OCC Exhibit 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, Revised 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
J. RANDALL WOOLRIDGE, Ph.D.

On Behalf of the
Office of the Ohio Consumers' Counsel
10 West Broad Street, Suite 1800
Columbus, Ohio 43215

Mary 6, 2014

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ATTACHMENTS

APPENDICES

Q1. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.

A1. My name is J. Randall Woolridge, and my business address is 120 Haymaker Circle, State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration at the University Park Campus of the Pennsylvania State University. I am also the Director of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A summary of my educational background, research, and related business experience is provided in Appendix A.

I. SUBJECT OF TESTIMONY AND SUMMARY OF RECOMMENDATIONS

Q2. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A2. I have been asked by the Office of the Ohio Consumers' Counsel ("OCC") to provide an opinion as to the overall fair rate of return or cost of capital for the Ohio Power Company ("AEP Ohio" or "Utility") and to evaluate AEP Ohio's rate of return testimony in this proceeding.

Q3. HOW IS YOUR TESTIMONY ORGANIZED?

A3. First I will review my cost of capital recommendation for AEP Ohio, and review the primary areas of contention between AEP Ohio's rate of return position and OCC's. Second, I provide an assessment of capital costs in today's capital markets. Third, I discuss my proxy group of electric utility companies for estimating the cost of

capital for AEP Ohio. Fourth, I present my recommendations for the Utility's capital structure and debt cost rate. Fifth, I discuss the concept of the cost of equity capital, and then estimate the equity cost rate for AEP Ohio. Finally, I critique the Utility's rate of return analysis and testimony.

Q4. WHAT IS YOUR RECOMMENDATION REGARDING THE APPROPRIATE RATE OF RETURN FOR AEP OHIO?

A4. I am recommending an overall rate of return of 7.39% for AEP Ohio.

Q5. PLEASE SUMMARIZE THE PRIMARY ISSUES REGARGING RATE OF RETURN IN THIS PROCEEDING.

A5. AEP Ohio witness Ms. Renee V. Hawkins provides the Utility's recommended capital structure and long-term debt cost rate. Dr. William E. Avera provides the Utility's proposed common equity cost rate. My analysis suggests that the Company's recommended capital structure with a common equity ratio of 47.8%% is in line with other electric utility companies. As such, the primary area of contention in this case is the proposed equity cost rate for AEP Ohio of 10.65%. My analysis indicates an equity cost rate of 8.875% is appropriate for AEP Ohio. Both Dr. Avera and I have applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") approaches to a proxy group of publicly-held electric utility companies ("Electric Proxy Group"). I have also employed the group developed by Dr. Avera ("Avera Proxy Group"). Dr. Avera has also used a Utility Risk Premium ("URP") approach to estimate an equity cost

rate for AEP Ohio. In addition, Dr. Avera has included a flotation cost adjustment of 0.12% in his rate of return recommendation.

As I discuss in my testimony, my equity cost rate recommendation is consistent with the current economic environment. Despite the increase in interest rates over the past two years, long-term interest rates are still at levels not seen since the 1950s. In the constant-growth DCF model, Dr. Avera has relied excessively on the forecasted earnings per share ("EPS") growth rates of Wall Street analysts and *Value Line.* There are two primary errors in Dr. Avera's DCF analysis. First, he has eliminated over 25% of his results because he believes his mean-low DCF estimates are too low. Second, I provide empirical evidence that demonstrate the long-term earnings growth rates of Wall Street analysts are overly optimistic and upwardly-biased. I also show that the estimated long-term EPS growth rates of *Value Line* are overstated. In developing my DCF growth rate, I have used thirteen growth rate measures including historic and projected growth rate measures and have evaluated growth in dividends, book value, and earnings per share.

The CAPM approach requires an estimate of the risk-free interest rate, beta, and the equity risk premium. The major area of disagreement involves the measurement and magnitude of the market or equity risk premium. In short, Dr. Avera's market risk premium is excessive and does not reflect current market fundamentals. As I highlight in my testimony, there are three procedures for

estimating a market or equity risk premium – historic returns, surveys, and expected return models. Dr. Avera uses projected market risk premium of 8.80%. Dr. Avera's projected equity risk premium uses analysts' EPS growth rate projections to compute an expected market return and market risk premium. This EPS growth rate projection and the resulting expected market return and market risk premium include unrealistic assumptions regarding future economic and earnings growth and stock returns. I have used a market risk premium of 5.0%, which: (1) factors in all three approaches to estimating an equity premium, and (2) employs the results of many studies of the equity risk premium. As I note, my market risk premium reflects the market risk premiums: (1) discovered in academic studies by leading finance scholars; (2) employed by leading investment banks and management consulting firms; and (3) that result from surveys of companies, financial forecasters, financial analysts, and corporate Chief Financial Officers (CFOs).

Dr. Avera also estimates an equity cost rate using his URP model. His risk premium is based on the historical relationship between the yields on long-term utility bond yields and authorized returns on equity ("ROEs") for electric utility companies. There are several issues with this approach. First and foremost, this approach is a gauge of commission behavior and not investor behavior. Capital costs are determined in the market place through the financial decisions of investors and are reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors' assessment of the risk and

expected return of different investments. Regulatory commissions evaluate capital market data in setting authorized ROEs, but also take into account other utility- and rate case-specific information in setting ROEs. As such, Dr. Avera's URP approach and results reflect other factors used by utility commissions in authorizing ROEs in addition to capital costs. This may especially true when the authorized ROE data include the results of rate cases that are settled and not fully litigated. Second, the methodology produces an inflated measure of the risk premium because the approach uses historic authorized ROEs and utility bond yields, and the resulting risk premium is applied to projected Treasury Yields. Finally, the risk premium is inflated as a measure of investor's required risk premium because the utilities have been selling at a market-to-book ratio in excess of 1.0. This indicates that the authorized rates of return have been greater than the return that investors require.

Q6. ARE THERE OTHER SECONDARY ISSUES REGARGING AEP OHIO'S EQUITY COST RATE ANALYSIS?

A6. Yes. These are several other less significant issues in Dr. Avera's equity cost rate analyses. In his CAPM analysis, he has: (1) used a risk-free rate that is over 50 basis points above current market rates; (2) employed the Empirical CAPM ("ECAPM") version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium; and (3) included an unwarranted size adjustment. Dr. Avera has also used several other ROE analyses that he refers to as checks on his 10.65% ROE recommendation. These approaches include an

Expected Earnings approach and a DCF analysis for a non-utility group. I show that these alternative approaches do not provide an appropriate measure of the equity cost rate for AEP Ohio.

I also focus on one other issue that is significant in this proceeding. This issue is whether the increase in interest rates over the past two years has resulted in a meaningful increase in equity cost rates for electric utilities. To address this issue, I evaluate the relationship between ten-year Treasury yields and authorized ROEs for electric utility companies. I show that ten-year Treasury yields declined from 3.5% in early 2011 to 1.5% at mid-year 2012. However, over that same time period, authorized ROEs for electric companies only declined from 10.12% to 10.0%. As such, authorized ROEs for electric utility companies did not decline nearly as much as interest rates and, thus, never really reflected the extremely low interest rate environment in 2012. Therefore, just because interest rates have increased over the past two years does not mean that there has been a meaningful increase in electric utility equity cost rates. In fact, as I show later in my testimony, authorized ROEs for electric utilities further declined to below 10.0% in 2013 and have continued to decline in 2014.

Q7. PLEASE SUMMARIZE THE REASONS THAT AEP OHIO'S COST OF CAPITAL SHOULD BE REJECTED.

A7. In summary, the primary areas of disagreement in measuring AEP Ohio cost of capital are: (1) the DCF equity cost rate estimates, and in particular, (a) Dr.

Avera's ignoring over 25% of his low-end of his results, and (b) the exclusive use of the earnings per share growth rates of Wall Street analysts and *Value Line*; (2) the base interest rate and market or equity risk premium in the URP and CAPM approaches; and (3) whether equity cost rate adjustments are needed to account for size and flotation costs.

II. CAPITAL COSTS IN TODAY'S MARKETS

Q8. PLEASE DISCUSS CAPITAL COSTS IN U.S. MARKETS.

A8. Long-term capital cost rates for U.S. corporations are a function of the required returns on risk-free securities plus a risk premium. The risk-free rate of interest is the yield on long-term U.S Treasury bonds. The yields on ten-year U.S. Treasury bonds from 1953 to the present are provided on Panel A of Attachment JRW-2. These yields peaked in the early 1980s and have generally declined since that time. These yields have fallen to historically low levels in recent years due to the financial crisis. In 2008, Treasury yields declined to below 3.0% as a result of the mortgage and subprime market credit crisis, the turmoil in the financial sector, the monetary stimulus provided by the Federal Reserve, and the slowdown in the economy. From 2008 until 2011, these rates fluctuated between 2.5% and 3.5%. In 2012, the yields on ten-year Treasuries declined from 2.5% to 1.5% as the Federal Reserve continued to support a low interest rate environment and economic uncertainties persisted. These yields increased from mid-2012 to about 3.0% as of December of 2013 on speculation of a tapering the Federal Reserve's

aggressive monetary policy. After the Federal Reserve's December 18, 2013 announcement that it was indeed tapering its bond buying program, these yields began to decline and are about 2.7% as of April 2014.

Panel B on Attachment JRW-2 shows the differences in yields between ten-year Treasuries and Moody's Baa-rated bonds since the year 2000. This differential primarily reflects the additional risk required by bond investors for the risk associated with investing in corporate bonds as opposed to obligations of the U.S. Treasury. The difference also reflects, to some degree, yield curve changes over time. The Baa rating is the lowest of the investment grade bond ratings for corporate bonds. The yield differential hovered in the 2.0% to 3.5% range until 2005, declined to 1.5% until late 2007, and then increased significantly in response to the financial crisis. This differential peaked at 6.0% at the height of the financial crisis in early 2009 due to tightening in credit markets, which increased corporate bond yields, and the "flight to quality," which decreased Treasury yields. The differential subsequently declined, and has been in the 2.5% to 3.5% range over the past four years.

The risk premium is the return premium required by investors to purchase riskier securities. The risk premium required by investors to buy corporate bonds is observable based on yield differentials in the markets. The market risk premium is the return premium required to purchase stocks as opposed to bonds. The market or equity risk premium is not readily observable in the markets (as are

bond risk premiums) because expected stock market returns are not readily observable. As a result, equity risk premiums must be estimated using market data. There are alternative methodologies to estimate the equity risk premium, and these alternative approaches and equity risk premium results are subject to much debate. One way to estimate the equity risk premium is to compare the mean returns on bonds and stocks over long historical periods. Measured in this manner, the equity risk premium has been in the 5% to 7% range. However, studies by leading academics indicate that the forward-looking equity risk premium is actually in the 4.0% to 6.0% range. These lower equity risk premium results are in line with the findings of equity risk premium surveys of CFOs, academics, analysts, companies, and financial forecasters.

Q9. PLEASE DISCUSS INTEREST RATES ON LONG-TERM UTILITY BONDS.

A9. Panel A of Attachment JRW-3 provides the yields on A-rated public utility bonds. These yields peaked in November 2008 at 7.75% and henceforth declined significantly. In mid-2013 the yields on A-rated bonds declined to below 4.0% in mid-2013, and then increased with interest rates in general to the 4.75% range as of late 2013. They have since declined to about 4.50%. Panel B of Attachment JRW-3 provides the yield spreads between long-term A-rated public utility bonds relative to the yields on 20-year Treasury bonds. These yield spreads increased dramatically in the third quarter of 2008 during the peak of the financial crisis and have decreased significantly since that time. For example, the yield spreads between 20-year U.S. Treasury bonds and A-rated utility bonds peaked at 3.4% in

November 2008, declined to about 1.5% in the summer of 2012, and have since remained in that range.

Q10. PLEASE DISCUSS THE FEDERAL RESERVE'S MONETARY POLICY AND INTEREST RATES.

A10. On September 13, 2012, the Federal Reserve released its policy statement relating to Quantitative Easing III ("QEIII"). In the statement, the Federal Reserve announced that it intended to expand and extend its purchasing of long-term securities to about $85 billion per month.[1] The Federal Open Market Committee ("FOMC") also indicated that it intends to keep the target rate for the federal funds rate between 0 to 1/4 percent through at least mid-2015. In a subsequent meeting over the next year, the Federal Reserve reiterated its continuation of its bond buying program and tied future monetary policy moves to unemployment rates and the level of interest rates. Specifically, the FOMC kept the target range for the federal funds rate at 0 to 1/4 percent and reiterated its opinion that this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6.5%.[2]

Beginning in May of 2013, the speculation in the markets was that the Federal Reserve's bond buying program would be tapered or scaled back. This

[1] Board of Governors of the Federal Reserve System, "Statement Regarding Transactions in Agency Mortgage-Backed Securities and Treasury Securities," September 13, 2012.

[2] Board of Governors of the Federal Reserve System, FOMC Statement," December 12, 2012.

speculation was fueled by more positive economic data on jobs and the economy, as well as by statements from FOMC members indicating that QEIII could be reduced later this calendar year. The speculation led to an increased in interest rates, with the ten-year Treasury yield increasing to about 3.0% as of December, 2013.

In response to continuing positive economic data, the Federal Reserve did decide to taper QEIII at its December 18, 2013 meeting. The Fed voted to reduce its purchases of mortgage-back securities and Treasuries by $5 billion per month beginning in January of 2014. However, this tapering did not involve monetary tightening by the Fed. Indeed, the Fed extended its commitment to keep short-term interest rates "exceptionally low" until either the unemployment rate falls to around 6.5% or the inflation rate exceeds 2.5% a year.[3] Despite the announcement of the QEIII tapering, the markets reacted positively to the news due to the clarity provided by the FOMC on the future of the monetary stimulus, interest rates, and economic activity. At the time of the December 18, 2013 FOMC announcement, the yield on the ten-year Treasury yield was 2.9%.

Q11. PLEASE DISCUSS THE FEDERAL RESERVE'S ACTIONS IN 2014 AND THE IMPACT ON INTEREST RATES.

A11. The January 29, 2014 FOMC meeting was historic as Janet Yellen took over for

[3] FOMC Press Release, December 18, 2013.

Ben Bernanke as Fed Chairman. The FOMC tapered its bond buying program by another $5 billion per month beginning in February.[4] The FOMC also reiterated the importance of its bond buying program and continued "highly accommodative" monetary policy, and the association with employment and price-level targets.[5] At its March 19, 2014 meeting, the Federal Reserve Board again indicated that the monetary stimulus program will continue into the foreseeable future:[6]

> To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy remains appropriate. In determining how long to maintain the current 0 to 1/4 percent target range for the federal funds rate, the Committee will assess progress--both realized and expected--toward its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments. The Committee continues to anticipate, based on its assessment of these factors, that it likely will be appropriate to maintain the current target range for the federal

[4] FOMC Press Release, January 29, 2014.

[5] *Id.*

[6] FOMC Press Release, March19, 2013.

> funds rate for a considerable time after the asset purchase program ends, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal, and provided that longer-term inflation expectations remain well anchored.
>
> When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent. The Committee currently anticipates that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run.

With the unemployment rate nearing 6-1/2 percent, the Committee has updated its forward guidance. The change in the Committee's guidance does not indicate any change in the Committee's policy intentions as set forth in its recent statements.

Additional clarity to the Fed's policy was provided on April 9, 2014, at 2:00 P.M with the release of the March 19, 2014 meeting minutes. The markets reacted positively to the news that the Fed members at the March meeting were almost all united in dropping the 6.5% unemployment rate target as a gauge for timing interest rate increases.

Q12. HOW HAVE THE MARKETS REACTED TO THE FEDERAL RESERVE'S SCALE BACK OF QEIII AND UPDATED CLARITY ON MONETARY POLICY?

A12. The yield on the ten-year Treasury yield was 3.0% as of January 2, 2014. This yield trended down in January and was at 2.72% after the January FOMC meeting. Since that time, the ten-year Treasury yield has traded in the 2.60% to 2.80% range, and is currently 2.7%. To provide some perspective on the level of interest rates, the last time that the ten-year Treasury yield traded as low as 2.7%, prior to the onset the financial crises in 2008, was in April of 1955!

III. PROXY GROUP SELECTION

Q13. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF RETURN RECOMMENDATION FOR AEP OHIO.

A13. To develop a fair rate of return recommendation for AEP Ohio, I have evaluated the return requirements of investors on the common stock of a proxy group of publicly-held electric utility companies.

Q14. PLEASE DESCRIBE YOUR PROXY GROUP OF COMPANIES.

A14. The selection criteria for the proxy group include the following:

1. At least 50% of revenues from regulated electric operations as reported by *AUS Utilities Report*;

2. Listed as an Electric Utility by *Value Line Investment Survey* and listed as an Electric Utility or Combination Electric & Gas Utility in *AUS Utilities Report*;
3. An investment grade corporate credit and bond rating;
4. Has paid a cash dividend for the past three years, with no cuts or omissions;
5. Not involved in an acquisition of another utility, and not the target of an acquisition, in the past six months; and
6. Analysts' long-term EPS growth rate forecasts available from Yahoo, Reuters, and/or Zacks.

The Electric Proxy Group includes thirty-four companies. Summary financial statistics for the proxy group are listed in Attachment JRW-4.[7] The median operating revenues and net plant among members of the Electric Proxy Group are $3,897.3 million and $10,217.7 million, respectively. The group's median receives 85% of revenues from regulated electric operations, has an A-/BBB+ bond rating from Standard & Poor's, has a current common equity ratio of 47.6%, and has an earned return on common equity over of 9.5%.

[7] In my testimony, I present financial results using both mean and medians as measures of central tendency. However, due to outliers among means, I have used the median as a measure of central tendency.

Q15. PLEASE DESCRIBE THE AVERA PROXY GROUP.

A15. Dr. Avera has selected a proxy group of 21 electric utilities.[8] Dr. Avera uses S&P bond rating, *Value Line* Risk Ratings, and market capitalization as selection criteria for his group. Whereas my group provides a more comprehensive sample to estimate an equity cost rate for the Company, I also included the Avera Proxy Group in my analysis.

A summary of the financial statistics for Dr. Avera's proxy group is provided in Panel B of page 1 of Attachment JRW-4. The median operating revenues and net plant for the Avera Proxy Group are $5,166.5 million and $11,944.5 million, respectively. The group receives 86% of its revenues from regulated electric operations, has a BBB+ bond rating from S&P, a current common equity ratio of 47.2%, and a current earned return on common equity of 9.3%.

Q16. HOW DOES THE INVESTMENT RISK OF AEP OHIO COMPARE TO THAT OF YOUR ELECTRIC PROXY GROUP AND THE AVERA PROXY GROUP?

A16. Bond ratings provide a good assessment of the investment risk of a company. As shown in Attachment JRW-4, page 1, AEP Ohio's bond ratings of BBB/BBB- from S&P and Baa1 are slightly below the averages for the two groups.

[8] Two utilities in the Avera Group, UIL Holdings and UNS Energy, have since become involved in acquisitions and hence I have dropped them from the group. Another, First Energy, has cut its dividend.

In addition, on page 2 of Attachment JRW-4, I have assessed the riskiness of AEP Ohio's parent, American Electric Power Co., relative to the Electric and Avera Proxy Groups using five different risk measures published by *Value Line*. These measures include Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price Stability. Whereas American Electric Power Co. has a Safety measure of '3' versus an average of '2' for the two groups, all other risk measures suggest that the Utility is equal in risk or slightly lower in risk than the averages for the groups. Given these results, I maintain that the two groups represent a risk comparable group for AEP Ohio.

IV. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

Q17. WHAT IS AEP OHIO'S PROPOSED CAPITAL STRUCTURE?

A17. The Utility's proposed capital structure is shown in Panel A of page 1 of Attachment JRW-5. The Utility is requesting a capital structure consisting of 52.50% long-term debt and a 47.50% common equity.

Q18. ARE YOU EMPLOYING THE UTILITY'S PROPOSED CAPITAL STRUCTURE?

A18. Yes. AEP Ohio's proposed capital structure has a common equity ratio that is in line the median common equity ratios of the Electric and Avera Proxy Groups (47.6% and 47.2%).

Q19. ARE YOU ALSO USING THE UTILITY'S RECOMMEDED LONG-TERM DEBT COST RATE OF 6.05%?

A19. Yes. I use the Utility's proposed long-term debt cost rate.

V. THE COST OF COMMON EQUITY CAPITAL

A. OVERVIEW

Q20. WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF RETURN BE ESTABLISHED FOR A PUBLIC UTILITY?

A20. In a competitive industry, the return on a firm's common equity capital is determined through the competitive market for its goods and services. Due to the capital requirements needed to provide utility services and to the economic benefit to society from avoiding duplication of these services, some public utilities are monopolies. Because of the lack of competition and the essential nature of their services, it is not appropriate to permit monopoly utilities to set their own prices. Thus, regulation seeks to establish prices that are fair to consumers and, at the same time, sufficient to meet the operating and capital costs of the utility (i.e., provide an adequate return on capital to attract investors).

Q21. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE CONTEXT OF THE THEORY OF THE FIRM.

A21. The total cost of operating a business includes the cost of capital. The cost of common equity capital is the expected return on a firm's common stock that the marginal investor would deem sufficient to compensate for risk and the time value of money. In equilibrium, the expected and required rates of return on a company's common stock are equal.

Normative economic models of the firm, developed under very restrictive assumptions, provide insight into the relationship between firm performance or profitability, capital costs, and the value of the firm. Under the economist's ideal model of perfect competition, where entry and exit are costless, products are undifferentiated, and there are increasing marginal costs of production, firms produce up to the point where price equals marginal cost. Over time, a long-run equilibrium is established where price equals average cost, including the firm's capital costs. In equilibrium, total revenues equal total costs, and because capital costs represent investors' required return on the firm's capital, actual returns equal required returns, and the market value must equal the book value of the firm's securities.

In the real world, firms can achieve competitive advantage due to product market imperfections. Most notably, companies can gain competitive advantage through product differentiation (adding real or perceived value to products) and by

achieving economies of scale (decreasing marginal costs of production). Competitive advantage allows firms to price products above average cost and thereby earn accounting profits greater than those required to cover capital costs. When these profits are in excess of that required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

James M. McTaggart, founder of the international management consulting firm Marakon Associates, described this essential relationship between the return on equity, the cost of equity, and the market-to-book ratio in the following manner:[9]

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of cash flow, while low ROE companies in high-growth markets, such as Texas Instruments, barely generate enough cash flow to finance growth.

[9] James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1988), p. 2.

> A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically profitable and its market value will exceed book value. If, however, the business earns an ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value.

As such, the relationship between a firm's return on equity, cost of equity, and market-to-book ratio is relatively straightforward. A firm that earns a return on equity above its cost of equity will see its common stock sell at a price above its book value. Conversely, a firm that earns a return on equity below its cost of equity will see its common stock sell at a price below its book value.

Q22. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE RELATIONSHIP BETWEEN RETURN ON EQUITY AND MARKET-TO-BOOK RATIOS.

A22. This relationship is discussed in a classic Harvard Business School case study entitled "A Note on Value Drivers." On page 2 of that case study, the author describes the relationship very succinctly:[10]

[10] Benjamin Esty, "A Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997.

For a given industry, more profitable firms – those able to generate higher returns per dollar of equity ("ROE") – should have higher market-to-book ratios. Conversely, firms which are unable to generate returns in excess of their cost of equity ("K") should sell for less than book value.

Profitability	*Value*
If ROE > K	*then Market/Book > 1*
If ROE = K	*then Market/Book =1*
If ROE < K	*then Market/Book < 1*

To assess the relationship by industry, as suggested above, I performed a regression study between estimated return on equity ("ROE") and market-to-book ratios using natural gas distribution, electric utility, and water utility companies. I used all companies in these three industries that are covered by *Value Line* and have estimated ROE and market-to-book ratio data. The results are presented in Panels A-C of Attachment JRW-6. The average R-squares for the electric, gas, and water companies are 0.52, 0.71, and 0.77, respectively.[11] This demonstrates the strong positive relationship between ROEs and market-to-book ratios for public utilities.

[11] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected ROE). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

Q23. WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF EQUITY CAPITAL FOR PUBLIC UTILITIES?

A23. Attachment JRW-7 provides indicators of public utility equity cost rates over the past decade. Page 1 shows the yields on long-term 'A' rated public utility bonds. These yields peaked in the early 2000s at over 8.0%, declined to about 5.5% in 2005, and rose to 6.0% in 2006 and 2007. They stayed in that 6.0% range until the third quarter of 2008 when they spiked to almost 7.5% during the financial crisis. They declined to the 4.0% range in 2012, and have since increased to the 4.85% range over the past eighteen months.

Page 2 of Attachment JRW-7 provides the dividend yields for the Electric Proxy Group over the past decade. The dividend yields for the Electric Proxy Group generally declined slightly over the decade until 2007. They increased in 2008 and 2009 in response to the financial crisis, but declined in the last four years and now are about 4.2%.

Average earned returns on common equity and market-to-book ratios for the Electric Proxy Group are on page 3 of Attachment JRW-7. The average earned returns on common equity for the Electric Proxy Group were in the 9.0%-12.0% range over the past decade, and have hovered in the 10.0% range for the past four years. The average market-to-book ratio for the group was in the 1.10X to 1.80X during the decade. The average declined to about 1.10X in 2009, but has since increased to 1.40X as of 2013.

Q24. WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED RATE OF RETURN ON EQUITY?

A24. The expected or required rate of return on common stock is a function of market-wide as well as company-specific factors. The most important market factor is the time value of money as indicated by the level of interest rates in the economy. Common stock investor requirements generally increase and decrease with like changes in interest rates. The perceived risk of a firm is the predominant factor that influences investor return requirements on a company-specific basis. A firm's investment risk is often separated into business and financial risk. Business risk encompasses all factors that affect a firm's operating revenues and expenses. Financial risk results from incurring fixed obligations in the form of debt in financing its assets.

Q25. HOW DOES THE INVESTMENT RISK OF UTILITIES COMPARE WITH THAT OF OTHER INDUSTRIES?

A25. Due to the essential nature of their service as well as their regulated status, public utilities are exposed to a lesser degree of business risk than other, non-regulated businesses. The relatively low level of business risk allows public utilities to meet much of their capital requirements through borrowing in the financial markets, thereby incurring greater than average financial risk. Nonetheless, the overall investment risk of public utilities is below most other industries.

Attachment JRW-8 provides an assessment of investment risk for 99 industries as measured by beta, which according to modern capital market theory, is the only relevant measure of investment risk. These betas come from the *Value Line Investment Survey* and are compiled annually by Aswath Damodaran of New York University.[12] The study shows that the investment risk of utilities is very low. The average betas for electric, water, and gas utility companies are 0.73, 0.66, and 0.66, respectively. These are well below the *Value Line* average of 1.15. As such, the cost of equity for utilities is among the lowest of all industries in the U.S.

Q26. HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON COMMON EQUITY CAPITAL BE DETERMINED?

A26. The costs of debt and preferred stock are normally based on historical or book values and can be determined with a great degree of accuracy. The cost of common equity capital, however, cannot be determined precisely and must instead be estimated from market data and informed judgment. This return to the stockholder should be commensurate with returns on investments in other enterprises having comparable risks.

According to valuation principles, the present value of an asset equals the discounted value of its expected future cash flows. Investors discount these

[12] *Available* at http://www.stern.nyu.edu/~adamodar.

expected cash flows at their required rate of return that, as noted above, reflects the time value of money and the perceived riskiness of the expected future cash flows. As such, the cost of common equity is the rate at which investors discount expected cash flows associated with common stock ownership.

Models have been developed to ascertain the cost of common equity capital for a firm. Each model, however, has been developed using restrictive economic assumptions. Consequently, judgment is required in selecting appropriate financial valuation models to estimate a firm's cost of common equity capital, in determining the data inputs for these models, and in interpreting the models' results. All of these decisions must take into consideration the firm involved as well as current conditions in the economy and the financial markets.

Q27. HOW DID YOU ESTIMATE THE COST OF EQUITY CAPITAL FOR THE COMPANY?

A27. I rely primarily on the discounted cash flow ("DCF") model to estimate the cost of equity capital. Given the investment valuation process and the relative stability of the utility business, the DCF model provides the best measure of equity cost rates for public utilities. It is my experience that this Commission has traditionally relied on the DCF model. I have also performed a capital asset pricing model ("CAPM") study; however, I give these results less weight because risk premium studies, of which the CAPM is one form, provide a less reliable indication of equity cost rates for public utilities.

B. DISCOUNTED CASH FLOW ANALYSIS

Q28. PLEASE DESCRIBE THE THEORY BEHIND THE TRADITIONAL DISCOUNTED CASH FLOW MODEL.

A28. According to the DCF model, the current stock price is equal to the discounted value of all future dividends that investors expect to receive from investment in the firm. As such, stockholders' returns ultimately result from current as well as future dividends. As owners of a corporation, common stockholders are entitled to a *pro rata* share of the firm's earnings. The DCF model presumes that earnings that are not paid out in the form of dividends are reinvested in the firm so as to provide for future growth in earnings and dividends. The rate at which investors discount future dividends, which reflects the timing and riskiness of the expected cash flows, is interpreted as the market's expected or required return on the common stock. Therefore, this discount rate represents the cost of common equity. Algebraically, the DCF model can be expressed as:

$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \frac{D_n}{(1+k)^n}$$

P is the current stock price, D_n is the dividend in year n, and k is the cost of common equity.

Q29. IS THE DISCOUNTED CASH FLOW MODEL CONSISTENT WITH VALUATION TECHNIQUES EMPLOYED BY INVESTMENT FIRMS?

A29. Yes. Virtually all investment firms use some form of the DCF model as a valuation technique. One common application for investment firms is called the three-stage DCF or dividend discount model ("DDM"). The stages in a three-stage DCF model are presented in Attachment JRW-9, Page 1 of 2. This model presumes that a company's dividend payout progresses initially through a growth stage, then proceeds through a transition stage, and finally assumes a maturity (or steady-state) stage. The dividend-payment stage of a firm depends on the profitability of its internal investments which, in turn, is largely a function of the life cycle of the product or service.

