
11 reasonable expectation that investors will have the opportunity to earn returns
12 commensurate with the underlying risks, capital will be allocated elsewhere, the
13 Company's financial integrity will be weakened, and investors will demand an even
14 higher rate of return. AEP Ohio's ability to offer a reasonable return on investment is a
15 necessary ingredient in ensuring that customers continue to enjoy economical rates and
16 reliable service.

17 **Q41. WHAT DOES THE ABOVE DISCUSSION IMPLY WITH RESPECT TO**
18 **ESTIMATING THE ROE FOR A UTILITY?**

19 A41. Although the ROE is unobservable, it is a function of the returns available from other
20 investment alternatives and the risks to which the equity capital is exposed. Because it
21 is not readily observable, the ROE for a particular utility must be estimated by analyzing
22 information about capital market conditions generally, assessing the relative risks of the
23 company specifically, and employing various quantitative methods that focus on
24 investors' required rates of return. These various quantitative methods typically attempt
25 to infer investors' required rates of return from stock prices, interest rates, or other
26 capital market data.

C. Discounted Cash Flow Analyses

Q42. HOW IS THE DCF MODEL USED TO ESTIMATE THE COST OF COMMON EQUITY?

A42. DCF models assume that the price of a share of common stock is equal to the present value of the expected cash flows (i.e., future dividends and stock price) that will be received while holding the stock, discounted at investors' required rate of return. Rather than developing annual estimates of cash flows into perpetuity, the DCF model can be simplified to a "constant growth" form:⁴⁵

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

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.

⁴⁵ The constant growth DCF model is dependent on a number of strict assumptions, which in practice are never met. These include a constant growth rate for both dividends and earnings; a stable dividend payout ratio; the discount rate exceeds the growth rate; a constant growth rate for book value and price; a constant earned rate of return on book value; no sales of stock at a price above or below book value; a constant price-earnings ratio; a constant discount rate (i.e., no changes in risk or interest rate levels and a flat yield curve); and all the above extend to infinity. Nevertheless, the DCF method provides a workable and practical approach to estimate investors' required return that is widely referenced in utility ratemaking.

Q43. WHAT STEPS ARE REQUIRED TO APPLY THE CONSTANT GROWTH DCF MODEL?

A43. 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 add the firm's dividend yield and estimated growth rate to arrive at an estimate of its cost of common equity.

Q44. HOW DO YOU DETERMINE THE DIVIDEND YIELDS FOR THE UTILITY GROUP?

A44. Estimates of dividends to be paid by each of these utilities over the next twelve months, obtained from Value Line, served as D_1 . This annual dividend was then divided by a 30-day average stock price for each utility to arrive at the expected dividend yield. The expected dividends, stock prices, and resulting dividend yields for the firms in the Utility Group are presented on Exhibit AMM-4. As shown on the first page of this exhibit, dividend yields for the firms in the Utility Group ranged from 2.0% to 4.5% and averaged 3.1%.

Q45. WHAT IS THE NEXT STEP IN APPLYING THE CONSTANT GROWTH DCF MODEL?

A45. The next step is to evaluate long-term growth expectations, or " g ", for the firm in question. In constant growth DCF theory, earnings, dividends, book value, and market price are all assumed to grow in lockstep, and the growth horizon of the DCF model is infinite. But implementation of the DCF model is more than just a theoretical exercise; it is an attempt to replicate the mechanism investors used to arrive at observable stock

1 prices. A wide variety of techniques can be used to derive growth rates, but the only
2 “g” that matters in applying the DCF model is the value that investors expect.

3 **Q46. WHAT ARE INVESTORS MOST LIKELY TO CONSIDER IN DEVELOPING**
4 **THEIR LONG-TERM GROWTH EXPECTATIONS?**

5 A46. Implementation of the DCF model is solely concerned with replicating the forward-
6 looking evaluation of real-world investors. In the case of utilities, dividend growth rates
7 are not likely to provide a meaningful guide to investors’ current growth expectations.
8 Utility dividend policies reflect the need to accommodate business risks and investment
9 requirements in the industry, as well as potential uncertainties in the capital markets. As
10 a result, dividend growth in the utility industry has lagged growth in earnings as utilities
11 conserve financial resources.

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

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

Q47. WHAT ARE SECURITY ANALYSTS CURRENTLY PROJECTING IN THE WAY OF GROWTH FOR THE FIRMS IN THE PROXY GROUP?

A47. The earnings growth projections for each of the firms in the Utility Group reported by Value Line, IBES,⁴⁶ and Zacks are displayed on page 2 of Exhibit AMM-4.

Q48. HOW ELSE ARE INVESTORS' EXPECTATIONS OF FUTURE LONG-TERM GROWTH PROSPECTS OFTEN ESTIMATED WHEN APPLYING THE CONSTANT GROWTH DCF MODEL?

A48. 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. Even though these conditions are never met in practice, this “sustainable growth” approach may provide a rough guide for evaluating a firm’s growth prospects and is frequently proposed in regulatory proceedings.

The sustainable growth rate is calculated by the formula, $g = br + sv$, where “b” is the expected retention ratio, “r” is the expected earned return on equity, “s” is the percent of common equity expected to be issued annually as new common stock, and “v” is the equity accretion rate. Under DCF theory, the “sv” factor is a component of the growth rate designed to capture the impact of issuing new common stock at a price above, or below, book value. The sustainable, “br+sv” growth rates for each firm in the proxy group are summarized on page 2 of Exhibit AMM-4, with the underlying details being presented on Exhibit AMM-5.

The sustainable growth rate analysis shown in Exhibit AMM-5 incorporates an “adjustment factor” because Value Line’s reported returns are based on year-end book values. Since earnings is a flow over the year while book value is determined at a given

⁴⁶ Formerly I/B/E/S International, Inc., IBES growth rates are now compiled and published by Refinitiv.

1 point in time, the measurement of earnings and book value are distinct concepts. It is
2 this fundamental difference between a flow (earnings) and point estimate (book value)
3 that makes it necessary to adjust to mid-year in calculating the ROE. Given that book
4 value will increase or decrease over the year, using year-end book value (as Value Line
5 does) understates or overstates the average investment that corresponds to the flow of
6 earnings. To address this concern, earnings must be matched with a corresponding
7 representative measure of book value, or the resulting ROE will be distorted. The
8 adjustment factor determined in Exhibit AMM-5, is solely a means of converting Value
9 Line's end-of-period values to an average return over the year, and the formula for this
10 adjustment is supported in recognized textbooks and has been adopted by other
11 regulators.⁴⁷

12 **Q49. ARE THERE SIGNIFICANT SHORTCOMINGS ASSOCIATED WITH THE**
13 **“BR+SV” GROWTH RATE?**

14 A49. Yes. First, in order to calculate the sustainable growth rate, it is necessary to develop
15 estimates of investors' expectations for four separate variables; namely, “b”, “r”, “s”,
16 and “v.” Given the inherent difficulty in forecasting each parameter and the difficulty
17 of estimating the expectations of investors, the potential for measurement error is
18 significantly increased when using four variables, as opposed to referencing a direct
19 projection for EPS growth. Second, empirical research in the finance literature indicates
20 that sustainable growth rates are not as significantly correlated to measures of value,
21 such as share prices, as are analysts' EPS growth forecasts.⁴⁸ The “sustainable growth”
22 approach is included for completeness, but evidence indicates that analysts' forecasts
23 provide a superior and more direct guide to investors' growth expectations.

⁴⁷ See, Roger A. Morin, *New Regulatory Finance*, Pub. Utils. Reports, Inc. (2006) at 305-306; *Bangor Hydro-Electric Co. et al.*, 122 FERC ¶ 61,265 at n.12 (2008).

⁴⁸ Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 307.

1 Accordingly, I give less weight to cost of equity estimates based on br+sv growth rates
2 in evaluating the results of the DCF model.

3 **Q50. WHAT COST OF COMMON EQUITY ESTIMATES WERE IMPLIED FOR**
4 **THE UTILITY GROUP USING THE DCF MODEL?**

5 A50. After combining the dividend yields and respective growth projections for each utility,
6 the resulting cost of common equity estimates are shown on page 3 of Exhibit AMM-4.

7 **Q51. IN EVALUATING THE RESULTS OF THE CONSTANT GROWTH DCF**
8 **MODEL, IS IT APPROPRIATE TO ELIMINATE ILLOGICAL ESTIMATES?**

9 A51. Yes. When applying quantitative methods to estimate the cost of equity, it is essential
10 that the resulting values pass fundamental tests of reasonableness and economic logic.
11 Accordingly, DCF estimates that are implausibly low or high should be eliminated when
12 evaluating the results of this method.

13 **Q52. HOW DO YOU EVALUATE DCF ESTIMATES AT THE LOW AND HIGH ENDS**
14 **OF THE RANGE?**

15 A52. I based my evaluation of DCF estimates at the low end of the range on the fundamental
16 risk-return tradeoff, which holds that investors will only take on more risk if they expect
17 to earn a higher rate of return to compensate them for the greater uncertainty. Because
18 common stocks lack the protections associated with an investment in long-term bonds,
19 a utility's common stock imposes far greater risks on investors. As a result, the rate of
20 return that investors require from a utility's common stock is considerably higher than
21 the yield offered by senior, long-term debt. Consistent with this principle, DCF results
22 that are not sufficiently higher than the yield available on less risky utility bonds must
23 be eliminated.

24 **Q53. HAVE OTHER REGULATORS EMPLOYED SUCH TESTS?**

25 A53. Yes. FERC has noted that adjustments are justified where applications of the DCF
26 approach and other methods produce illogical results. FERC evaluates low-end DCF

1 results against observable yields on long-term public utility debt and has recognized that
2 it is appropriate to eliminate estimates that do not sufficiently exceed this threshold,⁴⁹
3 and also excludes estimates that are “irrationally or anomalously high.”⁵⁰

4 **Q54. DO YOU EXCLUDE ANY ESTIMATES AT THE LOW OR HIGH END OF THE**
5 **RANGE OF DCF RESULTS?**

6 A54. Yes. As highlighted on page 3 of Exhibit AMM-4, I remove DCF cost of equity
7 estimates ranging from 4.6% to 6.9%. After removing these illogical values, the lower
8 end of the DCF results for the Utility Group is set by cost of equity estimates of 7.1%,
9 while the upper end is established by a cost of equity estimate of 12.6%. While a 12.6%
10 cost of equity estimate may exceed the other values, low-end DCF estimates in the 7%
11 range are assuredly far below investors’ required rate of return. Taken together and
12 considered along with the balance of the results, the remaining values provide a
13 reasonable basis on which to frame the range of plausible DCF estimates and evaluate
14 investors’ required rate of return.

15 **Q55. WHAT ROE ESTIMATES ARE IMPLIED BY YOUR DCF RESULTS FOR THE**
16 **UTILITY GROUP?**

17 A55. As shown on page 3 of Exhibit AMM-4 and summarized in Table AMM-3, application
18 of the constant growth DCF model results in the following ROE estimates:

19 **TABLE AMM-3**
20 **DCF RESULTS – UTILITY GROUP**

<u>Growth Rate</u>	<u>Average</u>	<u>Midpoint</u>
Value Line	9.0%	9.6%
IBES	9.6%	9.9%
Zacks	9.0%	9.4%
br + sv	8.5%	8.5%

⁴⁹ See, e.g., *Southern California Edison Co.*, 131 FERC ¶ 61,020 at P 55 (2010).

⁵⁰ *Ass’n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 171 FERC ¶ 61,154 at P 152 (2020).

D. Capital Asset Pricing Model

Q56. PLEASE DESCRIBE THE CAPM.

A56. 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 1.0, while stocks that tend to move more than the market have betas greater than 1.0. The CAPM is mathematically expressed as:

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

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

Under the CAPM formula above, a stock's required return is a function of the risk-free rate (R_f), plus a risk premium that is scaled to reflect the relative volatility of a firm's stock price, as measured by beta (β). Like the DCF model, the CAPM is an *ex-ante*, or forward-looking model based on expectations of the future. As a result, 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.

Q57. WHY IS THE CAPM APPROACH A RELEVANT COMPONENT WHEN EVALUATING THE COST OF EQUITY FOR AEP OHIO?

A57. The CAPM approach (which also forms the foundation of the ECAPM) generally is considered the most widely referenced method for estimating the cost of equity among academicians and professional practitioners, with the pioneering researchers of this method receiving the Nobel Prize in 1990. Because this is the dominant model for

1 estimating the cost of equity outside the regulatory sphere, the CAPM (and ECAPM)
2 provides important insight into investors' required rate of return for utility stocks,
3 including the Company.

4 **Q58. HOW DO YOU APPLY THE CAPM TO ESTIMATE THE ROE?**

5 A58. Application of the CAPM to the proxy group is based on a forward-looking estimate for
6 investors' required rate of return from common stocks presented in Exhibit AMM-6. To
7 capture the expectations of today's investors in current capital markets, the expected
8 market rate of return was estimated by conducting a DCF analysis on the dividend
9 paying firms in the S&P 500.

10 The dividend yield for each firm is obtained from Value Line, and the growth
11 rate is equal to the average of the earnings growth projections for each firm published
12 by IBES, Value Line, and Zacks, with each firm's dividend yield and growth rate being
13 weighted by its proportionate share of total market value. After removing companies
14 with growth rates that were negative or greater than 20%, the weighted average of the
15 projections for the individual firms implies an average growth rate over the next five
16 years of 10.2%. Combining this average growth rate with a year-ahead dividend yield
17 of 2.0% results in a current cost of common equity estimate for the market as a whole
18 (R_m) of 12.2%. Subtracting a 3.1% risk-free rate based on the average yield on 30-year
19 Treasury bonds for the six-months ending August 2022 produced a market equity risk
20 premium of 9.1%.

21 **Q59. IN PREVIOUS TESTIMONY YOU HAVE CUSTOMARILY RELIED ON A SIX-**
22 **MONTH AVERAGE YIELD ON TREASURY BONDS AS THE RISK-FREE**
23 **RATE. WHY ARE YOU NOW REFERENCING THE AUGUST 2022**
24 **AVERAGE?**

25 A59. Coupled with the Federal Reserve's recent decision to adopt tighter monetary policies,
26 increased concerns over rising inflation and geopolitical risks has led to a significant

1 upward shift in bond yields. As a result, six-month average data does not reflect
2 investors' current expectations and requirements. Accordingly, I relied on August 2022
3 yield averages to better reflect present economic realities. This is particularly important
4 in light of even higher interest rates projected over the intermediate term.

5 **Q60. WHAT WAS THE SOURCE OF THE BETA VALUES YOU USED TO APPLY**
6 **THE CAPM?**

7 A60. As indicated earlier in my discussion of risk measures for the proxy group, I relied on
8 the beta values reported by Value Line, which in my experience is the most widely
9 referenced source for beta in regulatory proceedings.

