AEP OHIO EX. NO._____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to §4928.143, Ohio Rev. Code, in the Form of an Electric Security Plan.	)))))	Case No. 13-2385-EL-SSO
In the Matter of the Application of Ohio Power Company for Approval of Certain Accounting Authority	)))	Case No. 13-2386-EL-AAM

DIRECT TESTIMONY OF ADRIEN M. MCKENZIE, CFA IN SUPPORT OF AEP OHIO'S AMENDED ELECTRIC SECURITY PLAN

Filed: May 13, 2016

INDEX TO DIRECT TESTIMONY OF
ADRIEN M. MCKENZIE, CFA

Exhibit	**Description**
AMM-1	Qualifications of Adrien M. McKenzie
AMM-2	ROE Analyses – Summary of Results
AMM-3	Capital Structure
AMM-4	DCF Model – Electric Group
AMM-5	Sustainable Growth Rate – Electric Group
AMM-6	CAPM – Electric Group
AMM-7	Empirical CAPM – Electric Group
AMM-8	Electric Utility Risk Premium
AMM-9	Expected Earnings Approach
AMM-10	DCF Model – Non-Utility Group

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

Q2. IN WHAT CAPACITY ARE YOU EMPLOYED?

A2. I am a Vice President with Financial Concepts and Applications, Inc. (FINCAP), a firm engaged in financial, economic, and policy consulting to business and government.

Q3. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A3. 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 sponsored direct and rebuttal testimony concerning the rate of return on equity ("ROE") in proceedings filed with the Federal Energy Regulatory Commission ("FERC"), and fifteen state regulatory commissions. My testimony in these filings 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 ROE for regulated electric and gas utility operations. I have critically evaluated the positions of other parties, have represented clients in settlement negotiations and hearings, and have assisted in the preparation of legal briefs. My resume is attached as Exhibit AMM-1.

Q4. FOR WHOM ARE YOU TESTIFYING IN THIS CASE?

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

Q5. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A5. The purpose of my testimony is to present to the Public Utilities Commission of Ohio ("PUCO") my independent assessment of the fair rate of return on equity ("ROE") that AEP Ohio should be authorized to earn on its investment in providing electric utility service.

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	Capital Structure
Exhibit AMM-4	DCF Model – Electric Group
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Exhibit AMM-7	Empirical CAPM – Electric Group
Exhibit AMM-8	Electric Utility Risk Premium
Exhibit AMM-9	Expected Earnings Approach

Exhibit AMM-10 DCF Model – Non-Utility Group

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

A7. To prepare my testimony, I used information from a variety of sources that would normally be relied upon by a person in my capacity. In connection with the present filing, I considered and relied upon corporate disclosures, publicly available financial reports and filings, and other published information relating to AEP Ohio. I also reviewed information relating generally to current capital market conditions and specifically to investor perceptions, requirements, and expectations for utilities. These sources, coupled with my experience in the fields of finance and utility regulation, have given me a working knowledge of the issues relevant to investors' required return for AEP Ohio, and they form the basis of my analyses and conclusions.

Q8. HOW IS YOUR TESTIMONY ORGANIZED?

A8. After first summarizing my conclusions and recommendations, I reviewed the operations and finances of AEP Ohio, as well as current conditions in the capital markets and their implications in evaluating a fair ROE for the Company. With this as a background, I conducted well-accepted quantitative analyses to estimate the current cost of equity for a reference group of comparable-risk electric utilities. These included the discounted cash flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the empirical form of Capital Asset Pricing Model ("ECAPM"), an equity risk premium approach based on allowed ROEs, and reference to expected earned rates of return for electric utilities. Based on the cost of equity estimates indicated by my analyses, I evaluated a fair ROE for AEP Ohio's electric utility operations, taking into account the specific risks for its

jurisdictional utility operations in Ohio, AEP Ohio's requirements for financial strength, as well as flotation costs, which are properly considered in setting a fair rate of return on equity.

Further, I corroborate my utility quantitative analyses by applying the DCF model to a group of low risk non-utility firms.

Q9. WHAT ARE YOUR RECOMMENDATIONS?

A9. Based on the results of my analyses, and considering the economic requirements necessary to support continuous access to capital, I recommend an ROE of 10.41% for AEP Ohio's electric utility operations, which corresponds to the midpoint of my 9.91% to 10.91% range.

II. RETURN ON EQUITY FOR AEP OHIO

Q10. WHAT IS THE PURPOSE OF THIS SECTION?

A10. This section presents my conclusions regarding the fair ROE applicable to AEP Ohio's electric utility operations. This section also discusses the relationship between ROE and preservation of a utility's financial integrity and the ability to attract capital.

A. Importance of Financial Strength

Q11. WHAT ROLE DOES REGULATION PLAY IN ENSURING THAT AEP OHIO HAS ACCESS TO CAPITAL UNDER REASONABLE TERMS AND ON A SUSTAINABLE BASIS?

A11. Regulatory signals are a major driver of investors' risk assessment for utilities. Investors recognize that constructive regulation is a key ingredient in supporting utility credit ratings and financial integrity, particularly during times of adverse conditions. As Moody's noted, "the regulatory environment is the most important

driver of our outlook because it sets the pace for cost recovery,"[1] With respect to the Company specifically, the major bond rating agencies have noted the importance of continued constructive regulatory outcomes in Ohio as support for existing ratings.[2]

Q12. DO CUSTOMERS BENEFIT BY ENHANCING THE UTILITY'S FINANCIAL FLEXIBILITY?

A12. Yes. Providing an ROE that is sufficient to maintain AEP Ohio's ability to attract capital under reasonable terms, even in times of financial and market stress, is not only consistent with the economic requirements embodied in the U.S. Supreme Court's *Hope* and *Bluefield* decisions, it is also in customers' best interests. Customers enjoy the benefits that come from ensuring that the utility has the financial wherewithal to take actions that are required to ensure safe and reliable service.

B. Recommended ROE

Q13. WHAT IS YOUR RECOMMENDATION AS TO A FAIR ROE FOR AEP OHIO?

A13. Based on the results of my quantitative analyses summarized on Exhibit AMM-2, I recommend an ROE of 10.41% for AEP Ohio's electric utility operations. The bases for my conclusion are summarized below:

- In order to reflect the risks and prospects associated with AEP Ohio's jurisdictional utility operations, my analyses focused on a proxy group of sixteen other electric utilities with comparable investment risks;

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[1] Moody's Investors Service, "Regulation Will Keep Cash Flow Stable As Major Tax Break Ends," *Industry Outlook* (Feb. 19, 2014).

[2] Moody's Investors Service, "Credit Opinion: Ohio Power Company," *Global Credit Research* (May 12, 2015); Standard & Poor's Corporation, "Summary: Ohio Power Co.," *Research* (May 8, 2014).

- Because investors' required return on equity is not directly observable and no single method should be viewed in isolation, I applied the DCF, CAPM, ECAPM, and risk premium methods to estimate a fair ROE for AEP Ohio, as well as referencing the expected earnings approach;
- Based on the results of these analyses, and giving less weight to extremes at the high and low ends of the range, I concluded that the cost of equity for the proxy group of utilities is in the 9.91% to 10.91% range after incorporating an adjustment to account for the impact of common equity flotation costs; and,
- Considering capital market expectations and the economic requirements necessary to maintain financial integrity and support additional capital investment even under adverse circumstances, it is my opinion that the 10.41% midpoint of this range represents a fair ROE for AEP Ohio.

Q14. WHAT DID THE DCF RESULTS FOR YOUR SELECT GROUP OF NON-UTILITY FIRMS INDICATE WITH RESPECT TO YOUR EVALUATION?

A14. Average DCF estimates for a low-risk group of firms in the competitive sector of the economy ranged from 10.1% to 10.5%, and averaged 10.2% before consideration of flotation costs. These results confirm that my recommended ROE falls in a reasonable range to maintain AEP Ohio's financial integrity, provide a return commensurate with investments of comparable risk, and support the Company's ability to attract capital.

Q15. WHAT OTHER FACTORS SHOULD BE CONSIDERED IN EVALUATING A FAIR ROE FOR THE COMPANY?

A15. Apart from the results of the quantitative methods summarized above, it is crucial to recognize the importance of maintaining a strong financial position so that AEP Ohio remains prepared to respond to unforeseen events that may materialize in the future. Past challenges in the capital markets and ongoing economic uncertainties highlight the benefits of continuing to support the Company's financial strength to ensure that AEP Ohio can attract the capital needed to maintain reliable service at a lower cost for customers. In addition, due to broad-based expectations for higher bond yields, current cost of capital estimates are likely to understate

investors' requirements at the time the outcome of this proceeding becomes effective and beyond.

Q16. DOES AN ROE OF 10.41% REPRESENT A REASONABLE COST FOR AEP OHIO'S CUSTOMERS TO PAY?

A16. Yes. Investors have many options vying for their money. They make investment capital available to AEP Ohio only if the expected returns justify the risk. Customers will enjoy reliable and efficient service so long as investors are willing to make the capital investments necessary to maintain and improve the Company's utility system. Providing an adequate return to investors is a necessary cost to ensure that capital is available to AEP Ohio now and in the future. If regulatory decisions increase risk or limit returns to levels that are insufficient to justify the risk, investors will look elsewhere to invest capital.

III. FUNDAMENTAL ANALYSES

Q17. WHAT IS THE PURPOSE OF THIS SECTION?

A17. As a predicate to subsequent quantitative analyses, this section briefly reviews the operations and finances of AEP Ohio. In addition, it examines conditions in the capital markets and the general economy. An understanding of the fundamental factors driving the risks and prospects of electric utilities is essential in developing an informed opinion of investors' expectations and requirements that are the basis of a fair ROE.

A. Ohio Power Company

Q18. BRIEFLY DESCRIBE AEP OHIO AND ITS ELECTRIC UTILITY OPERATIONS.

A18. AEP Ohio, a wholly-owned subsidiary of AEP, is engaged in the transmission and distribution of electric power to approximately 1,468,000 retail customers in the northwestern, east central, eastern and southern sections of Ohio. At December 31, 2015, AEP Ohio had total assets of $7.1 billion. During 2015, sales to residential customers generated approximately 54% of total electric revenues, with 24% coming from commercial, and 13% from industrial consumers. Wholesale sales accounted for 7% of AEP Ohio's 2015 total electric revenues, while revenues from other sources contributed 2%. The Company's transmission and distribution facilities consist of over 45,000 miles of transmission and distribution lines. AEP Ohio is a member of PJM Interconnection, LLC ("PJM"), a FERC-approved transmission organization, and provides regional transmission service pursuant to the PJM Open Access Transmission Tariff.

Q19. PLEASE DESCRIBE THE AEP SYSTEM.

A19. AEP delivers electricity to approximately 5.4 million customers across 11 states. AEP is one of the largest electric utilities in the U.S., with its combined utility system including approximately 32,000 MW of generating capacity, 40,000 miles of transmission lines, and 224,000 miles of distribution lines. AEP's electric utility subsidiaries rely primarily on coal-fired generation, which provided approximately 70% the energy produced by AEP's vertically integrated utility subsidiaries during 2015. AEP's revenues totaled approximately $16.5 billion in the most recent fiscal year, with total assets at year-end 2015 of $61.7 billion.

Q20. WHERE DOES AEP OHIO OBTAIN THE CAPITAL USED TO FINANCE ITS INVESTMENT IN ELECTRIC UTILITY PLANT?

A20. As a wholly-owned subsidiary of AEP, the Company obtains common equity capital solely from its parent, whose common stock is publicly traded on the New York Stock Exchange. In addition to capital supplied by AEP, AEP Ohio also issues debt securities directly under its own name.

Q21. WHAT CREDIT RATINGS HAVE BEEN ASSIGNED TO THE COMPANY?

A21. AEP Ohio is assigned issuer credit ratings of "BBB" by Standard & Poor's Corporation ("S&P") and "Baa1" by Moody's Investors Service ("Moody's"). Meanwhile, Fitch Ratings Ltd. ("Fitch") has assigned the Company a long-term issuer default rating of "BBB+."

B. Outlook for Capital Costs

Q22. WHAT ARE THE IMPLICATIONS OF CURRENT CAPITAL MARKET CONDITIONS IN EVALUATING A FAIR ROE?

A22. Current capital market conditions continue to be deeply affected by the Federal Reserve's unprecedented monetary policy actions, which were designed to push interest rates to historically low levels in an effort to stimulate the economy and bolster employment. Since the Great Recession, investors have also had to contend with a level of economic uncertainty that has been unprecedented in recent history. The ongoing potential for renewed turmoil in the capital markets has been seen repeatedly, and in response to heightened uncertainties in recent years, investors have repeatedly sought a safe haven in U.S. government bonds. As a result of this "flight to safety," Treasury bond yields have been pushed significantly lower in the face of political, economic, and capital market risks.

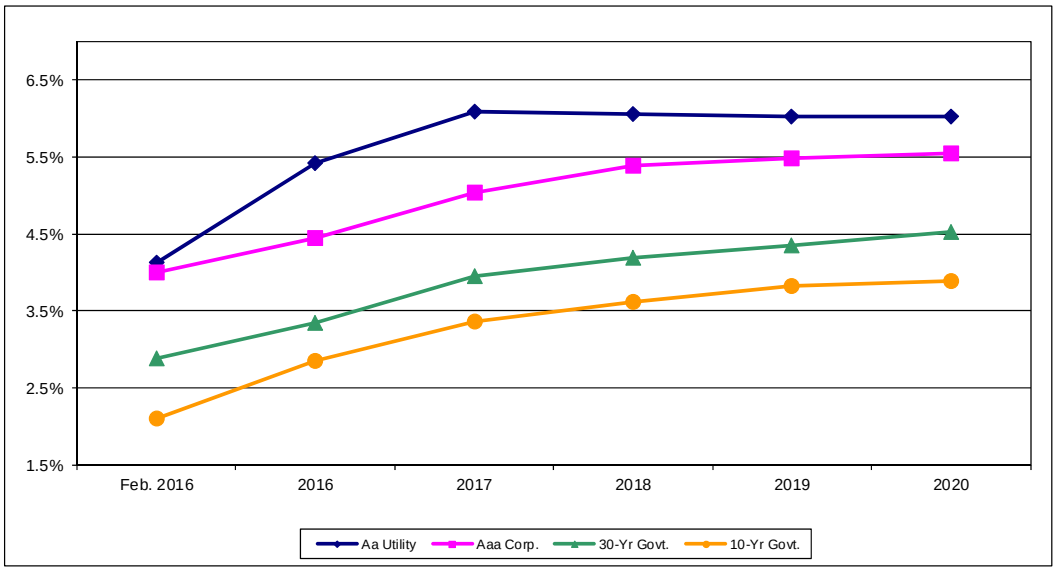
While serving as President of the Federal Reserve Bank of Philadelphia, Charles Plosser observed that U.S. interest rates were unprecedentedly low, and "outside historical norms."[3]

Q23. ARE THESE VERY LOW INTEREST RATES EXPECTED TO CONTINUE?