1. Growth stage: Characterized by rapidly expanding sales, high profit margins, and an abnormally high growth in earnings per share. Because of highly profitable expected investment opportunities, the payout ratio is low. Competitors are attracted by the unusually high earnings, leading to a decline in the growth rate.
2. Transition stage: In later years, increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings.
3. Maturity (steady-state) stage: Eventually, the company reaches a position where its new investment opportunities

offer, on average, only slightly attractive ROEs. At that time, its earnings growth rate, payout ratio, and ROE stabilize for the remainder of its life. The constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using this model to estimate a firm's cost of equity capital, dividends are projected into the future using the different growth rates in the alternative stages, and then the equity cost rate is the discount rate that equates the present value of the future dividends to the current stock price.

Q30. HOW DID YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED RATE OF RETURN USING THE DCF MODEL?

A30. Under certain assumptions, including a constant and infinite expected growth rate, and constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the following:

$$P = \frac{D_1}{k - g}$$

D_1 represents the expected dividend over the coming year and g is the expected growth rate of dividends. This is known as the constant-growth version of the DCF model. To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for k in the above expression to obtain the following:

$$k = \frac{D_1}{P} + g$$

Q31. IS THE CONSTANT-GROWTH DCF MODEL APPROPRIATE FOR EVALUATION OF PUBLIC UTILITIES?

A31. Yes. The economics of the public utility business indicate that the industry is in the steady-state or constant-growth stage of a three-stage DCF. The economics include the relative stability of the utility business, the maturity of the demand for public utility services, and the regulated status of public utilities (especially the fact that their returns on investment are effectively set through the ratemaking process). The DCF valuation procedure for companies in this stage is the constant-growth DCF. In the constant-growth version of the DCF model, the current dividend payment and stock price are directly observable. However, the primary problem and controversy in applying the DCF model to estimate equity cost rates entails estimating investors' expected dividend growth rate.

Q32. WHAT FACTORS SHOULD BE CONSIDERED WHEN APPLYING THE DCF METHODOLOGY?

A32. One should be sensitive to several factors when using the DCF model to estimate a firm's cost of equity capital. In general, one must recognize the assumptions under which the DCF model was developed in estimating its components (i.e., the dividend yield and the expected growth rate). The dividend yield can be measured precisely at any point in time, but tends to vary somewhat over time.

Estimation of expected growth is considerably more difficult. One must consider recent firm performance, in conjunction with current economic developments and other information available to investors, to accurately estimate investors' expectations.

Q33. WHAT DIVIDEND YIELD DID YOU USE OF THE AVERA PROXY GROUP?

A33. I have calculated the dividend yields for the companies in the two proxy groups using the current annual dividend and the 30-day, 90-day, and 180-day average stock prices. These dividend yields are provided on page 2 of Attachment JRW-10 for the Electric and Avera proxy groups, respectively. For the Electric Proxy Group, the mean and median dividend yields using 30-day, 90-day, and 180-day average stock prices range from 3.8% to 4.0%. Given this range, I will use 3.9% as the dividend yield for the Electric Proxy Group. For the Avera Proxy Group, provided in Panel B of page 2 of Attachment JRW-10, the mean and median dividend yields range from 3.9% to 4.2% using the 30-day, 90-day, and 180-day average stock prices. Given this range, I am using a dividend yield of 4.1% for the Avera Proxy Group.

Q34. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT DIVIDEND YIELD.

A34. According to the traditional DCF model, the dividend yield term relates to the dividend yield over the coming period. As indicated by Professor Myron Gordon,

who is commonly associated with the development of the DCF model for popular use, this is obtained by: (1) multiplying the expected dividend over the coming quarter by 4, and (2) dividing this dividend by the current stock price to determine the appropriate dividend yield for a firm that pays dividends on a quarterly basis.[13]

In applying the DCF model, some analysts adjust the current dividend for growth over the coming year as opposed to the coming quarter. This can be complicated, because firms tend to announce changes in dividends at different times during the year. As such, the dividend yield computed based on presumed growth over the coming quarter as opposed to the coming year can be quite different. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

Q35. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR DID YOU USE FOR YOUR DIVIDEND YIELD?

A35. I adjusted the dividend yield by one-half (1/2) the expected growth so as to reflect growth over the coming year. This is the approach employed by the Federal Energy Regulatory Commission ("FERC").[14] The DCF equity cost rate ("K") is computed as:

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[13] *Petition for Modification of Prescribed Rate of Return*, Federal Communications Commission, Docket No. 79-05, Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62 (April 1980).

[14] Opinion No. 414-A, *Transcontinental Gas Pipe Line Corp.*, 84 FERC ¶61,084 (1998).

$$K = [(D/P) * (1 + 0.5g)] + g$$

Q36. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF MODEL.

A36. There is much debate as to the proper methodology to employ in estimating the growth component of the DCF model. By definition, this component is investors' expectation of the long-term dividend growth rate. Presumably, investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book value growth to assess long-term potential.

Q37. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY GROUPS?

A37. I have analyzed a number of measures of growth for companies in the proxy groups. I reviewed *Value Line's* historical and projected growth rate estimates for earnings per share ("EPS"), dividends per share ("DPS"), and book value per share ("BVPS"). In addition, I utilized the average EPS growth rate forecasts of Wall Street analysts as provided by Yahoo, Reuters and Zacks. These services solicit five-year earnings growth rate projections from securities analysts and compile and publish the means and medians of these forecasts. Finally, I also assessed prospective growth as measured by prospective earnings retention rates and earned returns on common equity.

Q38. PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND DIVIDENDS AS WELL AS INTERNAL GROWTH.

A38. Historical growth rates for EPS, DPS, and BVPS are readily available to investors and are presumably an important ingredient in forming expectations concerning future growth. However, one must use historical growth numbers as measures of investors' expectations with caution. In some cases, past growth may not reflect future growth potential. Also, employing a single growth rate number (for example, for five or ten years) is unlikely to accurately measure investors' expectations, due to the sensitivity of a single growth rate figure to fluctuations in individual firm performance as well as overall economic fluctuations (i.e., business cycles). However, one must appraise the context in which the growth rate is being employed. According to the conventional DCF model, the expected return on a security is equal to the sum of the dividend yield and the expected long-term growth in dividends. Therefore, to best estimate the cost of common equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). The internal growth rate is computed as the retention rate times the return on equity. Internal growth is significant in determining long-run earnings and, therefore, dividends. Investors recognize the

importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

Q39. PLEASE DISCUSS THE SERVICES THAT PROVIDE ANALYSTS' EARNINGS PER SHARE FORECASTS.

A39. Analysts' EPS forecasts for companies are collected and published by a number of different investment information services, including Institutional Brokers Estimate System ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call and Reuters, among others. Thompson Reuters publishes analysts' EPS forecasts under different product names, including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, and Zacks publish their own set of analysts' EPS forecasts for companies. These services do not reveal: (1) the analysts who are solicited for forecasts; or (2) the identity of the analysts who actually provide the EPS forecasts that are used in the compilations published by the services. I/B/E/S, Bloomberg, FactSet, and First Call are fee-based services. These services usually provide detailed reports and other data in addition to analysts' EPS forecasts. Thompson Reuters and Zacks do provide limited EPS forecasts data free-of-charge on the internet. Yahoo finance (http://finance.yahoo.com) lists Thompson Reuters as the source of its summary EPS forecasts. The Reuters website (www.reuters.com) also publishes EPS forecasts from Thompson Reuters, but with more detail. Zacks (www.zacks.com) publishes its summary forecasts on its website. Zack's estimates are also available on other websites, such as msn.money (http://money.msn.com).

Q40. PLEASE PROVIDE AN EXAMPLE OF THESE EARNINGS PER SHARE FORECASTS.

A40. The following example provides the EPS forecasts compiled by Reuters for Alliant Energy Corp. (stock symbol "LNT"). The figures are provided on page 2 of Attachment JRW-9. The top line shows that four analysts have provided EPS estimates for the quarter ending June 30, 2014. The mean, high and low estimates are $0.55, $0.60, and $0.45, respectively. The second line shows the quarterly EPS estimates for the quarter ending September 30, 2014 of $0.1.57 (mean), $1.76 (high), and $1.46 (low). Lines three and four show the annual EPS estimates for the fiscal years ending December 2014 ($3.40 (mean), $3.48 (high), and $3.36 (low)) and December 2015 ($3.61 [mean], $3.94 [high], and $3.51 [low]). The quarterly and annual EPS forecasts in lines 1-4 are expressed in dollars and cents. As in the LNT case shown here, it is common for more analysts to provide estimates of annual EPS as opposed to quarterly EPS. The bottom line shows the projected long-term EPS growth rate, which is expressed as a percentage. For LNT, three analysts have provided long-term EPS growth rate forecasts, with mean, high and low growth rates of 5.60%, 6.00%, and 4.80%, respectively.

Q41. WHICH OF THESE EARNINGS PER SHARE FORECASTS IS USED IN DEVELOPING A DCF GROWTH RATE?

A41. The DCF growth rate is the long-term projected growth rate in EPS, DPS, and BVPS. Therefore, in developing an equity cost rate using the DCF model, the projected long-term growth rate is the projection used in the DCF model.

Q42. WHY DO YOU NOT RELY EXCLUSIVELY ON THE EPS FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE FOR THE PROXY GROUP?

A42. There are several issues with using the EPS growth rate forecasts of Wall Street analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long term, dividend and earnings will have to grow at a similar growth rate. Therefore, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth. Second, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[15] Employing data over a twenty-year period, these authors demonstrate that using the most recent year's EPS figure to forecast EPS in the next 3-5 years proved to be just as accurate as using the EPS estimates from analysts' long-term

[15] M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting (Vol. 8),* Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

earnings growth rate forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings growth rate forecasts should be used with caution as inputs for valuation and cost of capital purposes. Finally, and most significantly, it is well known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years. This issue is discussed at length in Appendix B of this testimony. Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate. On this issue, a study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[16]

Q43. DO STOCK PRICES REFLECT THE UPWARD BIAS IN THE EPS GROWTH RATE FORECASTS?

A43. Yes, investors are well aware of the bias in analysts' EPS growth rate forecasts, and therefore, stock prices reflect the upward bias.

Q44. HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A DCF EQUITY COST RATE STUDY?

A44. According to the DCF model, the equity cost rate is a function of the dividend yield and expected growth rate. Because stock prices reflect the bias, it would affect the

[16] Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. ACCT. RES. 983–1015 (2007).

dividend yield. In addition, the DCF growth rate needs to be adjusted downward from the projected EPS growth rate to reflect the upward bias.

Q45. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN THE PROXY GROUPS, AS PROVIDED BY VALUE LINE.

A45. Page 3 of Attachment JRW-10 provides the 5- and 10- year historical growth rates for EPS, DPS, and BVPS for the companies in the two proxy groups, as published in the *Value Line Investment Survey.* The median historical growth measures for EPS, DPS, and BVPS for the Electric Proxy Group, as provided in Panel A, range from 1.5% to 4.5%, with an average of 3.1%. For the Avera Proxy Group, as shown in Panel B of page 3 of Attachment JRW-10, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 1.0% to 4.5%, with an average of 2.6%.

Q46. PLEASE SUMMARIZE VALUE LINE'S PROJECTED GROWTH RATES FOR THE COMPANIES IN THE PROXY GROUPS.

A46. *Value Line's* projections of EPS, DPS and BVPS growth for the companies in the proxy groups are shown on page 4 of Attachment JRW-10. As stated above, due to the presence of outliers, the medians are used in the analysis. For the Electric Proxy Group, as shown in Panel A of page 4 of Attachment JRW-10, the medians range from 4.0% to 4.5%, with an average of 4.2%. For the Avera Proxy Group, as shown in Panel B of page 4 of Attachment JRW-10, the medians range from 3.3% to 4.5%, with an average of 4.0%.

Also provided on page 4 of Attachment JRW-10 are the prospective sustainable growth rates for the companies in the two proxy groups as measured by *Value Line*'s average projected retention rate and return on shareholders' equity. As noted above, sustainable growth is a significant and a primary driver of long-run earnings growth. For the Electric Proxy Group and the Avera Proxy Group, the median prospective sustainable growth rates are 3.8% and 3.7%, respectively.

Q47. PLEASE ASSESS GROWTH RATES FOR THE PROXY GROUPS AS MEASURED BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EARNINGS PER SHARE GROWTH.

A47. Yahoo, Zacks, and Reuters collect, summarize, and publish Wall Street analysts' long-term EPS growth rate forecasts for the companies in the proxy groups. These forecasts are provided for the companies in the proxy groups on page 5 of Attachment JRW-10. I have reported both the mean and median growth rates for the two groups. The mean/median of analysts' projected EPS growth rates for the Electric and Avera Proxy Groups are 5.1%/5.1% and 4.6%/4.9%, respectively.[17] Because there is considerable overlap in analyst coverage between the three services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the three services for each company to arrive at an expected EPS growth rate by company.

[17] Given the much higher mean of analysts' projected EPS growth rates for the Avera Proxy Group, I have also considered the mean figures in the growth rate analysis.

Q48. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND PROSPECTIVE GROWTH RATES OF THE PROXY GROUPS.

A48. Page 6 of Attachment JRW-10 shows the summary DCF growth rate indicators for the proxy groups.

The historical growth rate indicators for my Electric Proxy Group imply a baseline growth rate of 3.1%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.2%, and *Value Line*'s projected sustainable growth rate is 3.8%. The high end of the range for the Electric Proxy Group are the projected EPS growth rate of Wall Street analysts, which are 4.9% and 5.0% as measured by the mean and median growth rates. The overall range for the projected growth rate indicators is 3.1% to 5.1%. Because more weight is given to the projected EPS growth rate of Wall Street analysis, a growth rate in the range of 4.75% to 5.1% is appropriate. Within this range, I will use 5.0% as the DCF growth rate for the Electric Proxy Group. This growth rate figure is clearly in the upper end of the range of historic and projected growth rates for the Electric Proxy Group.

The historical growth rate indicators for the Avera Proxy Group indicate a growth rate of 2.6%. *Value Line*'s average projected EPS, DPS, and BVPS growth rate for the group is 4.0%, and *Value Line*'s projected sustainable growth rate is 3.7%. The mean/median projected EPS growth rates of Wall Street analysts for the group are 4.6% and 4.9%, respectively, with an average of the mean/median of

4.75%. The range for the projected growth rate indicators is 2.5% to 4.9%. Giving more weight to the projected EPS growth rate of Wall Street analysis, I used 4.75% as the DCF growth rate for the Avera Proxy Group. As with the Electric Proxy Group, this growth rate figure is in the upper end of the range of historic and projected growth rates.

Q49. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED COMMON EQUITY COST RATES FROM THE DISCOUNTED CASH FLOW MODEL FOR THE TWO PROXY GROUPS?

A49. My DCF-derived equity cost rates for the groups are summarized on page 1 of Attachment JRW-10 and in the table below.

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	**3.90%**	**1.02500**	**5.00%**	**9.0%**
Avera Proxy Group	**4.10%**	**1.02375**	**4.75%**	**8.9%**

The results for my Electric Proxy Group is the 3.9% dividend yield, times the 1 and ½ growth adjustment of 1.02500, plus the DCF growth rate of 5.00%, which results in an equity cost rate of 9.0%. The results for the Avera Proxy Group include a dividend yield of 4.1%, times the 1 and ½ growth adjustment of 1.02375, plus the DCF growth rate of 4.75%, which results in an equity cost rate of 8.9%.

C. CAPITAL ASSET PRICING MODEL

Q50. PLEASE DISCUSS THE CAPITAL ASSET PRICING MODEL ("CAPM").

A50. The CAPM is a risk premium approach to gauging a firm's cost of equity capital. According to the risk premium approach, the cost of equity is the sum of the interest rate on a risk-free bond (R_f) and a risk premium (RP), as in the following:

$$k = R_f + RP$$

The yield on long-term Treasury securities is normally used as R_f. Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock: firm-specific risk or unsystematic risk, and market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

According to the CAPM, the expected return on a company's stock, which is also the equity cost rate (K), is equal to:

$$K = (R_f) + \beta * [E(R_m) - (R_f)]$$

Where:

- K represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected return on the overall stock market. Frequently, the 'market' refers to the S&P 500;
- (R_f) represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- *Beta*—(ß) is a measure of the systematic risk of an asset.

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest (R_f), the beta (ß), and the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it is represented by the yield on long-term Treasury bonds. ß, the measure of systematic risk, is a little more difficult to measure because there are different opinions about what adjustments, if any, should be made to historical betas due to their tendency to regress to 1.0 over time. And finally, an even more difficult input to measure is the expected equity or market risk premium $(E(R_m) - (R_f))$. I will discuss each of these inputs below.

Q51. PLEASE DISCUSS ATTACHMENT JRW-11.

A51. Attachment JRW-11 provides the summary results for my CAPM study. Page 1 shows the results, and the following pages contain the supporting data.

Q52. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.

A52. The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn, has been considered to be the yield on U.S. Treasury bonds with thirty-year maturities.

Q53. WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPITAL ASSET PRICING MODEL?

A53. As shown on page 2 of Attachment JRW-11, the yield on thirty-year Treasury bonds has been in the 3.0% to 4.0% range over the 2013–2014 time period. These rates are currently in the 3.5% range. Given the recent range of yields and the higher recent interest rates, I used 4.0% as the risk-free rate, or R_f, in my CAPM.

Q54. WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPITAL ASSET PRICING MODEL?

A54. Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the market also has a beta of 1.0. A stock whose price movement is greater than that of the market, such as a technology stock, is riskier than the

market and has a beta greater than 1.0. A stock with below average price movement, such as that of a regulated public utility, is less risky than the market and has a beta less than 1.0. Estimating a stock's beta involves running a linear regression of a stock's return on the market return.

As shown on page 3 of Attachment JRW-11, the slope of the regression line is the stock's ß. A steeper line indicates that the stock is more sensitive to the return on the overall market. This means that the stock has a higher ß and greater-than-average market risk. A less steep line indicates a lower ß and less market risk.

Several online investment information services, such as Yahoo and Reuters, provide estimates of stock betas. Usually these services report different betas for the same stock. The differences are usually due to: (1) the time period over which the ß is measured; and (2) any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time. In estimating an equity cost rate for the proxy group, I am using the betas for the companies as provided in the *Value Line Investment Survey*. As shown on page 3 of Attachment JRW-11, the median beta for the companies in the Electric and Avera Proxy Groups are 0.70 and 0.73, respectively.

Q55. PLEASE DISCUSS THE ALTERNATIVE VIEWS REGARDING THE EQUITY RISK PREMIUM.

A55. The equity or market risk premium - $(E(R_m) - R_f)$ - is equal to the expected return on the stock market (e.g., the expected return on the S&P 500, $E(R_m)$ minus the risk-free rate of interest (R_f)). The equity premium is the difference in the expected total return between investing in equities and investing in "safe" fixed-income assets, such as long-term government bonds. However, while the equity risk premium is easy to define conceptually, it is difficult to measure because it requires an estimate of the expected return on the market.

Q56. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING THE EQUITY RISK PREMIUM.

A56. Page 4 of Attachment JRW-11 highlights the primary approaches to, and issues in, estimating the expected equity risk premium. The traditional way to measure the equity risk premium is to use the difference between historical average stock and bond returns. In this case, historical stock and bond returns, also called ex post returns, are used as the measures of the market's expected return (known as the ex ante or forward-looking expected return). This type of historical evaluation of stock and bond returns is often called the "Ibbotson approach" after Professor Roger Ibbotson, who popularized this method of using historical financial market returns as measures of expected returns. Most historical assessments of the equity risk premium suggest an equity risk premium range of 5% to 7% above the rate on long-term U.S. Treasury bonds. However, this can be a problem because: (1)

ex post returns are not the same as ex ante expectations; (2) market risk premiums can change over time, increasing when investors become more risk-averse and decreasing when investors become less risk-averse; and (3) market conditions can change such that ex post historical returns are poor estimates of ex ante expectations.

The use of historical returns as market expectations has been criticized in numerous academic studies as discussed later in my testimony. The general theme of these studies is that the large equity risk premium discovered in historical stock and bond returns cannot be justified by the fundamental data. These studies, which fall under the category "Ex Ante Models and Market Data," compute ex ante expected returns using market data to arrive at an expected equity risk premium. These studies have also been called "Puzzle Research" after the famous study by Mehra and Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[18]

In addition, there are a number of surveys of financial professionals regarding the equity risk premium. There have been several published surveys of academics on the equity risk premium. *CFO Magazine* conducts a quarterly survey of CFOs, which includes questions regarding their views on the current expected returns on stocks and bonds. Usually, over 350 CFOs normally participate in the survey.[19]

[18] Rajnish Mehra & Edward C. Prescott, *The Equity Premium: A Puzzle*, J. MONETARY ECON. 145 (1985).

[19] *See.* www.cfosurvey.org.

Questions regarding expected stock and bond returns are also included in the Federal Reserve Bank of Philadelphia's annual survey of financial forecasters, which is published as the *Survey of Professional Forecasters*.[20] This survey of professional economists has been published for almost 50 years. In addition, Pablo Fernandez conducts occasional surveys of financial analysts and companies regarding the equity risk premiums they use in their investment and financial decision-making.[21]

Q57. PLEASE PROVIDE A SUMMARY OF THE EQUITY RISK PREMIUM STUDIES.

A57. Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed the most comprehensive reviews to date of the research on the equity risk premium.[22] Derrig and Orr's study evaluated the various approaches to estimating equity risk premiums, as well as the issues with the alternative approaches and summarized the findings of the published research on the equity risk premium. Fernandez examined four alternative measures of the equity risk premium – historical, expected, required, and implied. He also reviewed the major studies of the equity

[20] Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters,* (February 15, 2014). The *Survey of Professional Forecasters* was formerly conducted by the American Statistical Association ("ASA") and the National Bureau of Economic Research ("NBER") and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

[21] Pablo Fernandez, Javier Auirreamalloa, and Javier Corres, "Market Risk Premium and Risk Free Rate used for 51 countries in 2013: a survey with 6,237 answers," June 26, 2013.

[22] *See* Richard Derrig & Elisha Orr, "Equity Risk Premium: Expectations Great and Small," Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, (August 28, 2003); Pablo Fernandez, "Equity Premium: Historical, Expected, Required, and Implied," IESE Business School Working Paper, (2007); Zhiyi Song, "The Equity Risk Premium: An Annotated Bibliography," CFA Institute, (2007).

risk premium and presented the summary equity risk premium results. Song provides an annotated bibliography and highlights the alternative approaches to estimating the equity risk summary.

Page 5 of Attachment JRW-11 provides a summary of the results of the primary risk premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as other more recent studies of the equity risk premium. In developing page 5 of Attachment JRW-11, I have categorized the studies as discussed on page 4 of Attachment JRW-11. I have also included the results of the "Building Blocks" approach to estimating the equity risk premium, including a study I performed, which is presented in Appendix C of this testimony. The Building Blocks approach is a hybrid approach employing elements of both historical and *ex ante* models.

Q58. PLEASE DISCUSS THE RESULTS OF THE EQUITY RISK STUDIES THAT YOU HAVE REVIEWED.

A58. Page 5 of JRW-11 provides a summary of the results of the equity risk premium studies that I have reviewed. These include the results of: (1) the various studies of the historical risk premium; (2) *ex ante* equity risk premium studies; (3) equity risk premium surveys of CFOs, Financial Forecasters, analysts, companies and academics; and (4) the Building Block approaches to the equity risk premium. My Attachment JRW-11 includes the results reported for over 30 studies and the median equity risk premium is 4.29%.

Q59. PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT RISK PREMIUM STUDIES AND SURVEYS.

A59. The studies cited on page 5 of Attachment JRW-11 include all equity risk premium studies and surveys that I identified that were published over the past decade and that provided an equity risk premium estimate. Most of these studies were published prior to the financial crisis of the past two years. In addition, some of these studies were published in the early 2000s at the market peak. It should be noted that many of these studies (as indicated) used data over long periods of time (as long as fifty years of data). Those studies were not estimating an equity risk premium as of a specific point in time (e.g., the year 2001). To assess the effect of the earlier studies on the equity risk premium, I have reconstructed page 5 of Attachment JRW-11 on page 6 of Attachment JRW-11; however, I have eliminated all studies dated before January 2, 2010. The median equity risk premium for this subset of studies is 4.87%.

Q60. GIVEN THESE RESULTS, WHAT MARKET OR EQUITY RISK PREMIUM ARE YOU USING IN YOUR CAPM?

A60. Much of the data indicates that the market risk premium is in the 4.0% to 6.0% range. Accordingly, I used the midpoint of this range, 5.0%, as the market or equity risk premium.

Q61. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS USED BY CHIEF FINANCIAL OFFICERS?

A51. Yes. In the March 31, 2014 CFO survey conducted by *CFO Magazine* and Duke University, the expected ten-year equity risk premium was 3.8%.

Q62. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS OF PROFESSIONAL FORECASTERS?

A62. The financial forecasters in the previously referenced Federal Reserve Bank of Philadelphia survey project both stock and bond returns. In the February 2014 survey, the median long-term expected stock and bond returns were 6.43% and 4.25%, respectively. This provides an *ex ante* equity risk premium of 2.18% (6.43%-4.25%).

Q63. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS OF FINANCIAL ANALYSTS AND COMPANIES?

A63. Yes. Pablo Fernandez recently published the results of a 2013 survey of academics, financial analysts and companies.[23] This survey included over 6,000 responses. The median equity risk premium employed by U.S. analysts and companies was 5.7%.

Q64. WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM ANALYSIS?

[23] Pablo Fernandez, Javier Auirreamalloa, and Javier Corres, "Market Risk Premium Used in 51 Countries in 2013: A survey with 6,237 Answers," June 26, 2013.

A64. The results of my CAPM study for the proxy groups are summarized on page 1 of Attachment JRW-11 and in the table below.

$$K = (R_f) + ß * [E(R_m) - (R_f)]$$

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Electric Proxy Group	**4.0%**	**0.70**	**5.0%**	**7.5%**
Avera Proxy Group	**4.0%**	**0.73**	**5.0%**	**7.6%**

For the Electric Proxy Group, the risk-free rate of 4.00% plus the product of the beta of 0.70 times the equity risk premium of 5.00% results in a 7.5% equity cost rate. For the Avera Proxy Group, the risk-free rate of 4.00% plus the product of the beta of 0.73 times the equity risk premium of 5.00% results in a 7.6% equity cost rate.

D. EQUITY COST RATE SUMMARY

Q65. PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.

A65. My DCF analyses for the Electric Proxy Group and Avera Proxy Group indicate equity cost rates of 8.9% and 9.0%, respectively. My CAPM analyses for the Electric and Avera Proxy Groups indicate equity cost rates of 7.5% and 7.8%.

	DCF	CAPM
Electric Proxy Group	**9.0%**	**7.5%**
Avera Proxy Group	**8.9%**	**7.6%**

Q66. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST RATE FOR THE TWO PROXY GROUPS?

A66. Given these results, I conclude that the appropriate equity cost rate for companies in my Electric Group and the Avera Proxy Group is in the 7.5% to 9.0% range. However, because I rely primarily on the DCF model, I am using the upper end of the range as the equity cost rate. Therefore, I conclude that the appropriate equity cost rate for AEP Ohio is in the range of 8.75% and 9.00%.

Q67. GIVEN THIS RANGE, WHAT IS YOUR RECOMMENDED RETURN ON EQUITY FOR AEP OHIO?

A67. I am recommending 8.875% as the equity cost rate for AEP Ohio. This represents the midpoint of my 8.75% to 9.0% equity cost rate range. This recommendation reflects a balancing of two factors. On one hand, the relative risk of AEP Ohio is at the higher end of the proxy groups as indicated by: (1) bond ratings; and (2) the *Value Line* risk metrics of AEP Ohio's parent, American Electric Power Company. On the other hand, two factors suggest a lower risk profile for AEP Ohio. First, with the approval of its Corporate Separation Plan and the associated transfer of electric generation assets, AEP Ohio is now a distribution-only electric company and no longer has the risk of generation. In recent years, the authorized ROEs for electric distribution companies have been lower than those of integrated electric utilities. In addition, as discussed in the testimony of AEP Ohio witness Andre Moore, virtually 100% of the Utility's projected revenues under the proposed ESP, with the exception of the base distribution rate, are recovered

through riders. Where many electric utilities these days have various investment and expense riders that adjust rates between rates cases, AEP Ohio's appears to have a more comprehensive set of riders that would appear to lower the Utility's risk.

Given the offsetting risk indicators, I will use the midpoint of the range of 8.75% to 9.00% as my equity cost rate for AEP Ohio.

Q68. PLEASE DISCUSS THE INCREASE IN INTEREST RATES OVER THE PAST TWO YEARS.

A68. As previously noted, interest rates have increased over the past two years as the economy has improved and the Federal Reserve has scaled back is bond buying program. The yield on ten-year Treasury bonds increased from 1.50% in July 2012 to about 3.0% in late 2013. These yields have since declined to about 2.65%. The extremely low rates in 2012 were largely attributable to slow economic growth and the Federal Reserve's QEIII program.

Q69. DOES THE INCREASE IN INTEREST RATES OVER THE PAST TWO YEARS INDICATE THAT EQUITY COST RATES HAVE INCREASED SIGNIFICANTLY FOR ELECTRIC UTILITIES?