10 **Q61. WHAT ELSE SHOULD BE CONSIDERED IN APPLYING THE CAPM?**

11 A61. Financial research indicates that the CAPM does not fully account for observed
12 differences in rates of return attributable to firm size. Accordingly, a modification is
13 required to account for this size effect. As explained by Morningstar:

14 One of the most remarkable discoveries of modern finance is the finding
15 of a relationship between firm size and return. On average, small
16 companies have higher returns than large ones. . . . The relationship
17 between firm size and return cuts across the entire size spectrum; it is not
18 restricted to the smallest stocks.⁵¹

19 According to the CAPM, the expected return on a security should consist of the
20 riskless rate, plus a premium to compensate for the systematic risk of the particular
21 security. The degree of systematic risk is represented by the beta coefficient. The need
22 for the size adjustment arises because differences in investors' required rates of return
23 that are related to firm size are not fully captured by beta. To account for this,
24 researchers have developed size premiums that need to be added to account for the level
25 of a firm's market capitalization in determining the CAPM cost of equity.⁵²

⁵¹ Morningstar, *2015 Ibbotson SBBI Classic Yearbook*, at 99.

⁵² Originally compiled by Ibbotson Associates and published in their annual yearbook entitled, *Stocks, Bonds, Bills and Inflation*, these size premia are now developed by Kroll and presented in its *Cost of Capital Navigator*.

1 Accordingly, my CAPM analyses also incorporated an adjustment to recognize the
2 impact of size distinctions, as measured by the market capitalization for the firms in the
3 Utility Group.

4 **Q62. IS THIS SIZE ADJUSTMENT RELATED TO THE RELATIVE SIZE OF AEP**
5 **OHIO AS COMPARED WITH THE PROXY GROUP?**

6 A62. No. I am not proposing to apply a general size risk premium in evaluating a just and
7 reasonable ROE for the Company and my recommendation does not include any
8 adjustment related to the relative size of AEP Ohio. Rather, this size adjustment is
9 specific to the CAPM and merely corrects for an observed inability of the beta measure
10 to fully reflect the risks perceived by investors for the firms in the proxy group. As
11 FERC has recognized, “[t]his type of size adjustment is a generally accepted approach
12 to CAPM analyses.”⁵³

13 **Q63. WHAT IS THE IMPLIED ROE FOR THE UTILITY GROUP USING THE**
14 **CAPM APPROACH?**

15 A63. As shown on page 1 of Exhibit AMM-6, after adjusting for the impact of firm size, the
16 CAPM approach implies an average ROE for the Utility Group of 11.4%.

17 **Q64. DO YOU ALSO APPLY THE CAPM USING FORECASTED BOND YIELDS?**

18 A64. Yes. As discussed earlier, there is general consensus that interest rates will increase over
19 the intermediate term. Accordingly, in addition to the use of current bond yields, I apply
20 the CAPM based on the forecasted long-term Treasury bond yields developed based on
21 projections published by Blue Chip for the years 2023 to 2027. As shown on page 2 of
22 Exhibit AMM-6, incorporating a forecasted Treasury bond yield implies an average cost
23 of equity estimate of 11.5% for the Utility Group.

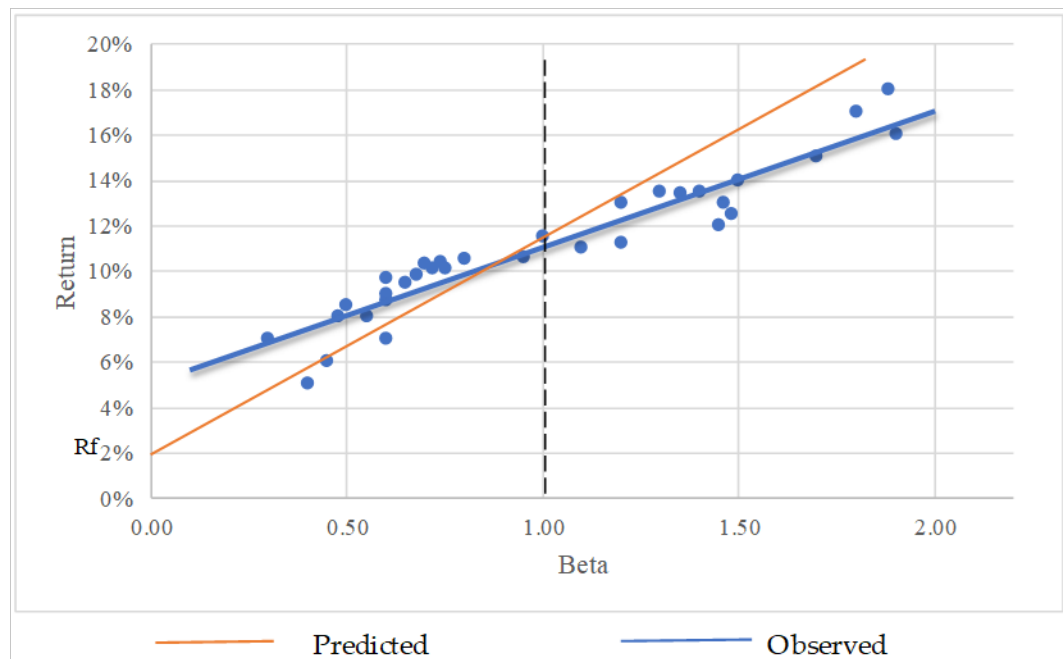
⁵³ *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531-B, 150 FERC ¶ 61,165 at P 117 (2015).

E. Empirical Capital Asset Pricing Model

Q65. HOW DOES THE ECAPM APPROACH DIFFER FROM TRADITIONAL APPLICATIONS OF THE CAPM?

A65. Empirical tests of the CAPM have shown that low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. In other words, the CAPM tends to overstate the actual sensitivity of the cost of capital to beta, with low-beta stocks tending to have higher returns and high-beta stocks tending to have lower risk returns than predicted by the CAPM. This is illustrated graphically in Figure AMM-5:

FIGURE AMM-5
CAPM – PREDICTED VS. OBSERVED RETURNS



Because the betas of utility stocks, including those in the proxy 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*:

1 As discussed in the previous section, several finance scholars have
2 developed refined and expanded versions of the standard CAPM by
3 relaxing the constraints imposed on the CAPM, such as dividend yield,
4 size, and skewness effects. These enhanced CAPMs typically produce a
5 risk-return relationship that is flatter than the CAPM prediction in
6 keeping with the actual observed risk-return relationship. The ECAPM
7 makes use of these empirical relationships.⁵⁴

8 As discussed in *New Regulatory Finance*, based on a review of the empirical
9 evidence, the expected return on a security is related to its risk by the ECAPM, which
10 is represented by the following formula:

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

11
12 Like the CAPM formula presented earlier, the ECAPM represents a stock's required
13 return as a function of the risk-free rate (R_f), plus a risk premium. In the formula above,
14 this risk premium is composed of two parts: (1) the market risk premium ($R_m - R_f$)
15 weighted by a factor of 25%, and (2) a company-specific risk premium based on the
16 stock's relative volatility [$\beta_j(R_m - R_f)$] weighted by 75%. This ECAPM equation, and
17 its associated weighting factors, recognizes the observed relationship between standard
18 CAPM estimates and the cost of capital documented in the financial research, and
19 corrects for the understated returns that would otherwise be produced for low beta
20 stocks.

21 **Q66. WHAT COST OF EQUITY IS INDICATED BY THE ECAPM?**

22 A66. My application of the ECAPM is based on the same forward-looking market rate of
23 return, risk-free rates, and beta values discussed earlier in connections with the CAPM.
24 As shown on page 1 of Exhibit AMM-7, applying the forward-looking ECAPM
25 approach to the firms in the Utility Group results in an average cost of equity estimate
26 of 11.7%. As shown on page 2 of Exhibit AMM-7, incorporating a forecasted Treasury

⁵⁴ Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 189.

1 bond yield for years 2023 to 2027 also implies an average cost of equity for the Utility
2 Group of 11.7%.

3 **F. Utility Risk Premium**

4 **Q67. BRIEFLY DESCRIBE THE RISK PREMIUM METHOD.**

5 A67. The risk premium method extends the risk-return tradeoff observed with bonds to
6 estimate investors' required rate of return on common stocks. The cost of equity is
7 estimated by first determining the additional return investors require to forgo the relative
8 safety of bonds and to bear the greater risks associated with common stock, and by then
9 adding this equity risk premium to the current yield on bonds. Like the DCF model, the
10 risk premium method is capital market oriented. However, unlike DCF models, which
11 indirectly impute the cost of equity, risk premium methods directly estimate investors'
12 required rate of return by adding an equity risk premium to observable bond yields.

13 **Q68. IS THE RISK PREMIUM APPROACH A WIDELY ACCEPTED METHOD FOR** 14 **ESTIMATING THE COST OF EQUITY?**

15 A68. Yes. The risk premium approach is based on the fundamental risk-return principle that
16 is central to finance, which holds that investors will require a premium in the form of a
17 higher return to assume additional risk. This method is routinely referenced by the
18 investment community and in academia and regulatory proceedings and provides an
19 important tool in estimating a just and reasonable ROE for AEP Ohio.

20 **Q69. HOW DO YOU IMPLEMENT THE RISK PREMIUM METHOD?**

21 A69. Estimates of equity risk premiums for utilities are based on surveys of previously
22 authorized ROEs. Authorized ROEs presumably reflect regulatory commissions' best
23 estimates of the cost of equity, however determined, at the time they issued their final
24 order. Such ROEs should represent a balanced and impartial outcome that considers the
25 need to maintain a utility's financial integrity and ability to attract capital. Moreover,
26 allowed returns are an important consideration for investors and have the potential to

1 influence other observable investment parameters, including credit ratings and
2 borrowing costs. Thus, when considered in the context of a complete and rigorous
3 analysis, this data provides a logical and frequently referenced basis for estimating
4 equity risk premiums for regulated utilities.

5 **Q70. HOW DO YOU CALCULATE EQUITY RISK PREMIUMS BASED ON**
6 **ALLOWED RETURNS?**

7 A70. The ROEs authorized for electric utilities by regulatory commissions across the U.S.
8 are compiled by S&P Global Market Intelligence and published in its *RRA Regulatory*
9 *Focus* report. On page 3 of Exhibit AMM-8, the average yield on public utility bonds
10 is subtracted from the average allowed ROE for electric utilities to calculate equity risk
11 premiums for each year between 1974 and 2021.⁵⁵ As shown there, over this period
12 these equity risk premiums for electric utilities average 3.87%, and the yields on public
13 utility bonds average 7.89%.

14 **Q71. IS THERE ANY CAPITAL MARKET RELATIONSHIP THAT MUST BE**
15 **CONSIDERED WHEN IMPLEMENTING THE RISK PREMIUM METHOD?**

16 A71. Yes. The magnitude of equity risk premiums is not constant and equity risk premiums
17 tend to move inversely with interest rates. In other words, when interest rate levels are
18 relatively high, equity risk premiums narrow, and when interest rates are relatively low,
19 equity risk premiums widen. The implication of this inverse relationship is that the cost
20 of equity does not move as much as, or in lockstep with, interest rates. Accordingly, for
21 a 1% increase or decrease in interest rates, the cost of equity may only rise or fall some
22 fraction of 1%. Therefore, when implementing the risk premium method, adjustments
23 may be required to incorporate this inverse relationship if current interest rate levels
24 have diverged from the average interest rate level represented in the data set.

⁵⁵ My analysis encompasses the entire period for which published data is available.

1 Current bond yields are lower than those prevailing over the risk premium study
2 periods. Given that equity risk premiums move inversely with interest rates, these lower
3 bond yields also imply an increase in the equity risk premium that investors require to
4 accept the higher uncertainties associated with an investment in utility common stocks
5 versus bonds. In other words, higher required equity risk premiums offset the impact
6 of declining interest rates on the ROE.

7 **Q72. HAS THIS INVERSE RELATIONSHIP BEEN DOCUMENTED IN THE**
8 **FINANCIAL RESEARCH?**

9 A72. Yes. There is considerable empirical evidence that when interest rates are relatively
10 high, equity risk premiums narrow, and when interest rates are relatively low, equity
11 risk premiums are greater. This inverse relationship between equity risk premiums and
12 interest rates has been widely reported in the financial literature. As summarized by

13 *New Regulatory Finance:*

14 Published studies by Brigham, Shome, and Vinson (1985), Harris
15 (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and
16 Lakonishok (1983), Morin (2005), and McShane (2005), and others
17 demonstrate that, beginning in 1980, risk premiums varied inversely with
18 the level of interest rates – rising when rates fell and declining when rates
19 rose.⁵⁶

20 Other regulators have also recognized that, while the cost of equity trends in the
21 same direction as interest rates, these variables do not move in lockstep.⁵⁷ This
22 relationship is illustrated in the figure on page 4 of Exhibit AMM-8.

⁵⁶ Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 128.

⁵⁷ See, e.g., California Public Utilities Commission, Decision 08-05-035 (May 29, 2008); Entergy Mississippi Formula Rate Plan FRP-7, https://cdn.entergy-mississippi.com/userfiles/content/price/tariffs/eml_frp.pdf (last visited Jul. 20, 2020); *Martha Coakley et al.*, 147 FERC ¶ 61,234 at P 147 (2014).

1 **Q73. WHAT ROE IS IMPLIED BY THE RISK PREMIUM METHOD USING**
2 **SURVEYS OF ALLOWED RETURNS?**

3 A73. Based on the regression output between the interest rates and equity risk premiums
4 displayed on page 4 of Exhibit AMM-8, the equity risk premium for electric utilities
5 increases by approximately 43 basis points for each percentage point drop in the yield
6 on average public utility bonds. As illustrated on page 1 of Exhibit AMM-8 with an
7 average yield on public utility bonds for August 2022 of 4.80%, this implies a current
8 equity risk premium of 5.20% for electric utilities. Adding this equity risk premium to
9 the average yield on Baa utility bonds of 5.09% implies a current ROE of 10.29%.

10 **Q74. WHAT RISK PREMIUM COST OF EQUITY ESTIMATE IS PRODUCED**
11 **AFTER INCORPORATING PROJECTED BOND YIELDS?**

12 A74. As shown on page 2 of Exhibit AMM-8, incorporating a projected yield for 2023 to
13 2017 and adjusting for changes in interest rates since the study period implies an equity
14 risk premium of 4.87% for electric utilities, which is less than the current equity risk
15 premium. This lower equity risk premium is consistent with the inverse relationship I
16 described above. Adding this equity risk premium to the implied average yield on Baa
17 utility bonds for 2023 to 2027 of 5.85% results in an implied cost of equity of 10.72%.

18 **G. Expected Earnings Approach**

19 **Q75. WHAT OTHER ANALYSES DO YOU CONDUCT TO ESTIMATE THE ROE?**

20 A75. I also evaluate the ROE using the expected earnings method. Reference to rates of
21 return available from alternative investments of comparable risk can provide an
22 important benchmark in assessing the return necessary to assure confidence in the
23 financial integrity of a firm and its ability to attract capital. This expected earnings
24 approach is consistent with the economic underpinnings for a just and reasonable rate

1 of return established by the U.S. Supreme Court in *Bluefield* and *Hope*.⁵⁸ Moreover, it
2 avoids the complexities and limitations of capital market methods and instead focuses
3 on the returns earned on book equity, which are readily available to investors.

4 **Q76. WHAT ECONOMIC PREMISE UNDERLIES THE EXPECTED EARNINGS**
5 **APPROACH?**

6 A76. The simple, but powerful concept underlying the expected earnings approach is that
7 investors compare each investment alternative with the next best opportunity. If the
8 utility is unable to offer a return similar to that available from other opportunities of
9 comparable risk, investors will become unwilling to supply the capital on reasonable
10 terms. For existing investors, denying the utility an opportunity to earn what is available
11 from other similar risk alternatives prevents them from earning their opportunity cost of
12 capital. Such an outcome would violate the *Hope* and *Bluefield* standards and
13 undermine the utility's access to capital on reasonable terms.