A23. No. Investors continue to anticipate that interest rates will increase significantly from present levels. For example, the March 4, 2016 quarterly economic review from the Value Line Investment Survey ("Value Line") anticipates that corporate bond yields will increase 180 basis points over the next five years. Figure 1 below compares current interest rates on 10-year and 30-year Treasury bonds, triple-A rated corporate bonds, and double-A rated utility bonds with near-term projections from Value Line, IHS Global Insight, Blue Chip Financial Forecasts ("Blue Chip"), and the Energy Information Administration ("EIA"), which are sources that are highly regarded and widely referenced:

[3] Barnato, Katy, "Fed's Plosser: Low rates 'should make us nervous'," CNBC (Nov. 11, 2014). The average yield on 10-year Treasury bonds for the six-months ended February 2016 was 2.1%, which is even lower than the 2.3% yields prevailing at the time of Mr. Plosser's observations.

FIGURE 1
INTEREST RATE TRENDS



Source:

Value Line Investment Survey, Forecast for the U.S. Economy (Mar. 4, 2016)
IHS Global Insight, The U.S. Economy: The 30-Year Focus (Third-Quarter 2015)
Energy Information Administration, Annual Energy Outlook 2015 (April 2015)
Blue Chip Financial Forecasts, Vol. 34, No. 6 (Dec. 1, 2015)

As evidenced above, projections by investment advisors, forecasting services, and government agencies support the general consensus in the investment community that the present low level of long-term interest rates will not be sustained.

Q24. DOES THE FEDERAL RESERVE'S DECEMBER 16, 2015 DECISION TO RAISE THE TARGET RANGE FOR THE FEDERAL FUNDS RATE BY ONE-QUARTER PERCENTAGE POINT MARK A RETURN TO "NORMAL" IN THE CAPITAL MARKETS?

A24. No. The Federal Reserve's long-anticipated move to increase the federal funds rate represents a first, and very modest, step towards implementing the process of monetary policy normalization outlined in its September 17, 2014 press release.[4] While the Federal Reserve's action marks the onset of the normalization process,

[4] Press Release, Fed. Reserve Sys., Policy Normalization Principles and Plans, (Sept. 17, 2014), http://www.federalreserve.gov/newsevents/press/monetary/20140917c.htm.

this first move does not result in a fundamental alteration of its highly accommodative monetary policy. Nor does it remove uncertainty over the trajectory of further interest rate increases or the overhanging implications of the Federal Reserve's enormous holdings of long-term securities.

The Federal Reserve continues to exert considerable influence over capital market conditions through its massive holdings of Treasuries and mortgage-backed securities. Prior to the initiation of the stimulus program in 2009, the Federal Reserve's holdings of U.S. Treasury bonds and notes amounted to approximately $400 - $500 billion. With the implementation of its asset purchase program, balances of Treasury securities and mortgage backed instruments climbed steadily, and their effect on capital market conditions became more pronounced. Table 1 below charts the course of the Federal Reserve's asset purchase program:

TABLE 1
FEDERAL RESERVE BALANCES OF
TREASURY BONDS AND MORTGAGE-BACKED SECURITIES
(BILLION $)

2008	$ 410
2009	$ 1,618
2010	$ 1,939
2011	$ 2,423
2012	$ 2,512
2013	$ 3,597
2014	$ 4,097
2015	$ 4,100

Far from representing a return to normal, the Federal Reserve's holdings of Treasury bonds and mortgage-backed securities now amount to more than $4 trillion,[5] which is an all-time high. The Federal Reserve has announced its

[5] Federal Reserve Statistical Release, "Factors Affecting Reserve Balances of Depository Institutions and Condition Statement of Federal Reserve Banks," H.4.1.

intention to maintain these balances by reinvesting principal payments from these securities "until normalization of the level of the federal funds rate is well under way."[6]

Of course, the corollary to these observations is that changes to this policy of reinvestment would further reduce stimulus measures and could place significant upward pressure on bond yields, especially considering the unprecedented magnitude of the Federal Reserve's holdings of Treasury bonds and mortgage-backed securities. As a *Financial Analysts Journal* article noted:

> Because no precedent exists for the massive monetary easing that has been practiced over the past five years in the United States and Europe, the uncertainty surrounding the outcome of central bank policy is so vast. . . . Total assets on the balance sheets of most developed nations' central banks have grown massively since 2008, and the timing of when the banks will unwind those positions is uncertain.[7]

With expectations for higher interest rates, concerns about China's economy and fears of a global economic slowdown, dramatic decreases in oil prices, ongoing concerns over political stalemate in Washington, and political and economic unrest in the Middle East, the potential for significant volatility and higher capital costs is clearly evident to investors.

Q25. CAN YOU GIVE AN EXAMPLE OF HOW THIS UNCERTAINTY HAS NEGATIVELY IMPACTED THE CREDIT MARKETS FOR UTILITIES LIKE AEP OHIO?

A25. Yes, this uncertainty has led the "cost" of risk to increase. This relationship is illustrated in Table 2, below:

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[6] Janet Yellen, Chairman, Fed. Reserve Sys., Press Conference 7 (Dec. 16, 2015), http://www.federalreserve.gov/mediacenter/files/fomcpresconf20151216.pdf.

[7] Poole, William, "Prospects for and Ramifications of the Great Central Banking Unwind," Financial Analysts Journal (November/December 2013).

TABLE 2
INTEREST RATE SPREADS

Month	Baa Utility	30-Year Treasury	Yield Spread
Jan-15	4.39%	2.46%	1.93%
Feb-15	4.44%	2.57%	1.87%
Mar-15	4.51%	2.63%	1.88%
Apr-15	4.51%	2.59%	1.92%
May-15	4.89%	2.96%	1.93%
Jun-15	5.13%	3.11%	2.02%
Jul-15	5.22%	3.07%	2.15%
Aug-15	5.23%	2.86%	2.37%
Sep-15	5.42%	2.95%	2.47%
Oct-15	5.47%	2.89%	2.58%
Nov-15	5.57%	3.02%	2.55%
Dec-15	5.55%	2.97%	2.58%
Jan-16	5.49%	2.86%	2.63%
Feb-16	5.28%	2.62%	2.66%
Change (Jan-Feb)	**0.89%**	**0.16%**	**0.73%**

Sources: Moody's Investors Service;
http://www.federalreserve.gov/releases/h15/data.htm.

As seen above, average triple-B utility bond yields have increased by 89 basis points from January 2015 to February 2016. Only a small portion of this increase (16 basis points) can be tied to the increase in "risk-free" Treasury bond rates. This is some measure of the increase in interest rates across the markets in general. However, another phenomenon is occurring. As uncertainties facing capital markets increase, investors are requiring more compensation to assume greater risk. In January 2015, triple-B rated utilities were required to pay investors 193 basis points over the cost of Treasury bonds to entice them to purchase their debt issues. In February 2016, that additional cost was 266 basis points. The difference (73 basis points), is the additional "cost" investors are now requiring to assume additional risk. For utilities like AEP Ohio, uncertainties across the globe and across capital markets are directly leading to higher capital costs.

Q26. WHAT DO THESE EVENTS IMPLY WITH RESPECT TO THE ROE FOR AEP OHIO MORE GENERALLY?

A26. Current capital market conditions continue to reflect the impact of unprecedented policy measures taken in response to recent dislocations in the economy and financial markets. As a result, current capital costs are not representative of what is likely to prevail over the near-term future. As the FERC recently concluded:

> [W]e also understand that any DCF analysis may be affected by potentially unrepresentative financial inputs to the DCF formula, including those produced by historically anomalous capital market conditions. Therefore, while the DCF model remains the Commission's preferred approach to determining allowed rate of return, the Commission may consider the extent to which economic anomalies may have affected the reliability of DCF analyses …[8]

This conclusion continues to be supported by comparisons of current conditions to the historical record and independent forecasts. As demonstrated above, recognized economic forecasting services project that long-term capital costs will increase from present levels.

Given investors' expectations for rising interest rates and capital costs, the PUCO should consider near-term forecasts for higher public utility bond yields in assessing the reasonableness of individual cost of equity estimates and in evaluating a fair ROE for AEP Ohio from within the range of reasonableness. The use of these near-term forecasts for public utility bond yields is supported below by economic studies that show that equity risk premiums are higher when interest rates are at very low levels.

[8] Opinion No. 531, 147 FERC ¶ 61,234 at P 41 (2014).

Q27. DO ONGOING ECONOMIC AND CAPITAL MARKET UNCERTAINTIES ALSO INFLUENCE THE APPROPRIATE CAPITAL STRUCTURE FOR AEP OHIO?

A27. Yes. Financial flexibility plays a crucial role in ensuring the wherewithal to meet funding needs, and utilities with higher financial leverage may be foreclosed or have limited access to additional borrowing, especially during times of stress. As a result, the Company's capital structure must maintain adequate equity to preserve the flexibility necessary to maintain continuous access to capital even during times of unfavorable market conditions.

IV. COMPARABLE RISK PROXY GROUPS

Q28. HOW DID YOU IMPLEMENT QUANTITATIVE METHODS TO ESTIMATE THE COST OF COMMON EQUITY FOR AEP OHIO?

A28. Application of quantitative methods to estimate the cost of common equity requires observable capital market data, such as stock prices. Moreover, even for a firm with publicly traded stock, the cost of common equity can only be estimated. As a result, applying quantitative models using observable market data only produces an estimate that inherently includes some degree of observation error. Thus, the accepted approach to increase confidence in the results is to apply quantitative methods to a proxy group of publicly traded companies that investors regard as risk-comparable.

Q29. WHAT SPECIFIC PROXY GROUP OF UTILITIES DID YOU RELY ON FOR YOUR ANALYSIS?

A29. In order to reflect the risks and prospects associated with AEP Ohio's jurisdictional electric operations, my analyses focused on a reference group of other utilities composed of those companies included in Value Line's electric

utility industry groups with an 1) S&P issuer rating of BBB+, BBB, or BBB-, 2) a Moody's issuer rating of A3, Baa1, or Baa2, and 3) a Value Line Safety Rank of "2" or "3". In addition, I excluded six utilities that otherwise would have been in the proxy group, but are not appropriate for inclusion because of current involvement in a major merger or acquisition.[9] These criteria resulted in a proxy group composed of sixteen companies, which I will refer to as the "Electric Group."

Q30. HOW DID YOU EVALUATE THE RISKS OF THE ELECTRIC GROUP RELATIVE TO AEP OHIO?

A30. My evaluation of relative risk considered four objective, published benchmarks that are widely relied on in the investment community. Credit ratings are assigned by independent rating agencies for the purpose of providing investors with a broad assessment of the creditworthiness of a firm. Ratings generally extend from triple-A (the highest) to D (in default). Other symbols (*e.g.*, "+" or "-") are used to show relative standing within a category. Because the rating agencies' evaluation includes all of the factors normally considered important in assessing a firm's relative credit standing, corporate credit ratings provide a broad, objective measure of overall investment risk that is readily available to investors. Widely cited in the investment community and referenced by investors, credit ratings are also frequently used as a primary risk indicator in establishing proxy groups to estimate the cost of common equity.

While credit ratings provide the most widely referenced benchmark for investment risks, other quality rankings published by investment advisory services also provide relative assessments of risks that are considered by investors in

[9] Black Hills Corporation, Dominion Resources, Inc., The Empire District Electric Company, Exelon Corporation, Hawaiian Electric Industries, Inc., and TECO Energy, Inc.

forming their expectations for common stocks. Value Line's primary risk indicator is its Safety Rank, which ranges from "1" (Safest) to "5" (Riskiest). This overall risk measure is intended to capture the total risk of a stock, and incorporates elements of stock price stability and financial strength. Given that Value Line is perhaps the most widely available source of investment advisory information, its Safety Rank provides useful guidance regarding the risk perceptions of investors.

The Financial Strength Rating is designed as a guide to overall financial strength and creditworthiness, with the key inputs including financial leverage, business volatility measures, and company size. Value Line's Financial Strength Ratings range from "A++" (strongest) down to "C" (weakest) in nine steps. Finally, beta measures a utility's stock price volatility relative to the market as a whole, and reflects the tendency of a stock's price to follow changes in the market. A stock that tends to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00. Beta is the only relevant measure of investment risk under modern capital market theory, and is widely cited in academics and in the investment industry as a guide to investors' risk perceptions. Moreover, in my experience Value Line is the most widely referenced source for beta in regulatory proceedings. As noted in *New Regulatory Finance*:

> Value Line is the largest and most widely circulated independent investment advisory service, and influences the expectations of a large number of institutional and individual investors. … Value Line betas are computed on a theoretically sound basis using a broadly based market index, and they are adjusted for the regression tendency of betas to converge to 1.00.[10]

[10] Morin, Roger A., "New Regulatory Finance," *Public Utilities Reports* at 71 (2006).

Q31. HOW DO THE OVERALL RISKS OF YOUR PROXY GROUP COMPARE TO AEP OHIO?

A31. Table 3 compares the Electric Group with AEP Ohio 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 3
COMPARISON OF RISK INDICATORS

	Credit Rating		Value Line		
	S&P	Moody's	Safety Rank	Financial Strength	Beta
Electric Group	BBB	Baa1	2	B++	0.77
AEP Ohio	BBB	Baa1	2	A	0.70

Q32. WHAT DOES THIS COMPARISON INDICATE REGARDING INVESTORS' ASSESSMENT OF THE RELATIVE RISKS ASSOCIATED WITH YOUR ELECTRIC GROUP?

A32. As shown above, the BBB and Baa1 credit ratings corresponding to AEP Ohio are identical to the average credit ratings for the Electric Group. Similarly, the average Value Line Safety Rank for the Electric Group is the same as that corresponding to the Company. With respect to Value Line's Financial Strength and beta measures, the average values for the Electric Group indicate slightly more risk than for AEP Ohio. Considered together, a comparison of these objective measures, which incorporate a broad spectrum of risks, including financial and business position, relative size, and exposure to company specific factors, indicates that investors would likely conclude that the overall investment risks for AEP Ohio are comparable to those of the firms in the Electric Group.