A69. No, not necessarily. To address this issue, I have evaluated the relationship between ten-year Treasury yields and authorized ROEs for electric utility companies. Panel A of Attachment JRW-12 shows the authorized ROEs for

electric utility companies and ten-year Treasury yields on a quarterly basis from 2005-2013. The graph shows that authorized ROEs for electric utility companies gradually declined from the 10.5% range to about 9.8% over that time frame.[24] The yields on ten-year Treasury bonds were in the 4.0% to 5.0% range in the 2005-2006 time frame, decreased to 1.5% in mid-2012, increased to almost 3.0% in late 2013, and have since decreased. In looking at the relationship between the two, it is significant to note that when ten-year Treasury yields declined from 3.5% in early 2011 to 1.5% as of mid-year 2012, authorized ROEs for electric companies only declined from 10.12% to 10.00%. The key point is that authorized ROEs for electric utility companies did not decline nearly as much as interest rates. Hence, the authorized ROEs for electric companies did not drop to the levels indicated by the very low interest rates in 2012. These authorized ROEs decreased further to 9.8% in 2013.

This fact is corroborated by Panel B of Attachment JRW-12, which plots the difference between authorized ROEs for electric companies and ten-year Treasury yields on a quarterly basis from 2005-2013. The difference has generally increased over time, and was in the 6.0% to 7.0% range prior to a dip in Treasury yields in 2011. The difference spiked to over 8.0% in 2011 and 2012, and decreased to the 7.0% range in 2013 in response to the higher Treasury yields and slightly lower authorized ROEs.

[24] The authorized ROEs exclude the authorized ROEs in Virginia which include generation adders. See *Regulatory Focus*, Regulatory Research Associates, July 2013.

Q70. PLEASE INDICATE WHY AN 8.875% RETURN IS APPROPRIATE FOR AEP OHIO.

A70. There are a number of reasons why a 8.875% return on equity is appropriate and fair for AEP Ohio in this case:

(1) As shown in Attachment JRW-8, the electric utility industry is one of the lowest risk industries in the U.S. as measured by beta. As such, the cost of equity capital for this industry is amongst the lowest in the U.S., according to the CAPM;

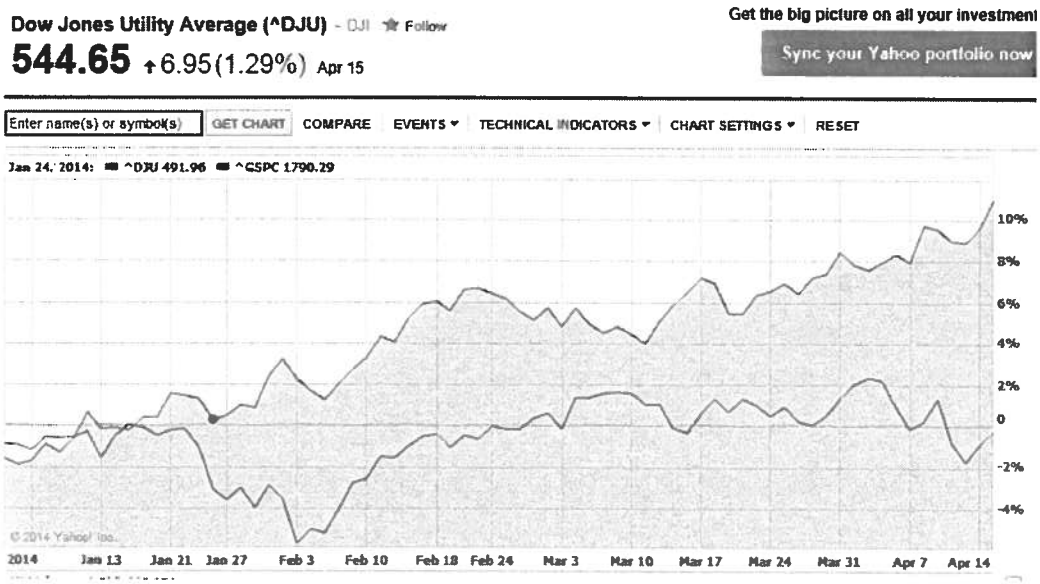
(2) As shown in Exhibits JRW-2 and JRW-3, capital costs for utilities, as indicated by long-term bond yields, are still at historically low levels, even given the increase in these rates over the past two years. Furthermore, as previously discussed, interest rates and utility bonds yields have decreased since the Federal Reserve announced the tapering of its QE III program in December of 2013;

(3) While the markets have recovered significantly over the past four years, the growth in the economy is tepid and unemployment is still at 6.3%. The continuation of the Fed's "highly accommodative" monetary and scaled back QEIII illustrates the Federal Reserve's concern over the economy. The relatively slow economic growth is a major

reason that interest rates and inflation are at still at historically low levels, and hence the expected returns on financial assets remain low.

(4) While the stock market is about even for the year, utility stocks have produced big returns. The overall market, as measured by the S&P 500, began the year by dropping about 10% in January. However, by the end of the first quarter 2014, the market had recovered and was about even for the year. Meanwhile, utilities are the best performing sector of the market. Figure 2 compares the performance of the Dow Jones Utilities Index ("DJU") (blue shaded area) relative to the S&P 500 (red line). For the year, the DJU is up 11% while the S&P 500 at 0%;

Figure 2
Dow Jones Utilities vs. S&P 500
1/1/2014 – 4-15-14



(5.) With utilities being the best performing sector in the S&P 500 this year, the earned ROEs of the utilities in the Electric and Avera Proxy Groups are very much in line with my recommendation. The table below provides the average current earned ROE and market-to-book ratio for the companies in the Electric and Avera Proxy Groups. These two groups are currently earning ROEs of 9.1% and 8.2%, respectively, and selling at market-to-book ratios of 1.66 and 1.55, respectively. Obviously, the stock market performance and earned ROEs indicate that my 8.875% ROE recommendation is clearly adequate and meets investors' expectations.

	Current ROE	**Market to Book Ratio**
Electric Proxy Group	**9.1%**	**1.66**
Avera Proxy Group	**8.2%**	**1.55**

(6.) And finally, as discussed above, after the completion of corporate separation and the transfer of generation assets to an affiliate on December 31, 2013, AEP Ohio is now a distribution-only electric utility with a number of rate riders that provide for the recovery of investment and expenses between rate cases. These two factors should serve to lower the riskiness of AEP Ohio.

VI. CRITIQUE OF AEP OHIO'S RATE OF RETURN TESTIMONY

Q71. PLEASE SUMMARIZE DR. AVERA'S RATE OF RETURN RECOMMENDATION FOR AEP OHIO.

A71. AEP Ohio witness Ms. Renee V. Hawkins provides the Utility's recommended capital structure and long-term debt cost rate. Dr. William E. Avera recommends a common equity cost rate for AEP Ohio. The Company's rate of return recommendation is summarized on page 1 of Attachment JRW-13. AEP Ohio's recommended capital structure from investor sources includes 52.50% long-term debt and 47.50% common equity. AEP Ohio uses a long-term cost rate of 6.05%, and an equity cost rate of 10.65%.

Q72. HAVE YOU IDENTIFIED ANY ISSUES WITH AEP OHIO'S COST OF CAPITAL POSITION?

A72. The primary area of concern in AEP Ohio's cost of capital calculation involves Dr. Avera's recommended equity cost rate of 10.65%. The primary errors in his equity cost rate studies include: (1) the DCF equity cost rate estimates, and in particular, (a) Dr. Avera's asymmetric elimination of over 25% of his low-end of his results; and (b) the exclusive use of the earnings per share growth rates of Wall Street analysts and *Value Line*; (2) the base interest rates and market or equity risk premium in the URP and CAPM approaches; and (3) whether equity cost rate adjustments are needed to account for size and flotation costs. Dr. Avera has also used several other ROE analyses which he refers to as checks on his

10.65% ROE recommendation. These approaches include an Expected Earnings approach and a DCF analysis for a non-utility group.

Q73. PLEASE SUMMARIZE DR. AVERA'S EQUITY COST RATE APPROACHES.

A73. Dr. Avera uses his twenty-one company electric utility proxy group and employs DCF, CAPM, and URP equity cost rate approaches. Dr. Avera's equity cost rate estimates for AEP Ohio are summarized in Panel A of page 2 of Attachment JRW-13. Based on these figures, he concludes that the appropriate equity cost rate for the Company is 10.25%.

A. DISCOUNTED CASH FLOW APPROACH

Q74. PLEASE SUMMARIZE DR. AVERA'S DISCOUNTED CASH FLOW ESTIMATES.

A74. On pages 22-36 of his testimony and in Exhibits WEA-4 and WEA-5, Dr. Avera develops an equity cost rate by applying the DCF model to the Avera Proxy Group. Dr. Avera's DCF results are summarized in Panel A of page 2 of Attachment JRW-13. In the traditional DCF approach, the equity cost rate is the sum of the dividend yield and expected growth. For the DCF growth rate, Dr. Avera uses five measures of projected EPS growth – the projected EPS growth of Wall Street analysts as compiled by IBES, Reuters, and Zack's, *Value Line's* projected EPS projected growth rate, and a measure of sustainable growth as computed by the sum of internal ("br") and external ("sv") growth. The average of the mean DCF results is 9.2% for

the Avera Proxy Group.

Q75. WHAT ERRORS HAVE YOU IDENTIFIED IN DR. AVERA'S DISCOUNTED CASH FLOW ANALYSES?

A75. The primary concerns in regard to Dr. Avera's DCF analyses are: (1) The asymmetric elimination of low-end DCF results (he has ignored over 25 % of the low DCF results for his constant-growth DCF model application;) and (2) The use of the EPS growth rate forecasts of Wall Street analysts and *Value Line* (the DCF growth rate in his DCF models employ the overly optimistic and upwardly-biased EPS growth rate estimates of Wall Street analysts and *Value Line.*)

Q76. PLEASE EXPLAIN DR. AVERA'S ASYMMETRIC ELIMINATION OF LOW END DISCOUNTED CASH FLOW RESULTS.

A76. A very significant error with Dr. Avera's DCF equity cost rate analyses is his asymmetric elimination of DCF results. Page 3 of Attachment JRW-13 provides Dr. Avera's DCF results for his utility group. In deriving a DCF equity cost rate, Dr. Avera has labeled equity cost rates below 7.5% and above 14.7% as extreme outliers.[25] These screens eliminate twenty-eight of his 105 DCF results, or 27%. All of the eliminated DCF results are on the low end. By eliminating low-end outliers and not also eliminating the same number of high-end outliers, Dr. Avera biases his DCF equity cost rate study and reports a higher DCF equity cost rate than the data

[25] In contrast, I have not labeled observations as outliers, but I have used the median as a measure of central tendency to minimize the impact of outliers.

indicate. In my DCF analysis, I have used the median as a measure of central tendency so as to not give outlier results too much weight. This approach also avoids biasing the results by including all data in the analysis and not selectively eliminating outcomes.

Q77. HAVE YOU CALCULATED THE DISCOUNTED CASH FLOW EQUITY COST RATE FOR DR. AVERA'S PROXY GROUP WITHOUT THE ELIMINATION OF LOW END DISCOUNTED CASH FLOW RESULTS?

A77. Yes. On page 2 of Attachment JRW-13, I have recalculated his DCF equity cost rate for the utility group without eliminating the so-called extreme outliers. The actual mean and median DCF equity cost rates, using all observations in the analysis, are both 8.0%.

Q78. PLEASE SUMMARIZE DR. AVERA'S DISCOUNTED CASH FLOW GROWTH RATE.

A78. In his constant-growth DCF model, Dr. Avera DCF growth rate is the average of the projected EPS growth rate forecasts: (1) Wall Street analysts as compiled by Zacks, IBES, and Reuters; and (2) *Value Line*.

Q79. ARE THERE ANY CONCERNS WITH DR. AVERA'S USE OF THE PROJECTED EPS GROWTH RATES OF WALL STREET ANALYSTS AND VALUE LINE IN HIS DCF MODELS?

A79. Yes. There are several issues with using the EPS growth rate forecasts of Wall Street analysts and *Value Line* as DCF growth rates. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Therefore, in my opinion, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth. Second, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years. In addition, I demonstrate that *Value Line*'s EPS growth rate forecasts are consistently too high. Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate.

Q80. PLEASE DISCUSS DR. AVERA'S RELIANCE ON THE PROJECTED GROWTH RATES OF WALL STREET ANALYSTS AND VALUE LINE.

A80. It seems highly unlikely that investors today would rely excessively on the EPS growth rate forecasts of Wall Street analysts and ignore other growth rate measures in arriving at expected growth. As I previously indicated, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Hence, consideration must be given to other indicators of growth, including historic growth prospective dividend growth, internal growth,

as well as projected earnings growth. In addition, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[26] As such, the weight give to analysts' projected EPS growth rate should be limited. Finally, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. Hence, using these growth rates as a DCF growth rate produces an overstated equity cost rate. A recent study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[27] These issues are addressed in more detail in Appendix B.

B. CAPITAL ASSET PRICING MODEL PPROACH

Q81. PLEASE DISCUSS DR. AVERA'S CAPM.

A81. On pages 36-40 of his testimony and Exhibit No. WEA-6, Dr. Avera estimates an equity cost rate by applying a CAPM model to his proxy group. The CAPM approach requires an estimate of the risk-free interest rate, Beta, and the equity risk premium. He calculates a CAPM equity cost rate using the current long-term Treasury bond yield of 3.8% and a projected bond yield of 4.2% and Betas from

[26] M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8).* Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

[27] Easton, P., & Sommers, G. (2007). Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. *Journal of Accounting Research*, 45(5), 983–1015.

Value Line. A market risk premium is computed for each risk-free rate, and both are based on an expected stock market return of 12.6%. He also adds a size premium to his CAPM equity cost rate. Dr. Avera has not used a traditional CAPM, has but he has employed a variant of the traditional CAPM, the Empirical CAPM ("ECAPM"). The ECAPM makes adjustments to the risk-free rate and the market risk premium in calculating an equity cost rate. His ECAPM equity cost rates using current/projected and including/excluding a size premium range from 10.8% to 11.7%.

Q82. WHAT ARE THE ERRORS IN DR. AVERA'S ECAPM ANALYSIS?

A82. The primary errors with Dr. Avera's ECAPM analysis are: (1) the use of the ECAPM version of the CAPM; (2) the expected market return of 12.6% that is used to compute the market risk premiums; and (3) the size adjustment.

Q83. WHAT ISSUES DO YOU HAVE WITH DR. AVERA ECAPM?

A83. Dr. Avera has employed a variation of the CAPM which he calls the 'ECAPM.' The ECAPM, as popularized by rate of return consultant Dr. Roger Morin, attempts to model the well-known finding of tests of the CAPM that have indicated the Security Market Line ("SML") is not as steep as predicted by the CAPM. As such, the ECAPM is nothing more than an ad hoc version of the CAPM and has not been theoretically or empirically validated in refereed journals. The ECAPM provides for weights which are used to adjust the risk-free rate and market risk premium in applying the ECAPM. Dr. Avera uses 0.25 and

0.75 factors to boost the equity risk premium measure, but provides no empirical justification for those figures.

Beyond the lack of any theoretical or empirical validation of the ECAPM, there are two errors in Dr. Avera's ECAPM. I am not aware of any tests of the CAPM that use adjusted betas such as those used by Dr. Avera. Adjusted betas address the empirical issues with the CAPM by increasing the expected returns for low beta stocks and decreasing the returns for high beta stocks.

Q84. PLEASE ASSESS DR. AVERA'S MARKET RISK PREMIUMS DERIVED FROM APPLYING THE DCF MODEL TO THE S&P 500.

A84. The primary problem with Dr. Avera's CAPM analysis is the magnitude of the market or equity risk premium. Dr. Avera develops an expected market risk premium by: (1) applying the DCF model to the S&P 500 to get an expected market return; and (2) subtracting the risk-free rate of interest. Dr. Avera's estimated market return of 12.6% for the S&P 500 equals the sum of the dividend yield of 2.5% and expected EPS growth rate of 10.1%. The expected EPS growth rate is the average of the expected EPS growth rates from IBES. The primary error in this approach is his expected DCF growth rate. As discussed in Appendix B, the expected EPS growth rates of Wall Street analysts are upwardly biased. In addition, as explained below, the projected growth rate is inconsistent with economic and earnings growth in the U.S.

Q85. BEYOND YOUR PREVIOUS DISCUSSION OF THE UPWARD BIAS IN WALL STREET ANALYSTS' AND VALUE LINE'S EPS GROWTH RATE FORECASTS, WHAT OTHER EVIDENCE IS THERE TO CORROBORATE YOUR POSITION THAT DR. AVERA'S S&P 500 GROWTH RATE IS EXCESSIVE?

A85. A long-term EPS growth rate of 10.1% is not consistent with historic as well as projected economic and earnings growth in the U.S for several reasons: (1) long-term EPS and economic growth, as measured by GDP, is about ½ of Dr. Avera's projected EPS growth rate%; (2) more recent trends in GDP growth, as well as projections of GDP growth, suggest slower economic and earnings growth in the future; and (3) over time, EPS growth tends to lag behind GDP growth.

The long-term economic, earnings, and dividend growth rate in the U.S. has only been in the 5% to 7% range. I performed a study of the growth in nominal GDP, S&P 500 stock price appreciation, and S&P 500 EPS and DPS growth since 1960. The results are provided on page 1 of Attachment JRW-14, and a summary is given in the table below.

GDP, S&P 500 Stock Price, EPS, and DPS Growth
1960-Present

Nominal GDP	**6.69%**
S&P 500 Stock Price	**6.75%**
S&P 500 EPS	**6.92%**
S&P 500 DPS	**5.64%**
Average	**6.50%**

The results are presented graphically on page 2 of Attachment JRW-14. In sum, the historical long-run growth rates for GDP, S&P EPS, and S&P DPS are in the 5% to 7% range. By comparison, Dr. Avera's long-run growth rate projection of 10.1% is vastly overstated. These estimates suggest that companies in the U.S. would be expected to: (1) increase their growth rate of EPS by over 50% in the future, and (2) maintain that growth indefinitely in an economy that is expected to grow at about one-half of his projected growth rates.

Q86. DO MORE RECENT DATA SUGGEST THAT THE U.S. ECONOMY GROWTH IS FASTER OR SLOWER THAN THE LONG-TERM DATA?

A86. The more recent trends suggest lower future economic growth than the long-term historic GDP growth. The historic GDP growth rates for 10-, 20-, 30-, 40- and 50-years, as presented in Panel A of page 3 of Attachment JRW-14 and in the table below.

Historic GDP Growth Rates

10-year Average	**3.9%**
20-Year Average	**4.6%**
30-Year Average	**5.2%**
40-Year Average	**6.4%**
50-Year Average	**6.8%**

These data clearly suggest that nominal GDP growth in recent decades has slowed to the 4.0% to 5.0% area.

Q87. WHAT LEVEL OF GDP GROWTH IS FORECASTED BY ECONOMISTS AND VARIOUS GOVERNMENT AGENCIES?

A87. There are several forecasts of annual GDP growth that are available from economists and government agencies. These are listed in Panel B of page 3 of Attachment JRW-14. The mean ten-year nominal GDP growth forecast (as of February 2014) by economists in the recent *Survey of Professional Forecasters* is 4.9%. The Energy Information Administration (EIA), in its projections used in preparing *Annual Energy Outlook,* forecasts long-term nominal GDP growth of 4.5% for the period 2011-2040. The Congressional Budget Office, in its forecasts for the period 2014 to 2024, projects a nominal GDP growth rate of 4.8%.

Q88. WHY IS GDP GROWTH RELEVANT IN YOUR DISCUSSION OF DR. AVERA'S USE OF THE LONG-TERM EPS GROWTH RATES IN DEVELOPING A MARKET RISK PREMIUM FOR HIS CAPM?

A88. Because, as indicated in recent research, the long-term earnings growth rates of companies are limited to the growth rate in GDP.

Q89. PLEASE DISCUSS RECENT RESEARCH ON ECONOMIC AND EARNINGS GROWTH AND EQUITY RETURNS.

A89. Brad Cornell of the California Institute of Technology recently published a study on GDP growth, earnings growth, and equity returns. He finds that long-term EPS growth in the U.S. is directly related GDP growth, with GDP growth providing an upward limit on EPS growth. In addition, he finds that long-term

stock returns are determined by long-term earnings growth. He concludes with the following observations:[28]

> The long-run performance of equity investments is fundamentally linked to growth in earnings. Earnings growth, in turn, depends on growth in real GDP. This article demonstrates that both theoretical research and empirical research in development economics suggest relatively strict limits on future growth. In particular, real GDP growth in excess of 3 percent in the long run is highly unlikely in the developed world. In light of ongoing dilution in earnings per share, this finding implies that investors should anticipate real returns on U.S. common stocks to average no more than about 4–5 percent in real terms.

Given current inflation in the 2% to 3% range, the results imply nominal expected stock market returns in the 7% to 8% range. As such, Dr. Avera's projected earnings growth rates and implied expected stock market returns and equity risk premiums are not indicative of the realities of the U.S. economy and stock market. As such, his expected CAPM equity cost rate is significantly overstated.

[28] Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* (January-February, 2010), p. 63.

Q90. PLEASE PROVIDE A SUMMARY ASSESSMENT OF DR. AVERA'S PROJECTED EQUITY RISK PREMIUM DERIVED FROM EXPECTED MARKET RETURNS.

A90. Dr. Avera's market risk premium derived from his DCF application to the S&P 500 is inflated due to errors and bias in his study. Investment banks, consulting firms, and CFOs use the equity risk premium concept every day in making financing, investment, and valuation decisions. On this issue, the opinions of CFOs and financial forecasters are especially relevant. CFOs deal with capital markets on an ongoing basis because they must continually assess and evaluate capital costs for their companies. They are well aware of the historical stock and bond return studies of Ibbotson. The CFOs in the March 2014 *CFO Magazine* – Duke University Survey of over almost 350 CFOs shows an expected return on the S&P 500 of 6.5% over the next ten years. In addition, the financial forecasters in the February 2014 Federal Reserve Bank of Philadelphia survey expect an annual market return of 6.43% over the next ten years. As such, with a more realistic equity or market risk premium, the appropriate equity cost rate for a public utility should be in the 8.0% to 9.0% range and not in the 10.0% to 11.0% range.

Q91. PLEASE DISCUSS DR. AVERA'S SIZE ADJUSTMENT IN HIS CAPITAL ASSETS PRICING MODEL APPROACH.

A91. Dr. Avera includes a size adjustment in his ECAPM approach for the size of the companies in the utility group. This adjustment is based on the historical stock market returns studies as performed by Morningstar (formerly Ibbotson

Associates). There are numerous errors in using historical market returns to compute risk premiums. These errors provide inflated estimates of expected risk premiums. Among the errors are survivorship bias (only successful companies survive – poor companies do not survive) and unattainable return bias (the Ibbotson procedure presumes monthly portfolio rebalancing). The net result is that Ibbotson's size premiums are poor measures for risk adjustment to account for the size of the Utility.

In addition, Professor Annie Wong has tested for a size premium in utilities and concluded that, unlike industrial stocks, utility stocks do not exhibit a significant size premium.[29] As explained by Professor Wong, there are several reasons why such a size premium would not be attributable to utilities. Utilities are regulated closely by state and federal agencies and commissions, and hence, their financial performance is monitored on an ongoing basis by both the state and federal governments. In addition, public utilities must gain approval from government entities for common financial transactions such as the sale of securities. Furthermore, unlike their industrial counterparts, accounting standards and reporting are fairly standardized for public utilities. Finally, a utility's earnings are predetermined to a certain degree through the ratemaking process in which performance is reviewed by state commissions and other interested parties. Overall, in terms of regulation, government oversight, performance review,

[29] Annie Wong, "Utility Stocks and the Size Effect: An Empirical Analysis," *Journal of the Midwest Finance Association*, pp. 95-101, (1993).

accounting standards, and information disclosure, utilities are much different than industrials, which could account for the lack of a size premium.

Q92. PLEASE DISCUSS THE RESEARCH ON THE SIZE PREMIUM IN ESTIMATING THE EQUITY COST RATE.

A92. As noted, there are errors in using historical market returns to compute risk premiums. With respect to the small firm premium, Richard Roll (1983) found that one-half of the historic return premium for small companies disappears once biases are eliminated and historic returns are properly computed. The error arises from the assumption of monthly portfolio rebalancing and the serial correlation in historic small firm returns.[30]

In a more recent paper, Ching-Chih Lu (2009) estimated the size premium over the long-run. Lu acknowledges that many studies have demonstrated that smaller companies have historically earned higher stock market returns. However, Lu highlights that these studies rebalance the size portfolios on an annual basis. This means that at the end of each year the stocks are sorted based on size, split into deciles, and the returns are computed over the next year for each stock decile. This annual rebalancing creates the problem. Using a size premium in estimating a CAPM equity cost rate requires that a firm carry the extra size premium in its discount factor for an extended period of time, not just for one year, which is the

[30] *See* Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics*, pp. 371-86, (1983).

presumption with annual rebalancing. Through an analysis of small firm stock returns for longer time periods (and without annual rebalancing), Lu finds that the size premium disappears within two years. Lu's conclusion with respect to the size premium is:[31]

> However, an analysis of the evolution of the size premium will show that it is inappropriate to attach a fixed amount of premium to the cost of equity of a firm simply because of its current market capitalization. For a small stock portfolio which does not rebalance since the day it was constructed, its annual return and the size premium are all declining over years instead of staying at a relatively stable level. This confirms that a small firm should not be expected to have a higher size premium going forward sheerly because it is small now.

C. UTILITY RISK PREMIUM APPROACH

Q93. PLEASE DISCUSS DR. AVERA'S UTILITY RISK PREMIUM APPROACH.

A93. At pages 40-43 of his testimony and in Exhibit No. WEA-7, Dr. Avera estimates equity cost rate of 10.4% using a current bond yield and 11.3% using a projected bond yield. Dr. Avera develops an equity cost rate by: (1) regressing the annual authorized returns on equity for electric utility companies from 1974 to 2012 time

[31] Ching-Chih Lu, "The Size Premium in the Long Run," 2009 Working Paper, SSRN abstract no. 1368705.

period Moody's long-term public utility bond yields; and (2) adding the appropriate risk premium established in (1) to a current and projected Moody's long-term public utility bond yields of 4.85% and 6.33%.

Q94. WHAT ARE THE ISSUES WITH DR. AVERA'S RP APPROACH?

A94. This approach overstates the equity cost rate for the Company in several ways.

First, the base yield is in excess of investor return requirements. This is because the base yield, the rate on Moody's utility bonds, is subject to credit risk. With credit risk, the expected return on the bond is below the yield-to-maturity. Hence, the yield-to-maturity of the bond is above the expected return.

Second, the methodology produces an inflated measure of the risk premium because the approach uses historic authorized ROEs and utility bond yields, and the resulting risk premium is applied to projected utility bond yields. Because interest rates are always forecasted to increase, the resulting risk premium would be smaller if done correctly which would be to use projected utility bond yields in the analysis and not historic Treasury yields.

Third, and more importantly, the risk premium is not necessarily applicable to measure a utility investors' required rate of return. Dr. Avera's URP approach is a gauge of *commission* behavior and not *investor* behavior. Capital costs are determined in the market place through the financial decisions of investors and

are reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors' assessment of the risk and expected return of different investments. Regulatory commissions evaluate capital market data in setting authorized ROEs, but also take into account other utility- and rate case-specific information in setting ROEs. As such, Dr. Avera's approach and results reflects other factors such as capital structure, credit ratings and other risk measures, service territory, capital expenditures, energy supply issues, rate design, investment and expense trackers, and other factors used by utility commissions in determining an appropriate ROE in addition to capital costs. This may especially true when the authorized ROE data includes the results of rate cases that are settled and not fully litigated.

Finally, Dr. Avera's methodology produces an inflated required rate of return because the utilities have been selling at market-to-book ratios in excess of 1.0 for many years. This indicates that the authorized rates of return have been greater than the return that investors require. Therefore, the risk premium produced from the study is overstated as a measure of investor return requirements and produced an inflated equity cost rate.

D. FLOTATION COSTS

Q95. PLEASE DISCUSS DR. AVERA'S ADJUSTMENT FOR FLOTATION COSTS.

A95. Dr. Avera claims that an upward adjustment of 0.12% to the equity cost rate recommendation to account for flotation costs. This adjustment factor is erroneous for several reasons.

First, he has not identified any flotation costs for AEP Ohio. Therefore, AEP Ohio is requesting annual revenues in the form of a higher return on equity for flotation costs that have not been identified.

Second, it is commonly argued that a flotation cost adjustment (such as that used by the Company) is necessary to prevent the dilution of the existing shareholders' investment. In this case, Dr. Avera justifies a flotation cost adjustment by referring to bonds and the manner in which issuance costs are recovered by including the amortization of bond flotation costs in annual financing costs. However, this is incorrect for several reasons:

(1) If an equity flotation cost adjustment is similar to a debt flotation cost adjustment, the fact that the market-to-book ratios for electric utility companies are over 1.5X actually suggests that there should be a flotation cost reduction (and not an increase) to the equity cost rate. This is because when (a) a bond is issued at a price in excess of face or

book value, and (b) the difference between market price and the book value is greater than the flotation or issuance costs, the cost of that debt is lower than the coupon rate of the debt. The amount by which market values of electric utility companies are in excess of book values is much greater than flotation costs. Hence, if common stock flotation costs were exactly like bond flotation costs, and one was making an explicit flotation cost adjustment to the cost of common equity, the adjustment would be downward;

(2) If a flotation cost adjustment is needed to prevent dilution of existing stockholders' investment, then the reduction of the book value of stockholder investment associated with flotation costs can occur only when a company's stock is selling at a market price at/or below its book value. As noted above, electric utility companies are selling at market prices well in excess of book value. Hence, when new shares are sold, existing shareholders realize an increase in the book value per share of their investment, not a decrease;

(3) Flotation costs consist primarily of the underwriting spread or fee and not out-of-pocket expenses. On a per-share basis, the underwriting spread is the difference between the

price the investment banker receives from investors and the price the investment banker pays to the company. Therefore, these are not expenses that must be recovered through the regulatory process. Furthermore, the underwriting spread is known to the investors who are buying the new issue of stock, and who are well aware of the difference between the price they are paying to buy the stock and the price that the Company is receiving. The offering price which they pay is what matters when investors decide to buy a stock based on its expected return and risk prospects. Therefore, the company is not entitled to an adjustment to the allowed return to account for those costs; and

(4) Flotation costs, in the form of the underwriting spread, are a form of a transaction cost in the market. They represent the difference between the price paid by investors and the amount received by the issuing company. Whereas the Company believes that it should be compensated for these transaction costs, it has not accounted for other market transaction costs in determining its cost of equity. Most notably, brokerage fees that investors pay when they buy shares in the open market are another market transaction cost. Brokerage fees increase the effective stock price paid

by investors to buy shares. If the Company had included these brokerage fees or transaction costs in its DCF analysis, the higher effective stock prices paid for stocks would lead to lower dividend yields and equity cost rates. This would result in a downward adjustment to their DCF equity cost rate.