14 **Q77. HOW IS THE EXPECTED EARNINGS APPROACH TYPICALLY**
15 **IMPLEMENTED?**

16 A77. The traditional comparable earnings test identifies a group of companies that are
17 believed to be comparable in risk to the utility. The actual earnings of those companies
18 on the book value of their investment are then compared to the allowed return of the
19 utility. While the traditional comparable earnings test is implemented using historical
20 data taken from the accounting records, it is also common to use projections of returns
21 on book investment, such as those published by recognized investment advisory
22 publications (e.g., Value Line). Because these returns on book value equity are
23 analogous to the allowed return on a utility's rate base, this measure of opportunity costs
24 results in a direct, "apples to apples" comparison.

⁵⁸ *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923) ("*Bluefield*"); *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("*Hope*").

Moreover, regulators do not set the returns that investors earn in the capital markets, which are a function of dividend payments and fluctuations in common stock prices - both of which are outside their control. Regulators can only establish the allowed ROE, which is applied to the book value of a utility's investment in rate base, as determined from its accounting records. This is analogous to the expected earnings approach, which measures the return that investors expect the utility to earn on book value. As a result, the expected earnings approach provides a meaningful guide to ensure that the allowed ROE is similar to what other utilities of comparable risk will earn on invested capital. This expected earnings test does not require theoretical models to indirectly infer investors' perceptions from stock prices or other market data. As long as the proxy companies are similar in risk, their expected earned returns on invested capital provide a direct benchmark for investors' opportunity costs that is independent of fluctuating stock prices, market-to-book ratios, debates over DCF growth rates, or the limitations inherent in any theoretical model of investor behavior.

Q78. WHAT ROES ARE INDICATED FOR AEP OHIO BASED ON THE EXPECTED EARNINGS APPROACH?

A78. For the firms in the proxy group, the year-end returns on common equity projected by Value Line over its forecast horizon are shown on 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.⁵⁹ Accordingly, these year-end values were converted to average returns using the same adjustment factor discussed earlier and developed on Exhibit AMM-5. As shown on Exhibit AMM-9, Value Line's projections suggest an average ROE of 11.4% for the Utility Group.

⁵⁹ 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.

H. Flotation Costs

Q79. WHAT OTHER CONSIDERATIONS ARE RELEVANT IN SETTING THE RETURN ON EQUITY FOR A UTILITY?

A79. 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.

Q80. IS THERE AN ESTABLISHED MECHANISM FOR A UTILITY TO RECOGNIZE EQUITY ISSUANCE COSTS?

A80. 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.

1 **Q81. IS THERE ACADEMIC EVIDENCE THAT SUPPORTS A FLOTATION COST**
2 **ADJUSTMENT?**

3 A81. The financial literature and evidence in this case provides a sound theoretical and
4 practical basis to include consideration of flotation costs for AEP Ohio. An adjustment
5 for flotation costs associated with past sales of common stock is appropriate, even when
6 the utility is not contemplating any new sales of common stock. The need for a flotation
7 cost adjustment to compensate for past common stock offerings has been recognized in
8 the financial literature. In a *Public Utilities Fortnightly* article, for example, Brigham,
9 Aberwald, and Gapenski demonstrated that even if no further stock issues are
10 contemplated, a flotation cost adjustment in all future years is required to keep
11 shareholders whole, and that the flotation cost adjustment must consider total equity,
12 including retained earnings.⁶⁰ Similarly, *New Regulatory Finance* contains the
13 following discussion:

14 Another controversy is whether the flotation cost allowance should still
15 be applied when the utility is not contemplating an imminent common
16 stock issue. Some argue that flotation costs are real and should be
17 recognized in calculating the fair rate of return on equity, but only at the
18 time when the expenses are incurred. In other words, the flotation cost
19 allowance should not continue indefinitely, but should be made in the
20 year in which the sale of securities occurs, with no need for continuing
21 compensation in future years. This argument implies that the company
22 has already been compensated for these costs and/or the initial
23 contributed capital was obtained freely, devoid of any flotation costs,
24 which is an unlikely assumption, and certainly not applicable to most
25 utilities. ... The flotation cost adjustment cannot be strictly forward-
26 looking unless all past flotation costs associated with past issues have
27 been recovered.⁶¹

⁶⁰ E. F. Brigham, D. A. Aberwald, and L. C. Gapenski, *Common Equity Flotation Costs and Rate Making*, Pub. Util. Fortnightly (May 2, 1985).

⁶¹ Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 335.

Q82. CAN YOU ILLUSTRATE WHY INVESTORS WILL NOT HAVE THE OPPORTUNITY TO EARN THEIR REQUIRED ROE UNLESS A FLOTATION COST ADJUSTMENT IS INCLUDED?

A82. 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-4 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 only be 5.25%, instead of 5.5%:

**TABLE AMM-4
NO FLOTATION COST ADJUSTMENT**

<u>Year</u>	<u>Common Stock</u>	<u>Retained Earnings</u>	<u>Total Equity</u>	<u>Market Price</u>	<u>M/B Ratio</u>	<u>Allowed ROE</u>	<u>EPS</u>	<u>DPS</u>	<u>Payout Ratio</u>
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-5 below, by allowing a rate of return on common equity of 10.75% (a 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-5
INCLUDING FLOTATION COST ADJUSTMENT**

<u>Year</u>	<u>Common Stock</u>	<u>Retained Earnings</u>	<u>Total Equity</u>	<u>Market Price</u>	<u>M/B Ratio</u>	<u>Allowed ROE</u>	<u>EPS</u>	<u>DPS</u>	<u>Payout Ratio</u>
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 the utility is expected to issue additional shares of common stock in the future.

Q83. WHAT IS THE MAGNITUDE OF THE ADJUSTMENT TO THE “BARE BONES” COST OF EQUITY TO ACCOUNT FOR ISSUANCE COSTS?

A83. 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 recent open-market common stock issues for each company in Value Line’s electric and gas utility industries. For all companies in the electric and gas industries, flotation costs averaged approximately 2.8%. This data includes AEP’s 2009 public offering where it incurred issuance costs equal to approximately 3.0% of the gross proceeds. Applying the average 2.8% expense percentage to the Utility Group dividend yield of 3.2% produces a flotation cost adjustment on the order of 0.1%.

IV. NON-UTILITY BENCHMARK

1 **Q84. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

2 A84. This section presents the results of my DCF analysis applied to a group of low-risk firms
3 in the competitive sector, which I refer to as the “Non-Utility Group.” This analysis
4 was not relied on to arrive at my recommended ROE range of reasonableness; however,
5 it is my opinion that this is a relevant consideration in evaluating a just and reasonable
6 ROE for the Company’s electric utility operations.

7 **Q85. DO UTILITIES HAVE TO COMPETE WITH NON-REGULATED FIRMS FOR**
8 **CAPITAL?**

9 A85. Yes. The cost of capital is an opportunity cost based on the returns that investors could
10 realize by putting their money in other alternatives. Clearly, the total capital invested in
11 utility stocks is only the tip of the iceberg of total common stock investment, and there
12 is a plethora of other enterprises available to investors beyond those in the utility
13 industry. Utilities must compete for capital, not just against firms in their own industry,
14 but with other investment opportunities of comparable risk. Indeed, modern portfolio
15 theory is built on the assumption that rational investors will hold a diverse portfolio of
16 stocks, not just companies in a single industry.

17 **Q86. IS IT CONSISTENT WITH THE *BLUEFIELD* AND *HOPE* CASES TO**
18 **CONSIDER INVESTORS’ REQUIRED ROE FOR NON-UTILITY**
19 **COMPANIES?**

20 A86. Yes. The cost of equity capital in the competitive sector of the economy forms the very
21 underpinning for utility ROEs because regulation purports to serve as a substitute for
22 the actions of competitive markets. The Supreme Court has recognized that it is the
23 degree of risk, not the nature of the business, which is relevant in evaluating an allowed
24 ROE for a utility. The *Bluefield* case refers to “business undertakings attended with

1 comparable risks and uncertainties.” It does not restrict consideration to other utilities.

2 Similarly, the *Hope* case states:

3 By that standard the return to the equity owner should be commensurate
4 with returns on investments in other enterprises having corresponding
5 risks.⁶²

6 As in the *Bluefield* decision, there is nothing to restrict “other enterprises” solely to the
7 utility industry.

8 **Q87. DOES CONSIDERATION OF THE RESULTS FOR THE NON-UTILITY**
9 **GROUP IMPROVE THE RELIABILITY OF DCF RESULTS?**

10 A87. Yes. The estimates of growth from the DCF model depend on analysts’ forecasts. It is
11 possible for utility growth rates to be distorted by short-term trends in the industry, or
12 by the industry falling into favor or disfavor by analysts. Such distortions could result
13 in biased DCF estimates for utilities. Because the Non-Utility Group includes low risk
14 companies from more than one industry, it helps to insulate against any possible
15 distortion that may be present in results for a particular sector.

16 **Q88. WHAT CRITERIA DO YOU APPLY TO DEVELOP THE NON-UTILITY**
17 **GROUP?**

18 A88. My comparable risk proxy group was composed of those United States companies
19 followed by Value Line that:

- 20 1) pay common dividends;
21 2) have a Safety Rank of “1”;
22 3) have a Financial Strength Rating of “A” or greater;
23 4) have a beta of less than 1.00; and
24 5) have investment grade credit ratings from S&P and Moody’s.

⁶² *Federal Power Comm’n v. Hope Natural Gas Co.*, 320 U.S. 391 (1944).

Q89. HOW DO THE OVERALL RISKS OF THIS NON-UTILITY GROUP COMPARE WITH THE UTILITY GROUP?

A89. Table AMM-6 compares the Non-Utility Group with the Utility Group across the measures of investment risk discussed earlier:

**TABLE AMM-6
COMPARISON OF RISK INDICATORS**

	S&P	Moody's	Value Line		
			Safety	Financial	
			Rank	Strength	Beta
Non-Utility Group	A	A2	1	A+	0.79
Utility Group	BBB+	Baa2	2	A	0.88
AEP Ohio	A-	Baa1	2	B++	0.90

Note: AEP Ohio's S&P Value Line ratings are for its parent company, AEP.

As shown above, considered together the risk indicators for the Non-Utility Group generally suggest less risk than for the Utility 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, Kellogg, Procter & Gamble, and Walmart, have long corporate histories, well-established track records, and conservative risk profiles. Many of these companies pay dividends on a par with utilities, with the average dividend yield for the group at 2.2%. 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.

Q90. WHAT ARE THE RESULTS OF YOUR DCF ANALYSIS FOR THE NON-UTILITY GROUP?

A90. I apply the DCF model to the Non-Utility Group using the same analysts' EPS growth projections described earlier for the Utility Group. The results of my DCF analysis for

the Non-Utility Group are presented in Exhibit AMM-11. As summarized in Table AMM-7, after eliminating illogical values, application of the constant growth DCF model results in the following cost of equity estimates:

TABLE AMM-7
DCF RESULTS – NON-UTILITY GROUP

<u>Growth Rate</u>	<u>Average</u>	<u>Midpoint</u>
Value Line	10.6%	11.0%
IBES	10.5%	11.2%
Zacks	10.2%	10.6%

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

V. RETURN ON EQUITY FOR AEP OHIO

Q91. WHAT IS THE PURPOSE OF THIS SECTION?

A91. This section presents an overview of the relationship between ROE and preservation of a utility's financial integrity and the ability to attract capital under reasonable terms and presents my conclusions regarding the just and reasonable ROE applicable to AEP Ohio's utility operations.

A. Importance of Financial Strength

Q92. WHAT IS THE ROLE OF THE ROE IN SETTING A UTILITY'S RATES?

A92. 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

1 on their investment commensurate with returns available from alternative investments
2 with comparable risks. Moreover, a just and reasonable ROE is integral in meeting
3 sound regulatory economics and the standards set forth by the U.S. Supreme Court. The
4 *Bluefield* case set the standard against which just and reasonable rates are measured:

5 A public utility is entitled to such rates as will permit it to earn a return
6 on the value of the property which it employs for the convenience of the
7 public equal to that generally being made at the same time and in the
8 same general part of the country on investments in other business
9 undertakings which are attended by corresponding risks and
10 uncertainties. . . . The return should be reasonable, sufficient to assure
11 confidence in the financial soundness of the utility, and should be
12 adequate, under efficient and economical management, to maintain and
13 support its credit and enable it to raise money necessary for the proper
14 discharge of its public duties.⁶³

15 The *Hope* case expanded on the guidelines as to a reasonable ROE,
16 reemphasizing its findings in *Bluefield* and establishing that the rate-setting process
17 must produce an end-result that allows the utility a reasonable opportunity to cover its
18 capital costs. The Court stated:

19 From the investor or company point of view it is important that there be
20 enough revenue not only for operating expenses but also for the capital
21 costs of the business. These include service on the debt and dividends
22 on the stock. . . . By that standard, the return to the equity owner should
23 be commensurate with returns on investments in other enterprises having
24 corresponding risks. That return, moreover, should be sufficient to
25 assure confidence in the financial integrity of the enterprise, so as to
26 maintain credit and attract capital.⁶⁴

27 In summary, the Supreme Court's findings in *Hope* and *Bluefield* established that a just
28 and reasonable ROE must be sufficient to 1) fairly compensate the utility's investors, 2)
29 enable the utility to offer a return adequate to attract new capital on reasonable terms,
30 and 3) maintain the utility's financial integrity. These standards should allow the utility

⁶³ *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923).

⁶⁴ *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

1 to fulfill its obligation to provide reliable service while meeting the needs of customers
2 through necessary system replacement and expansion, but the Supreme Court's
3 requirements can only be met if the utility has a reasonable opportunity to actually earn
4 its allowed ROE.

5 While the *Hope* and *Bluefield* decisions did not establish a particular method to
6 be followed in fixing rates (or in determining the allowed ROE),⁶⁵ these and subsequent
7 cases enshrined the importance of an end-result that meets the opportunity cost standard
8 of finance. Under this doctrine, the required return is established by investors in the
9 capital markets based on expected returns available from comparable risk investments.
10 Coupled with modern financial theory, which has led to the development of formal risk-
11 return models (e.g., DCF and CAPM), practical application of the *Bluefield* and *Hope*
12 standards involves the independent, case-by-case consideration of capital market data
13 in order to evaluate an ROE that will produce a balanced and fair end result for investors
14 and customers.

15 **Q93. THROUGHOUT YOUR TESTIMONY YOU REFER REPEATEDLY TO THE**
16 **CONCEPTS OF “FINANCIAL STRENGTH,” “FINANCIAL INTEGRITY,”**
17 **AND “FINANCIAL FLEXIBILITY.” WOULD YOU BRIEFLY DESCRIBE**
18 **WHAT YOU MEAN BY THESE TERMS?**

19 A93. These terms are generally synonymous and refer to the utility's ability to attract and
20 retain the capital that is necessary to provide service at reasonable cost, consistent with
21 the Supreme Court standards. AEP Ohio's plans call for a continuation of capital
22 investments to preserve and enhance service reliability for its customers. The Company
23 must generate adequate cash flow from operations to fund these requirements and for

⁶⁵ *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.”)