Q33. DOES THE FACT THAT UTILITIES IN YOUR ELECTRIC GROUP OWN AND OPERATE GENERATION ASSETS WARRANT A DISTINCTION WITH AEP OHIO?

A33. No. First, the credit ratings used to identify my proxy group of electric utilities consider the overall investment risks of each firm, including the impact of generation. As discussed above, these criteria reflect a risk profile that is comparable to AEP Ohio.

Second, while generation assets may have operating characteristics that differ from other segments of the utility industry, they also convey benefits. For example, the capital-intensive nature of generation also can provide long-term financial stability through ongoing depreciation and associated tax benefits, as well as having a positive impact on the utility's cash flows. Meanwhile, many exposures associated with generation ownership are now being moderated through the implementation of various cost recovery mechanisms, such as those designed to address environmental costs, nuclear plant costs, and capital additions without the need for a rate proceeding.

Q34. IS AN EVALUATION OF THE CAPITAL STRUCTURE MAINTAINED BY A UTILITY RELEVANT IN ASSESSING ITS RETURN ON EQUITY?

A34. Yes. Other things equal, a higher debt ratio, or lower common equity ratio, translates into increased financial risk for all investors. A greater amount of debt means more investors have a senior claim on available cash flow, thereby reducing the certainty that each will receive his contractual payments. This increases the risks to which lenders are exposed, and they require correspondingly higher rates of interest. From common shareholders' standpoint, a higher debt ratio means that there are proportionately more investors ahead of them, thereby increasing the uncertainty as to the amount of cash flow that will remain.

Q35. WHAT COMMON EQUITY RATIO IS IMPLICIT IN AEP OHIO'S CAPITAL STRUCTURE?

A35. The capital structure used to compute the overall rate of return for AEP Ohio includes approximately 50% common equity.

Q36. HOW DOES THIS COMPARE TO THE AVERAGE CAPITALIZATION MAINTAINED BY THE ELECTRIC GROUP?

A36. As shown on Exhibit AMM-3, for the firms in the Electric Group, common equity ratios at December 31, 2015 averaged 48.7% of total long-term debt and equity, with Value Line expecting an average common equity ratio of 49.8% for its three-to-five year forecast horizon. Thus, AEP Ohio's common equity ratio is entirely comparable to what investors would associate with the Electric Group.

V. QUANTITATIVE ANALYSES

Q37. WHAT IS THE PURPOSE OF THIS SECTION?

A37. This section presents alternative estimates of the cost of equity. First, I address the concept of the cost of common equity, along with the risk-return tradeoff principle fundamental to capital markets. Next, I describe the various quantitative analyses conducted to estimate the cost of common equity for the proxy group of comparable risk firms. I then examine flotation costs, which are properly considered in evaluating a fair rate of return on equity. Finally, I present an alternative test based on a DCF analysis for a select group of low-risk, non-utility firms with which utilities must compete for investors' capital.

A. Economic Standards

Q38. WHAT ROLE DOES THE RATE OF RETURN ON COMMON EQUITY PLAY IN A UTILITY'S RATES?

A38. The ROE compensates investors for the use of their capital to finance the plant and equipment necessary to provide utility service. Investors will commit money to a particular investment only if they expect it to produce a return commensurate with those from other investments with comparable risks. To be consistent with sound regulatory economics and the standards set forth by the Supreme Court in the *Bluefield*[11] and *Hope*[12] cases, a utility's allowed ROE should be sufficient to: (1) fairly compensate investors for capital invested in the utility, (2) enable the utility to offer a return adequate to attract new capital on reasonable terms, and (3) maintain the utility's financial integrity. Meeting these objectives allows the utility to fulfill its obligation to provide reliable service while meeting the needs of customers through necessary system expansion.

Q39. WHAT FUNDAMENTAL ECONOMIC PRINCIPLE UNDERLIES THE COST OF EQUITY CONCEPT?

A39. The fundamental economic principle underlying the cost of equity concept is the notion that investors are risk averse. In capital markets where relatively risk-free assets are available (*e.g.*, U.S. Treasury securities), investors can be induced to hold riskier assets only if they are offered a premium, or additional return, above the rate of return on a risk-free asset. Because all assets compete with each other

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[11] *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n of W. Va.*, 262 U.S. 679 (1923) ("*Bluefield*"). The Supreme Court explained in *Bluefield* that an approved return for a utility must, among other things, be adequate "to maintain and support its credit, and enable it to raise the money necessary for the proper discharge of its public duties." *Id.* at 693.

[12] *FPC v. Hope Natural Gas Co*., 320 U.S. 591 (1944) ("*Hope*"). Under *Hope*, an ROE should be "commensurate with returns on investments in other enterprises having corresponding risks . . . [and] sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital." *Id.* at 603.

for investor funds, riskier assets must yield a higher expected rate of return than safer assets to induce investors to invest and hold them.

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

$$k_i = R_f + RP_i$$

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

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

Q40. IS THERE EVIDENCE THAT THE RISK-RETURN TRADEOFF PRINCIPLE ACTUALLY OPERATES IN THE CAPITAL MARKETS?

A40. Yes. The risk-return tradeoff can be readily documented in segments of the capital markets where required rates of return can be directly inferred from market data and where generally accepted measures of risk exist. Bond yields, for example, reflect investors' expected rates of return, and bond ratings measure the risk of individual bond issues. Comparing the observed yields on government securities, which are considered free of default risk, to the yields on bonds of various rating categories demonstrates that the risk-return tradeoff does, in fact, exist.

Q41. DOES THE RISK-RETURN TRADEOFF OBSERVED WITH FIXED INCOME SECURITIES EXTEND TO COMMON STOCKS AND OTHER ASSETS?

A41. It is widely accepted that the risk-return tradeoff evidenced with long-term debt extends to all assets. Documenting the risk-return tradeoff for assets other than fixed income securities, however, is complicated by two factors. First, there is no

standard measure of risk applicable to all assets. Second, for most assets – including common stock – required rates of return cannot be directly observed. Yet there is every reason to believe that investors exhibit risk aversion in deciding whether or not to hold common stocks and other assets, just as when choosing among fixed-income securities.

Q42. IS THIS RISK-RETURN TRADEOFF LIMITED TO DIFFERENCES BETWEEN FIRMS?

A42. No. The risk-return tradeoff principle applies not only to investments in different firms, but also to different securities issued by the same firm. The securities issued by a utility vary considerably in risk because they have different characteristics and priorities. Long-term debt is senior among all capital in its claim on a utility's net revenues and is, therefore, the least risky. The last investors in line are common shareholders. They receive only the net revenues remaining after all other claimants have been paid. As a result, the rate of return that investors require from a utility's common stock, the most junior and riskiest of its securities, must be considerably higher than the yield offered by the utility's senior, long-term debt.

Q43. DOES THE FACT THAT AEP OHIO IS A SUBSIDIARY OF AEP IN ANY WAY ALTER THESE FUNDAMENTAL STANDARDS UNDERLYING A FAIR ROE?

A43. No. While AEP Ohio has no publicly traded common stock and AEP is its only shareholder, this does not change the standards governing the determination of a fair ROE for the Company. Ultimately, the common equity that is required to support AEP Ohio's utility operations must be raised in the capital markets, where investors consider the Company's ability to offer a rate of return that is competitive with other risk-comparable alternatives. Unless there is a reasonable

expectation that the Company can earn a return that is commensurate with its underlying risks, capital will be allocated elsewhere, AEP Ohio's financial integrity will be weakened, and investors will demand an even higher rate of return. AEP Ohio's ability to offer a reasonable return on investment is a necessary ingredient in ensuring that customers continue to enjoy economical rates and reliable service.

Q44. WHAT DOES THE ABOVE DISCUSSION IMPLY WITH RESPECT TO ESTIMATING THE COST OF COMMON EQUITY FOR A UTILITY?

A44. Although the cost of common equity cannot be observed directly, it is a function of the returns available from other investment alternatives and the risks to which the equity capital is exposed. Because it is not readily observable, the cost of common equity for a particular utility must be estimated by analyzing information about capital market conditions generally, assessing the relative risks of the company specifically, and employing various quantitative methods that focus on investors' required rates of return. These various quantitative methods typically attempt to infer investors' required rates of return from stock prices, interest rates, or other capital market data.

B. Discounted Cash Flow Analyses

Q45. HOW IS THE DCF MODEL USED TO ESTIMATE THE COST OF COMMON EQUITY?

A45. DCF models attempt to replicate the market valuation process that sets the price investors are willing to pay for a share of a company's stock. The model rests on the assumption that investors evaluate the risks and expected rates of return from all securities in the capital markets. Given these expectations, the price of each stock is adjusted by the market until investors are adequately compensated for the

risks they bear. Therefore, we can look to the market to determine what investors believe a share of common stock is worth. By estimating the cash flows investors expect to receive from the stock in the way of future dividends and capital gains, we can calculate their required rate of return. That is, the cost of common equity is the discount rate that will equate the current price of a share of stock with the present value of all expected cash flows from the stock. The formula for the general form of the DCF model is as follows:

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \cdots + \frac{D_t}{(1+k_e)^t} + \frac{P_t}{(1+k_e)^t}$$

where: P_0 = Current price per share;
P_t = Expected future price per share in period t;
D_t = Expected dividend per share in period t;
k_e = Cost of common equity.

Q46. WHAT FORM OF THE DCF MODEL IS CUSTOMARILY USED TO ESTIMATE THE COST OF COMMON EQUITY IN RATE CASES?

A46. Rather than developing annual estimates of cash flows into perpetuity, the DCF model can be simplified to a "constant growth" form:[13]

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

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

where: 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 the capital gains associated with price appreciation over the investors' holding period.

Q47. WHAT FORM OF THE DCF MODEL DID YOU USE?

A47. I applied the constant growth DCF model to estimate the cost of common equity for AEP Ohio, which is the form of the model most commonly relied on to establish the cost of common equity for traditional regulated utilities and the method most often referenced by regulators.

Q48. WHAT STEPS ARE REQUIRED TO APPLY THE CONSTANT GROWTH DCF MODEL?

A48. 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 step is to estimate investors' long-term growth expectations (g) for the firm. The final step is to sum the firm's

dividend yield and estimated growth rate to arrive at an estimate of its cost of common equity.

Q49. HOW WAS THE DIVIDEND YIELD FOR THE ELECTRIC GROUP DETERMINED?

A49. Estimates of dividends to be paid by each of these utilities over the next 12 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 Electric Group are presented on page 1 of Exhibit AMM-4. As shown there, dividend yields for the firms in the Electric Group ranged from 3.0% to 4.6%.

Q50. WHAT IS THE NEXT STEP IN APPLYING THE CONSTANT GROWTH DCF MODEL?

A50. The next step is to evaluate growth expectations, or "*g*", for the firm in question. In constant growth DCF theory, earnings, dividends, book value, and market price are all assumed to grow in lockstep, and the growth horizon of the DCF model is infinite. But implementation of the DCF model is more than just a theoretical exercise; it is an attempt to replicate the mechanism investors use to arrive at observable stock prices. A wide variety of techniques can be used to derive growth rates, but the only "*g*" that matters in applying the DCF model is the value that investors expect.

Q51. WHAT ARE INVESTORS MOST LIKELY TO CONSIDER IN DEVELOPING THEIR GROWTH EXPECTATIONS?

A51. Implementation of the DCF model is solely concerned with replicating the forward-looking evaluation of real-world investors. In the case of utilities, dividend growth rates are not likely to provide a meaningful guide to investors'

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

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

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

Q52. DO THE GROWTH RATE PROJECTIONS OF SECURITY ANALYSTS CONSIDER HISTORICAL TRENDS?

A52. Yes. Professional security analysts study historical trends extensively in developing their projections of future earnings. Hence, to the extent there is any useful information in historical patterns, that information is incorporated into analysts' growth forecasts.

Q53. DID PROFESSOR MYRON J. GORDON, WHO ORIGINATED THE DCF APPROACH, RECOGNIZE THE PIVOTAL ROLE THAT EARNINGS PLAY IN FORMING INVESTORS' EXPECTATIONS?

A53. Yes. Dr. Gordon specifically recognized that "it is the growth that investors expect that should be used" in applying the DCF model and he concluded:

> A number of considerations suggest that investors may, in fact, use earnings growth as a measure of expected future growth."[14]

Q54. ARE ANALYSTS' ASSESSMENTS OF GROWTH RATES APPROPRIATE FOR ESTIMATING INVESTORS' REQUIRED RETURN USING THE DCF MODEL?

A54. Yes. In applying the DCF model to estimate the cost of common equity, the only relevant growth rate is the forward-looking expectations of investors that are captured in current stock prices. Investors, just like securities analysts and others in the investment community, do not know how the future will actually turn out. They can only make investment decisions based on their best estimate of what the future holds in the way of long-term growth for a particular stock, and securities prices are constantly adjusting to reflect their assessment of available information.

Any claims that analysts' estimates are not relied upon by investors are illogical given the reality of a competitive market for investment advice. The market for investment advice is intensely competitive, and securities analysts are personally and professionally motivated to provide the most accurate assessment possible of future growth trends. If financial analysts' forecasts do not add value to investors' decision making, then it is irrational for investors to pay for these estimates. Those financial analysts who fail to provide reliable forecasts will lose

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

out in competitive markets relative to those analysts whose forecasts investors find more credible. The reality that analyst estimates are routinely referenced in the financial media and in investment advisory publications (*e.g.*, Value Line) implies that investors use them as a basis for their expectations.

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

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of *g* [growth]. The accuracy of these forecasts in the sense of whether they turn out to be correct is not an issue here, as long as they reflect widely held expectations.[15]

Q55. WHAT ARE SECURITY ANALYSTS CURRENTLY PROJECTING IN THE WAY OF GROWTH FOR THE FIRMS IN THE ELECTRIC GROUP?

A55. The earnings growth projections for each of the firms in the Electric Group reported by Value Line, IBES, and Zacks Investment Research ("Zacks") are displayed on page 2 of Exhibit AMM-4. [16]

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[15] Morin, Roger A., "New Regulatory Finance," *Public Utilities Reports, Inc.* at 298 (2006) (emphasis added).

[16] Formerly I/B/E/S International, Inc., IBES growth rates are now compiled and published by Thomson Reuters.

Q56. HOW ELSE ARE INVESTORS' EXPECTATIONS OF FUTURE GROWTH PROSPECTS OFTEN ESTIMATED WHEN APPLYING THE CONSTANT GROWTH DCF MODEL?