E. TEST OF REASONABLENESS

Q96. PLEASE DISCUSS DR. AVERA'S EXPECTED EARNINGS ANALYSIS.

A96. At pages 47-51 of his testimony and in Exhibit WEA-9, Dr. Avera estimates equity cost rate of 9.6% for the utility group using an approach he calls the Expected Earnings ("EE") approach. His methodology simply involves using the expected ROE for the companies in the proxy group as estimated by *Value Line.* This approach is fundamentally flawed for several reasons. First, these ROE results include the profits associated with the unregulated operations of the utility proxy group. More importantly, because Dr. Avera has not evaluated the market-to-book ratios for these companies, he cannot indicate whether the past and projected returns on common equity are above or below investors' requirements. These returns on common equity are excessive if the market-to-book ratios for these companies are above 1.0.

Q97. PLEASE DISCUSS THE PROBLEM WITH DR. AVERA'S NON-UTILITY PROXY GROUP.

A97. At pages 50-55 of his testimony and in Exhibit WEA-10, Dr. Avera has estimated an equity cost rate for AEP Ohio using a proxy group of eleven non-utility companies. This group includes such companies as Coca-Cola, General Mills, Kellogg, Kimberly-Clark, McDonald's, PepsiCo, Procter & Gamble, and WalMart. While many of these companies are large and successful, their lines of business are vastly different from the electric utility business and they do not operate in a highly regulated environment. In addition, as discussed below, the upward bias in the EPS growth rate forecasts of Wall Street analysts is particularly severe for non-utility companies and therefore the DCF equity cost rate estimates for this group are particularly overstated.

Q98. SHOULD THE PUCO ACCEPT DR. AVERA'S NON-UTILITY PROXY GROUP?

A98. No. For the reasons explained above, PUCO should reject the equity cost rate results from Dr. Avera's Non-Utility Proxy Group.

Q99. DOES THIS CONCLUDE YOUR TESTIMONY?

A99. Yes. However, I reserve the right to incorporate new information that may subsequently become available.

CERTIFICATE OF SERVICE

It is hereby certified that a true copy of the foregoing *Direct Testimony of J. Randall Woolridge, Ph.D. on Behalf of The Ohio Consumers' Counsel* was served via electronic transmission this 6th day of May, 2014.

/s/ Maureen R. Grady
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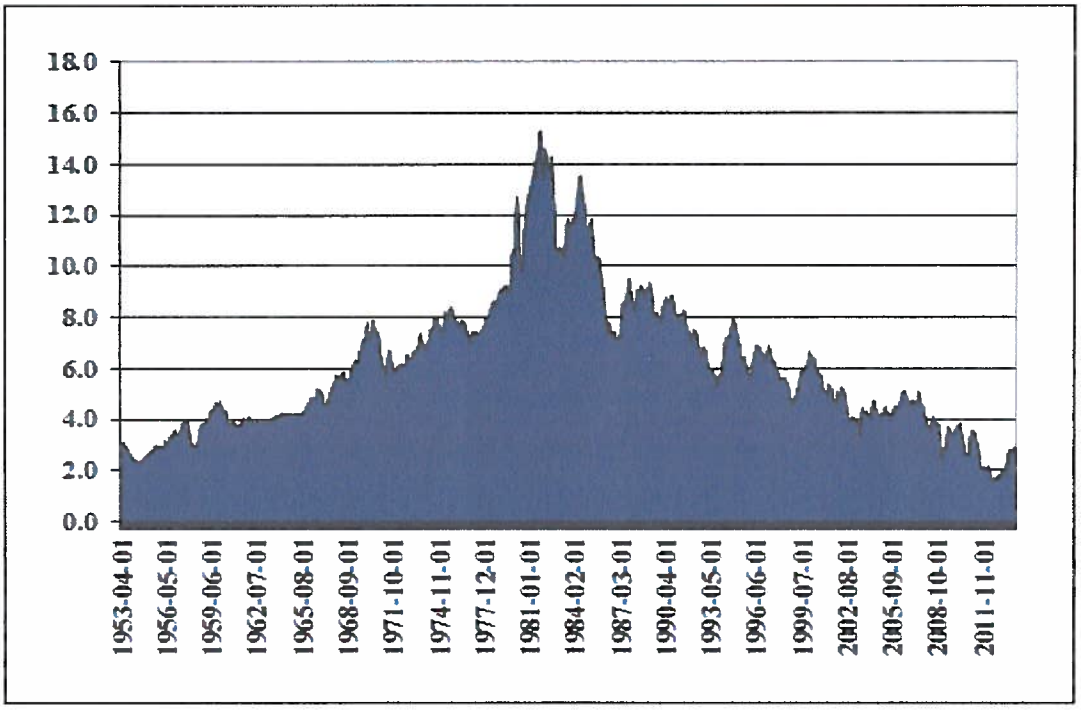
Attachment JRW-1
AEP Ohio
Recommended Cost of Capital

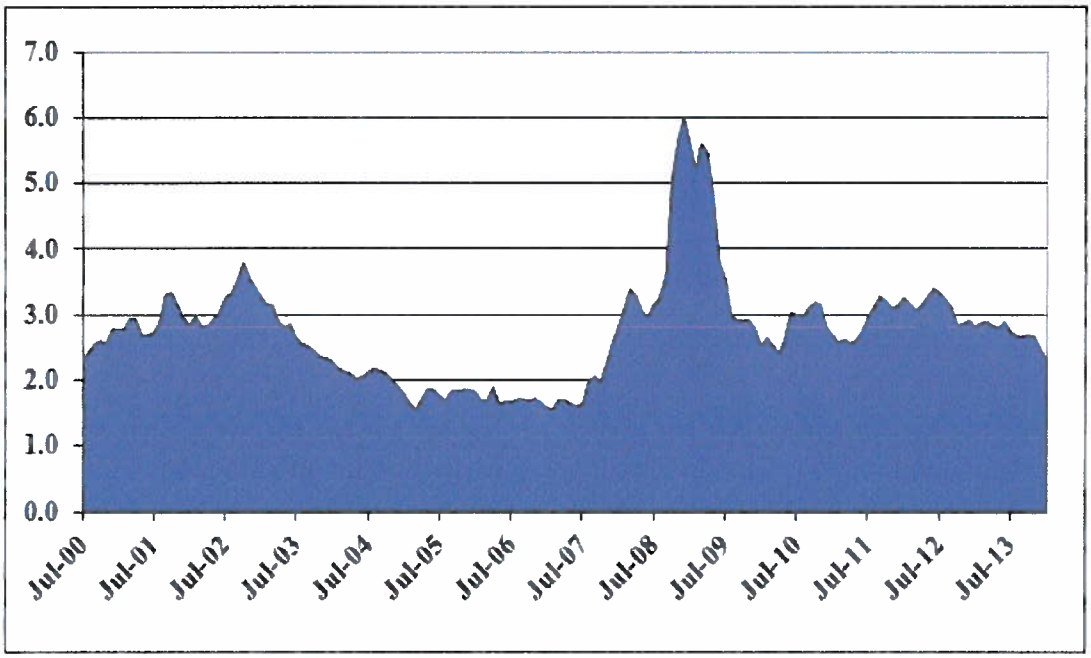
Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	52.50%	6.05%	3.18%
Common Equity	47.50%	8.88%	4.22%
Total	100.00%		7.39%

Attachment JRW-2

Panel A
Ten-Year Treasury Yields
1953-Present

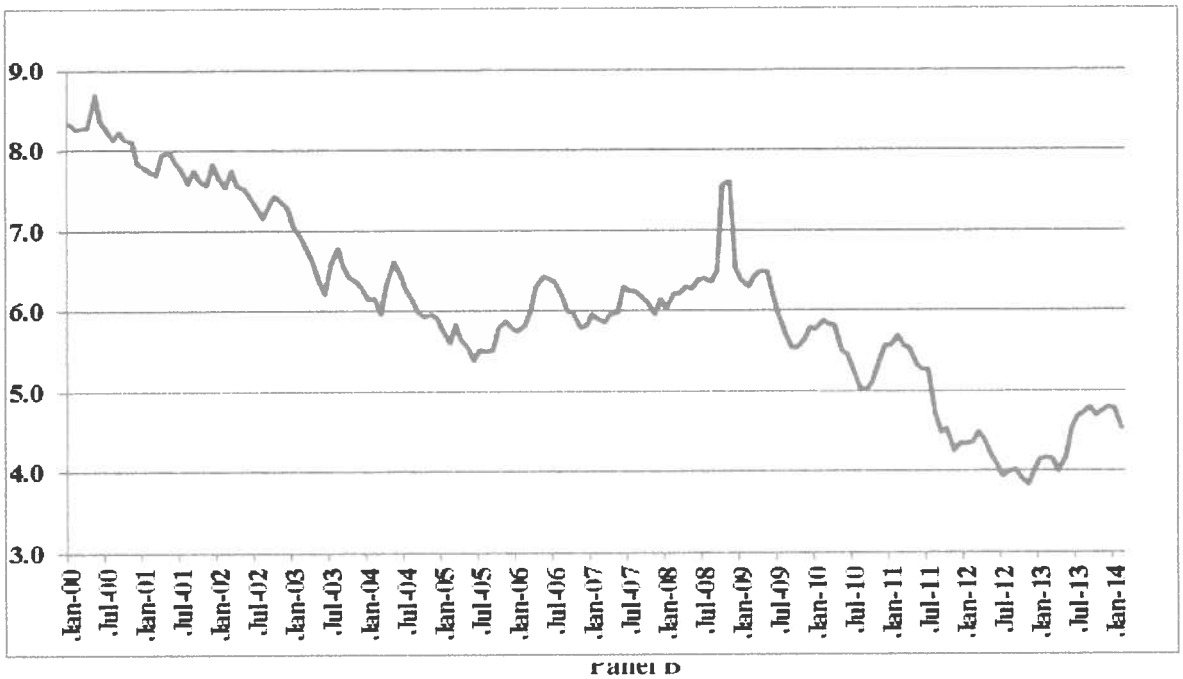


Panel B
Long-Term Moody's Baa Yields Minus Ten-Year Treasury Yields
2000-Present

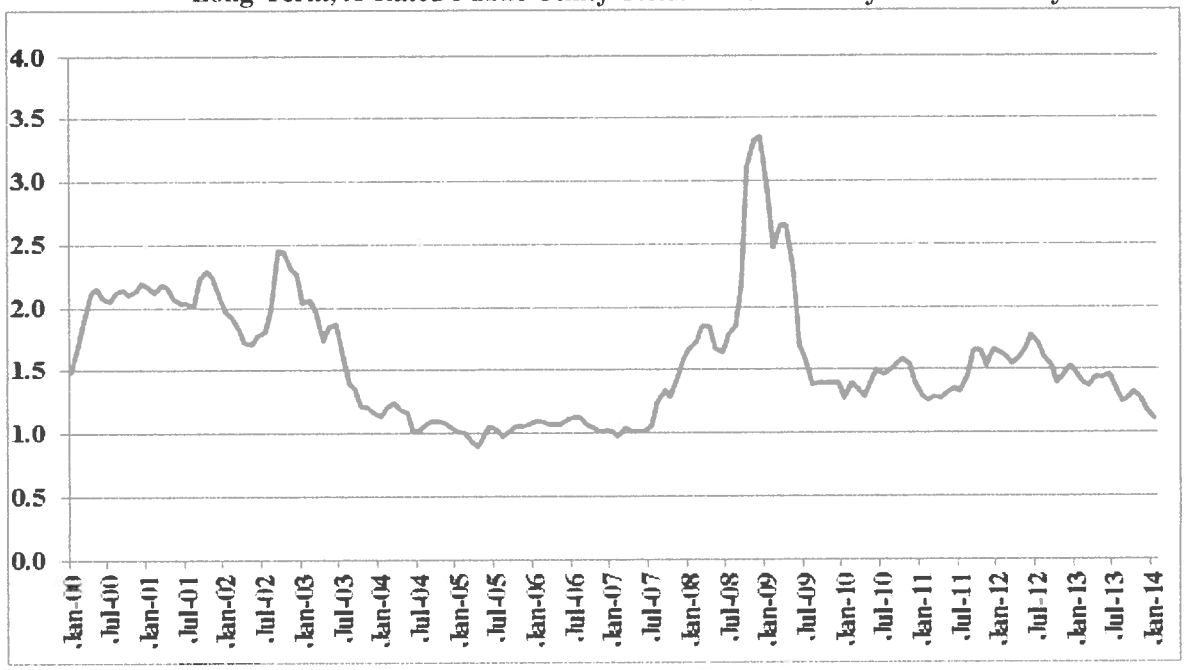


Source: Federal Reserve Bank of St. Louis, FRED Database.

Attachment JRW-3
Panel A
Long-Term, A-Rated Public Utility Yields



Panel B
Long-Term, A-Rated Public Utility Yields minus -Twenty-Year Treasury Yields



Source: Mergent Bond Record

Attachment JRW-4
AEP Ohio
Summary Financial Statistics

Panel A
Electric Proxy Group

Company	Operating Revenue ($mil)	Percent Elec Revenue	Percent Gas Revenue	Net Plant ($mil)	Market Cap ($mil)	S&P Bond Rating	Moody's Bond Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio
ALLETE, Inc. (NYSE-ALE)	1,018.4	91	0	2,576.5	2.1	A-	A3	3.6	MN, WI	54.7	8.2	1.57
Alliant Energy Corporation (NYSE-LNT)	3,276.8	82	14	8,326.5	6.0	A-	A2/A3	3.6	WS,IA,IL,MN	47.7	10.8	1.72
Ameren Corporation (NYSE-AEE)	5,838.0	83	17	16,205.0	9.7	BBB+/BBB	Baa1	2.8	IL,MO	50.0	4.5	1.49
American Electric Power Co. (NYSE-AEP)	15,357.0	89	0	40,997.0	23.8	BBB/BBB-	Baa1	3.5	10 States	45.7	9.5	1.48
Avista Corporation (NYSE-AVA)	1,618.5	64	32	3,202.4	1.8	A-	Baa1	3.2	WA,OR,ID	44.1	8.6	1.37
Black Hills Corporation (NYSE-BKH)	1,275.9	51	42	2,990.3	2.5	BBB	A3/Baa1	3.8	CO,SD,WY,MT	46.9	9.1	1.94
Cleco Corporation (NYSE-CNL)	1,096.7	96	0	3,083.1	3.0	BBB/BBB-	Baa1/Baa2	4.0	LA	54.3	10.4	1.88
CMS Energy Corporation (NYSE-CMS)	6,566.0	64	33	12,246.0	7.5	BBB+/BBB	A3/Baa1	2.9	MI	29.7	13.6	2.19
Consolidated Edison, Inc. (NYSE-ED)	12,353.0	71	15	27,831.0	15.5	A-/BBB+	A3	4.0	NY,PA	49.6	8.8	1.26
Dominion Resources, Inc. (NYSE-D)	13,120.0	55	2	32,628.0	40.5	A-	A3/Baa1	3.7		33.6	15.3	3.48
DTE Energy Company (NYSE-DTE)	9,661.0	54	17	15,800.0	12.5	A-/BBB+	A2/A3	3.3	MI	48.9	8.6	1.58
Duke Energy Corporation (NYSE-DUK)	24,598.0	83	2	69,490.0	48.8	BBB+	A3	2.7	NC,SC,FL,OH,KY	50.1	6.5	1.18
Edison International (NYSE-EIX)	12,581.0	100	0	30,379.0	16.9	BBB+	A2/A3	5.1	CA	44.5	9.5	1.71
El Paso Electric Company (NYSE-EE)	890.4	100	0	2,257.5	1.4	BBB+	Baa1	3.1	TX,NM	48.2	10	1.47
Empire District Electric Co. (NYSE-EDE)	594.3	90	8	1,751.9	1.0	A-	Baa1	3.2	KS,MO,OK,AR	50.1	8.6	1.36
Great Plains Energy Incorporated (NYSE-GXP)	2,446.3	100	0	7,746.4	4.0	BBB	Baa2	2.9	MO,KS	47.4	7.3	1.16
Hawaiian Electric Industries, Inc. (NYSE-HE)	3,238.5	92	0	3,858.9	2.5	BBB-	Baa2	4.2	HI	47.9	9.7	1.46
IDACORP, Inc. (NYSE-IDA)	1,246.2	100	0	3,665.0	2.7	A-	A3	3.5	ID	52.5	10.1	1.47
MGE Energy, Inc. (NYSE-MGEE)	590.9	68	31	1,160.2	13.3	AA-	Aa2	7.1	WI	60.5	12.5	2.15
Nextera Energy (NYSE-NEE)	15,136.0	69	0	52,720.0	40.7	A-/BBB+	A2/A3	3.6	FL	38.8	11.2	2.26
Northeast Utilities (NYSE-NU)	7,301.2	87	12	17,576.2	13.9	A-	A3/Baa1	4.4	CT,NH,MA	50.5	8.3	1.45
NorthWestern Corporation (NYSE-NWE)	1,154.5	75	25	2,690.1	2.0	NR	A3	2.8	SD,MT,NE	43.7	9.6	1.91
Otter Tail Corporation (NDQ-OTTR)	893.3	91	0	1,167.0	1.1	BBB-	Baa2	3.6	ND,SD	54.8	9.4	2.05
Pepco Holdings, Inc. (NYSE-POM)	4,340.0	99	1	9,704.0	5.0	A-/BBB+	Baa2	3.7	DC,MD,VA,NJ	44.7	0.0	1.15
PG&E Corporation (NYSE-PCG)	15,598.0	80	20	41,252.0	20.2	BBB/BBB-	A3/Baa1	2.5	CA	48.8	5.9	1.41
Pinnacle West Capital Corp. (NYSE-PNW)	3,454.6	100	0	10,731.3	5.9	BBB	A3/Baa1	4.4	AZ	53.6	9.9	1.41
PNM Resources, Inc. (NYSE-PNM)	1,387.9	100	0	3,933.9	2.1	BBB	Baa2	2.4	NM,TX	45.8	6.1	1.25
Portland General Electric Company (NYSE-POR)	1,810.0	100	0	4,880.0	2.5	A-	A3	2.5	OR	48.7	5.9	1.37
PPL Corporation (NYSE-PPL)	11,860.0	58	0	33,087.0	20.3	A-	Baa1/Baa2	3.2	PA,KY	36.6	9.8	1.63
SCANA Corporation (NYSE-SCG)	4,495.0	54	21	11,643.0	7.0	BBB+	Baa1/Baa2	3.3	SC,NC,GA	44.5	10.7	1.50
Southern Company (NYSE-SO)	17,087.0	94	0	51,208.0	38.0	A	A3/Baa1	5.2	GA,AL,FL,MS	46.0	8.5	1.92
Westar Energy, Inc. (NYSE-WR)	2,370.7	100	0	7,551.9	4.4	A-	A3/Baa1	3.4	KS	46.1	9.8	1.43
Wisconsin Energy Corporation (NYSE-WEC)	4,519.0	73	25	10,906.6	10.1	A-/BBB+	A1/A2	3.9	WI	44.7	13.7	2.38
Xcel Energy Inc. (NYSE-XEL)	10,914.9	83	17	26,122.2	14.8	A-	A3	3.7	MN,WI,ND,SD,MI	44.5	10.3	1.55
Mean	6,461.4	82	10	16,804.9	11.9	A-/BBB+	A3/Baa1	3.6		47.0	9.1	1.66
Median	3,897.3	85	2	10,217.7	6.5	A-/BBB+	A3/Baa1	3.6		47.6	9.5	1.49
American Electric Power Co. (NYSE-AEP)	15,357.0	89	0	40,997.0	23.8	BBB/BBB-	Baa1	3.2	10 States	45.7	9.5	1.48

Data Source: *AUS Utility Reports* April, 2014. Pre-Tax Interest Coverage and Primary Service Territory are from *Value Line Investment Survey*, 2014.

Panel B
Avera Proxy Group

Company	Operating Revenue ($mil)	Percent Elec Revenue	Percent Gas Revenue	Net Plant ($mil)	Market Cap ($mil)	S&P Bond Rating	Moody's Bond Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio
ALLETE, Inc. (NYSE-ALE)	1,018.4	91	0	2,576.5	2.1	A-	A3	3.6	MN, WI	54.7	8.2	1.57
Ameren Corporation (NYSE-AEE)	5,838.0	83	17	16,205.0	9.7	BBB+/BBB	Baa1	2.8	IL,MO	50.0	4.5	1.49
American Electric Power Co. (NYSE-AEP)	15,357.0	89	0	40,997.0	23.8	BBB/BBB-	Baa1	3.5	10 States	45.7	9.5	1.48
Black Hills Corporation (NYSE-BKH)	1,275.9	51	42	2,990.3	2.5	BBB	A3/Baa1	3.8	CO,SD,WY,MT	46.9	9.1	1.94
CMS Energy Corporation (NYSE-CMS)	6,566.0	64	33	12,246.0	7.5	BBB+/BBB	A3/Baa1	2.9	MI	29.7	13.6	2.19
DTE Energy Company (NYSE-DTE)	9,661.0	54	17	15,800.0	12.5	A-/BBB+	A2/A3	3.3	MI	48.9	8.6	1.58
Duke Energy Corporation (NYSE-DUK)	24,598.0	83	2	69,490.0	48.8	BBB+	A3	2.7	NC,SC,FL,OH,KY	50.1	6.5	1.18
Edison International (NYSE-EIX)	12,581.0	100	0	30,379.0	16.9	BBB+	A2/A3	5.1	CA	44.5	9.5	1.71
Great Plains Energy Incorporated (NYSE-GXP)	2,446.3	100	0	7,746.4	4.0	BBB	Baa2	2.9	MO,KS	47.4	7.3	1.16
Hawaiian Electric Industries, Inc. (NYSE-HE)	3,238.5	92	0	3,858.9	2.5	BBB-	Baa2	4.2	HI	47.9	9.7	1.46
IDACORP, Inc. (NYSE-IDA)	1,246.2	100	0	3,665.0	2.7	A-	A3	3.5	ID	52.5	10.1	1.47
Pepco Holdings, Inc. (NYSE-POM)	4,340.0	99	1	9,704.0	5.0	A-/BBB+	Baa2	3.7	DC,MD,VA,NJ	44.7	0.0	1.15
PG&E Corporation (NYSE-PCG)	15,598.0	80	20	41,252.0	20.2	BBB/BBB-	A3/Baa1	2.5	CA	48.8	5.9	1.41
Portland General Electric Company (NYSE-POR)	1,810.0	100	0	4,880.0	2.5	A-	A3	2.5	OR	48.7	5.9	1.37
PPL Corporation (NYSE-PPL)	11,860.0	58	0	33,087.0	20.3	A-	Baa1/Baa2	3.2	PA,KY	36.6	9.8	1.63
SCANA Corporation (NYSE-SCG)	4,495.0	54	21	11,643.0	7.0	BBB+	Baa1/Baa2	3.3	SC,NC,GA	44.5	10.7	1.50
SEMPRA Energy (NYSE-SRE)	10,523.0	34	39	24,763.0	23.1	A/A-	A2/A3	3.0	CA	45.0	9.7	2.13
Westar Energy, Inc. (NYSE-WR)	2,370.7	100	0	7,551.9	4.4	A-	A3/Baa1	3.4	KS	46.1	9.8	1.43
Mean	7,390.2	80	11	18,824.2	12.0	BBB+	A3/Baa1	3.3		46.3	8.2	1.55
Median	5,166.5	86	1	11,944.5	7.3	BBB+	A3/Baa1	3.3		47.2	9.3	1.48

Attachment JRW-4

AEP Ohio

Value Line Risk Metrics

Panel A

Electric Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
ALLETE, Inc. (NYSE-ALE)	0.70	A	2	80	100
Alliant Energy Corporation (NYSE-LNT)	0.75	A	2	75	95
Ameren Corporation (NYSE-AEE)	0.80	B++	3	85	95
American Electric Power Co. (NYSE-AEP)	0.70	B++	3	90	100
Avista Corporation (NYSE-AVA)	0.70	A	2	65	95
Black Hills Corporation (NYSE-BKH)	0.85	B+	3	35	90
Cleco Corporation (NYSE-CNL)	0.65	A	1	80	100
CMS Energy Corporation (NYSE-CMS)	0.75	B+	3	60	95
Consolidated Edison, Inc. (NYSE-ED)	0.60	A+	1	85	100
Dominion Resources, Inc. (NYSE-D)	0.70	B++	2	75	100
DTE Energy Company (NYSE-DTE)	0.75	B++	2	90	100
Duke Energy Corporation (NYSE-DUK)	0.60	A	2	75	100
Edison International (NYSE-EIX)	0.75	B++	2	80	95
El Paso Electric Company (NYSE-EE)	0.70	B++	2	85	95
Empire District Electric Co. (NYSE-EDE)	0.70	B++	2	85	100
Great Plains Energy Incorporated (NYSE-GXP)	0.80	B+	3	70	90
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.70	B++	2	65	90
IDACORP, Inc. (NYSE-IDA)	0.70	B++	2	85	100
MGE Energy, Inc. (NYSE-MGEE)	0.60	A	1	95	100
Nextera Energy (NYSE-NEE)	0.70	A	2	80	100
Northeast Utilities (NYSE-NU)	0.75	B++	2	65	100
NorthWestern Corporation (NYSE-NWE)	0.70	B+	3	90	100
Otter Tail Corporation (NDQ-OTTR)	0.90	B+	3	50	80
Pepco Holdings, Inc. (NYSE-POM)	0.75	B	3	70	95
PG&E Corporation (NYSE-PCG)	0.55	B+	3	85	100
Pinnacle West Capital Corp. (NYSE-PNW)	0.70	A	1	65	100
PNM Resources, Inc. (NYSE-PNM)	0.90	B	3	15	80
Portland General Electric Company (NYSE-POI	0.75	B++	2	50	100
PPL Corporation (NYSE-PPL)	0.65	B++	3	60	95
SCANA Corporation (NYSE-SCG)	0.65	B++	2	100	100
Southern Company (NYSE-SO)	0.55	A	1	100	100
Westar Energy, Inc. (NYSE-WR)	0.75	B++	2	75	100
Wisconsin Energy Corporation (NYSE-WEC)	0.65	A	1	95	100
Xcel Energy Inc. (NYSE-XEL)	0.65	B++	2	100	100
Mean	0.71	B++	2	75	97
Median	0.70	B++	2	80	100

Data Source: *Value Line Investment Survey*, 2014.

American Electric Power Co. (NYSE-AEP)	0.70	B++	3	90	100

Panel B

Avera Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
ALLETE, Inc. (NYSE-ALE)	0.70	A	2	80	100
Ameren Corporation (NYSE-AEE)	0.80	B++	3	85	95
American Electric Power Co. (NYSE-AEP)	0.70	B++	3	90	100
Black Hills Corporation (NYSE-BKH)	0.85	B+	3	35	90
CMS Energy Corporation (NYSE-CMS)	0.75	B+	3	60	95
Consolidated Edison, Inc. (NYSE-ED)	0.60	A+	1	85	100
Duke Energy Corporation (NYSE-DUK)	0.60	A	2	75	100
Edison International (NYSE-EIX)	0.75	B++	2	80	95
Great Plains Energy Incorporated (NYSE-GXP)	0.80	B+	3	70	90
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.70	B++	2	65	90
IDACORP, Inc. (NYSE-IDA)	0.70	B++	2	85	100
Pepco Holdings, Inc. (NYSE-POM)	0.75	B	3	70	95
PG&E Corporation (NYSE-PCG)	0.55	B+	3	85	100
Portland General Electric Company (NYSE-POI	0.75	B++	2	50	100
PPL Corporation (NYSE-PPL)	0.65	B++	3	60	95
SCANA Corporation (NYSE-SCG)	0.65	B++	2	100	100
SEMPRA Energy (NYSE-SRE)	0.80	A	2	95	95
Westar Energy, Inc. (NYSE-WR)	0.75	B++	2	75	100
Mean	0.71	B++	2	75	97
Median	0.73	B++	2	78	98

Data Source: *Value Line Investment Survey*, 2014.