1 repayment of maturing debt, together with access to capital from external sources under
2 reasonable terms, on a sustainable basis.

3 Rating agencies and potential debt investors tend to place significant emphasis
4 on maintaining strong financial metrics and credit ratings that support access to debt
5 capital markets under reasonable terms. This emphasis on financial metrics and credit
6 ratings is shared by equity investors who also focus on cash flows, capital structure and
7 liquidity, much like debt investors. Investors understand the important role that a
8 supportive regulatory environment plays in establishing a sound financial profile that
9 will permit the utility access to debt and equity capital markets on reasonable terms in
10 both favorable financial markets and during times of potential disruption and crisis.

11 **Q94. WHAT PART DOES REGULATION PLAY IN ENSURING THAT AEP OHIO**
12 **HAS ACCESS TO CAPITAL UNDER REASONABLE TERMS AND ON A**
13 **SUSTAINABLE BASIS?**

14 A94. Regulatory signals are a major driver of investors' risk assessment for utilities. Investors
15 recognize that constructive regulation is a key ingredient in supporting utility credit
16 ratings and financial integrity. Security analysts study commission orders and
17 regulatory policy statements to advise investors about where to put their money.
18 Moody's noted that, "An overarching consideration for regulated utilities is the
19 regulatory environment in which they operate," and concluded that "the regulatory
20 environment and how the utility adapts to that environment are the most important credit
21 considerations."⁶⁶ Similarly, S&P observed that, "Regulatory advantage is the most
22 heavily weighted factor when S&P Global Ratings analyzes a regulated utility's
23 business risk profile."⁶⁷ Value Line summarizes these sentiments:

⁶⁶ Moody's Investors Service, *Regulated Electric and Gas Utilities*, Rating Methodology (Jun. 23, 2017).

⁶⁷ S&P Global Ratings, *Assessing U.S. Investors-Owned Utility Regulatory Environments*, RatingsExpress (Aug. 10, 2016).

1 As we often point out, the most important factor in any utility's success,
2 whether it provides electricity, gas, or water, is the regulatory climate in
3 which it operates. Harsh regulatory conditions can make it nearly
4 impossible for the best run utilities to earn a reasonable return on their
5 investment.⁶⁸

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

9 **Q95. DO CUSTOMERS BENEFIT BY ENHANCING THE UTILITY'S FINANCIAL**
10 **FLEXIBILITY?**

11 A95. Yes. Providing an ROE that is sufficient to maintain the Company's ability to attract
12 capital under reasonable terms, even in times of financial and market stress, is consistent
13 with the economic requirements embodied in the U.S. Supreme Court's *Hope* and
14 *Bluefield* decisions, as well as customers' best interests. Supportive policies that address
15 regulatory lag and allow the utility the opportunity to earn a fair ROE also leads to lower
16 costs for customers.

17 The allowed ROE and other regulatory features, such as riders or tracking
18 mechanisms, are key determinants of the cash flows that support AEP Ohio's financial
19 metrics and credit standing. For example, Company witness Minton addresses the
20 ongoing regulatory lag attributable to the revenue caps under the DIR during a time of
21 heightened capital investment, which leads to erosion in AEP Ohio's credit metrics. As
22 evidenced by Moody's recent decision to downgrade the Company, a weakening
23 financial standing ultimately results in lower credit ratings. Because investors demand
24 a high return for assuming greater risk, an erosion in the utility's credit standing leads
25 directly to higher borrowing costs, as well as a higher required return on equity capital.⁶⁹
26 This additional return is further magnified during periods of turmoil in capital markets,

⁶⁸ Value Line Investment Survey, *Water Utility Industry* (Jan. 13, 2017) at p. 1780.

⁶⁹ For example, the average yield spread between utility bonds rated Baa and A-rated bonds was 32 basis points over the six-months ended August 2022.

1 when risk spreads may widen significantly.⁷⁰ Thus, authorizing a fair ROE and
2 providing the utility a reasonable opportunity to actually earn this return also lowers the
3 cost of borrowing and maintains access to the capital necessary to provide service. As
4 a result, customers enjoy the benefits that come from ensuring that the utility has the
5 financial wherewithal to take whatever actions are required to ensure safe and reliable
6 service.

7 **B. Conclusions and Recommendations**

8 **Q96. WHAT ARE YOUR FINDINGS REGARDING THE JUST AND REASONABLE** 9 **ROE FOR AEP OHIO?**

10 A96. Considering the economic requirements necessary to support continuous access to
11 capital under reasonable terms and the results of my analysis, I recommend a 10.65%
12 ROE for AEP Ohio's electric utility operations, which is consistent with the case-
13 specific evidence presented in my testimony. The bases for my conclusion are
14 summarized below:

- 15 • In order to reflect the risks and prospects associated with AEP Ohio's
16 utility business, I predicate my analysis on a proxy group of twenty-
17 one electric utilities of comparable risk.
- 18 • Because investors' required return on equity is unobservable and no
19 single method should be viewed in isolation, I apply the DCF,
20 CAPM, ECAPM, and risk premium methods to estimate a just and
21 reasonable ROE for AEP Ohio, as well as referencing the expected
22 earnings approach.
- 23 • Based on the results of these analyses and giving less weight to
24 extremes at the high and low ends of the range, I conclude that the
25 cost of equity for a regulated electric utility is in the 9.8% to 11.3%
26 range, or 9.9% to 11.4% after considering the impact of common
27 equity flotation costs.
- 28 • My ROE recommendation for AEP Ohio's electric operations is the
29 midpoint of this range, or 10.65%.

⁷⁰ In March 2009 the yield spread between utility bonds rated Baa and A-rated bonds rose to 158 basis points, almost a five-fold increase over the level during August 2022.

- 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.

Q97. WHAT DO THE DCF RESULTS FOR YOUR SELECT GROUP OF NON-UTILITY FIRMS INDICATE WITH RESPECT TO YOUR EVALUATION?

A97. As shown on page 3 of Exhibit AMM-11, average DCF estimates for a low-risk group of firms in the competitive sector of the economy range from 10.2% to 10.6%. While I do not base my recommendations on these results, they confirm that an ROE of 10.65% 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.

Q98. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A98. Yes, it does.

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 Street, Austin, Texas 78751.

Q. PLEASE STATE YOUR OCCUPATION.

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

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I received B.A. and M.B.A. degrees with a major in finance from The University of Texas at Austin and hold the Chartered Financial Analyst (CFA[®]) designation. Since joining FINCAP in 1984, I have participated in consulting assignments involving a broad range of economic and financial issues, including cost of capital, cost of service, rate design, economic damages, and business valuation. I have extensive experience in economic and financial analysis for regulated industries, and in preparing and supporting expert witness testimony before courts, regulatory agencies, and legislative committees throughout the U.S. and Canada. I have personally sponsored direct and rebuttal testimony in over 150 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. A resume containing the details of my qualifications and experience is attached below.

ADRIEN M. McKENZIE

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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 sponsored prefiled testimony submitted in over 150 regulatory proceedings. In addition to filings before 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, 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. 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 prudence reviews; and the analysis of avoided cost pricing for cogenerated power.

ROE ANALYSIS

Exhibit AMM-2

Page 1 of 1

SUMMARY OF RESULTS

Method	Result
DCF	
Value Line	9.0%
IBES	9.6%
Zacks	9.0%
Internal br + sv	8.5%
CAPM	
Current Bond Yield	11.4%
Projected Bond Yield	11.5%
ECAPM	
Current Bond Yield	11.7%
Projected Bond Yield	11.7%
Utility Risk Premium	
Current Bond Yield	10.3%
Projected Bond Yield	10.7%
Expected Earnings	11.4%

ROE Recommendation			
<u>Cost of Equity</u>			
Range	9.8%	--	11.3%
<u>Flotation Cost Adjustment</u>			
Dividend Yield	3.1%		
Flotation Cost Percentage	2.8%		
Adjustment			
	0.1%		
<u>Return on Equity</u>			
Range	9.9%	--	11.4%
<u>Recommended ROE</u>	10.65%		

REGULATORY MECHANISMS

Exhibit AMM-3

Page 1 of 4

UTILITY GROUP

		Type of Adjustment Clause							
		Conserv. Program Expense	Decoupling		New Capital			Environ. Compliance	Transmission Costs
Company	Fuel/PPA		Full	Partial	Trad. Generation	Renewables/ Non-Trad.	Delivery Infra.		
1 Alliant Energy	✓	✓	--	--	--	✓	--	✓	✓
2 Ameren Corp.	✓	✓	--	✓	--	✓	✓	✓	✓
3 American Elec Pwr	✓	✓	--	✓	✓	✓	✓	✓	✓
4 Black Hills Corp.	✓	✓	--	✓	✓	✓	--	✓	✓
5 CMS Energy Corp.	✓	✓	--	--	--	✓	--	--	✓
6 Consolidated Edison	--	✓	✓	✓	--	✓	✓	✓	--
7 Dominion Energy	✓	✓	--	--	✓	✓	✓	✓	✓
8 DTE Energy Co.	✓	✓	--	--	--	✓	--	--	✓
9 Duke Energy Corp.	✓	✓	--	✓	✓	✓	✓	✓	✓
10 Entergy Corp.	✓	✓	--	✓	✓	✓	✓	✓	✓
11 Evergy Inc.	✓	✓	--	✓	--	✓	✓	✓	✓
12 Eversource Energy	✓	✓	✓	✓	--	✓	✓	--	✓
13 NextEra Energy, Inc.	✓	✓	--	--	✓	✓	✓	✓	✓
14 OGE Energy Corp.	✓	✓	--	✓	✓	✓	✓	✓	✓
15 Pinnacle West Capital	✓	✓	--	✓	--	✓	--	✓	✓
16 Portland General Elec.	✓	✓	--	--	✓	✓	--	✓	✓
17 Pub Sv Enterprise Grp.	--	✓	--	✓	--	--	✓	✓	--
18 Sempra Energy	✓	✓	✓	--	--	--	✓	--	✓
19 Southern Company	✓	--	--	✓	✓	✓	--	✓	--
20 WEC Energy Group	✓	✓	--	--	--	✓	--	--	--
21 Xcel Energy Inc.	✓	✓	--	✓	✓	✓	✓	✓	✓

Source:

Exhibit AMM-3, pages 2-4, contain operating company data that are aggregated into the parent company data on this page.

UTILITY GROUP OPERATING COS.

	Company	State	Type of Adjustment Clause														
			Fuel/PPA	Conserv. Program Expense	Decoupling		Trad. Generation	New Capital			Environ. Compliance	Trans. Costs					
					Full	Partial		Renewables/ Non-Trad.	Delivery Infra.								
1	ALLIANT ENERGY CORP.																
	Interstate Power & Light Co.	IA	✓		✓		--	--	--		✓	--		✓	✓		
	Wisconsin Power & Light Co.	WI	✓	*	--	*	--	--	--	*	--	--	*	--	--		
2	AMEREN CORP.																
	Ameren Illinois Co.	IL	--	*	✓		--	✓	*	--	✓	--		✓	*	✓	
	Union Electric Co.	MO	✓		✓	*	--	✓	*	--	✓	*	✓	*	--	*	✓
3	AMERICAN ELEC PWR																
	Southwestern Electric Power Co.	AR	✓		✓		--	✓	*	✓	--	--		✓		✓	
	Indiana Michigan Power Co.	IN	✓		✓		--	✓	*	--	✓		*	✓	*	✓	
	Kentucky Power Co.	KY	✓		✓		--	✓	*	--	--	--		✓		--	
	Southwestern Electric Power Co.	LA	✓		✓	*	--	✓	*	--	--	--		--		--	
	Indiana Michigan Power Co.	MI	✓		✓		--	✓	*	--	✓	--		--		--	
	Ohio Power Co.	OH	--	*	✓	*	--	✓	*	--	✓		*	--		✓	
	Public Service Co. of Oklahoma	OK	✓		✓	*	--	✓	*	--	✓	*	--	--	*	✓	
	Kingsport Power Co.	TN	✓		--		--	--	--	--	--	--		--		--	
	AEP Texas Inc.	TX	--	*	✓		--	--	--	--	--	✓	--	--		✓	
	Southwestern Electric Power Co.	TX	✓	*	✓		--	--	--	*	--	✓	--	--		✓	
	Appalachian Power Co.	VA	✓		✓		--	--	✓	--	--	--		✓		✓	
	Appalachian Power Co./Wheeling Power	WV	✓		✓		--	--	--	*	--	--	*	✓		--	
4	BLACK HILLS CORP.																
	Black Hills Colorado Electric Inc.	CO	✓		✓		--	--	✓	*	✓	--	--	--		✓	
	Black Hills Power Inc.	SD	✓		--		--	--	--	--	--	--		✓	*	✓	
	Cheyenne Light Fuel & Power Co.	WY	✓		✓		--	✓	*	--	--	--	--	--		--	
5	CMS ENERGY																
	Consumers Energy Co.	MI	✓		✓		--	*	--	--	✓	--	--	--		✓	
6	CONSOLIDATED EDISON																
	Rockland Electric Co.	NJ	--	*	✓	*	--	✓	*	--	--	--	*	✓	*	--	
	Consolidated Edison Co. of New York Inc	NY	--	*	✓		✓	--	--	--	✓	*	✓	*	--	--	
	Orange & Rockland Utilities Inc.	NY	--	*	✓		✓	--	--	--	✓	*	--	--		--	
7	DOMINION ENERGY																
	Virginia Electric & Power Co.	NC	✓		✓	*	--	--	*	--	✓	*	--	✓		--	
	Virginia Electric & Power Co.	VA	✓		✓		--	--	✓	--	✓		✓	✓		✓	
	Dominion Energy South Carolina	SC	✓		✓		--	--	✓	*	--	--	✓	✓		--	
8	DTE ENERGY CO.																
	DTE Electric Co.	MI	✓		✓		--	*	--	--	✓	--	--	--		✓	

UTILITY GROUP OPERATING COS.