A56. In constant growth theory, growth in book equity will be equal to the product of the earnings retention ratio (one minus the dividend payout ratio) and the earned rate of return on book equity. Furthermore, if the earned rate of return and the payout ratio are constant over time, growth in earnings and dividends will be equal to growth in book value. Despite the fact that these conditions are never met in practice, this "sustainable growth" approach may provide a rough guide for evaluating a firm's growth prospects and is frequently proposed in regulatory proceedings.

The sustainable growth rate is calculated by the formula, g = br+sv, where "b" is the expected retention ratio, "r" is the expected earned return on equity, "s" is the percent of common equity expected to be issued annually as new common stock, and "v" is the equity accretion rate. Under DCF theory, the "sv" factor is a component of the growth rate designed to capture the impact of issuing new common stock at a price above, or below, book value. The sustainable, "br+sv" growth rates for each firm in the Utility Group are summarized on page 2 of Exhibit AMM-4, with the underlying details being presented on Exhibit AMM-5.[17]

Q57. ARE THERE SIGNIFICANT SHORTCOMINGS ASSOCIATED WITH THE "BR+SV" GROWTH RATE?

A57. Yes. First, in order to calculate the sustainable growth rate, it is necessary to develop estimates of investors' expectations for four separate variables; namely,

[17] Because Value Line reports end-of-year book values, an adjustment factor was incorporated to compute an average rate of return over the year, which is consistent with the theory underlying this approach.

"b", "r", "s", and "v." Given the inherent difficulty in forecasting each parameter and the difficulty of estimating the expectations of investors, the potential for measurement error is significantly increased when using four variables, as opposed to referencing a direct projection for EPS growth. Second, empirical research in the finance literature indicates that sustainable growth rates are not as significantly correlated to measures of value, such as share prices, as are analysts' EPS growth forecasts.[18] The "sustainable growth" approach was included for completeness, but evidence indicates that analysts' forecasts provide a superior and more direct guide to investors' growth expectations.

Q58. WHAT COST OF COMMON EQUITY ESTIMATES WERE IMPLIED FOR THE ELECTRIC GROUP USING THE DCF MODEL?

A58. After combining the dividend yields and respective growth projections for each utility, the resulting cost of common equity estimates are shown on page 3 of Exhibit AMM-4.

Q59. IN EVALUATING THE RESULTS OF THE CONSTANT GROWTH DCF MODEL, IS IT APPROPRIATE TO ELIMINATE ILLOGICAL ESTIMATES?

A59. Yes. In applying quantitative methods to estimate the cost of equity, it is essential that the resulting values pass fundamental tests of reasonableness and economic logic. Accordingly, DCF estimates that are implausibly low or high should be eliminated when evaluating the results of this method.

[18] Morin, Roger A., "New Regulatory Finance," *Public Utilities Reports, Inc.*, at 307 (2006).

Q60. HOW DID YOU EVALUATE DCF ESTIMATES AT THE LOW END OF THE RANGE?

A60. I based my evaluation of DCF estimates at the low end of the range on the fundamental risk-return tradeoff, which holds that investors will only take on more risk if they expect to earn a higher rate of return to compensate them for the greater uncertainly. Because common stocks lack the protections associated with an investment in long-term bonds, a utility's common stock imposes far greater risks on investors. As a result, the rate of return that investors require from a utility's common stock is considerably higher than the yield offered by senior, long-term debt. Consistent with this principle, DCF results that are not sufficiently higher than the yield available on less risky utility bonds must be eliminated.

Q61. HAVE SIMILAR TESTS BEEN APPLIED BY REGULATORS?

A61. Yes. FERC has noted that adjustments are justified where applications of the DCF approach produce illogical results. FERC evaluates DCF results against observable yields on long-term public utility debt and has recognized that it is appropriate to eliminate estimates that do not sufficiently exceed this threshold. [19] FERC recently affirmed that:

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

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

which companies are outliers. As the Presiding Judge explained, this is a flexible test.[20]

Q62. WHAT INTEREST RATE BENCHMARK DID YOU CONSIDER IN EVALUATING THE DCF RESULTS FOR AEP OHIO?

A62. The BBB and Baa1 credit ratings assigned to AEP Ohio by S&P and Moody's, respectively, are considered part of the triple-B rating category. The average of Moody's monthly yields for Baa utility bonds was 5.46% over the six months ended February 2016.[21]

Q63. WHAT ELSE SHOULD BE CONSIDERED IN EVALUATING DCF ESTIMATES AT THE LOW END OF THE RANGE?

A63. As indicated earlier, it is generally expected that long-term interest rates will rise as the Federal Reserve normalizes monetary policies. As shown in Table 4 below, forecasts of IHS Global Insight and the EIA imply an average triple-B bond yield of approximately 7.25% over the period 2016-2020:

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

[21] Moody's Investors Service, http://credittrends.moodys.com/chartroom.asp?c=3.

TABLE 4
IMPLIED BBB BOND YIELD

	2016-20
Projected Aa Utility Yield	
IHS Global Insight (a)	5.67%
EIA (b)	6.17%
Average	5.92%
Current Baa - Aa Yield Spread (c)	1.33%
Implied Baa Utility Yield	**7.25%**

(a) IHS Global Insight, The U.S. Economy: The 30-Year Focus (Third-Quarter 2015).
(b) Energy Information Administration, Annual Energy Outlook 2015 (April 2015).
(c) Based on monthly average bond yields from Moody's Investors Service for the six-month period Sep. 2015 - Feb. 2016.

The increase in debt yields anticipated by IHS Global Insight and EIA is also supported by the widely referenced Blue Chip, which projects that yields on corporate bonds will climb 200 basis points through 2020.[22]

Q64. WHAT DOES THIS TEST OF LOGIC IMPLY WITH RESPECT TO THE DCF ESTIMATES FOR THE ELECTRIC GROUP?

A64. Adding FERC's 100 basis-point premium to the historical and projected average utility bond yields implies a low-end threshold on the order of 6.5% to 8.3%. As highlighted on page 3 of Exhibit AMM-4, after considering this test and the distribution of individual estimates, I eliminated low-end DCF estimates ranging from 4.0% to 6.9%. Based on my professional experience and the risk-return tradeoff principle that is fundamental to finance, it is inconceivable that investors are not requiring a substantially higher rate of return for holding common stock.

[22] *Blue Chip Financial Forecasts*, Vol. 34, No. 12 (Dec. 1, 2015).

As a result, consistent with the threshold established by historical and projected utility bond yields, these values provide little guidance as to the returns investors require from utility common stocks and should be excluded.

Q65. DO YOU ALSO RECOMMEND EXCLUDING ESTIMATE AT THE HIGH END OF THE RANGE OF DCF RESULTS?

A65. While I typically recommend the exclusion of high end estimates that are clearly implausible, in this case, no such values existed. The upper end of the DCF range for the Electric Group was set by a cost of equity estimate of 13.9%. When compared with the balance of the remaining estimates, this value is reasonable and should not be excluded in evaluating the results of the DCF model for the Utility Group.

Q66. WHAT COST OF COMMON EQUITY ESTIMATES ARE IMPLIED BY YOUR DCF RESULTS FOR THE ELECTRIC GROUP?

A66. As shown on page 3 of Exhibit AMM-4 and summarized in Table 3, below, after eliminating illogical values, application of the constant growth DCF model resulted in the following cost of equity estimates:

TABLE 3
DCF RESULTS – ELECTRIC GROUP

	Cost of Equity	
Growth Rate	**Average**	**Midpoint**
Value Line	10.3%	11.2%
IBES	9.4%	9.3%
Zacks	9.1%	9.2%
br + sv	9.1%	10.3%

C. Capital Asset Pricing Model

Q67. PLEASE DESCRIBE THE CAPM.

A67. The CAPM is a theory of market equilibrium that measures risk using the beta coefficient. Assuming investors are fully diversified, the relevant risk of an

individual asset (*e.g.*, common stock) is its volatility relative to the market as a whole, with beta reflecting the tendency of a stock's price to follow changes in the market. A stock that tends to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00. The CAPM is mathematically expressed as:

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

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

Like the DCF model, the CAPM is an *ex-ante,* or forward-looking model based on expectations of the future. As a result, in order to produce a meaningful estimate of investors' required rate of return, the CAPM must be applied using estimates that reflect the expectations of actual investors in the market, not with backward-looking, historical data.

Q68. WHY IS THE CAPM APPROACH A RELEVANT COMPONENT WHEN EVALUATING THE COST OF EQUITY FOR AEP OHIO?

A68. The CAPM approach (which also forms the foundation of the ECAPM) generally is considered to be the most widely referenced method for estimating the cost of equity among academicians and professional practitioners, with the pioneering researchers of this method receiving the Nobel Prize in 1990. Because this is the dominant model for estimating the cost of equity outside the regulatory sphere, the CAPM (and ECAPM) provides important insight into investors' required rate of return for utility stocks, including AEP Ohio.

Q69. HOW DID YOU APPLY THE CAPM TO ESTIMATE THE COST OF COMMON EQUITY?

A69. Application of the CAPM to the Electric Group based on a forward-looking estimate for investors' required rate of return from common stocks is presented on Exhibit AMM-6. In order to capture the expectations of today's investors in current capital markets, the expected market rate of return was estimated by conducting a DCF analysis on the dividend paying firms in the S&P 500.

The dividend yield for each firm was obtained from Value Line, and the growth rate was equal to the average of the earnings growth projections for each firm published by IBES and Value Line, with each firm's dividend yield and growth rate being weighted by its proportionate share of total market value. Based on the weighted average of the projections for the individual firms, current estimates imply an average growth rate over the next five years of 8.4%. Combining this average growth rate with a year-ahead dividend yield of 2.7% results in a current cost of common equity estimate for the market as a whole (R_m) of approximately 11.1%. Subtracting a 2.9% risk-free rate based on the average yield on 30-year Treasury bonds for the six months ending February 2016 produced a market equity risk premium of 8.2%.

Q70. WHAT WAS THE SOURCE OF THE BETA VALUES YOU USED TO APPLY THE ECAPM?

A70. As indicated earlier in my discussion of risk measure for the Electric Group, I relied on the beta values reported by Value Line, which in my experience is the most widely referenced source for beta in regulatory proceedings.

Q71. WHAT ELSE SHOULD BE CONSIDERED IN APPLYING THE CAPM?

A71. Financial research indicates that the CAPM does not fully account for observed differences in rates of return attributable to firm size. Accordingly, a modification is required to account for this size effect. As explained by *Morningstar*:

> One of the most remarkable discoveries of modern finance is that of a relationship between company size and return. … The relationship between company size and return cuts across the entire size spectrum; it is not restricted to the smallest stocks. … This size-rated phenomenon has prompted a revision to the CAPM, which includes a size premium.[23]

According to the CAPM, the expected return on a security should consist of the riskless rate, plus a premium to compensate for the systematic risk of the particular security. The degree of systematic risk is represented by the beta coefficient. The need for the size adjustment arises because differences in investors' required rates of return that are related to firm size are not fully captured by beta. To account for this, researchers have developed size premiums that need to be added to the theoretical CAPM cost of equity estimates to account for the level of a firm's market capitalization in determining the CAPM cost of equity.[24] Accordingly, my CAPM analyses also incorporated an adjustment to recognize the impact of size distinctions, as measured by the average market capitalization for the Electric Group.

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

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

Q72. WHAT IS THE IMPLIED ROE FOR THE ELECTRIC GROUP USING THE CAPM APPROACH?

A72. As shown on page 1 of Exhibit AMM-6, a forward-looking application of the CAPM approach resulted in an average unadjusted ROE estimate of 9.2%.[25] After adjusting for the impact of firm size, the CAPM approach implied an average cost of equity of 10.0% for the Electric Group, with a midpoint cost of equity estimate of 9.9%.

Q73. DID YOU ALSO APPLY THE CAPM USING FORECASTED BOND YIELDS?

A73. Yes. As discussed earlier, there is general consensus that interest rates will increase materially as the Federal Reserve normalizes its monetary policies going forward. Accordingly, in addition to the use of current bond yields, I also applied the CAPM based on the forecasted long-term Treasury bond yields developed based on projections published by Value Line, IHS Global Insight and Blue Chip. As shown on page 2 of Exhibit AMM-6, incorporating a forecasted Treasury bond yield for 2016-2020 implied a cost of equity of approximately 9.5% for the Electric Group, or 10.3% after adjusting for the impact of relative size. The midpoints of the unadjusted and size adjusted cost of equity ranges were 9.5% and 10.2%, respectively.

[25] The midpoint of the unadjusted ECAPM range was 9.3%.

D. Empirical Capital Asset Pricing Model

Q74. HOW DOES THE ECAPM APPROACH DIFFER FROM TRADITIONAL APPLICATIONS OF THE CAPM?

A74. Empirical tests of the CAPM have shown that low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. In other words, the CAPM tends to overstate the actual sensitivity of the cost of capital to beta, with low-beta stocks tending to have higher returns and high-beta stocks tending to have lower returns than predicted by the CAPM.[26] This empirical finding is widely reported in the finance literature, as summarized in *New Regulatory Finance*:

> As discussed in the previous section, several finance scholars have developed refined and expanded versions of the standard CAPM by relaxing the constraints imposed on the CAPM, such as dividend yield, size, and skewness effects. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the CAPM prediction in keeping with the actual observed risk-return relationship. The ECAPM makes use of these empirical relationships.[27]

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

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

This equation, and its associated weighting factors, recognize the observed relationship between standard CAPM estimates and the cost of capital

[26] Because the betas of utility stocks, including those in the Electric Group, are generally less than 1.0, this implies that cost of equity estimates based on the traditional CAPM would understate the cost of equity.
[27] Morin, Roger A., "New Regulatory Finance," *Public Utilities Reports* at 189 (2006).

documented in the financial research, and corrects for the understated returns that would otherwise be produced for low beta stocks.

Q75. WHAT COST OF EQUITY ESTIMATES WERE INDICATED BY THE ECAPM?

A75. My applications of the ECAPM were based on the same forward-looking market rate of return, risk-free rates, and beta values discussed earlier in connections with the CAPM. As shown on page 1 of Exhibit AMM-7, applying the forward-looking ECAPM approach to the firms in the Electric Group results in an average unadjusted cost of equity estimate of 9.7%, or 10.5% after incorporating the size adjustment corresponding to the market capitalization of the individual utilities.