Attachment JRW-5
AEP Ohio
Capital Structure Ratios and Debt Cost Rates

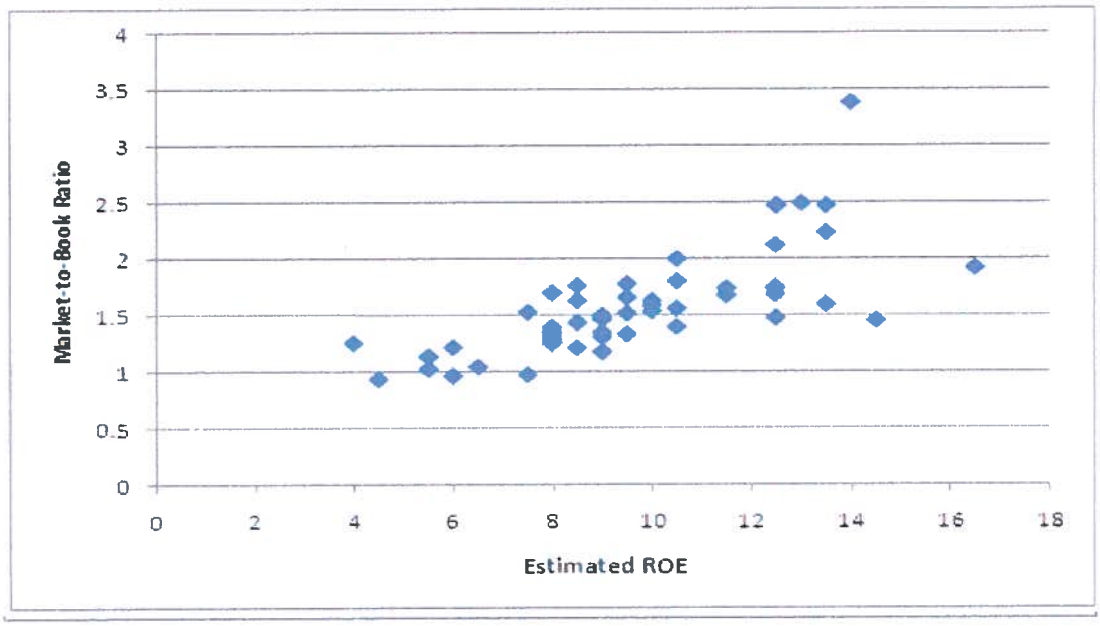
Panel A -AEP Ohio's Proposed Capitalization Ratios and Debt Cost Rate

Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	52.50%	6.05%
Common Equity	47.50%	
Total	100.00%	

Panel B -OCC's Proposed Capitalization Ratios and Cost Rates

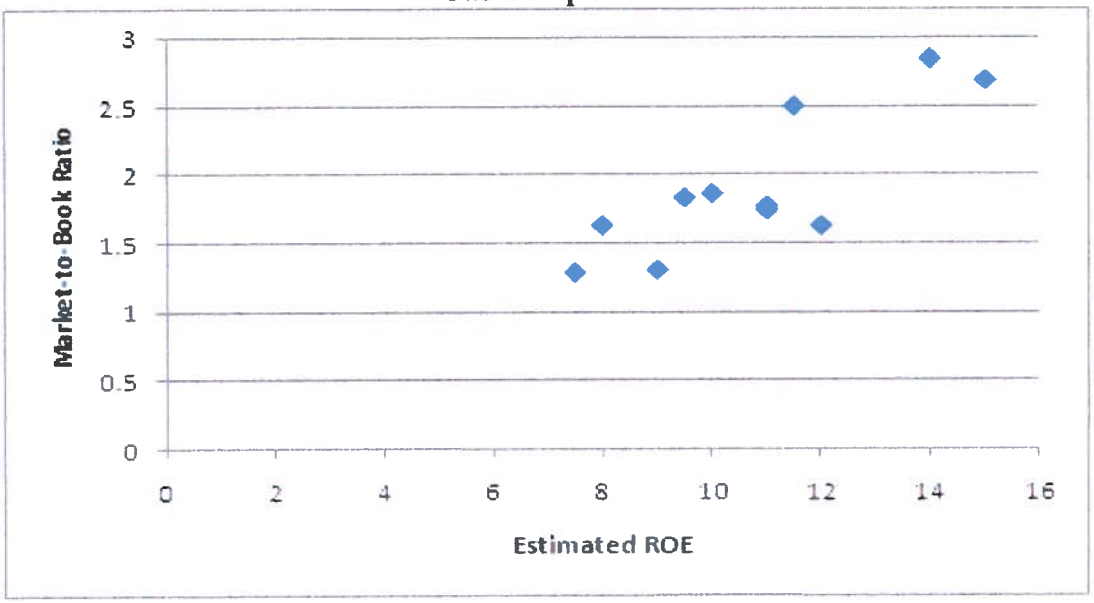
Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	52.50%	6.05%
Common Equity	47.50%	
Total	100.00%	

Attachment JRW-6
Electric Utilities
Panel A



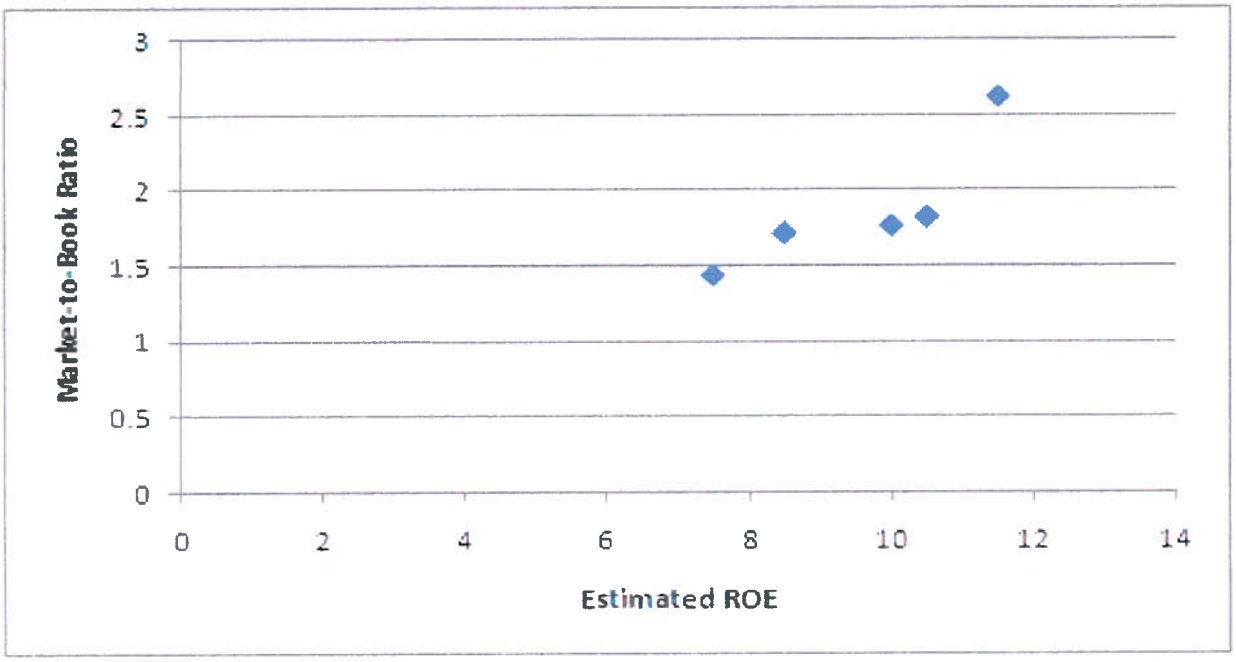
R-Square = .52, N=51.

Panel B
Gas Companies



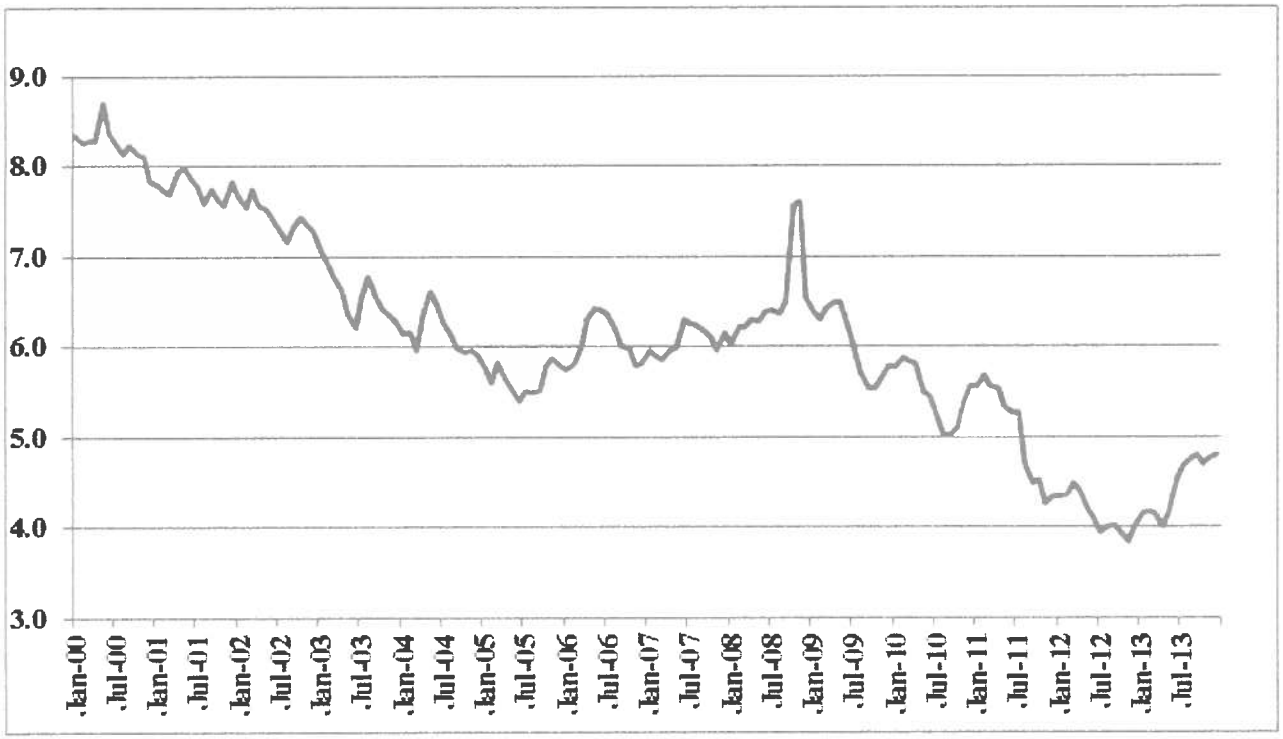
R-Square = .71, N=11.

Attachment JRW-6
Water Companies
Panel C



R-Square = .77, N=5.

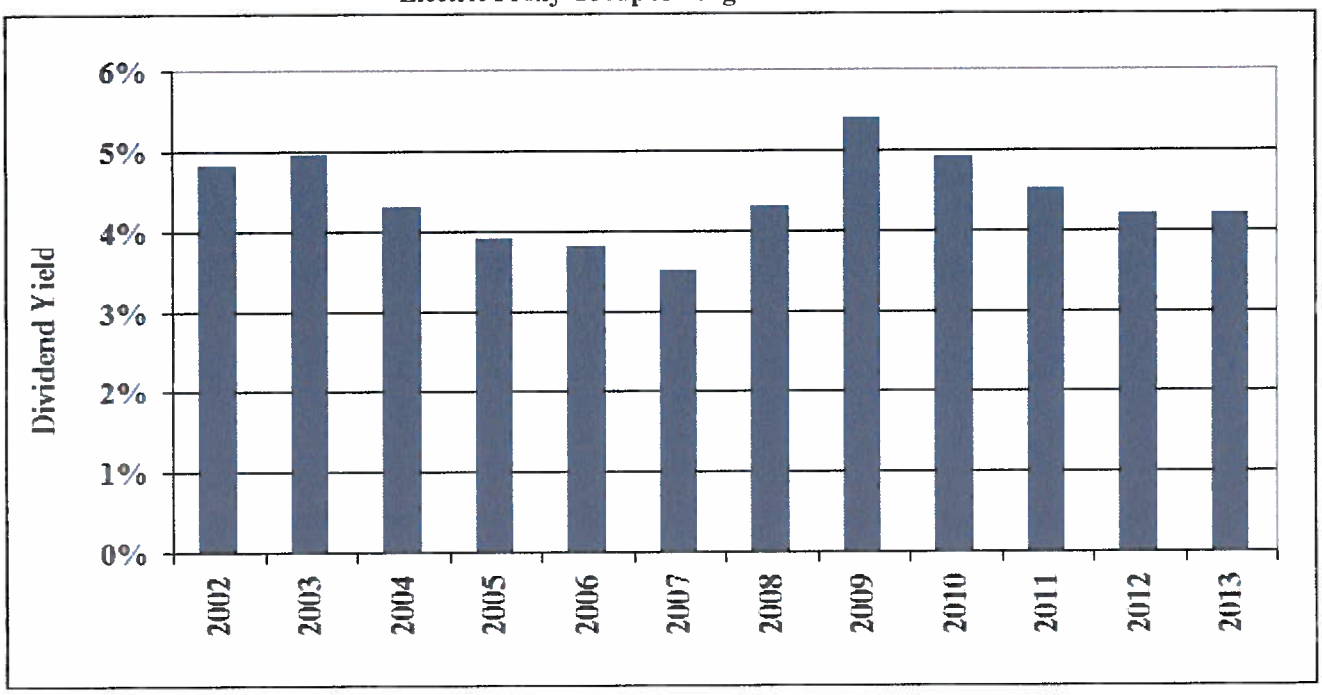
Attachment JRW-7
Long-Term 'A' Rated Public Utility Bonds



Data Source: Mergent Bond Record

Attachment JRW-7

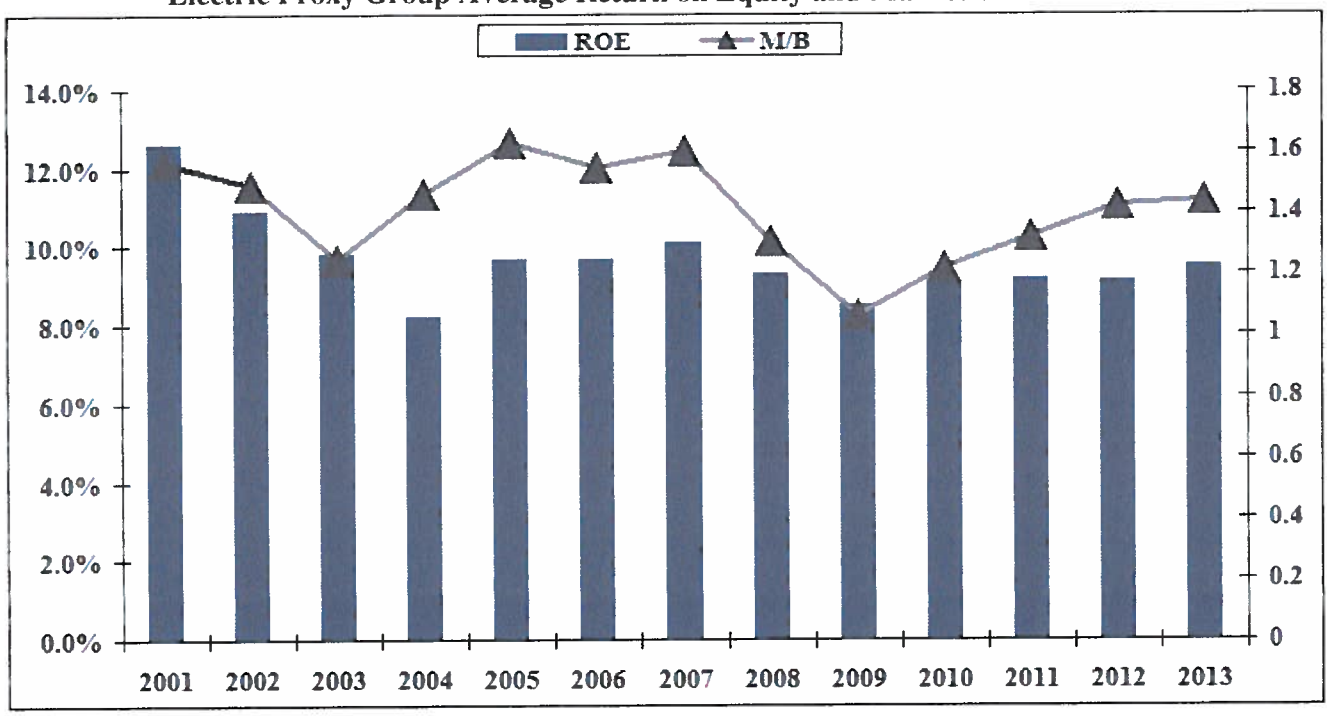
Electric Proxy Group Average Dividend Yield



Data Source: *Value Line Investment Survey.*

Attachment JRW-7

Electric Proxy Group Average Return on Equity and Market-to-Book Ratios



Data Source: *Value Line Investment Survey.*

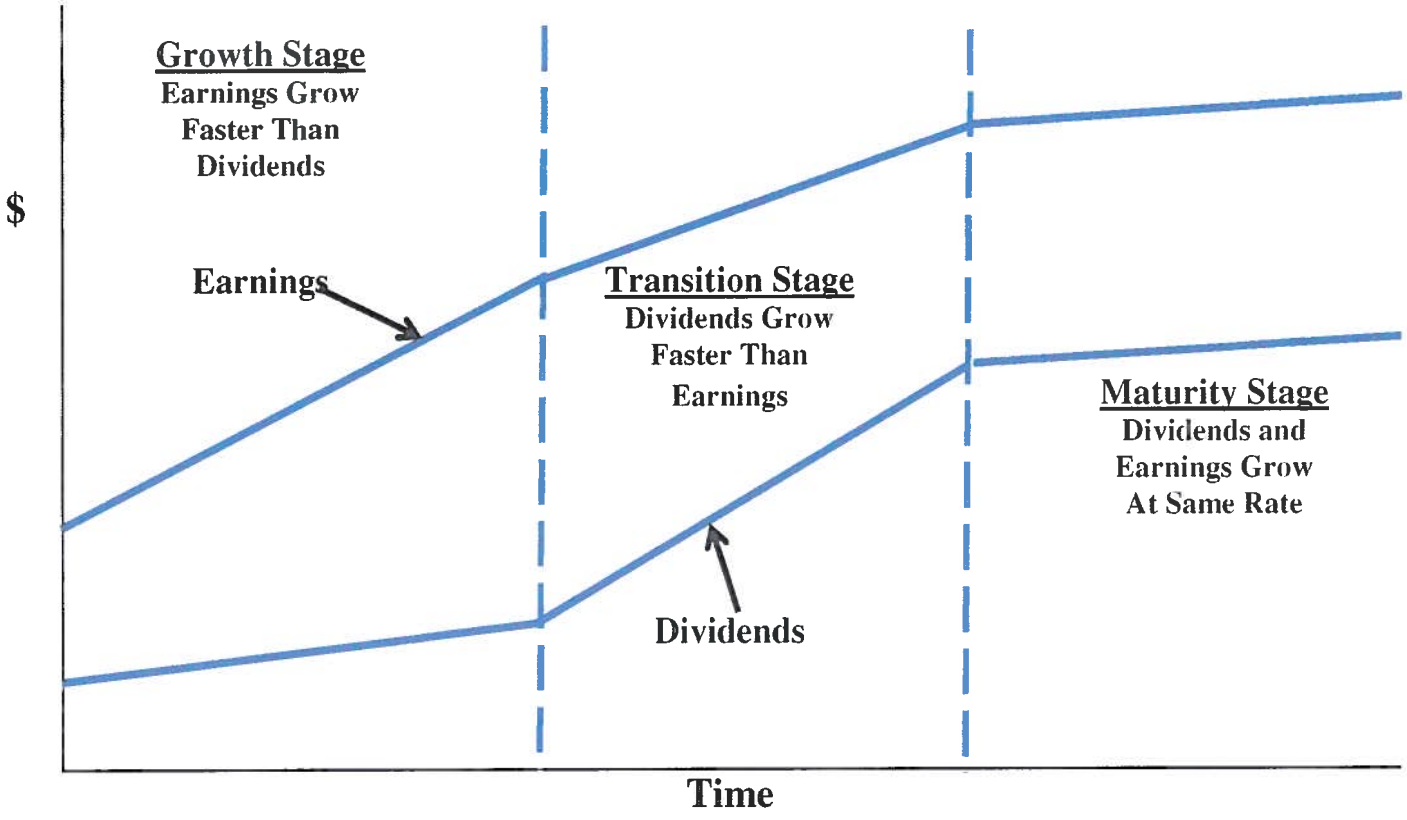
Attachment JRW-8

Industry Average Betas

Industry Name	No.	Beta	Industry Name	No.	Beta	Industry Name	No.	Beta
Public/Private Equity	11	2.18	Natural Gas (Div.)	29	1.33	IT Services	60	1.06
Advertising	31	2.02	Financial Svcs. (Div.)	225	1.31	Retail Building Supply	8	1.04
Furn/Home Furnishings	35	1.81	Toiletries/Cosmetics	15	1.30	Computer Software	184	1.04
Heavy Truck & Equip	21	1.80	Apparel	57	1.30	Med Supp Non-Invasiv	146	1.03
Semiconductor Equip	12	1.79	Computers/Peripherals	87	1.30	Biotechnology	158	1.03
Retail (Hardlines)	75	1.77	Retail Store	37	1.29	E-Commerce	57	1.03
Newspaper	13	1.76	Chemical (Specialty)	70	1.28	Telecom. Equipment	99	1.02
Hotel/Gaming	51	1.74	Precision Instrument	77	1.28	Pipeline MLPs	27	0.98
Auto Parts	51	1.70	Wireless Networking	57	1.27	Telecom. Services	74	0.98
Steel	32	1.68	Restaurant	63	1.27	Oil/Gas Distribution	13	0.96
Entertainment	77	1.63	Shoe	19	1.25	Utility (Foreign)	4	0.96
Metal Fabricating	24	1.59	Publishing	24	1.25	Industrial Services	137	0.93
Automotive	12	1.59	Trucking	36	1.24	Bank (Midwest)	45	0.93
Insurance (Life)	30	1.58	Human Resources	23	1.24	Reinsurance	13	0.93
Oilfield Svcs/Equip.	93	1.55	Entertainment Tech	40	1.23	Food Processing	112	0.91
Coal	20	1.53	Engineering & Const	25	1.22	Medical Services	122	0.91
Chemical (Diversified)	31	1.51	Air Transport	36	1.21	Insurance (Prop/Cas.)	49	0.91
Building Materials	45	1.50	Machinery	100	1.20	Beverage	34	0.88
Semiconductor	141	1.50	Securities Brokerage	28	1.20	Telecom. Utility	25	0.88
R.E.I.T.	5	1.47	Petroleum (Integrated)	20	1.18	Tobacco	11	0.85
Homebuilding	23	1.45	Healthcare Information	25	1.17	Med Supp Invasive	83	0.85
Recreation	56	1.45	Packaging & Container	26	1.16	Educational Services	34	0.83
Railroad	12	1.44	Precious Metals	84	1.15	Environmental	82	0.81
Retail (Softlines)	47	1.44	Diversified Co.	107	1.14	Bank	426	0.77
Maritime	52	1.40	Funeral Services	6	1.14	Electric Util. (Central)	21	0.75
Office Equip/Supplies	24	1.38	Property Management	31	1.13	Electric Utility (West)	14	0.75
Cable TV	21	1.37	Pharmacy Services	19	1.12	Retail/Wholesale Food	30	0.75
Retail Automotive	20	1.37	Drug	279	1.12	Thrift	148	0.71
Chemical (Basic)	16	1.36	Aerospace/Defense	64	1.10	Electric Utility (East)	21	0.70
Paper/Forest Products	32	1.36	Foreign Electronics	9	1.09	Natural Gas Utility	22	0.66
Power	93	1.35	Internet	186	1.09	Water Utility	11	0.66
Petroleum (Producing)	176	1.34	Information Services	27	1.07	Total Market	5891	1.15
Electrical Equipment	68	1.33	Household Products	26	1.07			
Metals & Mining (Div.)	73	1.33	Electronics	139	1.07			

Source: Damodaran Online 2012 - http://pages.stern.nyu.edu/~adamodar/

Attachment JRW-9
DCF Model



Source: William F. Sharpe, Gordon J. Alexander, and Jeffrey V. Bailey, Investments (Prentice-Hall, 1995), pp. 590-91.

Attachment JRW-9
DCF Model
Consensus Earnings Estimates
Alliant Energy Corp ("LNT")
www.reuters.com
4/5/2014

	# of Estimates	Mean	High	Low
Earnings (per share)				
Quarter Ending Jun-14	3	0.55	0.60	0.45
Quarter Ending Sep-14	3	1.57	1.76	1.46
Year Ending Dec-14	10	3.40	3.48	3.36
Year Ending Dec-15	10	3.61	3.94	3.51
LT Growth Rate (%)	3	5.60	6.00	4.80

Data Source: www.reuters.com

Attachment JRW-10

AEP Ohio
Discounted Cash Flow Analysis

Panel A
Electric Proxy Group

Dividend Yield*	3.90%
Adjustment Factor	1.025
Adjusted Dividend Yield	4.0%
Growth Rate**	5.00%
Equity Cost Rate	9.0%

* Page 2 of Attachment JRW-10

** Based on data provided on pages 3, 4, 5, and 6 of Attachment JRW-10

Panel B
Avera Proxy Group

Dividend Yield*	4.10%
Adjustment Factor	1.02375
Adjusted Dividend Yield	4.2%
Growth Rate**	4.75%
Equity Cost Rate	8.9%

* Page 2 of Attachment JRW-10

** Based on data provided on pages 3, 4, 5, and 6 of Attachment JRW-10

Attachment JRW-10
AEP Ohio
Monthly Dividend Yields

Panel A
Electric Proxy Group

Company	SMBL	Annual Dividend	Dividend Yield 30 Day	Dividend Yield 90 Day	Dividend Yield 180 Day
ALLETE, Inc. (NYSE-ALE)	ALE	1.96	3.8%	3.9%	4.0%
Alliant Energy Corporation (NYSE-LNT)	LNT	2.04	3.7%	3.9%	4.0%
Ameren Corporation (NYSE-AEE)	AEE	1.60	4.0%	4.3%	4.5%
American Electric Power Co. (NYSE-AEP)	AEP	2.00	4.0%	4.2%	4.4%
Avista Corporation (NYSE-AVA)	AVA	1.27	4.3%	4.5%	4.6%
Black Hills Corporation (NYSE-BKH)	BKH	1.56	2.7%	2.9%	3.0%
Cleco Corporation (NYSE-CNL)	CNL	1.45	2.9%	3.0%	3.1%
CMS Energy Corporation (NYSE-CMS)	CMA	1.08	3.8%	4.0%	4.0%
Consolidated Edison, Inc. (NYSE-ED)	ED	2.52	4.6%	4.7%	4.6%
Dominion Resources, Inc. (NYSE-D)	D	2.40	3.4%	3.6%	3.8%
DTE Energy Company (NYSE-DTE)	DTE	2.62	3.7%	3.8%	3.9%
Duke Energy Corporation (NYSE-DUK)	DUK	3.12	4.4%	4.5%	4.6%
Edison International (NYSE-EIX)	EIX	1.42	2.7%	2.9%	3.0%
El Paso Electric Company (NYSE-EE)	EE	1.06	3.0%	3.0%	3.1%
Empire District Electric Co. (NYSE-EDE)	EDE	1.02	4.3%	4.4%	4.6%
Great Plains Energy Incorporated (NYSE-GXP)	GXP	0.92	3.5%	3.7%	3.9%
Hawaiian Electric Industries, Inc. (NYSE-HE)	HE	1.24	5.0%	4.9%	4.9%
IDACORP, Inc. (NYSE-IDA)	IDA	1.72	3.1%	3.2%	3.4%
MGE Energy, Inc. (NYSE-MGEE)	MGEE	1.09	2.8%	2.9%	2.9%
Nextera Energy (NYSE-NEE)	NEE	2.90	3.1%	3.3%	3.4%
Northeast Utilities (NYSE-NU)	NU	1.57	3.5%	3.7%	3.7%
NorthWestern Corporation (NYSE-NWE)	NEW	1.60	3.5%	3.6%	3.7%
Otter Tail Corporation (NDQ-OTTR)	OTTR	1.21	4.0%	4.1%	4.2%
Pepco Holdings, Inc. (NYSE-POM)	POM	1.08	5.4%	5.6%	5.7%
PG&E Corporation (NYSE-PCG)	PCG	1.82	4.2%	4.4%	4.4%
Pinnacle West Capital Corp. (NYSE-PNW)	PNW	2.27	4.2%	4.3%	4.2%
PNM Resources, Inc. (NYSE-PNM)	PNM	0.74	2.8%	3.0%	3.1%
Portland General Electric Company (NYSE-POR)	POR	1.10	3.5%	3.6%	3.7%
PPL Corporation (NYSE-PPL)	PPL	1.49	4.6%	4.9%	4.9%
SCANA Corporation (NYSE-SCG)	SCG	2.09	4.2%	4.4%	4.4%
Southern Company (NYSE-SO)	SO	2.03	4.7%	4.9%	4.9%
Westar Energy, Inc. (NYSE-WR)	WR	1.40	4.1%	4.3%	4.4%
Wisconsin Energy Corporation (NYSE-WEC)	WEC	1.56	3.5%	3.7%	3.7%
Xcel Energy Inc. (NYSE-XEL)	XEL	1.20	4.0%	4.2%	4.3%
Mean			3.8%	3.9%	4.0%
Median			3.8%	4.0%	4.0%