	Company	State	Type of Adjustment Clause												
			Fuel/PPA	Conserv. Program Expense	Decoupling		Trad. Generation	New Capital			Environ. Compliance	Trans. Costs			
					Full	Partial		Renewables/ Non-Trad.	Delivery Infra.						
9	DUKE ENERGY														
	Duke Energy Florida LLC	FL	✓	✓		--	--	✓	*	✓	*	--	*	✓	--
	Duke Energy Indiana LLC	IN	✓	✓		--	✓	*	--	✓		✓	*	✓	✓
	Duke Energy Kentucky Inc.	KY	✓	✓		--	✓	*	--	--		--	✓		--
	Duke Energy Carolinas LLC	NC	✓	✓	*	--	--	*	--	✓	*	--	✓		--
	Duke Energy Progress LLC	NC	✓	✓	*	--	--	*	--	✓	*	--	✓		--
	Duke Energy Ohio Inc.	OH	--	*	✓	*	✓	*	--	✓		✓	*	--	✓
	Duke Energy Progress LLC	SC	✓	✓		--	--	--	*	--		--	✓		--
	Duke Energy Carolinas LLC	SC	✓	✓		--	--	--	*	--		--	✓		--
10	ENTERGY CORP.														
	Entergy Arkansas LLC	AR	✓	✓		--	✓	*	✓	*	✓	✓	*	--	✓
	Entergy New Orleans LLC	LA	✓	✓		--	--	--		✓		--	✓	*	✓
	Entergy Louisiana LLC	LA	✓	✓	*	--	✓	*	--	--		--	✓		--
	Entergy Mississippi LLC	MS	✓	--		--	✓	*	--	--		--	--		✓
	Entergy Texas Inc.	TX	✓	*	✓	--	--	✓	*	--		✓	--		✓
11	EVERGY, INC.														
	Evergy Kansas Central Inc.	KS	✓	✓	*	--	✓	*	--	✓		--	✓		✓
	Evergy Kansas South Inc.	KS	✓	✓	*	--	✓	*	--	✓		--	✓		✓
	Evergy Metro Inc.	KS	✓	✓	*	--	--	--		--		✓	*	--	✓
	Evergy Metro Inc.	MO	✓	✓	*	--	✓	*	--	--	*	✓	*	--	✓
	Evergy Missouri West Inc.	MO	✓	✓	*	--	✓	*	--	✓	*	✓	*	--	✓
12	EVERSOURCE ENERGY														
	Connecticut Light and Power Co.	CT	--	*	✓		✓	*	--	--	*	✓	*	--	✓
	NSTAR Electric Co.	MA	--	*	✓	*	✓		--	--	✓	✓	*	--	✓
	Public Service Co. of New Hampshire	NH	✓	*	--		✓	*	--	--		✓	*	--	✓
13	NEXTERA ENERGY														
	Florida Power & Light Co.	FL	✓	✓		--	--	✓	*	✓	*	--	*	✓	--
	Lone Star Transmission LLC	TX	--	*	--		--	--		--		✓	--		✓
	Pivotal Utility Holdings Inc.	FL	✓	✓		--	--	--		--		✓	*	✓	--
14	OGE ENERGY CORP.														
	Oklahoma Gas & Electric Co.	AR	✓	✓		--	✓	*	✓	✓		✓	✓		✓
	Oklahoma Gas & Electric Co.	OK	✓	✓	*	--	✓	*	--	--		✓	*	✓	*
15	PINNACLE WEST CAPITAL														
	Arizona Public Service Co.	AZ	✓	✓		--	✓	*	--	✓		--	✓		✓
16	PORTLAND GENERAL ELECTRIC														
	Portland General Electric Co.	OR	✓	✓		--	--	✓	*	✓	*	--	✓	*	✓
17	PUB SV ENTERPRISE GRP														
	Public Service Electric & Gas Co.	NJ	--	*	✓	*	✓	*	--	--		✓	*	✓	--
18	SEMPRA ENERGY														
	San Diego Gas & Electric Co.	CA	✓	--		✓	--	--		--		--	--		--

UTILITY GROUP OPERATING COS.

	Company	State	Type of Adjustment Clause										
			Fuel/PPA	Conserv. Program Expense	Decoupling		Trad. Generation	New Capital		Delivery Infra.	Environ. Compliance	Trans. Costs	
					Full	Partial		Renewables/ Non-Trad.					
19	SOUTHERN CO.	TX	--	*	✓		--	--	--	--	✓	--	✓
	Alabama Power Co.	AL	✓	*	--		--	--	✓	*	✓	--	✓
	Georgia Power Co.	GA	✓	--	--		--	--	✓	*	--	✓	*
	Mississippi Power Co.	MS	✓	--	--		✓	*	--	--	--	✓	*
20	WEC ENERGY GROUP												
	Upper Michigan Energy Resources Corp.	MI	✓		✓		--	*	--		✓	--	--
	Wisconsin Electric Power Co.	WI	✓	*	--	*	--	--	--	*	✓	--	*
	Wisconsin Public Service Corp.	WI	✓	*	--	*	--	--	--	*	--	--	*
21	XCEL ENERGY, INC.												
	Public Service Co. of Colorado	CO	✓		✓		--		✓	--	--	--	✓
	Northern States Power Co. - Minnesota	MN	✓		✓		--		✓	--	✓	--	✓
	Southwestern Public Service Co.	NM	✓		✓		--	--	✓	--	--	--	--
	Northern States Power Co. - Minnesota	ND	✓		--		--	--	✓	*	✓	*	✓
	Northern States Power Co. - Minnesota	SD	✓		✓	*	--	✓	*	✓	--	✓	✓
	Southwestern Public Service Co.	TX	✓	*	✓		--	--	--	*	--	--	✓
	Northern States Power Co. - Wisconsin	WI	✓	*	--	*	--	--	--	*	--	--	--

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

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

DIVIDEND YIELD

		(a)	(b)	
	Company	Price	Dividends	Yield
1	Alliant Energy	\$ 62.32	\$ 1.76	2.8%
2	Ameren Corp.	\$ 94.29	\$ 2.44	2.6%
3	American Elec Pwr	\$ 102.06	\$ 3.27	3.2%
4	Black Hills Corp.	\$ 77.05	\$ 2.38	3.1%
5	CMS Energy Corp.	\$ 69.08	\$ 1.89	2.7%
6	Consolidated Edison	\$ 99.11	\$ 3.20	3.2%
7	Dominion Energy	\$ 83.19	\$ 2.75	3.3%
8	DTE Energy Co.	\$ 132.91	\$ 3.54	2.7%
9	Duke Energy Corp.	\$ 109.87	\$ 4.02	3.7%
10	Entergy Corp.	\$ 118.63	\$ 4.04	3.4%
11	Evergy Inc.	\$ 69.60	\$ 2.39	3.4%
12	Eversource Energy	\$ 91.48	\$ 2.63	2.9%
13	NextEra Energy, Inc.	\$ 88.18	\$ 1.79	2.0%
14	OGE Energy Corp.	\$ 41.40	\$ 1.64	4.0%
15	Pinnacle West Capital	\$ 76.14	\$ 3.46	4.5%
16	Portland General Elec.	\$ 53.12	\$ 1.84	3.5%
17	Pub Sv Enterprise Grp.	\$ 66.58	\$ 2.22	3.3%
18	Sempra Energy	\$ 166.89	\$ 4.67	2.8%
19	Southern Company	\$ 78.29	\$ 2.72	3.5%
20	WEC Energy Group	\$ 105.10	\$ 2.91	2.8%
21	Xcel Energy Inc.	\$ 75.29	\$ 2.01	2.7%
	Average			3.1%

(a) Average of closing prices for 30 trading days ended Sep. 9, 2022.

(b) The Value Line Investment Survey, Summary & Index (Sep. 9, 2022).

GROWTH RATES

	Company	(a)	(b)	(c)	(d)
		Earnings Growth			br+sv
		V Line	IBES	Zacks	Growth
1	Alliant Energy	6.0%	6.3%	6.2%	4.8%
2	Ameren Corp.	6.5%	7.4%	7.2%	5.6%
3	American Elec Pwr	6.5%	6.4%	6.2%	5.7%
4	Black Hills Corp.	6.0%	4.7%	6.2%	6.8%
5	CMS Energy Corp.	6.5%	8.6%	8.3%	6.0%
6	Consolidated Edison	4.0%	5.2%	2.0%	3.6%
7	Dominion Energy	5.0%	6.7%	6.4%	6.3%
8	DTE Energy Co.	4.5%	4.0%	6.0%	6.4%
9	Duke Energy Corp.	5.0%	5.6%	6.1%	3.2%
10	Entergy Corp.	4.0%	6.0%	6.7%	5.7%
11	Evergy Inc.	7.5%	3.7%	5.1%	3.7%
12	Eversource Energy	6.5%	6.3%	6.3%	5.0%
13	NextEra Energy, Inc.	10.0%	9.5%	9.7%	7.3%
14	OGE Energy Corp.	6.5%	1.9%	3.5%	5.5%
15	Pinnacle West Capital	0.5%	0.1%	n/a	3.1%
16	Portland General Elec.	4.5%	2.9%	3.7%	3.3%
17	Pub Sv Enterprise Grp.	4.0%	2.8%	3.1%	4.3%
18	Sempra Energy	7.5%	9.8%	5.8%	4.6%
19	Southern Company	6.5%	6.6%	4.0%	5.5%
20	WEC Energy Group	6.0%	6.2%	6.1%	4.1%
21	Xcel Energy Inc.	6.0%	7.0%	6.4%	4.9%

(a) The Value Line Investment Survey (Jul. 22, Aug. 12 and Sep. 9, 2022).

(b) www.finance.yahoo.com (retrieved Sep. 15, 2022).

(c) www.zacks.com (retrieved Sep. 15, 2022).

(d) See Exhibit AMM-5.

COST OF EQUITY ESTIMATES

	(a)	(a)	(a)	(a)
	V Line	IBES	Zacks	br+sv Growth
1 Alliant Energy	8.8%	9.1%	9.0%	7.6%
2 Ameren Corp.	9.1%	10.0%	9.8%	8.2%
3 American Elec Pwr	9.7%	9.6%	9.4%	9.0%
4 Black Hills Corp.	9.1%	7.8%	9.3%	9.8%
5 CMS Energy Corp.	9.2%	11.3%	11.0%	8.7%
6 Consolidated Edison	7.2%	8.5%	5.2%	6.8%
7 Dominion Energy	8.3%	10.0%	9.7%	9.6%
8 DTE Energy Co.	7.2%	6.6%	8.7%	9.0%
9 Duke Energy Corp.	8.7%	9.3%	9.7%	6.9%
10 Entergy Corp.	7.4%	9.4%	10.1%	9.1%
11 Evergy Inc.	10.9%	7.1%	8.6%	7.1%
12 Eversource Energy	9.4%	9.1%	9.1%	7.8%
13 NextEra Energy, Inc.	12.0%	11.5%	11.7%	9.4%
14 OGE Energy Corp.	10.5%	5.9%	7.4%	9.5%
15 Pinnacle West Capital	5.0%	4.6%	n/a	7.7%
16 Portland General Elec.	8.0%	6.3%	7.2%	6.8%
17 Pub Sv Enterprise Grp.	7.3%	6.1%	6.4%	7.6%
18 Sempra Energy	10.3%	12.6%	8.5%	7.4%
19 Southern Company	10.0%	10.1%	7.5%	9.0%
20 WEC Energy Group	8.8%	9.0%	8.8%	6.9%
21 Xcel Energy Inc.	8.7%	9.7%	9.1%	7.6%
Average (b)	9.0%	9.6%	9.0%	8.5%

(a) Sum of dividend yield (Exhibit AMM-4, p. 1) and respective growth rate (Exhibit AMM-4, p. 2).

(b) Excludes highlighted values.

BR+SV GROWTH RATE

Exhibit AMM-5

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UTILITY GROUP

		(a)	(a)	(a)	(b)	(c)	(d)	(e)		(f)	(g)		
		2026			Adjustment					"sv" Factor			
	<u>Company</u>	<u>EPS</u>	<u>DPS</u>	<u>BVPS</u>	<u>b</u>	<u>r</u>	<u>Factor</u>	<u>Adjusted r</u>	<u>br</u>	<u>s</u>	<u>v</u>	<u>sv</u>	<u>br + sv</u>
1	Alliant Energy	\$3.50	\$2.15	\$30.25	38.6%	11.6%	1.0250	11.9%	4.6%	0.0042	0.5160	0.21%	4.8%
2	Ameren Corp.	\$5.25	\$3.10	\$51.25	41.0%	10.2%	1.0389	10.6%	4.4%	0.0294	0.4306	1.27%	5.6%
3	American Elec Pwr	\$6.50	\$4.00	\$59.00	38.5%	11.0%	1.0364	11.4%	4.4%	0.0292	0.4636	1.36%	5.7%
4	Black Hills Corp.	\$5.20	\$2.95	\$46.50	43.3%	11.2%	1.0365	11.6%	5.0%	0.0361	0.4833	1.74%	6.8%
5	CMS Energy Corp.	\$3.75	\$2.30	\$29.25	38.7%	12.8%	1.0322	13.2%	5.1%	0.0155	0.5500	0.85%	6.0%
6	Consolidated Edison	\$5.50	\$3.52	\$67.25	36.0%	8.2%	1.0242	8.4%	3.0%	0.0202	0.2921	0.59%	3.6%
7	Dominion Energy	\$5.30	\$3.40	\$43.00	35.8%	12.3%	1.0379	12.8%	4.6%	0.0316	0.5474	1.73%	6.3%
8	DTE Energy Co.	\$7.50	\$4.65	\$60.75	38.0%	12.3%	1.0365	12.8%	4.9%	0.0274	0.5500	1.51%	6.4%
9	Duke Energy Corp.	\$6.50	\$4.30	\$70.00	33.8%	9.3%	1.0133	9.4%	3.2%	0.0004	0.3778	0.02%	3.2%
10	Entergy Corp.	\$8.50	\$5.10	\$74.00	40.0%	11.5%	1.0308	11.8%	4.7%	0.0204	0.4618	0.94%	5.7%
11	Evergy Inc.	\$4.75	\$3.05	\$47.50	35.8%	10.0%	1.0162	10.2%	3.6%	0.0011	0.4242	0.04%	3.7%
12	Eversource Energy	\$5.30	\$3.30	\$53.50	37.7%	9.9%	1.0298	10.2%	3.8%	0.0229	0.4905	1.12%	5.0%
13	NextEra Energy, Inc.	\$4.00	\$2.50	\$27.00	37.5%	14.8%	1.0382	15.4%	5.8%	0.0220	0.7158	1.57%	7.3%
14	OGE Energy Corp.	\$3.25	\$1.85	\$26.00	43.1%	12.5%	1.0249	12.8%	5.5%	0.0002	0.4526	0.01%	5.5%
15	Pinnacle West Capital	\$5.25	\$3.76	\$58.50	28.4%	9.0%	1.0154	9.1%	2.6%	0.0141	0.3842	0.54%	3.1%
16	Portland General Elec.	\$3.40	\$2.25	\$35.50	33.8%	9.6%	1.0158	9.7%	3.3%	0.0004	0.4538	0.02%	3.3%
17	Pub Sv Enterprise Grp.	\$4.30	\$2.72	\$34.00	36.7%	12.6%	1.0153	12.8%	4.7%	(0.0073)	0.5613	-0.41%	4.3%
18	Sempra Energy	\$10.75	\$5.60	\$100.75	47.9%	10.7%	1.0206	10.9%	5.2%	(0.0142)	0.4627	-0.66%	4.6%
19	Southern Company	\$4.75	\$3.10	\$32.25	34.7%	14.7%	1.0216	15.0%	5.2%	0.0045	0.5839	0.26%	5.5%
20	WEC Energy Group	\$5.50	\$3.80	\$42.00	30.9%	13.1%	1.0195	13.4%	4.1%	-	0.6267	0.00%	4.1%
21	Xcel Energy Inc.	\$4.00	\$2.50	\$37.00	37.5%	10.8%	1.0279	11.1%	4.2%	0.0137	0.5515	0.76%	4.9%