As shown on page 2 of Exhibit AMM-7, incorporating a forecasted Treasury bond yield for 2016-2020 implied a cost of equity of approximately 9.9% for the Electric Group, or 10.7% after adjusting for the impact of relative size.

E. Utility Risk Premium

Q76. BRIEFLY DESCRIBE THE RISK PREMIUM METHOD.

A76. The risk premium method of estimating investors' required return extends to common stocks the risk-return tradeoff observed with bonds. The cost of equity is estimated by first determining the additional return investors require to forgo the relative safety of bonds and to bear the greater risks associated with common stock, and by then adding this equity risk premium to the current yield on bonds. Like the DCF model, the risk premium method is capital market oriented. However, unlike DCF models, which indirectly impute the cost of equity, risk premium methods directly estimate investors' required rate of return by adding an equity risk premium to observable bond yields.

Q77. IS THE RISK PREMIUM APPROACH A WIDELY ACCEPTED METHOD FOR ESTIMATING THE COST OF EQUITY?

A77. Yes. The risk premium approach is based on the fundamental risk-return principle that is central to finance, which holds that investors will require a premium in the form of a higher return in order to assume additional risk. This method is routinely referenced by the investment community and in academia and regulatory proceedings, and provides an important tool in estimating a fair ROE for AEP Ohio.

Q78. HOW DID YOU IMPLEMENT THE RISK PREMIUM METHOD?

A78. I based my estimates of equity risk premiums for utilities on surveys of previously authorized ROEs. Authorized ROEs presumably reflect regulatory commissions' best estimates of the cost of equity, however determined, at the time they issued their final order. Moreover, allowed ROEs are an important consideration for investors and have the potential to influence other observable investment parameters, including credit ratings and borrowing costs. Thus, this data provides a logical and frequently referenced basis for estimating equity risk premiums for regulated utilities.

Q79. IS IT CIRCULAR TO CONSIDER RISK PREMIUMS BASED ON AUTHORIZED RETURNS IN ASSESSING A FAIR ROE FOR AEP OHIO?

A79. No. In establishing authorized ROEs, regulators typically consider the results of alternative market-based approaches. Because allowed risk premiums consider objective market data (*e.g.*, stock prices dividends, beta, and interest rates), and are not based strictly on past actions of other regulators, this mitigates concerns over any potential for circularity.

Q80. HOW DID YOU IMPLEMENT THE RISK PREMIUM METHOD USING SURVEYS OF ALLOWED ROES?

A80. The ROEs authorized for electric utilities by regulatory commissions across the U.S. are compiled by Regulatory Research Associates and published in its *Regulatory Focus* report. On page 3 of Exhibit AMM-8, the average yield on public utility bonds is subtracted from the average allowed ROE for electric utilities to calculate equity risk premiums for each year between 1974 and 2015.[28] As shown there, over this period these equity risk premiums for electric utilities averaged 3.62%, and the yield on public utility bonds averaged 8.48%.

Q81. IS THERE ANY CAPITAL MARKET RELATIONSHIP THAT MUST BE CONSIDERED WHEN IMPLEMENTING THE RISK PREMIUM METHOD?

A81. Yes. There is considerable evidence that the magnitude of equity risk premiums is not constant and that equity risk premiums tend to move inversely with interest rates. In other words, when interest rate levels are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums widen. The implication of this inverse relationship is that the cost of equity does not move as much as, or in lockstep with, interest rates. Accordingly, for a 1% increase or decrease in interest rates, the cost of equity may only rise or fall, say, 50 basis points. Therefore, when implementing the risk premium method, adjustments may be required to incorporate this inverse relationship if current interest rate levels have diverged from the average interest rate level represented in the data set.

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

Q82. HAS THIS INVERSE RELATIONSHIP BEEN DOCUMENTED IN THE FINANCIAL RESEARCH?

A82. Yes. This inverse relationship between equity risk premiums and interest rates has been widely reported in the financial literature.[29] For example, New Regulatory Finance documented this inverse relationship:

> Published studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carelton, Chambers, and Lakonishok (1983), Morin (2005), and McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates – rising when rates fell and declining when rates rose.[30]

Other regulators have also recognized that the cost of equity does not move in tandem with interest rates.[31]

Q83. WHAT COST OF EQUITY IS IMPLIED BY THE RISK PREMIUM METHOD USING SURVEYS OF ALLOWED ROES?

A83. Because risk premiums move inversely with interest rates and current bond yields are significantly lower than the average over the study period, it is necessary to adjust the average equity risk premium over the study period to reflect the impact of changes in bond yields. Based on the regression output between the interest rates and equity risk premiums displayed on page 4 of Exhibit AMM-8, the equity risk premium for electric utilities increased approximately 43 basis points for each percentage point drop in the yield on average public utility bonds. As illustrated

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[29] *See, e.g.,* Brigham, E.F., Shome, D.K., and Vinson, S.R., "The Risk Premium Approach to Measuring a Utility's Cost of Equity," *Financial Management* (Spring 1985); Harris, R.S., and Marston, F.C., "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," *Financial Management* (Summer 1992).

[30] Morin, Roger A., "New Regulatory Finance," Public Utilities Reports, at 128 (2006).

[31] See, e.g., California Public Utilities Commission, Decision 08-05-035 (May 29, 2008); Entergy Mississippi Formula Rate Plan FRP-5, http://www.entergy-mississippi.com/content/price/tariffs/emi_frp.pdf; *Martha Coakley et al.*, 147 FERC ¶ 61,234 at P 147 (2014).

on page 1 of Exhibit AMM-8, with an average yield on public utility bonds for the six months ending February 2016 being 4.63%,[32] this implied a current equity risk premium of 5.27% for electric utilities. Adding this equity risk premium to the average Baa utility bond yield for the six months ending February 2016 of 5.46% implies a current cost of equity of approximately 10.7%.[33]

Q84. WHAT COST OF EQUITY ESTIMATE WAS PRODUCED BY THE RISK PREMIUM APPROACH AFTER INCORPORATING FORECASTED BOND YIELDS?

A84. As shown on page 2 of Exhibit AMM-8, incorporating a forecasted yield for 2016-2020 and adjusting for changes in interest rates since the study period implied an equity risk premium of 4.50% for electric utilities. Adding this equity risk premium to the implied average yield Baa utility bonds for 2016-2020 of 7.25% resulted in an implied cost of equity of approximately 11.8%.

F. Expected Earnings Approach

Q85. WHAT OTHER ANALYSES DID YOU CONDUCT TO ESTIMATE THE COST OF COMMON EQUITY?

A85. As I noted earlier, I also evaluated the cost of common equity using the expected earnings method. Reference to rates of return available from alternative investments of comparable risk can provide an important benchmark in assessing the return necessary to assure confidence in the financial integrity of a firm and its ability to attract capital. This expected earnings approach is consistent with the economic underpinnings for a fair rate of return established by the U.S. Supreme Court in *Bluefield* and *Hope*. Moreover, it avoids the complexities and limitations

[32] The average utility bond yield encompasses data for Moody's AA, A, and Baa rating categories.
[33] Reference to the Baa utility bond yield corresponds to AEP Ohio's credit ratings.

of capital market methods and instead focuses on the returns earned on book equity, which are readily available to investors.

Q86. WHAT ECONOMIC PREMISE UNDERLIES THE EXPECTED EARNINGS APPROACH?

A86. The simple, but powerful concept underlying the expected earnings approach is that investors compare each investment alternative with the next best opportunity. If the utility is unable to offer a return similar to that available from other opportunities of comparable risk, investors will become unwilling to supply the capital on reasonable terms. For existing investors, denying the utility an opportunity to earn what is available from other similar risk alternatives prevents them from earning their opportunity cost of capital. The expected earnings approach is consistent with the economic rationale underpinning established regulatory standards, which specifies a methodology to determine an ROE benchmark based on earned rates of return for a peer group of other regional utilities. This approach is also consistent with Ohio statute, as reflected in the SEET.

Q87. HOW IS THE EXPECTED EARNINGS APPROACH TYPICALLY IMPLEMENTED?

A87. The traditional comparable earnings test identifies a group of companies that are believed to be comparable in risk to the utility. The actual earnings of those companies on the book value of their investment are then compared to the allowed return of the utility. While the traditional comparable earnings test is implemented using historical data taken from the accounting records, it is also common to use projections of returns on book investment, such as those published by recognized investment advisory publications (*e.g.*, Value Line). Because these returns on book value equity are analogous to the allowed return on a utility's rate

base, this measure of opportunity costs results in a direct, "apples to apples" comparison.

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

Q88. WHAT RATES OF RETURN ON EQUITY ARE INDICATED FOR ELECTRIC UTILITIES BASED ON THE EXPECTED EARNINGS APPROACH?

A88. Value Line's projections imply an average rate of return on common equity for the electric utility industry of 10.8% over its 2018-2020 forecast horizon.[34] Meanwhile, for the firms in the Electric Group specifically, the year-end returns

[34] The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016). Recall that Value Line reports return on year-end equity so the equivalent return on average equity would be higher.

on common equity projected by Value Line over its forecast horizon are shown on Exhibit AMM-9. Consistent with the rationale underlying the development of the br+sv growth rates, 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 for the Electric Group suggest an average ROE of approximately 10.4%, with a midpoint value of 10.8%.

G. Flotation Costs

Q89. WHAT OTHER CONSIDERATIONS ARE RELEVANT IN SETTING THE RETURN ON EQUITY FOR A UTILITY?

A89. 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 utility nets when it issues common equity.

Q90. IS THERE AN ESTABLISHED MECHANISM FOR A UTILITY TO RECOGNIZE EQUITY ISSUANCE COSTS?

A90. 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.

Q91. IS THERE A THEORETICAL AND PRACTICAL BASIS TO INCLUDE A FLOTATION COST ADJUSTMENT IN THIS CASE?

A91. Yes. First, an adjustment for flotation costs associated with past equity issues is appropriate, even when the utility is not contemplating any new sales of common stock. The need for a flotation cost adjustment to compensate for past equity issues been recognized in the financial literature. In a *Public Utilities Fortnightly* article, for example, Brigham, Aberwald, and Gapenski demonstrated that even if no further stock issues are contemplated, a flotation cost adjustment in all future years is required to keep shareholders whole, and that the flotation cost adjustment must consider total equity, including retained earnings.[35] Similarly, *New Regulatory Finance* contains the following discussion:

> Another controversy is whether the flotation cost allowance should still be applied when the utility is not contemplating an imminent common stock issue. Some argue that flotation costs are real and should be recognized in calculating the fair rate of return on equity,

[35] Brigham, E.F., Aberwald, D.A., and Gapenski, L.C., "Common Equity Flotation Costs and Rate Making," *Public Utilities Fortnightly,* May, 2, 1985.

> but only at the time when the expenses are incurred. In other words, the flotation cost allowance should not continue indefinitely, but should be made in the year in which the sale of securities occurs, with no need for continuing compensation in future years. This argument implies that the company has already been compensated for these costs and/or the initial contributed capital was obtained freely, devoid of any flotation costs, which is an unlikely assumption, and certainly not applicable to most utilities. … The flotation cost adjustment cannot be strictly forward-looking unless all past flotation costs associated with past issues have been recovered.[36]

Q92. WHAT IS THE MAGNITUDE OF THE ADJUSTMENT TO THE "BARE BONES" COST OF EQUITY TO ACCOUNT FOR ISSUANCE COSTS?

A92. There are a number of ways in which a flotation cost adjustment can be calculated, but the most common methods used to account for flotation costs in regulatory proceedings is to apply an average flotation-cost percentage to a utility's dividend yield. Based on a review of the finance literature, *Regulatory Finance: Utilities' Cost of Capital* concluded:

> The flotation cost allowance requires an estimated adjustment to the return on equity of approximately 5% to 10%, depending on the size and risk of the issue.[37]

Alternatively, a study of data from Morgan Stanley regarding issuance costs associated with utility common stock issuances suggests an average flotation cost percentage of 3.6%,[38] with AEP incurring issuance costs equal to approximately 3.02% of the gross proceeds from its 2009 public offering of

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[36] Morin, Roger A., "New Regulatory Finance," *Public Utilities Reports, Inc.* (2006) at 335.

[37] Roger A. Morin, "Regulatory Finance: Utilities' Cost of Capital," *Public Utilities Reports, Inc. at 166* (1994).

[38] *Application of Yankee Gas Services Company for a Rate Increase*, DPUC Docket No. 04-06-01, Direct Testimony of George J. Eckenroth (Jul. 2, 2004) at Exhibit GJE-11.1. Updating the results presented by Mr. Eckenroth through April 2005 also resulted in an average flotation cost percentage of 3.6%.

common stock.[39] Multiplying this 3.02% expense percentage for AEP by a representative dividend yield of 3.5% produces a flotation cost adjustment on the order of 11 basis points.

H. Non-Utility ROE Benchmark

Q93. WHAT OTHER PROXY GROUP DID YOU CONSIDER IN EVALUATING A FAIR ROE FOR AEP OHIO?

A93. Consistent with underlying economic and regulatory standards, I also applied the DCF model to a reference group of low-risk risk companies in the non-utility sectors of the economy. I refer to this group as the "Non-Utility Group".

Q94. DO UTILITIES HAVE TO COMPETE WITH NON-REGULATED FIRMS FOR CAPITAL?

A94. Yes. The cost of capital is an opportunity cost based on the returns that investors could realize by putting their money in other alternatives. Clearly, the total capital invested in utility stocks is only the tip of the iceberg of total common stock investment, and there are a plethora of other enterprises available to investors beyond those in the utility industry. Utilities must compete for capital, not just against firms in their own industry, but with other investment opportunities of comparable risk. Indeed, modern portfolio theory is built on the assumption that rational investors will hold a diverse portfolio of stocks, not just companies in a single industry.

[39] American Electric Power Company, Inc., *Prospectus Supplement (To Prospectus dated December 22, 2008)* (Apr. 1, 2009). Net proceeds from AEP's sale of 69 million shares of common stock raised approximately $1.64 billion of additional equity capital.

Q95. IS IT CONSISTENT WITH THE BLUEFIELD AND HOPE CASES TO CONSIDER INVESTORS' REQUIRED ROE FOR NON-UTILITY COMPANIES?

A95. Yes. The cost of equity capital in the competitive sector of the economy form the very underpinning for utility ROEs because regulation purports to serve as a substitute for the actions of competitive markets. The Supreme Court has recognized that it is the degree of risk, not the nature of the business, which is relevant in evaluating an allowed ROE for a utility. The *Bluefield* case refers to "business undertakings attended with comparable risks and uncertainties." It does not restrict consideration to other utilities. Similarly, the *Hope* case states:

> By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.[40]

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

Q96. DOES CONSIDERATION OF THE RESULTS FOR THE NON-UTILITY GROUP HELP TO IMPROVE THE RELIABILITY OF DCF RESULTS?