Data Source: www.yahoo.com

Panel B
Avera Proxy Group

Company		Annual Dividend	Dividend Yield 30 Day	Dividend Yield 60 Day	Dividend Yield 90 Day
ALLETE, Inc. (NYSE-ALE)	ALE	1.96	3.8%	3.9%	4.0%
Ameren Corporation (NYSE-AEE)	AEE	1.60	4.0%	4.3%	4.5%
American Electric Power Co. (NYSE-AEP)	AEP	2.00	4.0%	4.2%	4.4%
Black Hills Corporation (NYSE-BKH)	BKH	1.56	2.7%	2.9%	3.0%
CMS Energy Corporation (NYSE-CMS)	CMS	1.08	3.8%	4.0%	4.0%
DTE Energy Company (NYSE-DTE)	DTE	2.62	3.7%	3.8%	3.9%
Duke Energy Corporation (NYSE-DUK)	DUK	3.12	4.4%	4.5%	4.6%
Edison International (NYSE-EIX)	EIX	1.42	2.7%	2.9%	3.0%
Great Plains Energy Incorporated (NYSE-GXP)	GXP	0.92	3.5%	3.7%	3.9%
Hawaiian Electric Industries, Inc. (NYSE-HE)	HE	1.24	5.0%	4.9%	4.9%
IDACORP, Inc. (NYSE-IDA)	IDA	1.72	3.1%	3.2%	3.4%
Pepco Holdings, Inc. (NYSE-POM)	POM	1.08	5.4%	5.6%	5.7%
PG&E Corporation (NYSE-PCG)	PCG	1.82	4.2%	4.4%	4.4%
Portland General Electric Company (NYSE-POR)	POR	1.10	3.5%	3.6%	3.7%
PPL Corporation (NYSE-PPL)	PPL	1.49	4.6%	4.9%	4.9%
SCANA Corporation (NYSE-SCG)	SCG	2.09	4.2%	4.4%	4.4%
SEMPRA Energy (NYSE-SRE)	SRE	2.64	2.8%	2.9%	3.0%
Westar Energy, Inc. (NYSE-WR)	WR	1.40	4.1%	4.3%	4.4%
Mean			3.9%	4.0%	4.1%
Median			3.9%	4.1%	4.2%

Data Source: www.yahoo.com

Attachment JRW-10

AEP Ohio
DCF Equity Cost Growth Rate Measures
***Value Line* Historic Growth Rates**
Panel A
Electric Proxy Group

Company	*Value Line* Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
ALLETE, Inc. (NYSE-ALE)				-2.0%	3.0%	5.0%
Alliant Energy Corporation (NYSE-LNT)	3.5%	-1.5%	2.0%	4.0%	8.0%	3.5%
Ameren Corporation (NYSE-AEE)	-2.0%	-4.5%	2.5%	-2.5%	-9.0%	-0.5%
American Electric Power Co. (NYSE-AEP)	2.0%	-3.0%	2.5%	1.0%	4.0%	4.5%
Avista Corporation (NYSE-AVA)	2.5%	8.5%	3.0%	8.5%	14.0%	4.0%
Black Hills Corporation (NYSE-BKH)	-5.5%	2.5%	5.0%	-8.0%	2.0%	3.0%
Cleco Corporation (NYSE-CNL)	5.5%	2.5%	8.0%	13.0%	4.5%	9.0%
CMS Energy Corporation (NYSE-CMS)	0.0%	1.0%	1.5%	13.5%		4.0%
Consolidated Edison, Inc. (NYSE-ED)	2.0%	1.0%	4.0%	3.0%	1.0%	4.5%
Dominion Resources, Inc. (NYSE-D)	5.0%	4.5%	2.5%	7.0%	7.0%	3.5%
DTE Energy Company (NYSE-DTE)	2.0%	1.0%	4.0%	6.0%	2.0%	4.0%
Duke Energy Corporation (NYSE-DUK)				4.5%	18.0%	-1.0%
Edison International (NYSE-EIX)			11.5%	2.5%	3.0%	5.5%
El Paso Electric Company (NYSE-EE)	9.0%		8.5%	13.0%		8.5%
Empire District Electric Co. (NYSE-EDE)	3.0%	-3.5%	1.5%	2.5%	-7.0%	1.5%
Great Plains Energy Incorporated (NYSE-GXP)	-3.5%	-6.5%	5.0%	-2.0%	-12.5%	3.5%
Hawaiian Electric Industries, Inc. (NYSE-HE)	-0.5%		2.0%	2.0%		2.0%
IDACORP, Inc. (NYSE-IDA)	1.5%	-4.0%	4.0%	10.0%	1.0%	5.5%
MGE Energy (NDQ-MGEE)	5.5%	1.5%	6.5%	5.5%	2.0%	5.5%
Nextera Energy (NYSE-NEE)	8.5%	7.0%	8.0%	10.0%	7.5%	8.5%
Northeast Utilities (NYSE-NU)	10.5%	9.5%	4.0%	13.0%	9.5%	6.0%
NorthWestern Corporation (NYSE-NWE)				9.0%	4.0%	2.5%
Otter Tail Corporation (NDQ-OTTR)	-9.5%	1.5%	3.5%	-18.5%	0.5%	-1.0%
Pepco Holdings, Inc. (NYSE-POM)	-4.0%		0.5%	-3.5%	1.0%	
PG&E Corporation (NYSE-PCG)			11.5%	-0.5%	6.5%	6.0%
Pinnacle West Capital Corp. (NYSE-PNW)		4.0%	2.0%	2.5%	2.5%	
PNM Resources, Inc. (NYSE-PNM)	-4.5%	-0.5%	1.5%	-4.0%	-9.0%	-2.0%
Portland General Electric (NYSE-POR)				4.0%	14.5%	2.0%
PPL Corporation (NYSE-PPL)	4.0%	9.0%	10.5%	2.0%	5.5%	6.0%
SCANA Corporation (NYSE-SCG)	3.0%	5.0%	4.0%	2.5%	3.0%	4.5%
Southern Company (NYSE-SO)	3.5%	3.5%	4.5%	3.0%	4.0%	5.5%
Westar Energy, Inc. (NYSE-WR)	16.0%			1.5%	5.0%	4.5%
Wisconsin Energy Corporation (NYSE-WEC)	9.5%	7.5%	7.0%	10.0%	17.0%	7.0%
Xcel Energy Inc. (NYSE-XEL)	2.0%	-3.0%	1.5%	5.5%	3.0%	4.5%
Mean	2.6%	1.8%	4.6%	3.5%	3.7%	4.0%
Median	2.5%	1.5%	4.0%	3.0%	3.0%	4.5%
Data Source: *Value Line Investment Survey.*	Average of Median Figures =			3.1%		

American Electric Power Co. (NYSE-AEP)	2.0%	-3.0%	2.5%	1.0%	4.0%	4.5%

Panel B
Avera Proxy Group

Company	*Value Line* Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
ALLETE, Inc. (NYSE-ALE)				-2.0%	3.0%	5.0%
Ameren Corporation (NYSE-AEE)	-2.0%	-4.5%	2.5%	-2.5%	-9.0%	-0.5%
American Electric Power Co. (NYSE-AEP)	2.0%	-3.0%	2.5%	1.0%	4.0%	4.5%
Black Hills Corporation (NYSE-BKH)	-5.5%	2.5%	5.0%	-8.0%	2.0%	3.0%
CMS Energy Corporation (NYSE-CMS)	0.0%	1.0%	1.5%	13.5%		4.0%
Consolidated Edison, Inc. (NYSE-ED)	2.0%	1.0%	4.0%	3.0%	1.0%	4.5%
Duke Energy Corporation (NYSE-DUK)				4.5%	18.0%	-1.0%
Edison International (NYSE-EIX)			11.5%	2.5%	3.0%	5.5%
Great Plains Energy Incorporated (NYSE-GXP)	-3.5%	-6.5%	5.0%	-2.0%	-12.5%	3.5%
Hawaiian Electric Industries, Inc. (NYSE-HE)	-0.5%		2.0%	2.0%		2.0%
IDACORP, Inc. (NYSE-IDA)	1.5%	-4.0%	4.0%	10.0%	1.0%	5.5%
Pepco Holdings, Inc. (NYSE-POM)	-4.0%		0.5%	-3.5%	1.0%	
PG&E Corporation (NYSE-PCG)			11.5%	-0.5%	6.5%	6.0%
Portland General Electric (NYSE-POR)				4.0%	14.5%	2.0%
PPL Corporation (NYSE-PPL)	4.0%	9.0%	10.5%	2.0%	5.5%	6.0%
SCANA Corporation (NYSE-SCG)	3.0%	5.0%	4.0%	2.5%	3.0%	4.5%
SEMPRA Energy (NYSE-SRE)	5.5%	7.0%	12.0%	1.5%	10.5%	7.5%
Westar Energy, Inc. (NYSE-WR)	16.0%			1.5%	5.0%	4.5%
Mean	1.4%	0.8%	5.5%	1.6%	3.5%	3.9%
Median	1.5%	1.0%	4.0%	1.8%	3.0%	4.5%
Data Source: *Value Line Investment Survey.*	Average of Median Figures =			2.6%		

Attachment JRW-10

AEP Ohio
DCF Equity Cost Growth Rate Measures
Value Line Projected Growth Rates

Panel A
Electric Proxy Group

Company	*Value Line* Projected Growth Est'd. '11-'13 to '17-'19			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	6.0%	4.0%	4.5%	9.0%	37.0%	3.3%
Alliant Energy Corporation (NYSE-LNT)	6.0%	4.5%	4.0%	11.5%	42.0%	4.8%
Ameren Corporation (NYSE-AEE)	2.5%	2.0%	0.5%	9.0%	38.0%	3.4%
American Electric Power Co. (NYSE-AEP)	4.5%	4.5%	4.5%	10.0%	37.0%	3.7%
Avista Corporation (NYSE-AVA)	6.5%	4.5%	3.0%	9.0%	36.0%	3.2%
Black Hills Corporation (NYSE-BKH)	13.0%	3.5%	3.5%	10.0%	46.0%	4.6%
Cleco Corporation (NYSE-CNL)	4.5%	8.5%	5.0%	10.5%	43.0%	4.5%
CMS Energy Corporation (NYSE-CMS)	6.5%	6.0%	6.0%	13.0%	40.0%	5.2%
Consolidated Edison, Inc. (NYSE-ED)	1.5%	2.0%	3.0%	8.5%	33.0%	2.8%
Dominion Resources, Inc. (NYSE-D)	5.0%	5.0%	5.0%	14.5%	32.0%	4.6%
DTE Energy Company (NYSE-DTE)	5.0%	5.5%	4.0%	10.0%	39.0%	3.9%
Duke Energy Corporation (NYSE-DUK)	4.0%	2.0%	3.0%	8.0%	37.0%	3.0%
Edison International (NYSE-EIX)	2.5%	6.5%	4.0%	11.0%	51.0%	5.6%
El Paso Electric Company (NYSE-EE)	1.5%		5.0%	10.0%	49.0%	4.9%
Empire District Electric Co. (NYSE-EDE)	4.0%	4.5%	3.0%	9.0%	36.0%	3.2%
Great Plains Energy Incorporated (NYSE-GXP)	6.0%	7.0%	2.5%	7.5%	34.0%	2.6%
Hawaiian Electric Industries, Inc. (NYSE-HE)	3.5%	1.0%	4.5%	8.5%	26.0%	2.2%
IDACORP, Inc. (NYSE-IDA)	2.0%	7.0%	4.5%	8.5%	39.0%	3.3%
MGE Energy (NDQ-MGEE)	8.0%	4.0%	6.0%	13.0%	57.0%	7.4%
Nextera Energy (NYSE-NEE)	4.5%	8.5%	7.0%	11.5%	41.0%	4.7%
Northeast Utilities (NYSE-NU)	8.0%	8.0%	5.5%	9.5%	42.0%	4.0%
NorthWestern Corporation (NYSE-NWE)	4.5%	4.0%	5.0%	9.5%	40.0%	3.8%
Otter Tail Corporation (NDQ-OTTR)	15.0%	1.5%	2.5%	13.0%	41.0%	5.3%
Pepco Holdings, Inc. (NYSE-POM)	5.5%	1.5%	2.0%	8.0%	31.0%	2.5%
PG&E Corporation (NYSE-PCG)	2.5%	2.5%	3.0%	8.5%	31.0%	2.6%
Pinnacle West Capital Corp. (NYSE-PNW)	4.0%	2.0%	3.5%	9.5%	36.0%	3.4%
PNM Resources, Inc. (NYSE-PNM)	12.0%	12.5%	4.0%	9.0%	49.0%	4.4%
Portland General Electric (NYSE-POR)	3.5%	3.0%	3.5%	8.5%	44.0%	3.7%
PPL Corporation (NYSE-PPL)	0.0%	2.0%	4.5%	10.5%	37.0%	3.9%
SCANA Corporation (NYSE-SCG)	5.0%	2.5%	5.5%	10.0%	47.0%	4.7%
Southern Company (NYSE-SO)	3.5%	3.5%	4.0%	12.5%	28.0%	3.5%
Westar Energy, Inc. (NYSE-WR)	6.0%	3.0%	5.0%	9.5%	40.0%	3.8%
Wisconsin Energy Corporation (NYSE-WEC)	6.0%	11.0%	2.5%	15.5%	34.0%	5.3%
Xcel Energy Inc. (NYSE-XEL)	4.5%	4.5%	4.5%	10.0%	42.0%	4.2%
Mean	5.2%	4.6%	4.0%	10.2%	39.3%	4.0%
Median	4.5%	4.0%	4.0%	9.8%	39.0%	3.8%
Average of Median Figures =		4.2%				3.8%

Data Source: *Value Line Investment Survey.*

American Electric Power Co. (NYSE-AEP)	4.5%	4.5%	4.5%	10.0%	37.0%	3.7%

Panel B
Avera Proxy Group

Company	*Value Line* Projected Growth Est'd. '11-'13 to '17-'19			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	6.0%	4.0%	4.5%	9.0%	37.0%	3.3%
Ameren Corporation (NYSE-AEE)	2.5%	2.0%	0.5%	9.0%	38.0%	3.4%
American Electric Power Co. (NYSE-AEP)	4.5%	4.5%	4.5%	10.0%	37.0%	3.7%
Black Hills Corporation (NYSE-BKH)	13.0%	3.5%	3.5%	10.0%	46.0%	4.6%
CMS Energy Corporation (NYSE-CMS)	6.5%	6.0%	6.0%	13.0%	40.0%	5.2%
DTE Energy Company (NYSE-DTE)	5.0%	5.5%	4.0%	10.0%	39.0%	3.9%
Duke Energy Corporation (NYSE-DUK)	4.0%	2.0%	3.0%	8.0%	37.0%	3.0%
Edison International (NYSE-EIX)	2.5%	6.5%	4.0%	11.0%	51.0%	5.6%
Great Plains Energy Incorporated (NYSE-GXP)	6.0%	7.0%	2.5%	7.5%	34.0%	2.6%
Hawaiian Electric Industries, Inc. (NYSE-HE)	3.5%	1.0%	4.5%	8.5%	26.0%	2.2%
IDACORP, Inc. (NYSE-IDA)	2.0%	7.0%	4.5%	8.5%	39.0%	3.3%
Pepco Holdings, Inc. (NYSE-POM)	5.5%	1.5%	2.0%	8.0%	31.0%	2.5%
PG&E Corporation (NYSE-PCG)	2.5%	2.5%	3.0%	8.5%	31.0%	2.6%
Portland General Electric (NYSE-POR)	3.5%	3.0%	3.5%	8.5%	44.0%	3.7%
PPL Corporation (NYSE-PPL)	0.0%	2.0%	4.5%	10.5%	37.0%	3.9%
SCANA Corporation (NYSE-SCG)	5.0%	2.5%	5.5%	10.0%	47.0%	4.7%
SEMPRA Energy (NYSE-SRE)	4.5%	7.5%	4.5%	11.0%	47.0%	5.2%
Westar Energy, Inc. (NYSE-WR)	6.0%	3.0%	5.0%	9.5%	40.0%	3.8%
Mean	4.6%	3.9%	3.9%	9.5%	38.9%	3.7%
Median	4.5%	3.3%	4.3%	9.3%	38.5%	3.7%
Average of Median Figures =		4.0%				3.7%

Data Source: *Value Line Investment Survey.*

Attachment JRW-10

AEP Ohio
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates

Panel A
Electric Proxy Group

Company	Yahoo	Zacks	Reuters	Mean
ALLETE, Inc. (NYSE-ALE)	6.0%	6.0%	na	6.0%
Alliant Energy Corporation (NYSE-LNT)	5.4%	5.5%	5.6%	5.5%
Ameren Corporation (NYSE-AEE)	5.0%	7.5%	5.0%	5.8%
American Electric Power Co. (NYSE-AEP)	4.2%	4.3%	4.2%	4.3%
Avista Corporation (NYSE-AVA)	5.0%	5.0%	na	5.0%
Black Hills Corporation (NYSE-BKH)	7.0%	4.0%	7.0%	6.0%
Cleco Corporation (NYSE-CNL)	8.0%	8.0%	8.0%	8.0%
CMS Energy Corporation (NYSE-CMS)	6.2%	6.0%	6.2%	6.2%
Consolidated Edison, Inc. (NYSE-ED)	2.3%	2.9%	2.3%	2.5%
Dominion Resources, Inc. (NYSE-D)	6.4%	5.6%	6.2%	6.1%
DTE Energy Company (NYSE-DTE)	5.2%	6.2%	5.2%	5.5%
Duke Energy Corporation (NYSE-DUK)	3.9%	3.9%	4.4%	4.0%
Edison International (NYSE-EIX)	1.9%	1.4%	2.5%	2.0%
El Paso Electric Company (NYSE-EE)	3.7%	3.5%	na	3.6%
Empire District Electric Co. (NYSE-EDE)	3.0%	3.0%	3.0%	3.0%
Great Plains Energy Incorporated (NYSE-GXP)	5.2%	5.2%	5.2%	5.2%
Hawaiian Electric Industries, Inc. (NYSE-HE)	4.2%	6.0%	4.5%	4.9%
IDACORP, Inc. (NYSE-IDA)	4.0%	4.0%	4.0%	4.0%
MGE Energy (NDQ-MGEE)	4.0%	na	na	4.0%
Nextera Energy (NYSE-NEE)	6.5%	6.2%	6.2%	6.3%
Northeast Utilities (NYSE-NU)	6.3%	7.9%	6.0%	6.7%
NorthWestern Corporation (NYSE-NWE)	8.0%	6.0%	8.0%	7.3%
Otter Tail Corporation (NDQ-OTTR)	6.0%	na	na	6.0%
Pepco Holdings, Inc. (NYSE-POM)	7.5%	6.3%	7.5%	7.1%
PG&E Corporation (NYSE-PCG)	6.4%	2.7%	6.4%	5.2%
Pinnacle West Capital Corp. (NYSE-PNW)	4.1%	4.6%	4.1%	4.3%
PNM Resources, Inc. (NYSE-PNM)	8.2%	7.6%	8.2%	8.0%
Portland General Electric Company (NYSE-POR)	10.9%	6.6%	9.7%	9.1%
PPL Corporation (NYSE-PPL)	0.7%	1.0%	0.7%	0.8%
SCANA Corporation (NYSE-SCG)	4.6%	4.5%	4.6%	4.6%
Southern Company (NYSE-SO)	3.6%	4.1%	3.9%	3.8%
Westar Energy, Inc. (NYSE-WR)	2.8%	4.3%	2.8%	3.3%
Wisconsin Energy Corporation (NYSE-WEC)	4.9%	5.2%	4.9%	5.0%
Xcel Energy Inc. (NYSE-XEL)	4.6%	4.2%	5.3%	4.7%
Mean	5.2%	5.0%	5.2%	5.1%
Median	5.0%	5.1%	5.2%	5.1%

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, April 5, 2014.

American Electric Power Co. (NYSE-AEP)	4.2%	4.1%	4.2%	4.2%

Panel B
Avera Proxy Group

Company	Yahoo	Zacks	Reuters	Mean
ALLETE, Inc. (NYSE-ALE)	6.0%	6.0%	na	6.0%
Ameren Corporation (NYSE-AEE)	5.0%	7.5%	5.0%	5.8%
American Electric Power Co. (NYSE-AEP)	4.2%	4.3%	4.2%	4.3%
Black Hills Corporation (NYSE-BKH)	7.0%	4.0%	7.0%	6.0%
CMS Energy Corporation (NYSE-CMS)	6.2%	6.0%	6.2%	6.2%
Consolidated Edison, Inc. (NYSE-ED)	2.3%	2.9%	2.3%	2.5%
Duke Energy Corporation (NYSE-DUK)	3.9%	3.9%	4.4%	4.0%
Edison International (NYSE-EIX)	1.9%	1.4%	2.5%	2.0%
Great Plains Energy Incorporated (NYSE-GXP)	5.2%	5.2%	5.2%	5.2%
Hawaiian Electric Industries, Inc. (NYSE-HE)	4.2%	6.0%	4.5%	4.9%
IDACORP, Inc. (NYSE-IDA)	4.0%	4.0%	4.0%	4.0%
Pepco Holdings, Inc. (NYSE-POM)	7.5%	6.3%	7.5%	7.1%
PG&E Corporation (NYSE-PCG)	6.4%	2.7%	6.4%	5.2%
Portland General Electric Company (NYSE-POR)	10.9%	6.6%	9.7%	9.1%
PPL Corporation (NYSE-PPL)	0.7%	1.0%	0.7%	0.8%
SCANA Corporation (NYSE-SCG)	4.6%	4.5%	4.6%	4.6%
SEMPRA Energy (NYSE-SRE)	6.3%	7.5%	6.3%	6.7%
Westar Energy, Inc. (NYSE-WR)	2.8%	4.3%	2.8%	3.3%
Mean	4.6%	4.4%	4.6%	4.6%
Median	4.6%	4.3%	4.7%	4.9%

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, April 5, 2014.

Attachment JRW-10

AEP Ohio
DCF Growth Rate Indicators

Electric and Avera Proxy Groups
Summary Growth Rates

Growth Rate Indicator	Electric Proxy Group	Avera Proxy Group
Historic *Value Line* Growth in EPS, DPS, and BVPS	3.1%	2.6%
Projected *Value Line* Growth in EPS, DPS, and BVPS	4.2%	4.0%
Sustainable Growth ROE * Retention Rate	3.8%	3.7%
Projected EPS Growth from Yahoo, Zacks, and Reuters - Mean/Median	5.1%/5.1%	4.6%/4.9%

Attachment JRW-11

AEP Ohio
Capital Asset Pricing Model

Panel A
Electric Proxy Group

Risk-Free Interest Rate	**4.00%**
Beta*	**0.70**
Ex Ante Equity Risk Premium**	**5.00%**
CAPM Cost of Equity	**7.5%**

* See page 3 of Attachment JRW-11
** See pages 5 and 6 of Attachment JRW-11

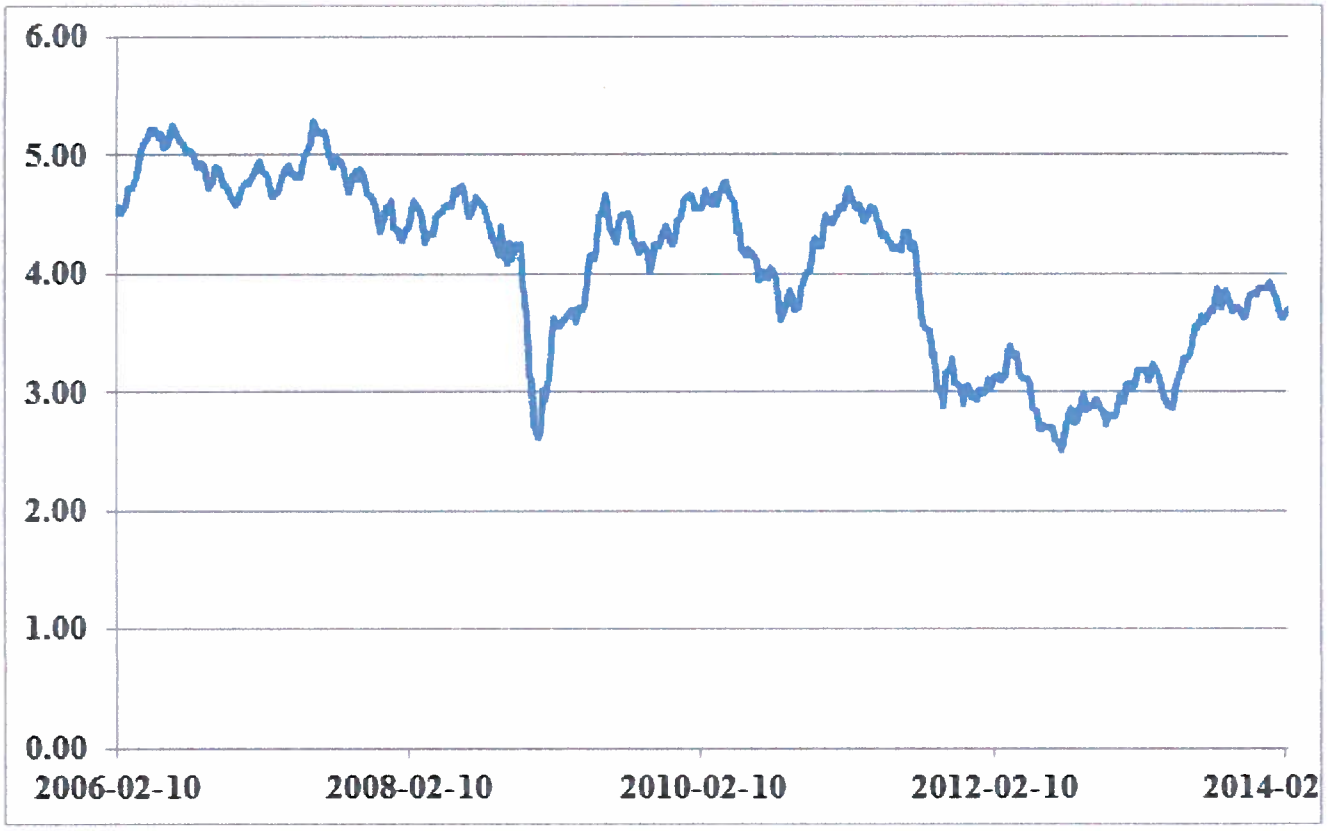
Panel B
Avera Proxy Group

Risk-Free Interest Rate	**4.00%**
Beta*	**0.73**
Ex Ante Equity Risk Premium**	**5.00%**
CAPM Cost of Equity	**7.6%**

* See page 3 of Attachment JRW-11
** See pages 5 and 6 of Attachment JRW-11

Attachment JRW-11

Thirty-Year U.S. Treasury Yields
January 2006-Present

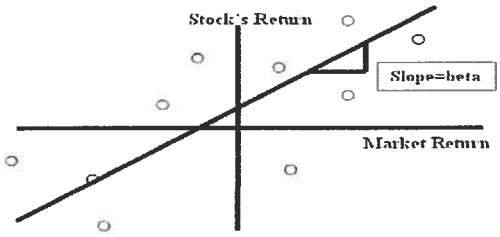


Source: Federal Reserve Bank of St. Louis, FRED Database.

Attachment JRW-11

Panel A
Betas

Calculation of Beta



Panel A
Electric Proxy Group

Company Name	Beta
ALLETE, Inc. (NYSE-ALE)	0.70
Alliant Energy Corporation (NYSE-LNT)	0.75
Ameren Corporation (NYSE-AEE)	0.80
American Electric Power Co. (NYSE-AEP)	0.70
Avista Corporation (NYSE-AVA)	0.70
Black Hills Corporation (NYSE-BKH)	0.85
Cleco Corporation (NYSE-CNL)	0.65
CMS Energy Corporation (NYSE-CMS)	0.75
Consolidated Edison, Inc. (NYSE-ED)	0.60
Dominion Resources, Inc. (NYSE-D)	0.70
DTE Energy Company (NYSE-DTE)	0.75
Duke Energy Corporation (NYSE-DUK)	0.60
Edison International (NYSE-EIX)	0.75
El Paso Electric Company (NYSE-EE)	0.70
Empire District Electric Co. (NYSE-EDE)	0.70
Great Plains Energy Incorporated (NYSE-GXP)	0.80
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.70
IDACORP, Inc. (NYSE-IDA)	0.70
MGE Energy, Inc. (NYSE-MGEE)	0.60
Nextera Energy (NYSE-NEE)	0.70
Northeast Utilities (NYSE-NU)	0.75
NorthWestern Corporation (NYSE-NWE)	0.70
Otter Tail Corporation (NDQ-OTTR)	0.90
Pepco Holdings, Inc. (NYSE-POM)	0.75
PG&E Corporation (NYSE-PCG)	0.55
Pinnacle West Capital Corp. (NYSE-PNW)	0.70
PNM Resources, Inc. (NYSE-PNM)	0.90
Portland General Electric Company (NYSE-POR	0.75
PPL Corporation (NYSE-PPL)	0.65
SCANA Corporation (NYSE-SCG)	0.65
Southern Company (NYSE-SO)	0.55
Westar Energy, Inc. (NYSE-WR)	0.75
Wisconsin Energy Corporation (NYSE-WEC)	0.65
Xcel Energy Inc. (NYSE-XEL)	0.65
Mean	0.71
Median	0.70

Data Source: *Value Line Investment Survey, 2014*

Panel B
Avera Proxy Group

Company Name	Beta
ALLETE, Inc. (NYSE-ALE)	0.70
Ameren Corporation (NYSE-AEE)	0.80
American Electric Power Co. (NYSE-AEP)	0.70
Black Hills Corporation (NYSE-BKH)	0.85
CMS Energy Corporation (NYSE-CMS)	0.75
Consolidated Edison, Inc. (NYSE-ED)	0.60
Duke Energy Corporation (NYSE-DUK)	0.60
Edison International (NYSE-EIX)	0.75
Great Plains Energy Incorporated (NYSE-GXP)	0.80
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.70
IDACORP, Inc. (NYSE-IDA)	0.70
Pepco Holdings, Inc. (NYSE-POM)	0.75
PG&E Corporation (NYSE-PCG)	0.55
Portland General Electric Company (NYSE-POR	0.75
PPL Corporation (NYSE-PPL)	0.65
SCANA Corporation (NYSE-SCG)	0.65
SEMPRA Energy (NYSE-SRE)	0.80
Westar Energy, Inc. (NYSE-WR)	0.75
Mean	0.71
Median	0.73

Data Source: *Value Line Investment Survey, 2014*

Attachment JRW-11
Risk Premium Approaches

	Historical Ex Post Returns	**Surveys**	**Expected Return Models and Market Data**
Means of Assessing The Market Risk Premium	Historical Average Stock Minus Bond Returns	Surveys of CFOs, Financial Forecasters, Companies, Analysts on Expected Returns and Market Risk Premiums	Use Market Prices and Market Fundamentals (such as Growth Rates) to Compute Expected Returns and Market Risk Premiums
Problems/Debated Issues	Time Variation in Required Returns, Measurement and Time Period Issues, and Biases such as Market and Company Survivorship Bias	Questions Regarding Survey Histories, Responses, and Representativeness Surveys may be Subject to Biases, such as Extrapolation	Assumptions Regarding Expectations, Especially Growth

Source: Adapted from Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management*. (Winter 2003).