BR+SV GROWTH RATE

Exhibit AMM-5

Page 2 of 2

UTILITY GROUP

		(a)	(a)	(h)	(a)	(a)	(h)	(i)	(a)	(a)		(j)	(a)	(a)	(i)
		2021			2026			Chg	2026				Common Shares		
	<u>Company</u>	<u>Eq Ratio</u>	<u>Tot Cap</u>	<u>Com Eq</u>	<u>Eq Ratio</u>	<u>Tot Cap</u>	<u>Com Eq</u>	<u>Equity</u>	<u>High</u>	<u>Low</u>	<u>Avg.</u>	<u>M/B</u>	<u>2021</u>	<u>2026</u>	<u>Growth</u>
1	Alliant Energy	47.1%	\$12,725	\$5,993	45.0%	\$17,100	\$7,695	5.1%	\$70.0	\$55.0	\$62.5	2.066	250.47	253.00	0.20%
2	Ameren Corp.	43.3%	\$22,391	\$9,695	48.5%	\$29,500	\$14,308	8.1%	\$100.0	\$80.0	\$90.0	1.756	257.70	280.00	1.67%
3	American Elec Pwr	41.7%	\$53,734	\$22,407	42.5%	\$75,900	\$32,258	7.6%	\$120.0	\$100.0	\$110.0	1.864	504.21	545.00	1.57%
4	Black Hills Corp.	40.3%	\$6,914	\$2,786	55.0%	\$7,300	\$4,015	7.6%	\$105.0	\$75.0	\$90.0	1.935	64.74	71.00	1.86%
5	CMS Energy Corp.	34.2%	\$18,760	\$6,416	38.0%	\$23,300	\$8,854	6.7%	\$75.0	\$55.0	\$65.0	2.222	289.76	300.00	0.70%
6	Consolidated Edison	47.0%	\$42,641	\$20,041	49.5%	\$51,600	\$25,542	5.0%	\$105.0	\$85.0	\$95.0	1.413	353.98	380.00	1.43%
7	Dominion Energy	38.5%	\$66,344	\$25,542	42.0%	\$88,900	\$37,338	7.9%	\$110.0	\$80.0	\$95.0	2.209	810.40	870.00	1.43%
8	DTE Energy Co.	37.5%	\$23,236	\$8,714	39.0%	\$32,200	\$12,558	7.6%	\$155.0	\$115.0	\$135.0	2.222	193.75	206.00	1.23%
9	Duke Energy Corp.	43.1%	\$109,744	\$47,300	37.5%	\$144,100	\$54,038	2.7%	\$130.0	\$95.0	\$112.5	1.607	769.00	770.00	0.03%
10	Entergy Corp.	31.7%	\$36,733	\$11,644	33.5%	\$47,300	\$15,846	6.4%	\$160.0	\$115.0	\$137.5	1.858	202.65	214.00	1.10%
11	Evergy Inc.	49.9%	\$18,542	\$9,252	46.5%	\$23,400	\$10,881	3.3%	\$95.0	\$70.0	\$82.5	1.737	229.30	230.00	0.06%
12	Eversource Energy	45.3%	\$32,233	\$14,602	44.0%	\$44,700	\$19,668	6.1%	\$115.0	\$95.0	\$105.0	1.963	344.40	365.00	1.17%
13	NextEra Energy, Inc.	42.2%	\$88,162	\$37,204	43.5%	\$125,400	\$54,549	8.0%	\$105.0	\$85.0	\$95.0	3.519	1963.00	2025.00	0.62%
14	OGE Energy Corp.	47.4%	\$8,553	\$4,054	50.0%	\$10,400	\$5,200	5.1%	\$55.0	\$40.0	\$47.5	1.827	200.10	200.20	0.01%
15	Pinnacle West Capital	46.1%	\$12,820	\$5,910	45.0%	\$15,325	\$6,896	3.1%	\$110.0	\$80.0	\$95.0	1.624	113.01	118.00	0.87%
16	Portland General Elec.	43.2%	\$6,265	\$2,706	42.0%	\$7,550	\$3,171	3.2%	\$75.0	\$55.0	\$65.0	1.831	89.41	89.50	0.02%
17	Pub Sv Enterprise Grp.	48.7%	\$29,657	\$14,443	42.5%	\$39,600	\$16,830	3.1%	\$85.0	\$70.0	\$77.5	2.279	504.00	496.00	-0.32%
18	Sempra Energy	53.3%	\$47,069	\$25,088	52.0%	\$59,300	\$30,836	4.2%	\$215.0	\$160.0	\$187.5	1.861	316.92	305.00	-0.76%
19	Southern Company	35.6%	\$78,285	\$27,869	37.0%	\$93,500	\$34,595	4.4%	\$90.0	\$65.0	\$77.5	2.403	1060.00	1070.00	0.19%
20	WEC Energy Group	44.6%	\$24,467	\$10,912	44.5%	\$29,800	\$13,261	4.0%	\$125.0	\$100.0	\$112.5	2.679	315.43	315.43	0.00%
21	Xcel Energy Inc.	41.8%	\$37,391	\$15,629	42.0%	\$49,200	\$20,664	5.7%	\$90.0	\$75.0	\$82.5	2.230	544.03	561.00	0.62%

(a) The Value Line Investment Survey (Jul. 22, Aug. 12 and Sep. 9, 2022).

(b) "b" is the retention ratio, computed as (EPS-DPS)/EPS.

(c) "r" is the rate of return on book equity, computed as EPS/BVPS.

(d) Computed using the formula $2 \times (1 + 5\text{-Yr. Change in Equity}) / (2 + 5\text{ Yr. Change in Equity})$.

(e) Product of average year-end "r" for 2025 and Adjustment Factor.

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

(g) Computed as $1 - B/M$ Ratio.

(h) Product of total capital and equity ratio.

(i) Five-year rate of change.

(j) Average of High and Low expected market prices divided by 2025 BVPS.

CURRENT BOND YIELD

		(a)	(b)	(c)	(d)	(e)	(f)				
		Market Return (R_m)									
		Div	Proj.	Cost of	Risk-Free	Risk		Unadjusted	Market	Size	CAPM
	Company	Yield	Growth	Equity	Rate	Premium	Beta	K_e	Cap	Adjustment	Result
1	Alliant Energy	2.0%	10.2%	12.2%	3.1%	9.1%	0.85	10.8%	\$15,700	0.57%	11.4%
2	Ameren Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	0.85	10.8%	\$25,000	0.44%	11.3%
3	American Elec Pwr	2.0%	10.2%	12.2%	3.1%	9.1%	0.75	9.9%	\$53,000	-0.17%	9.8%
4	Black Hills Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	0.95	11.7%	\$4,700	0.91%	12.7%
5	CMS Energy Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	0.80	10.4%	\$20,200	0.44%	10.8%
6	Consolidated Edison	2.0%	10.2%	12.2%	3.1%	9.1%	0.75	9.9%	\$34,800	0.44%	10.4%
7	Dominion Energy	2.0%	10.2%	12.2%	3.1%	9.1%	0.80	10.4%	\$67,000	-0.17%	10.2%
8	DTE Energy Co.	2.0%	10.2%	12.2%	3.1%	9.1%	0.95	11.7%	\$26,000	0.44%	12.2%
9	Duke Energy Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	0.85	10.8%	\$84,600	-0.17%	10.7%
10	Entergy Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	0.95	11.7%	\$24,300	0.44%	12.2%
11	Evergy Inc.	2.0%	10.2%	12.2%	3.1%	9.1%	0.90	11.3%	\$16,100	0.57%	11.9%
12	Eversource Energy	2.0%	10.2%	12.2%	3.1%	9.1%	0.90	11.3%	\$30,800	0.44%	11.7%
13	NextEra Energy, Inc.	2.0%	10.2%	12.2%	3.1%	9.1%	0.95	11.7%	\$168,000	-0.17%	11.6%
14	OGE Energy Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	1.05	12.7%	\$8,300	0.57%	13.2%
15	Pinnacle West Capital	2.0%	10.2%	12.2%	3.1%	9.1%	0.90	11.3%	\$8,100	0.56%	11.9%
16	Portland General Elec.	2.0%	10.2%	12.2%	3.1%	9.1%	0.85	10.8%	\$4,400	0.91%	11.7%
17	Pub Sv Enterprise Grp.	2.0%	10.2%	12.2%	3.1%	9.1%	0.90	11.3%	\$32,800	0.44%	11.7%
18	Sempra Energy	2.0%	10.2%	12.2%	3.1%	9.1%	0.95	11.7%	\$46,700	-0.17%	11.6%
19	Southern Company	2.0%	10.2%	12.2%	3.1%	9.1%	0.90	11.3%	\$81,500	-0.17%	11.1%
20	WEC Energy Group	2.0%	10.2%	12.2%	3.1%	9.1%	0.80	10.4%	\$33,200	0.44%	10.8%
21	Xcel Energy Inc.	2.0%	10.2%	12.2%	3.1%	9.1%	0.80	10.4%	\$38,100	-0.17%	10.2%
Average								11.1%			11.4%

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Aug. 26, 2022)..

(b) Average of weighted average earnings growth rates from IBES, Value Line, and Zacks for dividend-paying stocks in the S&P 500 based on data from Refinitiv, as provided by fidelity.com (retrieved Aug. 26, 2022), www.valueline.com (retrieved Aug. 26, 2022), and www.zacks.com (retrieved Aug. 26, 2022). Eliminated growth rates that were greater than 20%, as well as all negative values.

(c) Average yield on 30-year Treasury bonds for Aug. 2022 based on data from <https://fred.stlouisfed.org/>.

(d) The Value Line Investment Survey, Summary & Index (Sep. 9, 2022).

(e) The Value Line Investment Survey (Jul. 22, Aug. 12 and Sep. 9, 2022).

(f) Kroll, 2022 Supplementary CRSP Decile Size Study Data Exhibits.

PROJECTED BOND YIELD

		(a)	(b)	(c)	(d)	(e)	(f)				
		Market Return (R_m)									
		Div	Proj.	Cost of	Risk-Free	Risk		Unadjusted	Market	Size	CAPM
	Company	Yield	Growth	Equity	Rate	Premium	Beta	K_e	Cap	Adjustment	Result
1	Alliant Energy	2.0%	10.2%	12.2%	3.8%	8.4%	0.85	10.9%	\$15,700	0.57%	11.5%
2	Ameren Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	0.85	10.9%	\$25,000	0.44%	11.4%
3	American Elec Pwr	2.0%	10.2%	12.2%	3.8%	8.4%	0.75	10.1%	\$53,000	-0.17%	9.9%
4	Black Hills Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	0.95	11.8%	\$4,700	0.91%	12.7%
5	CMS Energy Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	0.80	10.5%	\$20,200	0.44%	11.0%
6	Consolidated Edison	2.0%	10.2%	12.2%	3.8%	8.4%	0.75	10.1%	\$34,800	0.44%	10.5%
7	Dominion Energy	2.0%	10.2%	12.2%	3.8%	8.4%	0.80	10.5%	\$67,000	-0.17%	10.4%
8	DTE Energy Co.	2.0%	10.2%	12.2%	3.8%	8.4%	0.95	11.8%	\$26,000	0.44%	12.2%
9	Duke Energy Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	0.85	10.9%	\$84,600	-0.17%	10.8%
10	Entergy Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	0.95	11.8%	\$24,300	0.44%	12.2%
11	Evergy Inc.	2.0%	10.2%	12.2%	3.8%	8.4%	0.90	11.4%	\$16,100	0.57%	11.9%
12	Eversource Energy	2.0%	10.2%	12.2%	3.8%	8.4%	0.90	11.4%	\$30,800	0.44%	11.8%
13	NextEra Energy, Inc.	2.0%	10.2%	12.2%	3.8%	8.4%	0.95	11.8%	\$168,000	-0.17%	11.6%
14	OGE Energy Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	1.05	12.6%	\$8,300	0.57%	13.2%
15	Pinnacle West Capital	2.0%	10.2%	12.2%	3.8%	8.4%	0.90	11.4%	\$8,100	0.56%	11.9%
16	Portland General Elec.	2.0%	10.2%	12.2%	3.8%	8.4%	0.85	10.9%	\$4,400	0.91%	11.9%
17	Pub Sv Enterprise Grp.	2.0%	10.2%	12.2%	3.8%	8.4%	0.90	11.4%	\$32,800	0.44%	11.8%
18	Sempra Energy	2.0%	10.2%	12.2%	3.8%	8.4%	0.95	11.8%	\$46,700	-0.17%	11.6%
19	Southern Company	2.0%	10.2%	12.2%	3.8%	8.4%	0.90	11.4%	\$81,500	-0.17%	11.2%
20	WEC Energy Group	2.0%	10.2%	12.2%	3.8%	8.4%	0.80	10.5%	\$33,200	0.44%	11.0%
21	Xcel Energy Inc.	2.0%	10.2%	12.2%	3.8%	8.4%	0.80	10.5%	\$38,100	-0.17%	10.4%
Average								11.2%			11.5%

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Aug. 26, 2022)..

(b) Average of weighted average earnings growth rates from IBES, Value Line, and Zacks for dividend-paying stocks in the S&P 500 based on data from Refinitiv, as provided by fidelity.com (retrieved Aug. 26, 2022), www.valueline.com (retrieved Aug. 26, 2022), and www.zacks.com (retrieved Aug. 26, 2022). Eliminated growth rates that were greater than 20%, as well as all negative values.

(c) Projected yield on 30-year Treasury bonds for 2023-27 based on data from Wolters Kluwer, Blue Chip Financial Forecasts (Jun. 1, 2022).

(d) The Value Line Investment Survey, Summary & Index (Sep. 9, 2022).

(e) The Value Line Investment Survey (Jul. 22, Aug. 12 and Sep. 9, 2022).

(f) Kroll, 2022 Supplementary CRSP Decile Size Study Data Exhibits.

CURRENT BOND YIELD

		(a)	(b)	(c)		(d)	(e)	(d)		(f)	(g)					
		Market Return (R_m)														
		Div	Proj.	Cost of	Risk-Free	Risk	Unadjusted RP	Beta	Adjusted RP		Unadjusted	Market	Size	ECAPM		
Company		Yield	Growth	Equity	Rate	Premium	Weight	RP^1	Beta	Weight	RP^2	Total RP	K_e	Cap	Adjustment	Result
1	Alliant Energy	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.85	75%	5.8%	8.1%	11.2%	\$15,700	0.57%	11.7%
2	Ameren Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.85	75%	5.8%	8.1%	11.2%	\$25,000	0.44%	11.6%
3	American Elec Pwr	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.75	75%	5.1%	7.4%	10.5%	\$53,000	-0.17%	10.3%
4	Black Hills Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.95	75%	6.5%	8.8%	11.9%	\$4,700	0.91%	12.8%
5	CMS Energy Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.80	75%	5.5%	7.7%	10.8%	\$20,200	0.44%	11.3%
6	Consolidated Edison	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.75	75%	5.1%	7.4%	10.5%	\$34,800	0.44%	10.9%
7	Dominion Energy	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.80	75%	5.5%	7.7%	10.8%	\$67,000	-0.17%	10.7%
8	DTE Energy Co.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.95	75%	6.5%	8.8%	11.9%	\$26,000	0.44%	12.3%
9	Duke Energy Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.85	75%	5.8%	8.1%	11.2%	\$84,600	-0.17%	11.0%
10	Entergy Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.95	75%	6.5%	8.8%	11.9%	\$24,300	0.44%	12.3%
11	Evergy Inc.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.90	75%	6.1%	8.4%	11.5%	\$16,100	0.57%	12.1%
12	Eversource Energy	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.90	75%	6.1%	8.4%	11.5%	\$30,800	0.44%	12.0%
13	NextEra Energy, Inc.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.95	75%	6.5%	8.8%	11.9%	\$168,000	-0.17%	11.7%
14	OGE Energy Corp.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	1.05	75%	7.2%	9.4%	12.5%	\$8,300	0.57%	13.1%
15	Pinnacle West Capital	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.90	75%	6.1%	8.4%	11.5%	\$8,100	0.56%	12.1%
16	Portland General Elec.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.85	75%	5.8%	8.1%	11.2%	\$4,400	0.91%	12.1%
17	Pub Sv Enterprise Grp.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.90	75%	6.1%	8.4%	11.5%	\$32,800	0.44%	12.0%
18	Sempra Energy	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.95	75%	6.5%	8.8%	11.9%	\$46,700	-0.17%	11.7%
19	Southern Company	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.90	75%	6.1%	8.4%	11.5%	\$81,500	-0.17%	11.3%
20	WEC Energy Group	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.80	75%	5.5%	7.7%	10.8%	\$33,200	0.44%	11.3%
21	Xcel Energy Inc.	2.0%	10.2%	12.2%	3.1%	9.1%	25%	2.3%	0.80	75%	5.5%	7.7%	10.8%	\$38,100	-0.17%	10.7%
Average													11.4%			11.7%

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Aug. 26, 2022)..