A96. Yes. The estimates of growth from the DCF model depend on analysts' forecasts. It is possible for utility growth rates to be distorted by short-term trends in the industry, or by the industry falling into favor or disfavor by analysts. The result of such distortions would be to bias the DCF estimates for utilities. Because the Non-Utility Group includes low risk companies from more than one industry, it helps to insulate against any possible distortion that may be present in results for a particular sector.

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

Q97. WHAT CRITERIA DID YOU APPLY TO DEVELOP THE NON-UTILITY GROUP?

A97. My comparable risk proxy group was composed of those United States companies followed by Value Line that:

1) pay common dividends;

2) have a Safety Rank of "1";

3) have a Financial Strength Rating of "B++" or greater;

4) have a beta of 0.70 or less; and

5) have investment grade credit ratings from S&P and Moody's.[41]

Q98. HOW DO THE OVERALL RISKS OF THIS NON-UTILITY GROUP COMPARE WITH THE ELECTRIC GROUP?

A98. Table 4 compares the Non-Utility Group with the Electric Group and AEP Ohio across the four key risk measures discussed earlier:

TABLE AMM-4
COMPARISON OF RISK INDICATORS

	Credit Rating		Value Line		
			Safety	Financial	
	S&P	Moody's	Rank	Strength	Beta
Non-Utility Group	A-	A2	1	A+	0.68
Electric Group	BBB	Baa1	2	B++	0.77
AEP Ohio	BBB	Baa1	2	A	0.70

When considered together, a comparison of these objective measures, which consider a broad spectrum of risks, including financial and business position, relative size, and exposure to company-specific factors, indicates that investors

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

would likely conclude that the overall investment risks for the Electric Group and AEP Ohio are greater than those of the firms in the Non-Utility Group.

The companies that make up the Non-Utility Group are representative of the pinnacle of corporate America. These firms, which include household names such as Coca-Cola, McDonalds, and Wal-Mart, have long corporate histories, well-established track records, and exceedingly conservative risk profiles. Many of these companies pay dividends on a par with utilities, with the average dividend yield for the group approaching 3%. 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.

Q99. WHAT WERE THE RESULTS OF YOUR DCF ANALYSIS FOR THE NON-UTILITY GROUP?

A99. I applied the DCF model to the Non-Utility Group using the same analysts EPS growth projections described earlier for the Electric Group, with the results being presented in Exhibit AMM-10. As summarized in Table 5, below, application of the constant growth DCF model resulted in the following cost of equity estimates:

TABLE 5
DCF RESULTS – NON-UTILITY GROUP

	Cost of Equity	
Growth Rate	**Average**	**Midpoint**
Value Line	10.1%	11.2%
IBES	10.2%	10.6%
Zacks	10.5%	11.6%

As discussed earlier, reference to the Non-Utility Group is consistent with established regulatory principles. Required returns for utilities should be in line

with those of non-utility firms of comparable risk operating under the constraints of free competition. Because the actual cost of equity is unobservable, and DCF results inherently incorporate a degree of error, the cost of equity estimates for the Non-Utility Group provide an important benchmark in evaluating a fair ROE for AEP Ohio. The results of the Non-Utility Group DCF support my conclusion that the 10.41% recommended ROE for AEP Ohio's electric operations is a reasonable estimate of a fair ROE, particularly since this recommendation includes a flotation cost adjustment in addition to the bare bones cost of equity.

Q100. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A100. Yes.

EXHIBIT AMM-1

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 25 years 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

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

Education

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

Professional Associations

Received Chartered Financial Analyst (CFA) designation in 1990.

Member – CFA Institute.

Bibliography

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

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

Presentations

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

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

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

Representative Assignments

Mr. McKenzie has prepared and supported prefiled testimony submitted in over 250 regulatory proceedings. In addition to filings before regulators in 33 states, Mr. McKenzie has considerable expertise in preparing expert analyses and testimony before the Federal Energy Regulatory Commission ("FERC") on the issue of ROE. Many of these proceedings have been influential in addressing key aspects of FERC's policies with respect to ROE determinations. Broad experience in applying and evaluating the results of quantitative methods to estimate a fair ROE, including discounted cash flow approaches, the Capital Asset Pricing Model, risk premium methods, and other quantitative benchmarks. Other representative assignments have included the application of econometric models to analyze the impact of anti-competitive behavior and estimate lost profits; development of explanatory models for nuclear plant capital costs in connection with prudency reviews; and the analysis of avoided cost pricing for cogenerated power.

ROE ANALYSES **Exhibit AMM-2**

SUMMARY OF RESULTS

DCF	**Average**		**Midpoint**
Value Line	10.3%		11.2%
IBES	9.4%		9.3%
Zacks	9.1%		9.2%
Internal br + sv	9.1%		10.3%
CAPM			
Historical Bond Yield	10.0%		9.9%
Projected Bond Yield	10.3%		10.2%
Empirical CAPM			
Historical Bond Yield	10.5%		10.4%
Projected Bond Yield	10.7%		10.6%
Utility Risk Premium			
Historical Bond Yields		10.7%	
Projected Bond Yields		11.8%	
Expected Earnings			
Industry		10.8%	
Proxy Group	10.4%		10.8%
Cost of Equity Recommendation			
Cost of Equity Range	9.8%	--	10.8%
Flotation Cost Adjustment			
Dividend Yield		3.5%	
Flotation Cost Percentage		3.0%	
Adjustment		0.11%	
Return on Equity Range	**9.91%**	--	**10.91%**
ROE Recommendation		**10.41%**	

CAPITAL STRUCTURE **Exhibit AMM-3**

UTILITY GROUP

		At Fiscal Year-End 2015 (a)			Value Line Projected (b)		
	Company	**Debt**	**Preferred**	**Common Equity**	**Debt**	**Other**	**Common Equity**
1	ALLETE	46.8%	0.0%	53.2%	41.0%	0.0%	59.0%
2	Ameren Corp.	50.7%	0.0%	49.3%	46.5%	1.0%	52.5%
3	American Elec Pwr	52.2%	0.0%	47.8%	49.0%	0.0%	51.0%
4	Avista Corp.	50.7%	0.0%	49.3%	52.0%	0.0%	48.0%
5	CMS Energy Corp.	69.7%	0.0%	30.3%	65.0%	0.0%	35.0%
6	DTE Energy Co.	51.4%	0.0%	48.6%	51.0%	0.0%	49.0%
7	Edison International	45.7%	8.2%	46.1%	44.0%	7.0%	49.0%
8	El Paso Electric	52.7%	0.0%	47.3%	55.5%	0.0%	44.5%
9	Great Plains Energy	50.3%	0.5%	49.1%	48.0%	0.5%	51.5%
10	IDACORP, Inc.	45.6%	0.0%	54.4%	45.0%	0.0%	55.0%
11	NorthWestern Corp.	52.7%	0.0%	47.3%	51.0%	0.0%	49.0%
12	Otter Tail Corp.	45.2%	0.0%	54.8%	47.0%	0.0%	53.0%
13	PG&E Corp.	49.0%	0.8%	50.2%	48.0%	0.5%	51.5%
14	Portland General Elec.	49.4%	0.0%	50.6%	49.5%	0.0%	50.5%
15	Sempra Energy	52.7%	0.1%	47.2%	51.0%	0.0%	49.0%
16	Westar Energy	46.3%	0.0%	53.7%	50.0%	0.0%	50.0%
	Average	**50.7%**	**0.6%**	**48.7%**	**49.6%**	**0.6%**	**49.8%**

(a) Company Form 10-K and Annual Reports.

(b) The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016).

DIVIDEND YIELD

	Company	(a) Price	(b) Dividends	Yield
1	ALLETE	$ 51.68	$ 2.08	4.0%
2	Ameren Corp.	$ 44.57	$ 1.72	3.9%
3	American Elec Pwr	$ 60.20	$ 2.27	3.8%
4	Avista Corp.	$ 36.46	$ 1.38	3.8%
5	CMS Energy Corp.	$ 37.94	$ 1.24	3.3%
6	DTE Energy Co.	$ 83.02	$ 3.00	3.6%
7	Edison International	$ 61.20	$ 1.95	3.2%
8	El Paso Electric	$ 39.77	$ 1.23	3.1%
9	Great Plains Energy	$ 27.81	$ 1.06	3.8%
10	IDACORP, Inc.	$ 68.57	$ 2.04	3.0%
11	NorthWestern Corp.	$ 55.47	$ 2.00	3.6%
12	Otter Tail Corp.	$ 27.11	$ 1.25	4.6%
13	PG&E Corp.	$ 54.17	$ 1.82	3.4%
14	Portland General Elec.	$ 38.02	$ 1.26	3.3%
15	Sempra Energy	$ 93.21	$ 2.80	3.0%
16	Westar Energy	$ 43.32	$ 1.44	3.3%
	Average			**3.5%**

(a) Average of closing prices for 30 trading days ended Feb. 19, 2016.
(b) The Value Line Investment Survey, Summary & Index (Feb. 19, 2016).

GROWTH RATES

		(a)	(b)	(c)	(d)
		Earnings Growth			**br+sv**
	Company	**V Line**	**IBES**	**Zacks**	**Growth**
1	ALLETE	6.5%	6.0%	6.0%	4.4%
2	Ameren Corp.	7.0%	5.6%	6.1%	4.7%
3	American Elec Pwr	5.0%	4.2%	4.8%	4.1%
4	Avista Corp.	5.0%	5.0%	5.0%	2.9%
5	CMS Energy Corp.	5.5%	7.2%	6.4%	5.0%
6	DTE Energy Co.	5.0%	4.9%	5.4%	4.4%
7	Edison International	3.5%	2.2%	5.4%	6.5%
8	El Paso Electric	3.5%	7.0%	6.7%	4.8%
9	Great Plains Energy	5.0%	6.9%	6.4%	3.0%
10	IDACORP, Inc.	1.0%	4.0%	4.0%	3.9%
11	NorthWestern Corp.	6.5%	5.0%	5.0%	4.4%
12	Otter Tail Corp.	9.0%	6.0%	NA	8.2%
13	PG&E Corp.	10.5%	5.5%	4.6%	5.4%
14	Portland General Elec.	6.0%	5.7%	5.8%	4.8%
15	Sempra Energy	9.5%	8.6%	8.4%	7.7%
16	Westar Energy	6.0%	5.3%	5.2%	7.2%

(a) The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016).
(b) www.finance.yahoo.com (Mar. 8, 2016).
(c) www.zacks.com (Mar. 8, 2016).
(d) See Exhibit AMM-5.

COST OF EQUITY ESTIMATES

		(a)	(a)	(a)	(a)
		Earnings Growth			**br+sv**
	Company	**V Line**	**IBES**	**Zacks**	**Growth**
1	ALLETE	10.5%	10.0%	10.0%	8.4%
2	Ameren Corp.	10.9%	9.5%	9.9%	8.5%
3	American Elec Pwr	8.8%	8.0%	8.6%	7.8%
4	Avista Corp.	8.8%	8.8%	8.8%	6.7%
5	CMS Energy Corp.	8.8%	10.5%	9.7%	8.3%
6	DTE Energy Co.	8.6%	8.5%	9.0%	8.1%
7	Edison International	6.7%	5.3%	8.6%	9.7%
8	El Paso Electric	6.6%	10.1%	9.8%	7.9%
9	Great Plains Energy	8.8%	10.7%	10.2%	6.8%
10	IDACORP, Inc.	4.0%	7.0%	7.0%	6.9%
11	NorthWestern Corp.	10.1%	8.6%	8.6%	8.0%
12	Otter Tail Corp.	13.6%	10.6%	NA	12.9%
13	PG&E Corp.	13.9%	8.9%	7.9%	8.8%
14	Portland General Elec.	9.3%	9.0%	9.1%	8.1%
15	Sempra Energy	12.5%	11.6%	11.4%	10.7%
16	Westar Energy	9.3%	8.6%	8.5%	10.5%
	Average (b)	**10.3%**	**9.4%**	**9.1%**	**9.1%**
	Midpoint (c)	**11.2%**	**9.3%**	**9.2%**	**10.3%**

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

(b) Excludes highlighted figures.

(c) Average of low and high values.