Attachment JRW-8

AEP Ohio
Capital Asset Pricing Model
Equity Risk Premium

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Median
Historical Risk Premium										
	Ibbotson	2014	1926-2012	Historical Stock Returns - Bond Returns	Arithmetic				6.20%	
					Geometric				4.60%	
	Damodaran	2014	1928-2012	Historical Stock Returns - Bond Returns	Arithmetic				6.29%	
					Geometric				4.62%	
	Dimson, Marsh, Staunton	2011	1900-2013	Historical Stock Returns - Bond Returns	Arithmetic					
					Geometric				4.50%	
	Bate	2008	1900-2007	Historical Stock Returns - Bond Returns	Geometric				4.50%	
	Shiller	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				7.00%	
					Geometric				5.50%	
	Siegel	2005	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				6.10%	
					Geometric				4.60%	
	Dimson, Marsh, and Staunton	2006	1900-2005	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
	Goyal & Welch	2006	1872-2004	Historical Stock Returns - Bond Returns					4.77%	
	Median									5.14%
Ex Ante Models (Puzzle Research)										
	Claus Thomas	2001	1985-1998	Abnormal Earnings Model					3.00%	
	Arnott and Bernstein	2002	1810-2001	Fundamentals - Div Yld + Growth					2.40%	
	Constantinides	2002	1872-2000	Historical Returns & Fundamentals - P/D & P/E					6.90%	
	Cornell	1999	1926-1997	Historical Returns & Fundamental GDP/Earnings		3.50%	5.50%	4.50%	4.50%	
	Easton, Taylor, et al	2002	1981-1998	Residual Income Model					5.30%	
	Fama French	2002	1951-2000	Fundamental DCF with EPS and DPS Growth		2.55%	4.32%		3.44%	
	Harris & Marston	2001	1982-1998	Fundamental DCF with Analysts' EPS Growth					7.14%	
	Best & Byrne	2001								
	McKinsey	2002	1962-2002	Fundamental (P/E, D/P, & Earnings Growth)		3.50%	4.00%		3.75%	
	Siegel	2005	1802-2001	Historical Earnings Yield	Geometric				2.50%	
	Grabowski	2006	1926-2005	Historical and Projected		3.50%	6.00%	4.75%	4.75%	
	Maheu & McCurdy	2006	1885-2003	Historical Excess Returns, Structural Breaks,		4.02%	5.10%	4.56%	4.56%	
	Bostock	2004	1960-2002	Bond Yields, Credit Risk, and Income Volatility		3.90%	1.30%	2.60%	2.60%	
	Bakshi & Chen	2005	1982-1998	Fundamentals - Interest Rates					7.31%	
	Donaldson, Kamstra, & Kramer	2006	1952-2004	Fundamental, Dividend yld., Returns,, & Volatility		3.00%	4.00%	3.50%	3.50%	
	Campbell	2008	1982-2007	Historical & Projections (D/P & Earnings Growth)		4.10%	5.40%		4.75%	
	Best & Byrne	2001	Projection	Fundamentals - Div Yld + Growth					2.00%	
	Fernandez	2007	Projection	Required Equity Risk Premium					4.00%	
	DeLong & Magin	2008	Projection	Earnings Yield - TIPS					3.22%	
	Siegel - Rethink ERP	2011	Projection	Real Stock Returns and Components					5.50%	
	American Appraisal Quarterly ERP	2013	Projection	Fundamental Economic and Market Factors					6.50%	
	Duarte & Rosa - NY Fed	2013	projection	Projections from 20 Models					5.40%	
	Duff & Phelps	2014	Projection	Normalized with 4.0% Long-Term Treasury Yield					5.00%	
	Damodaran	2014	Projection	Fundamentals - Implied from FCF to Equity Model					5.15%	
	Social Security									
	Office of Chief Actuary		1900-1995							
	John Campbell	2001	1860-2000	Historical & Projections (D/P & Earnings Growth)	Arithmetic	3.00%	4.00%	3.50%	3.50%	
			Projected for 75 Years		Geometric	1.50%	2.50%	2.00%	2.00%	
	Peter Diamond	2001	Projected for 75 Years	Fundamentals (D/P, GDP Growth)		3.00%	4.80%	3.90%	3.90%	
	John Shoven	2001	Projected for 75 Years	Fundamentals (D/P, P/E, GDP Growth)		3.00%	3.50%	3.25%	3.25%	
	Median									4.00%
Surveys										
	New York Fed	2013	Five-Year	Survey of Wall Street Firms					5.20%	
	Survey of Financial Forecasters	2014	10-Year Projection	About 50 Financial Forecasters					2.18%	
	Duke - CFO Magazine Survey	2014	10-Year Projection	Approximately 350 CFOs					3.80%	
	Welch - Academics	2008	30-Year Projection	Random Academics		5.00%	5.71%	5.37%	5.37%	
	Fernandez - Academics, Analysts, and Compani	2013	Long-Term	Survey of Academics, Analysts, and Companies					5.70%	
	Median									4.59%
Building Block										
	Ibbotson and Chen	2014	Projection	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			6.12%	5.10%	
					Geometric			4.06%		
	Chen - Rethink ERP	2010	20-Year Projection	Combination Supply Model (Historic and Projection)	Geometric				4.00%	
	Ilmanen - Rethink ERP	2010	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				3.00%	
	Grinold, Kroner, Siegel - Rethink ERP	2011	Projection	Current Supply Model (D/P & Earnings Growth)	Arithmetic			4.63%	4.12%	
					Geometric			3.60%		
	Woolridge		2014	Current Supply Model (D/P & Earnings Growth)					4.00%	
	Median									4.00%
Mean										4.43%
Median										4.29%

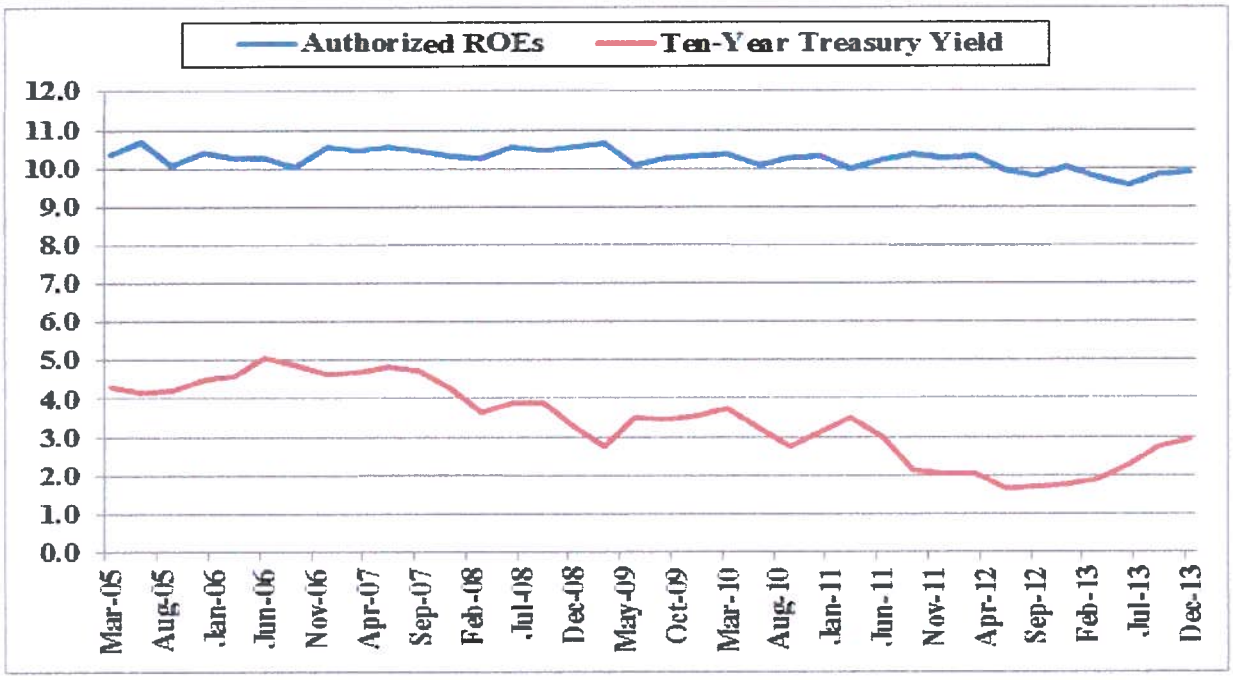
Attachment JRW-8

AEP Ohio
Capital Asset Pricing Model
Equity Risk Premium

Summary of 2010-14 Equity Risk Premium Studies

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Average
Historical Risk Premium										
	Ibbotson	2014	1926-2013	Historical Stock Returns - Bond Returns	Arithmetic				6.20%	
					Geometric				4.60%	
	Damodaran	2014	1928-2013	Historical Stock Returns - Bond Returns	Arithmetic				6.29%	
					Geometric				4.62%	
	Dimson, Marsh, Staunton	2014	1900-2013	Historical Stock Returns - Bond Returns	Arithmetic					
					Geometric				4.50%	
	Median									5.24%
Ex Ante Models (Puzzle Research)										
	Siegel - Rethink ERP	2011	Projection	Real Stock Returns and Components					5.50%	
	American Appraisal Quarterly ERP	2013	Projection	Fundamental Economic and Market Factors					6.50%	
	Duarte & Rosa - NY Fed	2013	Projection	Projections from 29 Models					5.10%	
	Duff & Phelps	2014	Projection	Normalized with 4.0% Long-Term Treasury Yield					5.00%	
	Damodaran	2014	Projection	Fundamental - Implied from FCF to Equity Model					5.15%	
	Median									5.10%
Surveys										
	New York Fed	2013	Five-Year	Survey of Wall Street Firms					5.20%	
	Survey of Financial Forecasters	2014	10-Year Projection	About 50 Financial Forecasttsers					2.18%	
	Duke - CFO Magazine Survey	2014	10-Year Projection	Approximately 350 CFOs					3.80%	
	Fernandez - Academics, Analysts, and Companies	2013	Long-Term	Survey of Academics, Analysts, and Companies					5.10%	
	Median									4.50%
Building Block										
	Ibbotson and Chen	2014	Projection	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			6.12%	5.10%	
					Geometric			4.06%		
	Chen - Rethink ERP	2010	20-Year Projection	Combination Supply Model (Historic and Projection)	Geometric				4.00%	
	Ilmanen - Rethink ERP	2010	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				3.00%	
	Grinold, Kroner, Siegel - Rethink ERP	2011	Projection	Current Supply Model (D/P & Earnings Growth)	Arithmetic			4.63%	4.12%	
					Geometric			3.60%		
	Wooldridge	2014	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				4.00%	
	Median									4.00%
Mean										4.79%
Median										4.87%

Attachment JRW-12
Panel A
Authorized ROEs for Electric Utility Companies and Ten-Year Treasury Yields



Panel B
Authorized ROEs for Electric Utility Companies and Ten-Year Treasury Yields

Source: Mergent Bond Record and Regulatory Focus, Regulatory Research Associates.

Attachment JRW-13

AEP Ohio
Company's Proposed Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	52.50%	6.05%	3.18%
Common Equity	47.50%	10.65%	5.06%
Total	100.00%		8.24%

Attachment JRW-13

Panel A
Summary of AEP Ohio's Proposed Cost of Capital

DCF	Average	Midpoint
Value Line	9.6%	11.0%
IBES	9.3%	9.9%
Zacks	9.2%	10.1%
Internal br + sv	8.6%	8.7%
Empirical CAPM - 2013 Yield		
Unadjusted	10.8%	10.4%
Size Adjusted	11.6%	11.1%
Empirical CAPM - Projected Yield		
Unadjusted	10.8%	10.6%
Size Adjusted	11.7%	11.2%
Utility Risk Premium		
Current Bond Yields	10.4%	
Projected Bond Yields	11.3%	
Cost of Equity Recommendation		
Cost of Equity Range	9.5% --	11.0%
Recommended Point Estimate	10.53%	
Flotation Cost Adjustment		
Dividend Yield	4.00%	
Flotation Cost Percentage	3.02%	
Adjustment	0.12%	
ROE Recommendation	10.65%	

Panel B
Checks of Reasonableness

CAPM - 2013 Bond Yield	Average	Midpoint
Unadjusted	10.1%	9.7%
Size Adjusted	11.0%	10.4%
CAPM - Projected Bond Yield		
Unadjusted	10.3%	9.9%
Size Adjusted	11.1%	10.6%
Expected Earnings		
Industry	10.2%	
Proxy Group	9.6%	10.5%
Non-Utility DCF		
Value Line	11.6%	11.7%
IBES	11.7%	12.8%
Zacks	11.8%	12.8%

Attachment JRW-13
The Impact of Avera DCF Eliminations

Company	Earnings Growth				br+sv
	V Line	IBES	Zacks	Reuters	Growth
ALLETE	10.7%	9.7%	10.2%	9.7%	8.9%
Ameren Corp.	4.0%	3.3%	7.1%	3.3%	7.4%
American Elec Pwr	8.9%	8.5%	8.3%	8.5%	8.5%
Black Hills Corp.	14.4%	7.9%	7.9%	7.9%	7.0%
CMS Energy Corp.	9.3%	9.6%	9.6%	9.6%	8.8%
DTE Energy Co.	7.8%	8.4%	8.4%	8.4%	7.5%
Duke Energy Corp.	8.5%	8.1%	8.2%	8.3%	7.1%
Edison International	4.4%	3.7%	6.5%	4.4%	8.9%
FirstEnergy Corp.	6.3%	7.7%	5.8%	7.9%	6.8%
Great Plains Energy	10.3%	9.4%	9.8%	9.4%	7.1%
Hawaiian Elec.	8.2%	7.1%	8.4%	8.4%	8.0%
IDACORP, Inc.	4.9%	6.9%	7.4%	NA	7.1%
Pepco Holdings	11.4%	10.1%	10.4%	10.1%	8.2%
PG&E Corp.	6.6%	6.9%	7.9%	7.6%	7.2%
Portland General Elec.	7.1%	10.1%	9.9%	9.8%	7.6%
PPL Corp.	4.8%	9.8%	1.8%	9.8%	9.9%
SCANA Corp.	8.5%	8.8%	8.7%	8.9%	9.6%
Sempra Energy	7.5%	5.9%	8.0%	8.0%	8.2%
UIL Holdings	8.3%	12.1%	12.3%	11.4%	7.3%
UNS Energy	10.0%	11.5%	10.5%	NA	8.7%
Westar Energy	10.1%	8.0%	8.4%	8.0%	8.7%
Reported DCF Equity Cost Rates					
Average (b)	9.6%	9.3%	9.2%	8.9%	8.6%
Median (b)	9.1%	9.4%	8.6%	8.5%	8.7%
Actual DCF Equity Cost Rates					
Average (b)	8.2%	8.3%	8.4%	8.4%	8.0%
Median (b)	8.3%	8.4%	8.4%	8.4%	8.0%

Source: Exhibit WEA-4, page 3 of 3

Avera br+sv Growth Versus *Value Line* Projected BVPS Growth

Company	Avera br+sv Growth	*Value Line* Projected BVPS Growth
ALLETE	5.2%	4.5%
Ameren Corp.	2.8%	0.5%
American Elec Pwr	4.1%	4.5%
Black Hills Corp.	4.1%	3.5%
CMS Energy Corp.	5.0%	6.0%
DTE Energy Co.	3.7%	4.0%
Duke Energy Corp.	2.6%	3.0%
Edison International	6.0%	4.0%
FirstEnergy Corp.	1.0%	2.5%
Great Plains Energy	3.2%	2.5%
Hawaiian Elec.	3.3%	4.5%
IDACORP, Inc.	4.2%	4.5%
Pepco Holdings	2.9%	2.0%
PG&E Corp.	3.2%	3.0%
Portland General Elec.	4.0%	3.5%
PPL Corp.	5.2%	4.5%
SCANA Corp.	5.6%	5.5%
Sempra Energy	5.2%	4.5%
UIL Holdings	3.0%	4.5%
UNS Energy	5.2%	5.0%
Westar Energy	4.5%	5.0%
Average	4.0%	3.9%

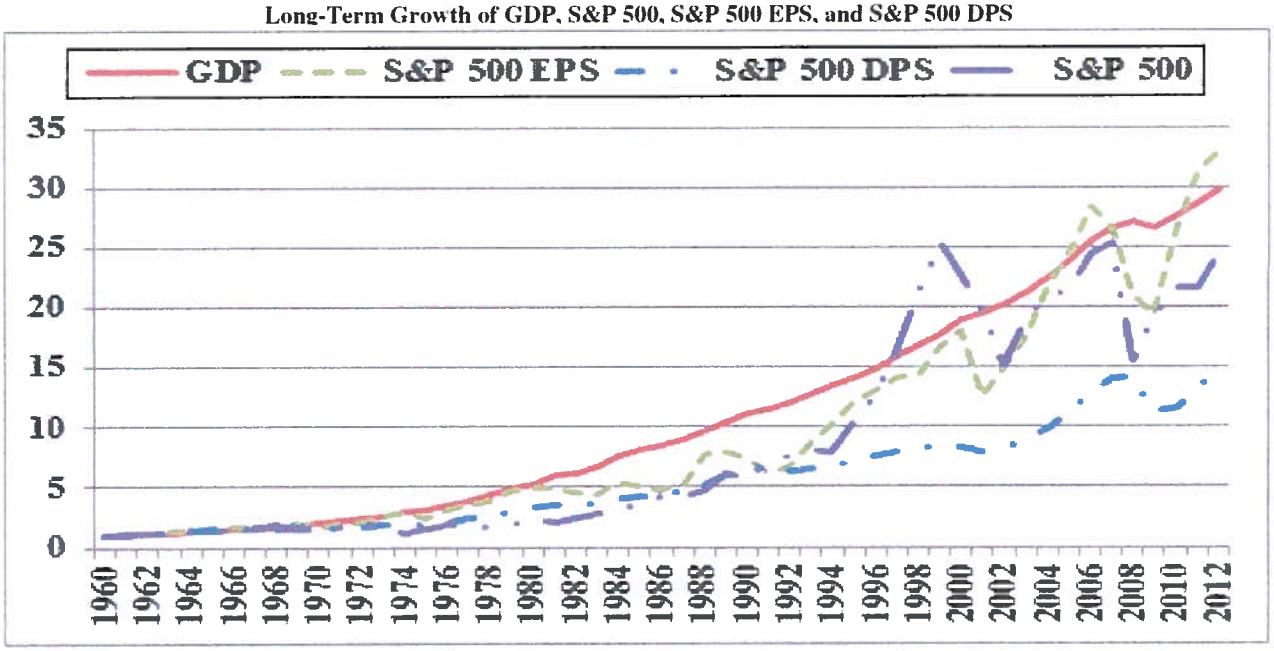
Source: Exhibit WEA-5, page 1 of 1

Growth Rates
GDP, S&P 500 Price, EPS, and DPS

	GDP	S&P 500	Earnings	Dividends	
1960	543.3	58.11	3.10	1.98	
1961	563.3	71.55	3.37	2.04	
1962	605.1	63.10	3.67	2.15	
1963	638.6	75.02	4.13	2.35	
1964	685.8	84.75	4.76	2.58	
1965	743.7	92.43	5.30	2.83	
1966	815.0	80.33	5.41	2.88	
1967	861.7	96.47	5.46	2.98	
1968	942.5	103.86	5.72	3.04	
1969	1019.9	92.06	6.10	3.24	
1970	1075.9	92.15	5.51	3.19	
1971	1167.8	102.09	5.57	3.16	
1972	1282.4	118.05	6.17	3.19	
1973	1428.5	97.55	7.96	3.61	
1974	1548.8	68.56	9.35	3.72	
1975	1688.9	90.19	7.71	3.73	
1976	1877.6	107.46	9.75	4.22	
1977	2086.0	95.10	10.87	4.86	
1978	2356.6	96.11	11.64	5.18	
1979	2632.1	107.94	14.55	5.97	
1980	2862.5	135.76	14.99	6.44	
1981	3210.9	122.55	15.18	6.83	
1982	3345.0	140.64	13.82	6.93	
1983	3638.1	164.93	13.29	7.12	
1984	4040.7	167.24	16.84	7.83	
1985	4346.7	211.28	15.68	8.20	
1986	4590.1	242.17	14.43	8.19	
1987	4870.2	247.08	16.04	9.17	
1988	5252.6	277.72	24.12	10.22	
1989	5657.7	353.40	24.32	11.73	
1990	5979.6	330.22	22.65	12.35	
1991	6174.0	417.09	19.30	12.97	
1992	6539.3	435.71	20.87	12.64	
1993	6878.7	466.45	26.90	12.69	
1994	7308.7	459.27	31.75	13.36	
1995	7664.0	615.93	37.70	14.17	
1996	8100.2	740.74	40.63	14.89	
1997	8608.5	970.43	44.09	15.52	
1998	9089.1	1229.23	44.27	16.20	
1999	9665.7	1469.25	51.68	16.71	
2000	10289.7	1320.28	56.13	16.27	
2001	10625.3	1148.09	38.85	15.74	
2002	10980.2	879.82	46.04	16.08	
2003	11512.2	1111.91	54.69	17.88	
2004	12277.0	1211.92	67.68	19.41	
2005	13095.4	1248.29	76.45	22.38	
2006	13857.9	1418.30	87.72	25.05	
2007	14480.3	1468.36	82.54	27.73	
2008	14720.3	903.25	65.39	28.05	
2009	14417.9	1115.10	59.65	22.31	
2010	14958.3	1257.64	83.66	23.12	
2011	15533.8	1257.60	97.05	26.02	Average
2012	16244.6	1426.19	102.47	30.44	
2013	16803.0	1848.36	107.45	36.28	
Growth Rates	**6.69**	**6.75**	**6.92**	**5.64**	**6.50**

Data Sources: GDPA -http://research.stlouisfed.org/fred2/series/GDPA/downloaddata
S&P 500, EPS and DPS - http://pages.stern.nyu.edu/~adamodar/

Long-Term Growth of GDP, S&P 500, S&P 500 EPS, and S&P 500 DPS



	GDP	S&P 500	S&P 500 EPS	S&P 500 DPS
Growth Rates	6.69%	6.75%	6.92%	5.64%

Panel A
Historic GDP Growth Rates

10-Year Average	3.9%
20-Year Average	4.6%
30-Year Average	5.2%
40-Year Average	6.4%
50-Year Average	6.8%

Calculated from Page 1 of Attachment JRW-14

Panel B
Projected GDP Growth Rates

	Time Frame	Projected Nominal GDP Growth Rate
Congressional Budget Office	2014-2024	4.8%
Survey of Financial Forecasters	Ten Year	4.9%
Energy Information Administration	2011-2040	4.5%

Sources:
http://www.cbo.gov/topics/budget/budget-and-economic-outlook
http://www.eia.gov/forecasts/aeo/tables_ref.cfm Table 20
http://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/2014/survq114.cfm

Appendix A
Educational Background, Research, and Related Business Experience
J. Randall Woolridge

J. Randall Woolridge is a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed Faculty Fellow in Business Administration in the College of Business Administration of the Pennsylvania State University in University Park, PA. In addition, Professor Woolridge is Director of the Smeal College Trading Room and President and CEO of the Nittany Lion Fund, LLC.

Professor Woolridge received a Bachelor of Arts degree in Economics from the University of North Carolina, a Master of Business Administration degree from the Pennsylvania State University, and a Doctor of Philosophy degree in Business Administration (major area-finance, minor area-statistics) from the University of Iowa. He has taught Finance courses including corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on empirical issues in corporation finance and financial markets. He has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.* His research has been cited extensively in the business press. His work has been featured in the *New York Times*, *Forbes, Fortune, The Economist*, *Barron's*, *Wall Street Journal*, *Business Week*, *Investors' Business Daily*, *USA Today*, and other publications. In addition, Dr. Woolridge has appeared as a guest to discuss the implications of his research on CNN's *Money Line*, CNBC's *Morning Call* and *Business Today*, and Bloomberg's *Morning Call.*

Professor Woolridge's stock valuation book, *The StreetSmart Guide to Valuing a Stock* (McGraw-Hill, 2003), was released in its second edition. He has also co-authored *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation, 1999) as well as a textbook entitled *Basic Principles of Finance* (Kendall Hunt, 2011).

Professor Woolridge has also consulted with corporations, financial institutions, and government agencies. In addition, he has directed and participated in university- and company-sponsored professional development programs for executives in 25 countries in North and South America, Europe, Asia, and Africa.

Over the past twenty-five years Dr. Woolridge has prepared testimony and/or provided consultation services in regulatory rate cases in the rate of return area in following states: Alaska, Arizona, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Indiana, Kansas, Kentucky, Massachusetts, Missouri, Nebraska, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Utah, Vermont, Washington, and Washington, D.C. He has also prepared testimony which was submitted to the Federal Energy Regulatory Commission.

J. Randall Woolridge

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120 Haymaker Circle
State College, PA 16801
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Academic Experience

Professor of Finance, the Smeal College of Business Administration, the Pennsylvania State University (July 1, 1990 to the present).

President, Nittany Lion Fund LLC, (January 1, 2005 to the present)

Director, the Smeal College Trading Room (January 1, 2001 to the present)

Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration (July 1, 1987 to the present).

Associate Professor of Finance, College of Business Administration, the Pennsylvania State University (July 1, 1984 to June 30, 1990).

Assistant Professor of Finance, College of Business Administration, the Pennsylvania State University (September, 1979 to June 30, 1984).

Education

Doctor of Philosophy in Business Administration, the University of Iowa (December, 1979). Major field: Finance.

Master of Business Administration, the Pennsylvania State University (December, 1975).

Bachelor of Arts, the University of North Carolina (May, 1973) Major field: Economics.

Books

James A. Miles and J. Randall Woolridge, *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation), 1999

Patrick Cusatis, Gary Gray, and J. Randall Woolridge, *The StreetSmart Guide to Valuing a Stock* (2nd Edition, McGraw-Hill), 2003.

J. Randall Woolridge and Gary Gray, *The New Corporate Finance, Capital Markets, and Valuation: An Introductory Text* (Kendall Hunt, 2003).

Research

Dr. Woolridge has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.*

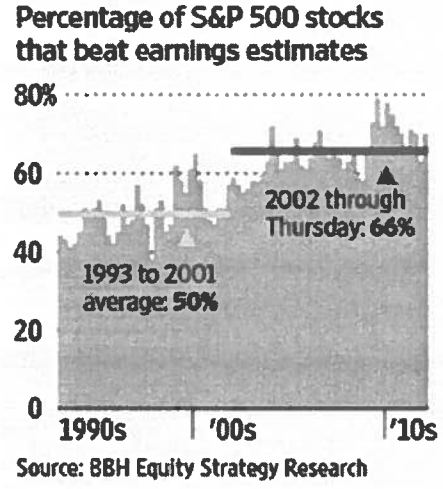
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

Most of the attention given to the accuracy of analysts' EPS forecasts comes from media coverage of companies' quarterly earnings announcements. When companies' announced earnings beat Wall Street's EPS estimates ("a positive surprise"), their stock prices usually go up. When a company's EPS figure misses or is below Wall Street's forecasted EPS ("a negative surprise"), their stock price usually declines, sometimes precipitously so. Wall Street's estimate is the consensus forecast for quarterly EPS made by analysts who follow the stock as of the announcement date. And so Wall Street's estimate is the consensus EPS made in the days leading up to the EPS announcement.

In recent years, it has become more common for companies to beat Wall Street's quarterly EPS estimate. A recent *Wall Street Journal* article summarized the results for the first quarter of 2012: "While this "positive surprise ratio" of 70% is above the 20 year average of 58% and also higher than last quarter's tally, it is just middling since the current bull market began in 2009. In the past decade, the ratio only dipped below 60% during the financial crisis. Look before 2002, though, and 70% would have been literally off the chart. From 1993 through 2001, about half of companies had positive surprises."[1] Figure 1 below provides the record for companies beating Wall Street's EPS estimate on a quarterly basis over the past twenty years.

[1] Spencer Jakab, "Earnings Surprises Lose Punch," *Wall Street Journal* (May 7, 2012), p. C1.

Figure 1
Percent of Companies Beating Wall Street's Quarterly Estimates



A. RESEARCH ON THE ACCURACY OF ANALYSTS' NEAR-TERM EPS ESTIMATES

There is a long history of studies that evaluate how well analysts forecast near-term EPS estimates and long-term EPS growth rates. Most of these studies have evaluated the accuracy of earnings forecasts for the current quarter or year. Many of the early studies indicated that analysts make overly optimistic EPS earnings forecasts for quarter-to-quarter EPS (Stickel (1990); Brown (1997); Chopra (1998)).[2] More recent studies have shown that the optimistic bias tends to be larger for longer-term forecasts and smaller for forecasts made nearer to the EPS announcement date. Richardson, Teoh, and Wysocki (2004) report that the upward bias in earnings growth rates declines in the quarters leading up to the

[2] S. Stickel, "Predicting Individual Analyst Earnings Forecasts," *Journal of Accounting Research*, Vol. 28, 409-417, 1990. Brown, L.D., "Analyst Forecasting Errors: Additional Evidence," *Financial Analysts Journal*, Vol. 53, 81-88, 1997, and Chopra, V.K., "Why So Much Error in Analysts' Earnings Forecasts?" *Financial Analysts Journal*, Vol. 54, 30-37 (1998).

earnings announcement date.[3] They call this result the "walk-down to beatable analyst forecasts." They hypothesize that the walk-down might be driven by the "earning-guidance game," in which analysts give optimistic forecasts at the start of a fiscal year, then revise their estimates downwards until the firm can beat the forecasts at the earnings announcement date.