(b) Average of weighted average earnings growth rates from IBES, Value Line, and Zacks for dividend-paying stocks in the S&P 500 based on data from Refinitiv, as provided by fidelity.com (retrieved Aug. 26, 2022), www.valueline.com (retrieved Aug. 26, 2022), and www.zacks.com (retrieved Aug. 26, 2022). Eliminated growth rates that were greater than 20%, as well as all negative values.

(c) Average yield on 30-year Treasury bonds for Aug. 2022 based on data from Moody's Investors Service.

(d) Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 190.

(e) The Value Line Investment Survey, Summary & Index (Sep. 9, 2022).

(f) The Value Line Investment Survey (Jul. 22, Aug. 12 and Sep. 9, 2022).

(g) Kroll, 2022 Supplementary CRSP Decile Size Study Data Exhibits.

PROJECTED BOND YIELD

		(a)	(b)	(c)		(d)	(e)	(d)		(f)	(g)					
		Market Return (R _m)														
		Div	Proj.	Cost of	Risk-Free	Risk	Unadjusted RP	Beta	Adjusted RP		Unadjusted	Market	Size	ECAPM		
	Company	Yield	Growth	Equity	Rate	Premium	Weight	RP ¹	Beta	Weight	RP ²	Total RP	K _e	Cap	Adjustment	Result
1	Alliant Energy	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.85	75%	5.4%	7.5%	11.3%	\$15,700	0.57%	11.8%
2	Ameren Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.85	75%	5.4%	7.5%	11.3%	\$25,000	0.44%	11.7%
3	American Elec Pwr	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.75	75%	4.7%	6.8%	10.6%	\$53,000	-0.17%	10.5%
4	Black Hills Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.95	75%	6.0%	8.1%	11.9%	\$4,700	0.91%	12.8%
5	CMS Energy Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.80	75%	5.0%	7.1%	10.9%	\$20,200	0.44%	11.4%
6	Consolidated Edison	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.75	75%	4.7%	6.8%	10.6%	\$34,800	0.44%	11.1%
7	Dominion Energy	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.80	75%	5.0%	7.1%	10.9%	\$67,000	-0.17%	10.8%
8	DTE Energy Co.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.95	75%	6.0%	8.1%	11.9%	\$26,000	0.44%	12.3%
9	Duke Energy Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.85	75%	5.4%	7.5%	11.3%	\$84,600	-0.17%	11.1%
10	Entergy Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.95	75%	6.0%	8.1%	11.9%	\$24,300	0.44%	12.3%
11	Eversource Energy	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.90	75%	5.7%	7.8%	11.6%	\$16,100	0.57%	12.1%
12	Eversource Energy	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.90	75%	5.7%	7.8%	11.6%	\$30,800	0.44%	12.0%
13	NextEra Energy, Inc.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.95	75%	6.0%	8.1%	11.9%	\$168,000	-0.17%	11.7%
14	OGE Energy Corp.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	1.05	75%	6.6%	8.7%	12.5%	\$8,300	0.57%	13.1%
15	Pinnacle West Capital	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.90	75%	5.7%	7.8%	11.6%	\$8,100	0.56%	12.1%
16	Portland General Elec.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.85	75%	5.4%	7.5%	11.3%	\$4,400	0.91%	12.2%
17	Pub Sv Enterprise Grp.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.90	75%	5.7%	7.8%	11.6%	\$32,800	0.44%	12.0%
18	Sempra Energy	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.95	75%	6.0%	8.1%	11.9%	\$46,700	-0.17%	11.7%
19	Southern Company	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.90	75%	5.7%	7.8%	11.6%	\$81,500	-0.17%	11.4%
20	WEC Energy Group	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.80	75%	5.0%	7.1%	10.9%	\$33,200	0.44%	11.4%
21	Xcel Energy Inc.	2.0%	10.2%	12.2%	3.8%	8.4%	25%	2.1%	0.80	75%	5.0%	7.1%	10.9%	\$38,100	-0.17%	10.8%
Average												11.4%				11.7%

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Aug. 26, 2022)..

(b) Average of weighted average earnings growth rates from IBES, Value Line, and Zacks for dividend-paying stocks in the S&P 500 based on data from Refinitiv, as provided by fidelity.com (retrieved Aug. 26, 2022), www.valueline.com (retrieved Aug. 26, 2022), and www.zacks.com (retrieved Aug. 26, 2022). Eliminated growth rates that were greater than 20%, as well as all negative values.

(c) Projected yield on 30-year Treasury bonds for 2023-27 based on data from Wolters Kluwer, Blue Chip Financial Forecasts (Jun. 1, 2022).

(d) Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 190.

(e) The Value Line Investment Survey, Summary & Index (Sep. 9, 2022).

(f) The Value Line Investment Survey (Jul. 22, Aug. 12 and Sep. 9, 2022).

(g) Kroll, 2022 Supplementary CRSP Decile Size Study Data Exhibits.

ELECTRIC UTILITY RISK PREMIUM

Exhibit AMM-8

Page 1 of 4

CURRENT BOND YIELD

Current Equity Risk Premium

(a) Avg. Yield over Study Period	7.89%
(b) Average Utility Bond Yield	<u>4.80%</u>
Change in Bond Yield	-3.09%
(c) Risk Premium/Interest Rate Relationship	<u>-0.4303</u>
Adjustment to Average Risk Premium	1.33%
(a) Average Risk Premium over Study Period	<u>3.87%</u>
Adjusted Risk Premium	5.20%

Implied Cost of Equity

(b) Baa Utility Bond Yield	5.09%
Adjusted Equity Risk Premium	<u>5.20%</u>
Risk Premium Cost of Equity	10.29%

- (a) Exhibit AMM-8, page 2.
- (b) Average bond yield on all utility bonds and 'Baa' subset for Aug. 2022 based on data from Moody's Investors Service at www.credittrends.com.
- (c) Exhibit AMM-8, page 3.

ELECTRIC UTILITY RISK PREMIUM

Exhibit AMM-8

Page 2 of 4

PROJECTED BOND YIELD

Current Equity Risk Premium

(a) Avg. Yield over Study Period	7.89%
(b) Average Utility Bond Yield 2023-27	<u>5.57%</u>
Change in Bond Yield	-2.32%
(c) Risk Premium/Interest Rate Relationship	<u>-0.4303</u>
Adjustment to Average Risk Premium	1.00%
(a) Average Risk Premium over Study Period	<u>3.87%</u>
Adjusted Risk Premium	4.87%

Implied Cost of Equity

(b) Baa Utility Bond Yield 2023-27	5.85%
Adjusted Equity Risk Premium	<u>4.87%</u>
Risk Premium Cost of Equity	10.72%

- (a) Exhibit AMM-8, page 2.
- (b) Yields on all utility bonds and 'Baa' subset based on data from Wolters Kluwer, Blue Chip Financial Forecasts (Jun. 1, 2021) and Moody's Investors Service at www.credittrends.com.
- (c) Exhibit AMM-8, page 3.

ELECTRIC UTILITY RISK PREMIUM

Exhibit AMM-8

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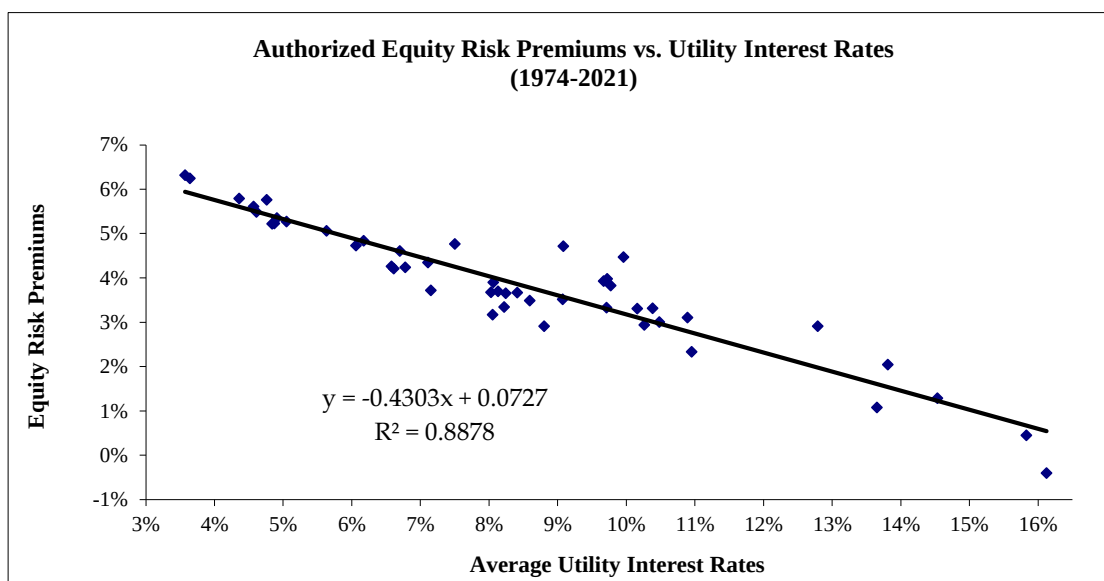
AUTHORIZED RETURNS

	(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%

	(a)	(b)	
Year	Allowed ROE	Average Utility Bond Yield	Risk Premium
1998	11.77%	7.00%	4.77%
1999	10.72%	7.55%	3.17%
2000	11.58%	8.09%	3.49%
2001	11.07%	7.72%	3.35%
2002	11.21%	7.53%	3.68%
2003	10.96%	6.61%	4.35%
2004	10.81%	6.20%	4.61%
2005	10.51%	5.67%	4.84%
2006	10.34%	6.08%	4.26%
2007	10.32%	6.11%	4.21%
2008	10.37%	6.65%	3.72%
2009	10.52%	6.28%	4.24%
2010	10.29%	5.56%	4.73%
2011	10.19%	5.13%	5.06%
2012	10.02%	4.26%	5.76%
2013	9.82%	4.55%	5.27%
2014	9.76%	4.41%	5.35%
2015	9.60%	4.37%	5.23%
2016	9.60%	4.11%	5.49%
2017	9.68%	4.07%	5.61%
2018	9.56%	4.34%	5.22%
2019	9.65%	3.86%	5.79%
2020	9.39%	3.07%	6.32%
2021	<u>9.39%</u>	<u>3.14%</u>	<u>6.25%</u>
Average	11.76%	7.89%	3.87%

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

(b) Moody's Investors Service.

REGRESSION RESULTS**SUMMARY OUTPUT**

<i>Regression Statistics</i>	
Multiple R	0.942226
R Square	0.887791
Adjusted R Square	0.885351
Standard Error	0.004807
Observations	48

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.008411	0.008411	363.948371	0.000000
Residual	46	0.001063	0.000023		
Total	47	0.009474			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.072668	0.001911	38.034901	0.000000	0.068822	0.076514	0.068822	0.076514
X Variable 1	-0.430291	0.022555	-19.077431	0.000000	-0.475692	-0.384890	-0.475692	-0.384890

EXPECTED EARNINGS APPROACH**Exhibit AMM-9****Page 1 of 1****UTILITY GROUP**

	(a)	(b)	(c)
<u>Company</u>	<u>Expected Return on Common Equity</u>	<u>Adjustment Factor</u>	<u>Adjusted Return on Common Equity</u>
1 Alliant Energy	11.5%	1.0250	11.8%
2 Ameren Corp.	10.0%	1.0389	10.4%
3 American Elec Pwr	11.0%	1.0364	11.4%
4 Black Hills Corp.	10.0%	1.0365	10.4%
5 CMS Energy Corp.	13.0%	1.0322	13.4%
6 Consolidated Edison	8.0%	1.0242	8.2%
7 Dominion Energy	12.5%	1.0379	13.0%
8 DTE Energy Co.	12.5%	1.0365	13.0%
9 Duke Energy Corp.	9.0%	1.0133	9.1%
10 Entergy Corp.	11.5%	1.0308	11.9%
11 Evergy Inc.	10.0%	1.0162	10.2%
12 Eversource Energy	10.0%	1.0298	10.3%
13 NextEra Energy, Inc.	15.0%	1.0382	15.6%
14 OGE Energy Corp.	13.0%	1.0249	13.3%
15 Pinnacle West Capital	9.0%	1.0154	9.1%
16 Portland General Elec.	9.5%	1.0158	9.7%
17 Pub Sv Enterprise Grp.	12.5%	1.0153	12.7%
18 Sempra Energy	10.5%	1.0206	10.7%
19 Southern Company	14.5%	1.0216	14.8%
20 WEC Energy Group	13.0%	1.0195	13.3%
21 Xcel Energy Inc.	11.0%	1.0279	11.3%
Average (d)	11.1%		11.4%

(a) The Value Line Investment Survey (Jul. 22, Aug. 12 and Sep. 9, 2022).

(b) Adjustment to convert year-end return to an average rate of return from Exhibit AMM-5.

(c) (a) x (b).

(d) Excludes highlighted values.