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		(a)	(a)	(a)			(b)	(c)		(d)	(e)		
		----------	2019/20	----------			Adjustment			--------- "sv" Factor --------			
	Company	EPS	DPS	BVPS	b	r	Factor	Adjusted r	br	s	v	sv	br + sv
1	ALLETE	$4.00	$2.30	$43.50	42.5%	9.2%	1.0299	9.5%	4.0%	0.0208	0.1714	0.36%	**4.4%**
2	Ameren Corp.	$3.50	$1.95	$34.00	44.3%	10.3%	1.0206	10.5%	4.7%	-	0.2000	0.00%	**4.7%**
3	American Elec Pwr	$4.25	$2.65	$42.25	37.6%	10.1%	1.0229	10.3%	3.9%	0.0061	0.2958	0.18%	**4.1%**
4	Avista Corp.	$2.25	$1.56	$27.25	30.7%	8.3%	1.0180	8.4%	2.6%	0.0132	0.2214	0.29%	**2.9%**
5	CMS Energy Corp.	$2.25	$1.50	$17.75	33.3%	12.7%	1.0330	13.1%	4.4%	0.0138	0.4929	0.68%	**5.0%**
6	DTE Energy Co.	$5.75	$3.50	$59.00	39.1%	9.7%	1.0310	10.0%	3.9%	0.0216	0.2387	0.51%	**4.4%**
7	Edison International	$5.25	$2.45	$44.00	53.3%	11.9%	1.0270	12.3%	6.5%	-	0.3714	0.00%	**6.5%**
8	El Paso Electric	$2.75	$1.40	$29.50	49.1%	9.3%	1.0208	9.5%	4.7%	0.0049	0.2625	0.13%	**4.8%**
9	Great Plains Energy	$2.00	$1.20	$26.75	40.0%	7.5%	1.0145	7.6%	3.0%	0.0018	0.0273	0.00%	**3.0%**
10	IDACORP, Inc.	$4.25	$2.45	$47.05	42.4%	9.0%	1.0199	9.2%	3.9%	0.0002	0.3279	0.01%	**3.9%**
11	NorthWestern Corp.	$3.75	$2.25	$38.25	40.0%	9.8%	1.0245	10.0%	4.0%	0.0134	0.2714	0.36%	**4.4%**
12	Otter Tail Corp.	$2.25	$1.32	$18.10	41.3%	12.4%	1.0283	12.8%	5.3%	0.0541	0.5475	2.96%	**8.2%**
13	PG&E Corp.	$4.25	$2.20	$41.75	48.2%	10.2%	1.0325	10.5%	5.1%	0.0214	0.1650	0.35%	**5.4%**
14	Portland General Elec.	$2.75	$1.50	$29.75	45.5%	9.2%	1.0342	9.6%	4.3%	0.0326	0.1500	0.49%	**4.8%**
15	Sempra Energy	$7.50	$3.40	$60.75	54.7%	12.3%	1.0318	12.7%	7.0%	0.0150	0.4600	0.69%	**7.7%**
16	Westar Energy	$3.10	$1.70	$28.55	45.2%	10.9%	1.0128	11.0%	5.0%	0.0551	0.3989	2.20%	**7.2%**

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		(a)	(a)	(f)	(a)	(a)	(f)	(g)	(a)	(a)		(h)	(a)	(a)	(g)
		----------	2014/15	----------	----------	2019/20	----------	Chg	------ 2019/20 Price -------				---- Common Shares ----		
	Company	Eq Ratio	Tot Cap	Com Eq	Eq Ratio	Tot Cap	Com Eq	Equity	High	Low	Avg.	M/B	2014/15	2019/20	Growth
1	ALLETE	55.8%	$2,882	$1,608	59.0%	$3,675	$2,168	6.2%	$60.00	$45.00	$52.50	1.207	45.90	50.00	1.73%
2	Ameren Corp.	51.7%	$12,975	$6,708	52.5%	$15,700	$8,243	4.2%	$50.00	$35.00	$42.50	1.250	242.63	242.63	0.00%
3	American Elec Pwr	51.0%	$33,001	$16,831	51.0%	$41,500	$21,165	4.7%	$70.00	$50.00	$60.00	1.420	489.40	500.00	0.43%
4	Avista Corp.	49.0%	$3,027	$1,483	48.0%	$3,700	$1,776	3.7%	$40.00	$30.00	$35.00	1.284	62.24	65.50	1.03%
5	CMS Energy Corp.	31.0%	$11,846	$3,672	35.0%	$14,600	$5,110	6.8%	$40.00	$30.00	$35.00	1.972	275.20	285.00	0.70%
6	DTE Energy Co.	50.0%	$16,670	$8,335	49.0%	$23,200	$11,368	6.4%	$90.00	$65.00	$77.50	1.314	176.99	192.00	1.64%
7	Edison International	47.2%	$23,216	$10,958	49.0%	$29,300	$14,357	5.6%	$80.00	$60.00	$70.00	1.591	325.81	325.81	0.00%
8	El Paso Electric	46.5%	$2,118	$985	44.5%	$2,725	$1,213	4.2%	$45.00	$35.00	$40.00	1.356	40.36	41.10	0.36%
9	Great Plains Energy	50.4%	$7,113	$3,585	51.5%	$8,050	$4,146	2.9%	$35.00	$20.00	$27.50	1.028	154.16	155.50	0.17%
10	IDACORP, Inc.	54.7%	$3,568	$1,951	55.0%	$4,330	$2,382	4.1%	$80.00	$60.00	$70.00	1.488	50.27	50.30	0.01%
11	NorthWestern Corp.	46.6%	$3,168	$1,476	49.0%	$3,850	$1,887	5.0%	$65.00	$40.00	$52.50	1.373	46.91	49.25	0.98%
12	Otter Tail Corp.	53.5%	$1,071	$573	53.0%	$1,435	$761	5.8%	$50.00	$30.00	$40.00	2.210	37.22	42.00	2.45%
13	PG&E Corp.	50.7%	$31,050	$15,742	51.5%	$42,300	$21,785	6.7%	$60.00	$40.00	$50.00	1.198	475.91	520.00	1.79%
14	Portland General Elec.	47.3%	$4,037	$1,910	50.5%	$5,325	$2,689	7.1%	$40.00	$30.00	$35.00	1.176	78.23	89.70	2.77%
15	Sempra Energy	48.2%	$23,513	$11,333	49.0%	$31,800	$15,582	6.6%	$135.00	$90.00	$112.50	1.852	246.33	256.50	0.81%
16	Westar Energy	50.0%	$6,596	$3,298	50.0%	$7,500	$3,750	2.6%	$55.00	$40.00	$47.50	1.664	131.69	155.00	3.31%

(a) The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016).
(b) Computed using the formula 2*(1+5-Yr. Change in Equity)/(2+5 Yr. Change in Equity).
(c) Product of average year-end "r" for 2019 and Adjustment Factor.
(d) Product of change in common shares outstanding and M/B Ratio.
(e) Computed as 1 - B/M Ratio.
(f) Product of total capital and equity ratio.
(g) Five-year rate of change.
(h) Average of High and Low expected market prices divided by 2019 BVPS.

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		(a)	(b)		(c)		(d)		(e)	(f)	
		Market Return (R_m)									Size
	Company	Div Yield	Proj. Growth	Cost of Equity	Risk-Free Rate	Risk Premium	Beta	Unadjusted K_e	Market Cap	Size Adjustment	Adjusted K_e
1	ALLETE	2.7%	8.4%	11.1%	2.9%	8.2%	0.80	9.5%	$ 2,600.9	1.49%	11.0%
2	Ameren Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	0.75	9.1%	$ 11,227.5	0.57%	9.6%
3	American Elec Pwr	2.7%	8.4%	11.1%	2.9%	8.2%	0.70	8.6%	$ 30,650.8	-0.36%	8.3%
4	Avista Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	0.80	9.5%	$ 2,342.0	1.49%	11.0%
5	CMS Energy Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	0.75	9.1%	$ 10,995.3	0.57%	9.6%
6	DTE Energy Co.	2.7%	8.4%	11.1%	2.9%	8.2%	0.75	9.1%	$ 15,280.6	0.57%	9.6%
7	Edison International	2.7%	8.4%	11.1%	2.9%	8.2%	0.70	8.6%	$ 20,754.2	0.57%	9.2%
8	El Paso Electric	2.7%	8.4%	11.1%	2.9%	8.2%	0.75	9.1%	$ 1,648.3	1.63%	10.7%
9	Great Plains Energy	2.7%	8.4%	11.1%	2.9%	8.2%	0.85	9.9%	$ 4,471.9	0.99%	10.9%
10	IDACORP, Inc.	2.7%	8.4%	11.1%	2.9%	8.2%	0.80	9.5%	$ 3,590.3	0.99%	10.5%
11	NorthWestern Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	0.70	8.6%	$ 2,949.5	1.49%	10.1%
12	Otter Tail Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	0.85	9.9%	$ 1,031.4	1.62%	11.5%
13	PG&E Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	0.70	8.6%	$ 27,450.0	-0.36%	8.3%
14	Portland General Elec.	2.7%	8.4%	11.1%	2.9%	8.2%	0.80	9.5%	$ 3,372.5	0.99%	10.5%
15	Sempra Energy	2.7%	8.4%	11.1%	2.9%	8.2%	0.80	9.5%	$ 24,046.6	-0.36%	9.1%
16	Westar Energy	2.7%	8.4%	11.1%	2.9%	8.2%	0.75	9.1%	$ 6,458.8	0.86%	9.9%
	Average							**9.2%**			**10.0%**
	Midpoint (g)							**9.3%**			**9.9%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (Mar. 9, 2016).

(b) Average of weighted average earnings growth rates from IBES and Value Line Investment Survey for dividend-paying stocks in the S&P 500 based on data from http://finance.yahoo.com (retrieved Mar. 9, 2016). and www.valueline.com (Mar. 9, 2016).

(c) Average yield on 30-year Treasury bonds for the six-months ending Feb. 2016 based on data from the Federal Reserve at http://www.federalreserve.gov/releases/h15/data.htm.

(d) The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016).

(e) www.valueline.com (retrieved Feb. 23, 2016).

(f) Duff & Phelps, "2016 Valuation Handbook - Guide to Cost of Capital (Preview Version)," John Wiley & Sons (2016).

(g) Average of low and high values.

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		(a)	(b)		(c)		(d)		(e)	(f)	
		Market Return (R_m)									Size
	Company	Div Yield	Proj. Growth	Cost of Equity	Risk-Free Rate	Risk Premium	Beta	Unadjusted K_e	Market Cap	Size Adjustment	Adjusted K_e
1	ALLETE	2.7%	8.4%	11.1%	4.1%	7.0%	0.80	9.7%	$ 2,600.9	1.49%	11.2%
2	Ameren Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	0.75	9.4%	$ 11,227.5	0.57%	9.9%
3	American Elec Pwr	2.7%	8.4%	11.1%	4.1%	7.0%	0.70	9.0%	$ 30,650.8	-0.36%	8.6%
4	Avista Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	0.80	9.7%	$ 2,342.0	1.49%	11.2%
5	CMS Energy Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	0.75	9.4%	$ 10,995.3	0.57%	9.9%
6	DTE Energy Co.	2.7%	8.4%	11.1%	4.1%	7.0%	0.75	9.4%	$ 15,280.6	0.57%	9.9%
7	Edison International	2.7%	8.4%	11.1%	4.1%	7.0%	0.70	9.0%	$ 20,754.2	0.57%	9.6%
8	El Paso Electric	2.7%	8.4%	11.1%	4.1%	7.0%	0.75	9.4%	$ 1,648.3	1.63%	11.0%
9	Great Plains Energy	2.7%	8.4%	11.1%	4.1%	7.0%	0.85	10.1%	$ 4,471.9	0.99%	11.0%
10	IDACORP, Inc.	2.7%	8.4%	11.1%	4.1%	7.0%	0.80	9.7%	$ 3,590.3	0.99%	10.7%
11	NorthWestern Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	0.70	9.0%	$ 2,949.5	1.49%	10.5%
12	Otter Tail Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	0.85	10.1%	$ 1,031.4	1.62%	11.7%
13	PG&E Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	0.70	9.0%	$ 27,450.0	-0.36%	8.6%
14	Portland General Elec.	2.7%	8.4%	11.1%	4.1%	7.0%	0.80	9.7%	$ 3,372.5	0.99%	10.7%
15	Sempra Energy	2.7%	8.4%	11.1%	4.1%	7.0%	0.80	9.7%	$ 24,046.6	-0.36%	9.3%
16	Westar Energy	2.7%	8.4%	11.1%	4.1%	7.0%	0.75	9.4%	$ 6,458.8	0.86%	10.2%
	Average							**9.5%**			**10.3%**
	Midpoint (g)							**9.5%**			**10.2%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (Mar. 9, 2016).

(b) Average of weighted average earnings growth rates from IBES and Value Line Investment Survey for dividend-paying stocks in the S&P 500 based on data from http://finance.yahoo.com (retrieved Mar. 9, 2016). and www.valueline.com (Mar. 9, 2016).

(c) Average yield on 30-year Treasury bonds for 2016-20 based on data from the Value Line Investment Survey, Forecast for the U.S. Economy (Mar. 4, 2016); IHS Global Insight, The U.S. Economy: The 30-Year Focus (Third-Quarter 2015); & Blue Chip Financial Forecasts, Vol. 34, No. 6 (Dec. 1, 2015).

(d) The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016).

(e) www.valueline.com (retrieved Feb. 23, 2016).

(f) Duff & Phelps, "2016 Valuation Handbook - Guide to Cost of Capital (Preview Version)," John Wiley & Sons (2016).

(g) Average of low and high values.

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		(a)	(b)		(c)		(d)		(e)	(d)				(f)	(g)	
		Market Return (R_m)				Market										Size
		Div	Proj.	Cost of	Risk-Free	Risk	Unadjusted RP		Beta Adjusted RP			Total	Unadjusted	Market	Size	Adjusted
	Company	Yield	Growth	Equity	Rate	Premium	Weight	RP^1	Beta	Weight	RP^2	RP	K_e	Cap	Adjustment	K_e
1	ALLETE	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.80	75%	4.9%	7.0%	9.9%	$ 2,600.9	1.49%	11.4%
2	Ameren Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.75	75%	4.6%	6.7%	9.6%	$ 11,227.5	0.57%	10.1%
3	American Elec Pwr	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.70	75%	4.3%	6.4%	9.3%	$ 30,650.8	-0.36%	8.9%
4	Avista Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.80	75%	4.9%	7.0%	9.9%	$ 2,342.0	1.49%	11.4%
5	CMS Energy Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.75	75%	4.6%	6.7%	9.6%	$ 10,995.3	0.57%	10.1%
6	DTE Energy Co.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.75	75%	4.6%	6.7%	9.6%	$ 15,280.6	0.57%	10.1%
7	Edison International	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.70	75%	4.3%	6.4%	9.3%	$ 20,754.2	0.57%	9.8%
8	El Paso Electric	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.75	75%	4.6%	6.7%	9.6%	$ 1,648.3	1.63%	11.2%
9	Great Plains Energy	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.85	75%	5.2%	7.3%	10.2%	$ 4,471.9	0.99%	11.2%
10	IDACORP, Inc.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.80	75%	4.9%	7.0%	9.9%	$ 3,590.3	0.99%	10.9%
11	NorthWestern Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.70	75%	4.3%	6.4%	9.3%	$ 2,949.5	1.49%	10.7%
12	Otter Tail Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.85	75%	5.2%	7.3%	10.2%	$ 1,031.4	1.62%	11.8%
13	PG&E Corp.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.70	75%	4.3%	6.4%	9.3%	$ 27,450.0	-0.36%	8.9%
14	Portland General Elec.	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.80	75%	4.9%	7.0%	9.9%	$ 3,372.5	0.99%	10.9%
15	Sempra Energy	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.80	75%	4.9%	7.0%	9.9%	$ 24,046.6	-0.36%	9.5%
16	Westar Energy	2.7%	8.4%	11.1%	2.9%	8.2%	25%	2.1%	0.75	75%	4.6%	6.7%	9.6%	$ 6,458.8	0.86%	10.4%
	Average												**9.7%**			**10.5%**
	Midpoint (h)												**9.7%**			**10.4%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (Mar. 9, 2016).

(b) Average of weighted average earnings growth rates from IBES and Value Line Investment Survey for dividend-paying stocks in the S&P 500 based on data from http://finance.yahoo.com (retrieved Mar. 9, 2016). and www.valueline.com (Mar. 9, 2016).