VALUE LINE ELECTRIC & GAS UTILITIES

			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Shares	Offering	Underwriting	Underwriting	Offering	Total	Gross Proceeds	Flotation
No.	Sym	Company	Date	Issued	Price	Discount	Discount	Expense	Flotation	Before Flot.	Cost
						(per share)			Costs	Costs	(%)
1	ALE	ALLETE	4/1/2022	3,200,000	\$63.00	\$2.20500	\$7,056,000	\$700,000	\$7,756,000	\$201,600,000	3.847%
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.	2/25/2020	1,222,942	\$81.77	\$0.73590	\$899,963	\$230,000	\$1,129,963	\$99,999,967	1.130%
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)	6/17/2021	10,100,000	\$76.92	\$0.83000	\$8,383,000	\$450,000	\$8,833,000	\$776,892,000	1.137%
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	5/13/2020	14,181,882	\$56.41	\$0.98718	\$14,000,000	\$1,000,000	\$15,000,000	\$799,999,964	1.875%
15	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%
16	EVRG	Eversource Energy					N/A				
17	ES	Eversource Energy	6/12/2020	6,000,000	\$84.91	\$1.35000	\$8,100,000	\$600,000	\$8,700,000	\$509,460,000	1.708%
18	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%
19	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%
20	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%
21	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%
22	MGEE	MGE Energy	5/14/2020	1,300,000	\$56.00	\$2.38000	\$3,094,000	\$500,000	\$3,594,000	\$72,800,000	4.937%
23	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%
24	NWE	NorthWestern Corp.	11/18/2021	6,074,767	\$53.50	\$1.60500	\$9,750,001	\$900,000	\$10,650,001	\$325,000,035	3.277%
25	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%
26	OTTR	Otter Tail Corp.					N/A				
27	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%
28	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%
29	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%
30	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%
31	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%
32	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%
33	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%
34	WEC	WEC Energy Group					N/A				
35	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											2.672%
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.	3/30/2022	2,500,000	\$50.00	\$1.62500	\$4,062,500	\$450,000	\$4,512,500	\$125,000,000	3.610%
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	3/29/2022	5,500,000	\$74.00	\$2.49750	\$13,736,250	\$730,000	\$14,466,250	\$407,000,000	3.554%
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%
Average											3.116%
Average - Electric & Gas											2.763%

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	3M Company	Diversified Co.	\$ 138.49	\$ 5.96	4.3%
2	Abbott Labs.	Med Supp Non-Invasive	\$ 107.43	\$ 1.88	1.8%
3	Air Products & Chem.	Chemical (Diversified)	\$ 258.82	\$ 6.48	2.5%
4	Amdocs Ltd.	IT Services	\$ 86.88	\$ 1.58	1.8%
5	Amgen	Biotechnology	\$ 246.21	\$ 8.39	3.4%
6	Apple Inc.	Computers/Peripherals	\$ 164.57	\$ 0.92	0.6%
7	Archer Daniels Midl'd	Food Processing	\$ 86.34	\$ 1.60	1.9%
8	Baxter Int'l Inc.	Med Supp Invasive	\$ 58.90	\$ 1.16	2.0%
9	Becton, Dickinson	Med Supp Invasive	\$ 256.55	\$ 3.60	1.4%
10	Bristol-Myers Squibb	Drug	\$ 72.09	\$ 2.16	3.0%
11	Brown-Forman 'B'	Beverage	\$ 75.17	\$ 0.76	1.0%
12	Church & Dwight	Household Products	\$ 86.20	\$ 1.05	1.2%
13	Cisco Systems	Telecom. Equipment	\$ 45.99	\$ 1.53	3.3%
14	Clorox Co.	Household Products	\$ 145.53	\$ 4.72	3.2%
15	CME Group	Brokers & Exchanges	\$ 199.83	\$ 4.00	2.0%
16	Coca-Cola	Beverage	\$ 63.43	\$ 1.76	2.8%
17	Colgate-Palmolive	Household Products	\$ 80.22	\$ 1.88	2.3%
18	Comcast Corp.	Cable TV	\$ 37.59	\$ 1.08	2.9%
19	Costco Wholesale	Retail Store	\$ 539.11	\$ 3.60	0.7%
20	Danaher Corp.	Diversified Co.	\$ 286.32	\$ 1.00	0.3%
21	Gen'l Mills	Food Processing	\$ 76.70	\$ 2.16	2.8%
22	Gilead Sciences	Drug	\$ 63.29	\$ 2.92	4.6%
23	Hershey Co.	Food Processing	\$ 228.24	\$ 4.14	1.8%
24	Hormel Foods	Food Processing	\$ 49.55	\$ 1.04	2.1%
25	Hunt (J.B.)	Trucking	\$ 182.74	\$ 1.65	0.9%
26	Intel Corp.	Semiconductor	\$ 34.23	\$ 1.46	4.3%
27	Intercontinental Exch.	Brokers & Exchanges	\$ 105.04	\$ 1.52	1.4%
28	Johnson & Johnson	Med Supp Non-Invasive	\$ 167.45	\$ 4.52	2.7%
29	Kellogg	Food Processing	\$ 74.50	\$ 2.36	3.2%
30	Kimberly-Clark	Household Products	\$ 132.44	\$ 4.64	3.5%
31	Lilly (Eli)	Drug	\$ 312.37	\$ 3.92	1.3%
32	Lockheed Martin	Aerospace/Defense	\$ 428.48	\$ 11.80	2.8%
33	Marsh & McLennan	Financial Svcs. (Div.)	\$ 166.85	\$ 2.36	1.4%
34	McCormick & Co.	Food Processing	\$ 87.72	\$ 1.50	1.7%
35	McDonald's Corp.	Restaurant	\$ 260.35	\$ 5.68	2.2%
36	McKesson Corp.	Med Supp Non-Invasive	\$ 359.12	\$ 2.16	0.6%
37	Merck & Co.	Drug	\$ 88.75	\$ 2.76	3.1%
38	Microsoft Corp.	Computer Software	\$ 276.15	\$ 2.57	0.9%
39	Mondelez Int'l	Food Processing	\$ 63.59	\$ 1.54	2.4%
40	NewMarket Corp.	Chemical (Specialty)	\$ 298.56	\$ 8.40	2.8%
41	Northrop Grumman	Aerospace/Defense	\$ 482.48	\$ 6.92	1.4%
42	Oracle Corp.	Computer Software	\$ 76.62	\$ 1.28	1.7%
43	PepsiCo, Inc.	Beverage	\$ 175.80	\$ 4.40	2.5%
44	Pfizer, Inc.	Drug	\$ 48.32	\$ 1.60	3.3%
45	Procter & Gamble	Household Products	\$ 143.70	\$ 3.65	2.5%
46	Progressive Corp.	Insurance (Prop/Cas.)	\$ 122.43	\$ 0.40	0.3%
47	Public Storage	R.E.I.T.	\$ 340.43	\$ 8.10	2.4%
48	Republic Services	Environmental	\$ 144.18	\$ 1.98	1.4%
49	Sherwin-Williams	Retail Building Supply	\$ 241.05	\$ 2.50	1.0%
50	Smucker (J.M.)	Food Processing	\$ 137.75	\$ 4.08	3.0%
51	Texas Instruments	Semiconductor	\$ 175.30	\$ 4.60	2.6%
52	Thermo Fisher Sci.	Precision Instrument	\$ 577.87	\$ 1.20	0.2%
53	United Parcel Serv.	Air Transport	\$ 199.73	\$ 6.08	3.0%
54	Verizon Communic.	Telecom. Services	\$ 43.88	\$ 2.60	5.9%
55	Walmart Inc.	Retail Store	\$ 133.10	\$ 2.24	1.7%
56	Waste Management	Environmental	\$ 170.85	\$ 2.60	1.5%
	Average				2.2%

(a) Average of closing prices for 30 trading days ended Sep. 9, 2022.

(b) The Value Line Investment Survey, *Summary & Index* (Sep. 9, 2022).

GROWTH RATES

	Company	(a)	(b)	(c)
		Earnings Growth		
		V Line	IBES	Zacks
1	3M Company	6.50%	0.40%	9.50%
2	Abbott Labs.	8.00%	11.00%	5.41%
3	Air Products & Chem.	12.00%	11.98%	14.22%
4	Amdocs Ltd.	8.00%	12.92%	11.50%
5	Amgen	5.50%	8.00%	7.10%
6	Apple Inc.	14.00%	9.48%	12.67%
7	Archer Daniels Midl'd	13.00%	9.20%	6.96%
8	Baxter Int'l Inc.	10.00%	8.41%	7.61%
9	Becton, Dickinson	4.50%	5.00%	6.75%
10	Bristol-Myers Squibb	n/a	4.65%	6.28%
11	Brown-Forman 'B'	14.00%	9.15%	n/a
12	Church & Dwight	6.00%	4.62%	8.00%
13	Cisco Systems	8.00%	6.69%	6.50%
14	Clorox Co.	4.50%	7.19%	7.00%
15	CME Group	8.50%	6.96%	7.80%
16	Coca-Cola	7.50%	5.50%	6.41%
17	Colgate-Palmolive	6.50%	3.93%	4.61%
18	Comcast Corp.	9.00%	10.15%	13.50%
19	Costco Wholesale	10.50%	13.74%	9.24%
20	Danaher Corp.	17.00%	10.45%	20.03%
21	Gen'l Mills	3.50%	4.84%	7.50%
22	Gilead Sciences	13.50%	-1.23%	14.67%
23	Hershey Co.	6.50%	10.37%	7.67%
24	Hormel Foods	6.00%	8.75%	7.29%
25	Hunt (J.B.)	11.50%	20.09%	15.00%
26	Intel Corp.	2.50%	-0.16%	7.50%
27	Intercontinental Exch.	6.50%	6.26%	5.17%
28	Johnson & Johnson	8.00%	4.07%	5.23%
29	Kellogg	3.50%	2.30%	4.10%
30	Kimberly-Clark	5.50%	5.76%	5.00%
31	Lilly (Eli)	11.50%	20.44%	19.41%
32	Lockheed Martin	7.00%	9.60%	5.45%
33	Marsh & McLennan	11.00%	8.20%	8.22%
34	McCormick & Co.	5.50%	5.10%	5.33%
35	McDonald's Corp.	10.50%	7.17%	8.37%
36	McKesson Corp.	10.00%	10.61%	10.05%
37	Merck & Co.	8.00%	11.07%	10.15%
38	Microsoft Corp.	16.50%	15.41%	11.71%
39	Mondelez Int'l	9.50%	5.24%	6.91%
40	NewMarket Corp.	-1.50%	7.70%	n/a
41	Northrop Grumman	6.50%	6.10%	2.19%
42	Oracle Corp.	9.00%	10.13%	8.00%
43	PepsiCo, Inc.	6.00%	8.00%	7.66%
44	Pfizer, Inc.	6.50%	-1.20%	12.47%
45	Procter & Gamble	6.50%	5.83%	6.09%
46	Progressive Corp.	6.50%	30.00%	17.50%
47	Public Storage	n/a	17.00%	6.97%
48	Republic Services	12.50%	11.45%	11.34%
49	Sherwin-Williams	11.50%	13.74%	12.00%
50	Smucker (J.M.)	4.00%	5.15%	2.77%
51	Texas Instruments	9.00%	10.00%	9.33%
52	Thermo Fisher Sci.	11.00%	7.89%	14.00%
53	United Parcel Serv.	11.50%	5.61%	8.87%
54	Verizon Communic.	2.50%	3.35%	4.15%
55	Walmart Inc.	7.50%	6.00%	5.50%
56	Waste Management	6.50%	14.64%	11.81%

(a) The Value Line Investment Survey (various editions as of Sep. 9, 2022).

(b) www.finance.yahoo.com (retrieved Sep. 15, 2022).

(c) www.zacks.com (retrieved Sep. 15, 2022).

DCF COST OF EQUITY ESTIMATES

		(a)	(b)	(c)
		Earnings Growth		
	Company	V Line	IBES	Zacks
1	3M Company	10.8%	4.7%	13.8%
2	Abbott Labs.	9.8%	12.8%	7.2%
3	Air Products & Chem.	14.5%	14.5%	16.7%
4	Amdocs Ltd.	9.8%	14.7%	13.3%
5	Amgen	8.9%	11.4%	10.5%
6	Apple Inc.	14.6%	10.0%	13.2%
7	Archer Daniels Midl'd	14.9%	11.1%	8.8%
8	Baxter Int'l Inc.	12.0%	10.4%	9.6%
9	Becton, Dickinson	5.9%	6.4%	8.2%
10	Bristol-Myers Squibb	n/a	7.6%	9.3%
11	Brown-Forman 'B'	15.0%	10.2%	n/a
12	Church & Dwight	7.2%	5.8%	9.2%
13	Cisco Systems	11.3%	10.0%	9.8%
14	Clorox Co.	7.7%	10.4%	10.2%
15	CME Group	10.5%	9.0%	9.8%
16	Coca-Cola	10.3%	8.3%	9.2%
17	Colgate-Palmolive	8.8%	6.3%	7.0%
18	Comcast Corp.	11.9%	13.0%	16.4%
19	Costco Wholesale	11.2%	14.4%	9.9%
20	Danaher Corp.	17.3%	10.8%	20.4%
21	Gen'l Mills	6.3%	7.7%	10.3%
22	Gilead Sciences	18.1%	3.4%	19.3%
23	Hershey Co.	8.3%	12.2%	9.5%
24	Hormel Foods	8.1%	10.8%	9.4%
25	Hunt (J.B.)	12.4%	21.0%	15.9%
26	Intel Corp.	6.8%	4.1%	11.8%
27	Intercontinental Exch.	7.9%	7.7%	6.6%
28	Johnson & Johnson	10.7%	6.8%	7.9%
29	Kellogg	6.7%	5.5%	7.3%
30	Kimberly-Clark	9.0%	9.3%	8.5%
31	Lilly (Eli)	12.8%	21.7%	20.7%
32	Lockheed Martin	9.8%	12.4%	8.2%
33	Marsh & McLennan	12.4%	9.6%	9.6%
34	McCormick & Co.	7.2%	6.8%	7.0%
35	McDonald's Corp.	12.7%	9.4%	10.6%
36	McKesson Corp.	10.6%	11.2%	10.7%
37	Merck & Co.	11.1%	14.2%	13.3%
38	Microsoft Corp.	17.4%	16.3%	12.6%
39	Mondelez Int'l	11.9%	7.7%	9.3%
40	NewMarket Corp.	1.3%	10.5%	n/a
41	Northrop Grumman	7.9%	7.5%	3.6%
42	Oracle Corp.	10.7%	11.8%	9.7%
43	PepsiCo, Inc.	8.5%	10.5%	10.2%
44	Pfizer, Inc.	9.8%	2.1%	15.8%
45	Procter & Gamble	9.0%	8.4%	8.6%
46	Progressive Corp.	6.8%	30.3%	17.8%
47	Public Storage	n/a	19.4%	9.3%
48	Republic Services	13.9%	12.8%	12.7%
49	Sherwin-Williams	12.5%	14.8%	13.0%
50	Smucker (J.M.)	7.0%	8.1%	5.7%
51	Texas Instruments	11.6%	12.6%	12.0%
52	Thermo Fisher Sci.	11.2%	8.1%	14.2%
53	United Parcel Serv.	14.5%	8.7%	11.9%
54	Verizon Communic.	8.4%	9.3%	10.1%
55	Walmart Inc.	9.2%	7.7%	7.2%
56	Waste Management	8.0%	16.2%	13.3%
	Average (b)	10.6%	10.5%	10.2%

(a) Sum of dividend yield (p. 1) and respective growth rate (p. 2).

(b) Excludes highlighted figures.

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 Ohio Power Company's Direct Testimony of Adrien M. McKenzie was sent by, or on behalf of, the undersigned counsel to the following parties of record this 6th day of January 2023, via electronic transmission.

/s/ Steven T. Nourse

Steven T. Nourse

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in

Case No(s). 23-0023-EL-SSO, 23-0024-EL-AAM

Summary: Testimony DIRECT TESTIMONY OF ADRIEN MCKENZIE ON BEHALF
OF OHIO POWER COMPANY electronically filed by Mr. Steven T. Nourse on
behalf of Ohio Power Company