(c) Average yield on 30-year Treasury bonds for the six-months ending Feb. 2016 based on data from the Federal Reserve at http://www.federalreserve.gov/releases/h15/data.htm.

(d) Morin, Roger A., "New Regulatory Finance,"*Public Utilities Reports, Inc.* at 190 (2006).

(e) The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016).

(f) www.valueline.com (retrieved Feb. 23, 2016).

(g) Duff & Phelps, "2016 Valuation Handbook - Guide to Cost of Capital (Preview Version)," John Wiley & Sons (2016)

(h) Average of low and high values.

ELECTRIC GROUP

		(a)	(b)		(c)		(d)		(e)	(d)				(f)	(g)	
		Market Return (R_m)				Market										Size
		Div	Proj.	Cost of	Risk-Free	Risk	Unadjusted RP		Beta Adjusted RP			Total	Unadjusted	Market	Size	Adjusted
	Company	Yield	Growth	Equity	Rate	Premium	Weight	RP^1	Beta	Weight	RP^2	RP	K_e	Cap	Adjustment	K_e
1	ALLETE	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.80	75%	4.2%	6.0%	10.1%	$ 2,600.9	1.49%	11.5%
2	Ameren Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.75	75%	3.9%	5.7%	9.8%	$ 11,227.5	0.57%	10.4%
3	American Elec Pwr	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.70	75%	3.7%	5.4%	9.5%	$ 30,650.8	-0.36%	9.2%
4	Avista Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.80	75%	4.2%	6.0%	10.1%	$ 2,342.0	1.49%	11.5%
5	CMS Energy Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.75	75%	3.9%	5.7%	9.8%	$ 10,995.3	0.57%	10.4%
6	DTE Energy Co.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.75	75%	3.9%	5.7%	9.8%	$ 15,280.6	0.57%	10.4%
7	Edison International	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.70	75%	3.7%	5.4%	9.5%	$ 20,754.2	0.57%	10.1%
8	El Paso Electric	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.75	75%	3.9%	5.7%	9.8%	$ 1,648.3	1.63%	11.4%
9	Great Plains Energy	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.85	75%	4.5%	6.2%	10.3%	$ 4,471.9	0.99%	11.3%
10	IDACORP, Inc.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.80	75%	4.2%	6.0%	10.1%	$ 3,590.3	0.99%	11.0%
11	NorthWestern Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.70	75%	3.7%	5.4%	9.5%	$ 2,949.5	1.49%	11.0%
12	Otter Tail Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.85	75%	4.5%	6.2%	10.3%	$ 1,031.4	1.62%	11.9%
13	PG&E Corp.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.70	75%	3.7%	5.4%	9.5%	$ 27,450.0	-0.36%	9.2%
14	Portland General Elec.	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.80	75%	4.2%	6.0%	10.1%	$ 3,372.5	0.99%	11.0%
15	Sempra Energy	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.80	75%	4.2%	6.0%	10.1%	$ 24,046.6	-0.36%	9.7%
16	Westar Energy	2.7%	8.4%	11.1%	4.1%	7.0%	25%	1.8%	0.75	75%	3.9%	5.7%	9.8%	$ 6,458.8	0.86%	10.6%
	Average												**9.9%**			**10.7%**
	Midpoint (h)												**9.9%**			**10.6%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (Mar. 9, 2016).

(b) Average of weighted average earnings growth rates from IBES and Value Line Investment Survey for dividend-paying stocks in the S&P 500 based on data from http://finance.yahoo.com (retrieved Mar. 9, 2016). and www.valueline.com (Mar. 9, 2016).

(c) Average yield on 30-year Treasury bonds for 2016-20 based on data from the Value Line Investment Survey, Forecast for the U.S. Economy (Mar. 4, 2016); IHS Global Insight, The U.S. Economy: The 30-Year Focus (Third-Quarter 2015); & Blue Chip Financial Forecasts, Vol. 34, No. 6 (Dec. 1, 2015).

(d) Morin, Roger A., "New Regulatory Finance,"*Public Utilities Reports, Inc.* at 190 (2006).

(e) The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016).

(f) www.valueline.com (retrieved Feb. 23, 2016).

(g) Duff & Phelps, "2016 Valuation Handbook - Guide to Cost of Capital (Preview Version)," John Wiley & Sons (2016).

(h) Average of low and high values.

CURRENT BOND YIELD

Current Equity Risk Premium

(a)	Avg. Yield over Study Period	8.48%
(b)	Average Utility Bond Yield	4.63%
	Change in Bond Yield	-3.85%
(c)	Risk Premium/Interest Rate Relationship	-0.4281
	Adjustment to Average Risk Premium	1.65%
(a)	Average Risk Premium over Study Period	3.62%
	Adjusted Risk Premium	**5.27%**

Implied Cost of Equity

(b)	Baa Utility Bond Yield	5.46%
	Adjusted Equity Risk Premium	5.27%
	Risk Premium Cost of Equity	**10.73%**

(a) Exhibit AMM-8, page 3.
(b) Average bond yield for six-months ending Feb. 2016 for all utility bonds and Baa subset based on data from Moody's Investors Service at www.credittrends.com.
(c) Exhibit AMM-8, page 4.

PROJECTED BOND YIELD

Current Equity Risk Premium

(a)	Avg. Yield over Study Period	8.48%
(b)	Average Utility Bond Yield 2016-2020	6.42%
	Change in Bond Yield	-2.06%
(c)	Risk Premium/Interest Rate Relationship	-0.4281
	Adjustment to Average Risk Premium	0.88%
(a)	Average Risk Premium over Study Period	3.62%
	Adjusted Risk Premium	**4.50%**

Implied Cost of Equity

(b)	Baa Utility Bond Yield 2016-2020	7.25%
	Adjusted Equity Risk Premium	4.50%
	Risk Premium Cost of Equity	**11.75%**

(a) Exhibit AMM-8, page 3.

(b) Based on data from IHS Global Insight, The U.S. Economy: The 30-Year Focus (Third-Quarter 2015); Energy Information Administration, Annual Energy Outlook 2015 (April 2015); & Moody's Investors Service at www.credittrends.com.

(c) Exhibit AMM-8, page 4.

AUTHORIZED RETURNS

Year	(a) Allowed ROE	(b) Average Utility Bond Yield	Risk Premium
1974	13.10%	9.27%	3.83%
1975	13.20%	9.88%	3.32%
1976	13.10%	9.17%	3.93%
1977	13.30%	8.58%	4.72%
1978	13.20%	9.22%	3.98%
1979	13.50%	10.39%	3.11%
1980	14.23%	13.15%	1.08%
1981	15.22%	15.62%	-0.40%
1982	15.78%	15.33%	0.45%
1983	15.36%	13.31%	2.05%
1984	15.32%	14.03%	1.29%
1985	15.20%	12.29%	2.91%
1986	13.93%	9.46%	4.47%
1987	12.99%	9.98%	3.01%
1988	12.79%	10.45%	2.34%
1989	12.97%	9.66%	3.31%
1990	12.70%	9.76%	2.94%
1991	12.55%	9.21%	3.34%
1992	12.09%	8.57%	3.52%
1993	11.41%	7.56%	3.85%
1994	11.34%	8.30%	3.04%
1995	11.55%	7.91%	3.64%
1996	11.39%	7.74%	3.65%
1997	11.40%	7.63%	3.77%
1998	11.66%	7.00%	4.66%
1999	10.77%	7.55%	3.22%
2000	11.43%	8.09%	3.34%
2001	11.09%	7.72%	3.37%
2002	11.16%	7.53%	3.63%
2003	10.97%	6.61%	4.36%
2004	10.75%	6.20%	4.55%
2005	10.54%	5.67%	4.87%
2006	10.36%	6.08%	4.28%
2007	10.36%	6.11%	4.25%
2008	10.46%	6.65%	3.81%
2009	10.48%	6.28%	4.20%
2010	10.34%	5.56%	4.78%
2011	10.29%	5.13%	5.16%
2012	10.17%	4.26%	5.91%
2013	10.02%	4.55%	5.47%
2014	9.92%	4.41%	5.51%
2015	9.85%	4.37%	5.48%
Average	12.10%	8.48%	3.62%

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

(b) Moody's Investors Service.

REGRESSION RESULTS

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9270912
R Square	0.8594981
Adjusted R Square	0.8559856
Standard Error	0.0050171
Observations	42

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.006159143	0.006159	244.6937	1.2107E-18
Residual	40	0.001006833	2.52E-05		
Total	41	0.007165976			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0725018	0.002446981	29.62907	7.81E-29	0.06755625	0.07744732	0.067556248	0.077447316
X Variable 1	-0.4281032	0.027367621	-15.6427	1.21E-18	-0.48341523	-0.37279118	-0.48341523	-0.37279118

ELECTRIC GROUP

	Company	(a) Expected Return on Common Equity	(b) Adjustment Factor	(c) Adjusted Return on Common Equity
1	ALLETE	9.0%	1.0299	9.3%
2	Ameren Corp.	10.5%	1.0206	10.7%
3	American Elec Pwr	9.5%	1.0229	9.7%
4	Avista Corp.	8.5%	1.0180	8.7%
5	CMS Energy Corp.	13.5%	1.0330	13.9%
6	DTE Energy Co.	10.0%	1.0310	10.3%
7	Edison International	12.0%	1.0270	12.3%
8	El Paso Electric	9.5%	1.0208	9.7%
9	Great Plains Energy	7.5%	1.0145	7.6%
10	IDACORP, Inc.	8.5%	1.0199	8.7%
11	NorthWestern Corp.	10.0%	1.0245	10.2%
12	Otter Tail Corp.	12.5%	1.0283	12.9%
13	PG&E Corp.	10.5%	1.0325	10.8%
14	Portland General Elec.	9.0%	1.0342	9.3%
15	Sempra Energy	12.5%	1.0318	12.9%
16	Westar Energy	9.5%	1.0128	9.6%
	Average			**10.4%**
	Midpoint (d)			**10.8%**

(a) The Value Line Investment Survey (Dec. 18, 2015; Jan. 29 & Feb. 19, 2016).

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

(c) (a) x (b).

(d) Average of low and high values.

DIVIDEND YIELD

	Company	Industry Group	(a) Price	(b) Dividends	Yield
1	Church & Dwight	Household Products	$ 83.94	$ 1.42	1.7%
2	Coca-Cola	Beverage	$ 42.40	$ 1.40	3.3%
3	ConAgra Foods	Food Processing	$ 40.29	$ 1.00	2.5%
4	Gen'l Mills	Food Processing	$ 55.88	$ 1.81	3.2%
5	Kellogg	Food Processing	$ 72.23	$ 2.08	2.9%
6	Kimberly-Clark	Household Products	$ 127.32	$ 3.52	2.8%
7	McDonald's Corp.	Restaurant	$ 118.37	$ 3.56	3.0%
8	PepsiCo, Inc.	Beverage	$ 97.26	$ 2.87	3.0%
9	Procter & Gamble	Household Products	$ 79.19	$ 2.65	3.3%
10	Sysco Corp.	Wholesale Food	$ 41.45	$ 1.24	3.0%
11	Target Corp.	Retail Store	$ 70.84	$ 2.30	3.2%
12	Wal-Mart Stores	Retail Store	$ 64.60	$ 2.00	3.1%
	Average				**2.9%**

(a) Average of closing prices for 30 trading days ended Feb. 19, 2016.
(b) The Value Line Investment Survey, *Summary & Index* (Feb. 19, 2016).

GROWTH RATES

		(a)	(b)	(c)
		Earnings Growth Rates		
	Company	**V Line**	**IBES**	**Zacks**
1	Church & Dwight	9.00%	8.52%	9.06%
2	Coca-Cola	4.50%	2.20%	6.16%
3	ConAgra Foods	6.50%	6.72%	6.70%
4	Gen'l Mills	5.50%	5.62%	6.64%
5	Kellogg	4.00%	4.53%	6.62%
6	Kimberly-Clark	7.00%	7.15%	7.09%
7	McDonald's Corp.	4.50%	9.50%	9.02%
8	PepsiCo, Inc.	6.00%	6.47%	7.78%
9	Procter & Gamble	7.50%	5.93%	6.20%
10	Sysco Corp.	12.00%	8.51%	7.30%
11	Target Corp.	9.00%	10.47%	10.84%
12	Wal-Mart Stores	1.50%	0.23%	2.86%

(a) The Value Line Investment Survey (Dec. 25, 2015 & Jan. 22, Jan. 29, & Feb. 26, 2016).
(b) www.finance.yahoo.com (retreived Feb. 24, 2016).
(c) www.zacks.com (Retreived Feb. 24, 2016).

DCF COST OF EQUITY ESTIMATES

		(a)	(a)	(a)
		Cost of Equity Estimates		
	Company	**V Line**	**IBES**	**Zacks**
1	Church & Dwight	10.7%	10.2%	10.8%
2	Coca-Cola	7.8%	5.5%	9.5%
3	ConAgra Foods	9.0%	9.2%	9.2%
4	Gen'l Mills	8.7%	8.9%	9.9%
5	Kellogg	6.9%	7.4%	9.5%
6	Kimberly-Clark	9.8%	9.9%	9.9%
7	McDonald's Corp.	7.5%	12.5%	12.0%
8	PepsiCo, Inc.	9.0%	9.4%	10.7%
9	Procter & Gamble	10.8%	9.3%	9.5%
10	Sysco Corp.	15.0%	11.5%	10.3%
11	Target Corp.	12.2%	13.7%	14.1%
12	Wal-Mart Stores	4.6%	3.3%	6.0%
	Average (b)	**10.1%**	**10.2%**	**10.5%**
	Midpoint (c)	**11.2%**	**10.6%**	**11.6%**

(a) Sum of dividend yield (Exhibit AMM-10, p. 1) and respective growth rate (Exhibit AMM-10, p. 2).

(b) Excludes highlighted figures.

(c) Average of low and high values.

CERTIFICATE OF SERVICE

In accordance with Rule 4901-1-05, Ohio Administrative Code, the PUCO's e-filing system will electronically serve notice of the filing of this document upon the following parties. In addition, I hereby certify that a service copy of the foregoing *Direct Testimony of Adrien M. McKenzie* was sent by, or on behalf of, the undersigned counsel to the following parties of record this 13th day of May 2016, via electronic transmission.

/s/ Steven T. Nourse
Steven T. Nourse

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Summary: Testimony -Direct Testimony of Adrien M. McKenzie CFA in Support of AEP Ohio's Amended Electric Security Plan electronically filed by Mr. Steven T Nourse on behalf of Ohio Power Company