However, two regulatory developments over the past decade have potentially impacted analysts' EPS growth rate estimates. First, Regulation Fair Disclosure ("Reg FD") was introduced by the Securities and Exchange Commission ("SEC") in October of 2000. Reg FD prohibits private communication between analysts and management so as to level the information playing field in the markets. With Reg FD, analysts are less dependent on gaining access to management to obtain information and, therefore, are not as likely to make optimistic forecasts to gain access to management. Second, the conflict of interest within investment firms with investment banking and analyst operations was addressed in the Global Analysts Research Settlements ("GARS"). GARS, as agreed upon on April 23, 2003, between the SEC, NASD, NYSE and ten of the largest U.S. investment firms, includes a number of regulations that were introduced to prevent investment bankers from pressuring analysts to provide favorable projections.

[3] S. Richardson, S. Teoh, and P. Wysocki, "The Walk-Down to Beatable Analyst Forecasts: The Role of Equity Issuance and Insider Trading Incentives," *Contemporary Accounting Research*, pp. 885–924, (2004).

Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

The previously cited *Wall Street Journal* article acknowledged the impact of the new regulatory rules in explaining the recent results:[4] "What changed? One potential reason is the tightening of rules governing analyst contacts with management. Analysts now must rely on publicly available guidance or, gasp, figure things out by themselves. That puts companies, with an incentive to set the bar low so that earnings are received positively, in the driver's seat. While that makes managers look good short-term, there is no lasting benefit for buy-and-hold investors."

These comments on the impact of regulatory developments on the accuracy of short-term EPS estimates was addressed in a study by Hovakimian and Saenyasiri (2010).[5] The authors investigate analysts' forecasts of annual earnings for the following time periods: (1) the time prior to Reg FD (1984-2000); (2) the time period after Reg FD but prior to GARS (2000-2002);[6] and (3) the time period after GARS (2002-2006). For the pre-Reg FD period, Hovakimian and Saenyasiri find that analysts generally make overly optimistic forecasts of annual earnings. The forecast bias is higher for early forecasts and steadily declines in the months leading up to the earnings announcement. The results are similar for the time period after Reg FD but prior to GARS. However, the bias is lower in the later forecasts (the forecasts made just prior to the announcement).

[4] Spencer Jakab, "Earnings Surprises Lose Punch," *Wall Street Journal* (May 7, 2012), p. C1.

[5] A. Hovakimian and E. Saenyasiri, "Conflicts of Interest and Analysts Behavior: Evidence from Recent Changes in Regulation," *Financial Analysts* Journal (July-August, 2010), pp. 96-107.

[6] Whereas the GARS settlement was signed in 2003, rules addressing analysts' conflict of interest by separating the research and investment banking activities of analysts went into effect with the passage of NYSE and NASD rules in July of 2002.

For the time period after GARS, the average forecasts declined significantly, but a positive bias remains. In sum, Hovakimian and Saenyasiri find that: (1) analysts make overly optimistic short-term forecasts of annual earnings; (2) Reg FD had no effect on this bias; and (3) GARS did result in a significant reduction in the bias, but analysts' short-term forecasts of annual earnings still have a small positive bias.

B. RESEARCH ON THE ACCURACY OF ANALYSTS' LONG-TERM EPS GROWTH RATE FORECASTS

There have been very few studies regarding the accuracy of analysts' long-term EPS growth rate forecasts. Cragg and Malkiel (1968) studied analysts' long-term EPS growth rate forecasts made in 1962 and 1963 by five brokerage houses for 185 firms. They concluded that analysts' long-term earnings growth forecasts are on the whole no more accurate than naive forecasts based on past earnings growth. Harris (1999) evaluated the accuracy of analysts' long-term EPS forecasts over the 1982-1997 time period using a sample of 7,002 firm-year observations.[7] He concluded the following: (1) the accuracy of analysts' long-term EPS forecasts is very low; (2) a superior long-run method to forecast long-term EPS growth is to assume that all companies will have an earnings growth rate equal to historic GDP growth; and (3) analysts' long-term EPS forecasts are significantly upwardly biased, with forecasted earnings growth exceeding actual earnings growth by seven percent per annum. Subsequent studies by DeChow, P., A. Hutton, and R. Sloan (2000), and Chan, Karceski, and Lakonishok (2003) also

[7] R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55 (June/July 1999).

conclude that analysts' long-term EPS growth rate forecasts are overly optimistic and upwardly biased.[8] The Chan, Karceski, and Lakonishok (2003) study evaluated the accuracy of analysts' long-term EPS growth rate forecasts over the 1982-98 time period. They reported a median IBES growth forecast of 14.5%, versus a median realized five-year growth rate of about 9%. They also found the IBES forecasts of EPS beyond two years are not accurate. They concluded the following: "Over long horizons, however, there is little forecastability in earnings, and analysts' estimates tend to be overly optimistic."

Lacina, Lee, and Xu (2011) evaluated the accuracy of analysts' long-term earnings growth rate forecasts over the 1983-2003 time period.[9] The study included 27,081 firm year observations, and compared the accuracy of analysts' EPS forecasts to those produced by two naïve forecasting models: (1) a random walk model ("RW") where the long-term EPS (t+5) is simply equal to last year's EPS figure (t-1); and (2) a RW model with drift ("RWGDP"), where the drift or growth rate is GDP growth for period t-1. In this model, long-term EPS (t+5) is simply equal to last year's EPS figure (t-1) times (1 + GDP growth (t-1)). The authors conclude that that using the RW model to forecast EPS in the next 3-5 years proved to be just as accurate as using the EPS estimates from analysts' long-term earnings growth rate forecasts. They find that the RWGDP model performs

[8] P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research (2000)* and K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance* pp. 643–684, (2003).

[9] M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8),* Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101

better than the pure RW model, and that both models perform as well as analysts in forecasting long-term EPS. They also discover an optimistic bias in analysts' long-term EPS forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings growth rate forecasts should be used with caution as inputs for valuation and cost of capital purposes.

C. ISSUES REGARDING THE SUPERIORITY OF ANALYSTS' EPS FORECASTS OVER HISTORIC AND TIME-SERIES ESTIMATES OF LONG-TERM EPS GROWTH

As highlighted by the classic study by Brown and Rozeff (1976) and the other studies that followed, analysts' forecasts of quarterly earnings estimates are superior to the estimates derived from historic and time-series analyses.[10] This is often attributed to the information and timing advantage that analysts have over historic and time-series analyses. These studies relate to analysts' forecasts of quarterly and/or annual forecasts, and not to long-term EPS growth rate forecasts. The previously cited studies by Harris (1999), Chan, Karceski, and Lakonishok (2003), and Lacina, Lee, and Xu (2011) all conclude that analysts' forecasts are no better than time-series models and historic growth rates in forecasting long-term EPS. Harris (1999) and Lacina, Lee, and Xu (2011) concluded that historic GDP growth was superior to analysts' forecasts for long run earnings growth. These overall results are similar to the findings by Bradshaw, Drake, Myers, and Myers (2009) that discovered that time-series estimates of annual earnings are more accurate over longer horizons than analysts' forecasts of earnings. As the

[10] L. Brown and M. Rozeff, "The Superiority of Analyst Forecasts as Measures of Expectations: Evidence from Earnings," *The Journal of Finance* 33 (1): pp. 1-16 (1976).

authors state, "These findings suggest an incomplete and misleading generalization about the superiority of analysts' forecasts over even simple time-series-based earnings forecasts."[11]

D. STUDY OF THE ACCURACY OF ANALYSTS' LONG-TERM EARNINGS GROWTH RATES

To evaluate the accuracy of analysts' EPS forecasts, I have compared actual 3-5 year EPS growth rates with forecasted EPS growth rates on a quarterly basis over the past 20 years for all companies covered by the I/B/E/S data base. In Panel A of page 1 of Exhibit JRW-B1, I show the average analysts' forecasted 3-5 year EPS growth rate with the average actual 3-5 year EPS growth rate for the past twenty years.

The following example shows how the results can be interpreted. For the 3-5 year period prior to the first quarter of 1999, analysts had projected an EPS growth rate of 15.13%, but companies only generated an average annual EPS growth rate over the 3-5 years of 9.37%. This projected EPS growth rate figure represented the average projected growth rate for over 1,510 companies, with an average of 4.88 analysts' forecasts per company. For the entire twenty-year period of the study, for each quarter there were on average 5.6 analysts' EPS projections for 1,281 companies. Overall, my findings indicate that forecast errors for long-term estimates are predominantly positive, which indicates an upward bias in growth rate estimates. The mean and median forecast errors over the observation period are 143.06% and 75.08%, respectively. The forecasting errors

[11] M. Bradshaw, M. Drake, J. Myers, and L. Myers, "A Re-examination of Analysts' Superiority Over Time-Series Forecasts," Workings paper, (1999), http://ssrn.com/abstract=1528987.

are negative for only eleven of the eighty quarterly time periods: five consecutive quarters starting at the end of 1995 and six consecutive quarters starting in 2006. As shown in Panel A of page 1 of Exhibit JRW-B1, the quarters with negative forecast errors were for the 3-5 year periods following earnings declines associated with the 1991 and 2001 economic recessions in the U.S. Thus, there is evidence of a persistent upward bias in long-term EPS growth forecasts.

The average 3-5 year EPS growth rate projections for all companies provided in the I/B/E/S database on a quarterly basis from 1988 to 2008 are shown in Panel B of page 1 of Exhibit JRW-B1. In this graph, no comparison to actual EPS growth rates is made, and hence, there is no follow-up period. Therefore, since companies are not lost from the sample due to a lack of follow-up EPS data, these results are for a larger sample of firms. The average projected growth rate increased to the 18.0% range in 2006, and has since decreased to about 14.0%.

The upward bias in analysts' long-term EPS growth rate forecasts appears to be known in the markets. Page 2 of Exhibit JRW-B1 provides an article published in the *Wall Street Journal*, dated March 21, 2008, that discusses the upward bias in analysts' EPS growth rate forecasts.[12] In addition, a recent *Bloomberg Businessweek* article also highlighted the upward bias in analysts' EPS forecasts, citing a study by

[12] Andrew Edwards, "Study Suggests Bias in Analysts' Rosy Forecasts," *Wall Street Journal* (March 21, 2008), p. C6.

McKinsey Associates. This article is provided on pages 3 and 4 of Exhibit JRW-B1. The article concludes with the following:[13]

The bottom line: *Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects.*

E. REGULATORY DEVELOPMENTS AND THE ACCURACY OF ANALYSTS' LONG-TERM EARNINGS GROWTH RATES FORECASTS

Whereas Hovakimian and Saenyasiri evaluated the impact of regulations on analysts' short-term EPS estimates, there is little research on the impact of Reg FD and GARS on the long-term EPS forecasts of Wall Street analysts. My study with Patrick Cusatis did find that the long-term EPS growth rate forecasts of analysts did not decline significantly and have continued to be overly optimistic in the post-Reg FD and GARS period.[14] Analysts' long-term EPS growth rate forecasts before and after GARS are about two times the level of historic GDP growth. These observations are supported by a *Wall Street Journal* article entitled "Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant – and the Estimates Help to Buoy the Market's Valuation." The following quote provides insight into the continuing bias in analysts' forecasts:

> Hope springs eternal, says Mark Donovan, who manages Boston Partners Large Cap Value Fund. "You would have thought that, given what happened in the last three years, people would have given up the ghost. But in large measure they have not.

[13] Roben Farzad, 'For Analysts, Things are Always Looking Up,' *Bloomberg Businessweek* (June 14, 2010), pp. 39-40.

[14] P. Cusatis and J. R. Woolridge, "The Accuracy of Analysts' Long-Term EPS Growth Rate Forecasts," Working Paper (July 2008).

> These overly optimistic growth estimates also show that, even with all the regulatory focus on too-bullish analysts allegedly influenced by their firms' investment-banking relationships, a lot of things haven't changed. Research remains rosy and many believe it always will.[15]

These observations are echoed in a recent McKinsey study entitled "Equity Analysts: Still too Bullish" which involved a study of the accuracy on analysts long-term EPS growth rate forecasts. The authors conclude that after a decade of stricter regulation, analysts' long-term earnings forecasts continue to be excessively optimistic. They made the following observation (emphasis added): [16]

> Alas, a recently completed update of our work only reinforces this view—despite a series of rules and regulations, dating to the last decade, that were intended to improve the quality of the analysts' long-term earnings forecasts, restore investor confidence in them, and prevent conflicts of interest. For executives, many of whom go to great lengths to satisfy Wall Street's expectations in their financial reporting and long-term strategic moves, this is a cautionary tale worth remembering. This pattern confirms our earlier findings that analysts typically lag behind events in revising their forecasts to reflect new economic conditions. When economic growth accelerates, the size of the forecast error declines; when economic growth slows, it increases. So as economic growth cycles up and down, the actual earnings S&P 500 companies report occasionally coincide with the analysts' forecasts, as they did, for example, in 1988, from 1994 to 1997, and from 2003 to 2006. Moreover, analysts have been persistently overoptimistic for the past 25 years, with estimates ranging from 10 to 12 percent a year, compared with actual earnings growth of 6 percent. Over this time frame, actual earnings growth surpassed forecasts in only two instances, both during the earnings recovery following a recession. On average, analysts' forecasts have been almost 100 percent too high.

F. ANALYSTS' LONG-TERM EPS GROWTH RATE FORECASTS FOR UTILITY COMPANIES

[15] Ken Brown, "Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant – and the Estimates Help to Buoy the Market's Valuation," *Wall Street Journal*, p. C1, (January 27, 2003).
[16] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, "Equity Analysts, Still Too Bullish," *McKinsey on Finance*, pp. 14-17, (Spring 2010).

To evaluate whether analysts' EPS growth rate forecasts are upwardly biased for utility companies, I conducted a study similar to the one described above using a group of electric utility and gas distribution companies. The results are shown on Panels A and B of page 5 of Exhibit JRW-B1. The projected EPS growth rates for electric utilities have been in the 4% to 6% range over the last twenty years, with the recent figures at approximately 5%. As shown, the achieved EPS growth rates have been volatile and, on average, below the projected growth rates. Over the entire period, the average quarterly 3-5 year projected and actual EPS growth rates are 4.59% and 2.90%, respectively.

For gas distribution companies, the projected EPS growth rates have declined from about 6% in the 1990s to about 5% in the 2000s. The achieved EPS growth rates have been volatile. Over the entire period, the average quarterly 3-5 year projected and actual EPS growth rates are 5.15% and 4.53%, respectively.

Overall, the upward bias in EPS growth rate projections for electric utility and gas distribution companies is not as pronounced as it is for all companies. Nonetheless, the results here are consistent with the results for companies in general -- analysts' projected EPS growth rate forecasts are upwardly biased for utility companies.

G. *VALUE LINE*'S LONG-TERM EPS GROWTH RATE FORECASTS

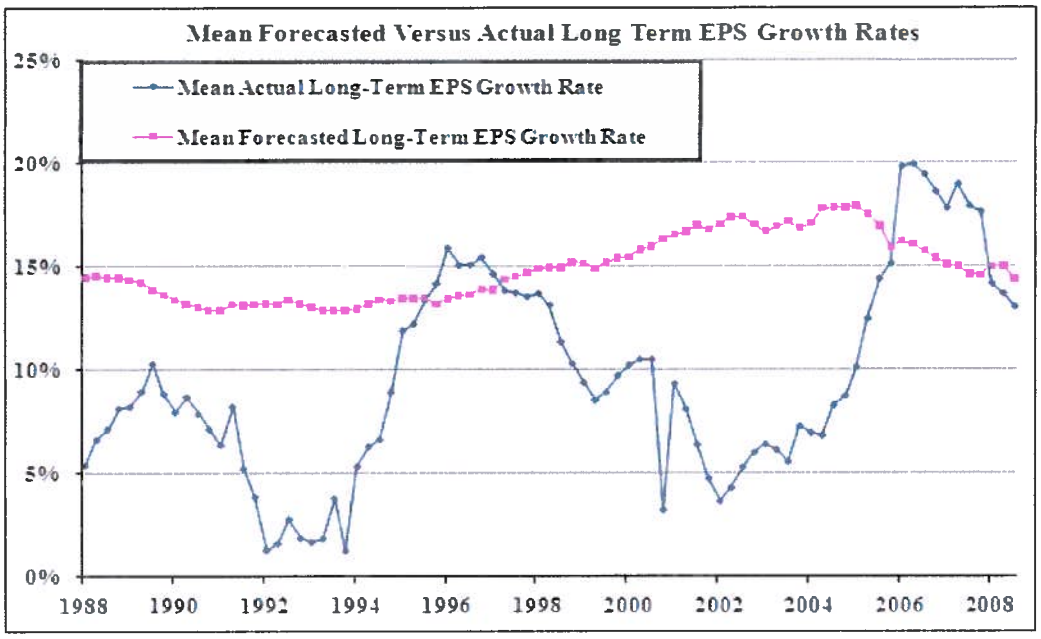
To assess *Value Line*'s earnings growth rate forecasts, I used the *Value Line Investment Analyzer*. The results are summarized in Panel A of Page 6 of Exhibit JRW-B1. I initially filtered the database and found that *Value Line* has 3-

5 year EPS growth rate forecasts for 2,333 firms. The average projected EPS growth rate was 14.70%. This is high given that the average historical EPS growth rate in the U.S. is about 7%. A major factor seems to be that *Value Line* only predicts negative EPS growth for 43 companies. This is less than two percent of the companies covered by *Value Line*. Given the ups and downs of corporate earnings, this is unreasonable.

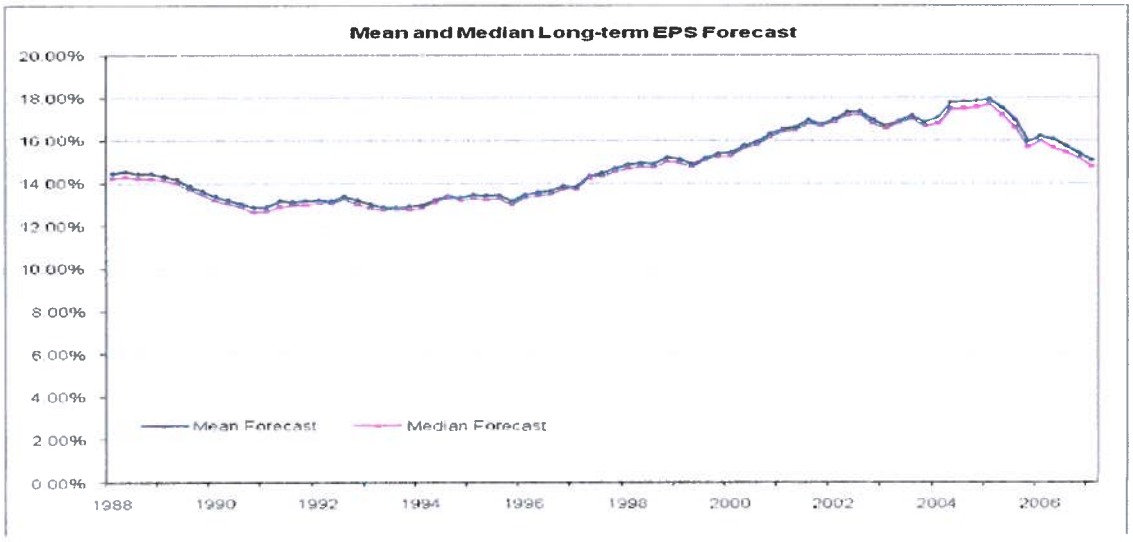
To put this figure in perspective, I screened the *Value Line* companies to see what percent of companies covered by *Value Line* had experienced negative EPS growth rates over the past five years. *Value Line* reported a five-year historic growth rate for 2,219 companies. The results are shown in Panel B of page 6 of Exhibit JRW-B1 and indicate that the average 5-year historic growth rate was 3.90%, and *Value Line* reported negative historic growth for 844 firms which represents 38.0% of these companies.

These results indicate that *Value Line*'s EPS forecasts are excessive and unrealistic. It appears that the analysts at *Value Line* are similar to their Wall Street brethren in that they are reluctant to forecast negative earnings growth.

Panel A
Long-Term Forecasted Versus Actual EPS Growth Rates
1988-2009



Panel B
Long-Term Forecasted EPS Growth Rates
1988-2007



Source: Patrick J. Cusatis and J. Randall Woolridge, "The Accuracy of Analysts' Long-Term Earnings Per Share Growth Rate Forecasts," (July, 2008).

THE WALL STREET JOURNAL.

Study Suggests Bias in Analysts' Rosy Forecasts

By ANDREW EDWARDS
March 21, 2008; Page C6

Despite an economy teetering on the brink of a recession -- if not already in one -- analysts are still painting a rosy picture of earnings growth, according to a study done by Penn State's Smeal College of Business.

The report questions analysts' impartiality five years after then-New York Attorney General Eliot Spitzer forced analysts to pay $1.5 billion in damages after finding evidence of bias.

"Wall Street analysts basically do two things: recommend stocks to buy and forecast earnings," said J. Randall Woolridge, professor of finance. "Previous studies suggest their stock recommendations do not perform well, and now we show that their long-term earnings-per-share growth-rate forecasts are excessive and upwardly biased."

The report, which examined analysts' long-term (three to five years) and one-year per-share earnings expectations from 1984 through 2006 found that companies' long-term earnings growth surpassed analysts' expectations in only two instances, and those came right after recessions.

Over the entire time period, analysts' long-term forecast earnings-per-share growth averaged 14.7%, compared with actual growth of 9.1%. One-year per-share earnings expectations were slightly more accurate: The average forecast was for 13.8% growth and the average actual growth rate was 9.8%.

"A significant factor in the upward bias in long-term earnings-rate forecasts is the reluctance of analysts to forecast" profit declines, Mr. Woolridge said. The study found that nearly one-third of all companies experienced profit drops over successive three-to-five-year periods, but analysts projected drops less than 1% of the time.

The study's authors said, "Analysts are rewarded for biased forecasts by their employers, who want them to hype stocks so that the brokerage house can garner trading commissions and win underwriting deals."

They also concluded that analysts are under pressure to hype stocks to generate trading commissions, and they often don't follow stocks they don't like.

Write to Andrew Edwards at andrew.edwards@dowjones.com

Markets & Finance June 10, 2010, 5:00PM EST

Bloomberg Businessweek

For Analysts, Things Are Always Looking Up

They're raising earnings estimates for U.S. companies at a record pace

By Roben Farzad

For years, the rap on Wall Street securities analysts was that they were shills, reflexively producing upbeat research on companies they cover to help their employers win investment banking business. The dynamic was well understood: Let my bank take your company public, or advise it on this acquisition, and—wink, wink—I will recommend your stock through thick or thin. After the Internet bubble burst, that was supposed to change. In April 2003 the Securities & Exchange Commission reached a settlement with 10 Wall Street firms in which they agreed, among other things, to separate research from investment banking.

Seven years on, Wall Street analysts remain a decidedly optimistic lot. Some economists look at the global economy and see troubles—the European debt crisis, persistently high unemployment worldwide, and housing woes in the U.S. Stock analysts as a group seem unfazed. Projected 2010 profit growth for companies in the Standard & Poor's 500-stock index has climbed seven percentage points this quarter, to 34 percent, data compiled by Bloomberg show. According to Sanford C. Bernstein (AB), that's the fastest pace since 1980, when the Dow Jones industrial average was quoted in the hundreds and Nancy Reagan was getting ready to order new window treatments for the Oval Office.

Among the companies analysts expect to excel: Intel (INTL) is projected to post an increase in net income of 142 percent this year. Caterpillar, a multinational that gets much of its revenue abroad, is expected to boost its net income by 47 percent this year. Analysts have also hiked their S&P 500 profit estimate for 2011 to $95.53 a share, up from $92.45 at the beginning of January, according to Bloomberg data. That would be a record, surpassing the previous high reached in 2007.

With such prospects, it's not surprising that more than half of S&P 500-listed stocks boast overall buy ratings. It is telling that the proportion has essentially held constant at both the market's October 2007 high and March 2009 low, bookends of a period that saw stocks fall by more than half. If the analysts are correct, the market would appear to be attractively priced right now. Using the $95.53 per share figure, the price-to-earnings ratio of the S&P 500 is a modest 11 as of June 9. If, however, analysts end up being too high by, say, 20 percent, the P/E would jump to almost 14.

If history is any guide, chances are good that the analysts are wrong. According to a recent McKinsey report by Marc Goedhart, Rishi Raj, and Abhishek Saxena, "Analysts have been persistently over-optimistic for 25 years," a stretch that saw them peg earnings growth at 10 percent to 12 percent a year when the actual number was ultimately 6 percent. "On average," the researchers note, "analysts' forecasts have been almost 100 percent too high," even after regulations were enacted to weed out conflicts and improve the rigor of their calculations. As the chart below shows, in most years analysts have been forced to lower their estimates after it became apparent they had set them too high.

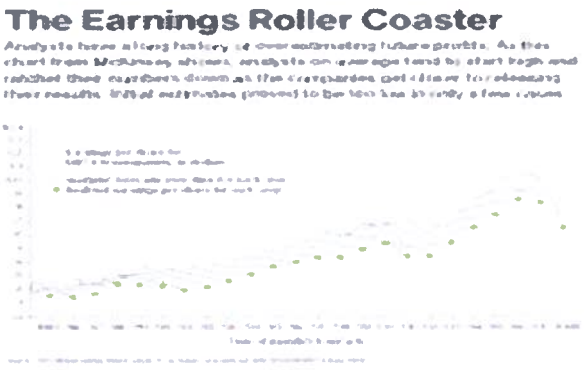
While a few analysts, like Meredith Whitney, have made their names on bearish calls, most are chronically bullish. Part of the problem is that despite all the reforms they remain too aligned with the companies they cover. "Analysts still need to get the bulk of their information from companies, which have an incentive to be over-optimistic," says Stephen Bainbridge, a professor at UCLA Law School who specializes in the securities industry. "Meanwhile, analysts don't want to threaten that ongoing access by being too negative." Bainbridge says that with the era of the overpaid, superstar analyst long over, today's job description calls for resisting the urge to be an iconoclast. "It's a matter of herd behavior," he says.

So what's a more plausible estimate of companies' earning power? Looking at factors including the strengthening dollar, which hurts exports, and higher corporate borrowing costs, David Rosenberg, chief economist at Toronto-based investment shop Gluskin Sheff + Associates, says "disappointment looms." Bernstein's Adam Parker says every 10 percent drop in the value of the euro knocks U.S. corporate earnings down by 2.5 percent to 3 percent. He sees the S&P 500 earning $86 a share next year.

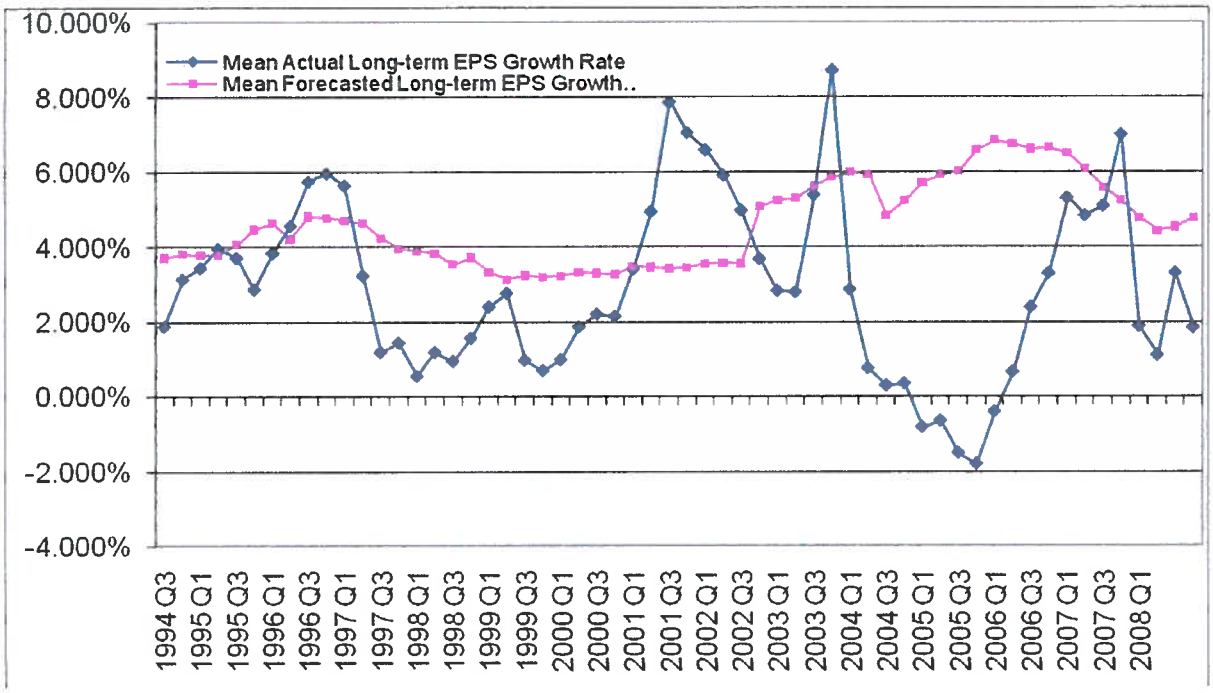
As realities hit home, "It's only natural that analysts will have to revise down their views," says Todd Salamone, senior vice-president at Schaeffer's Investment Research. The market may be making its own downward adjustment, as the S&P 500 has already fallen 14 percent from its high in April. If precedent holds, analysts are bound to curb their enthusiasm belatedly, telling us next year what we really needed to know this year.

The bottom line: *Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects.*

Bloomberg Businessweek Senior Writer Farzad covers Wall Street and international finance.

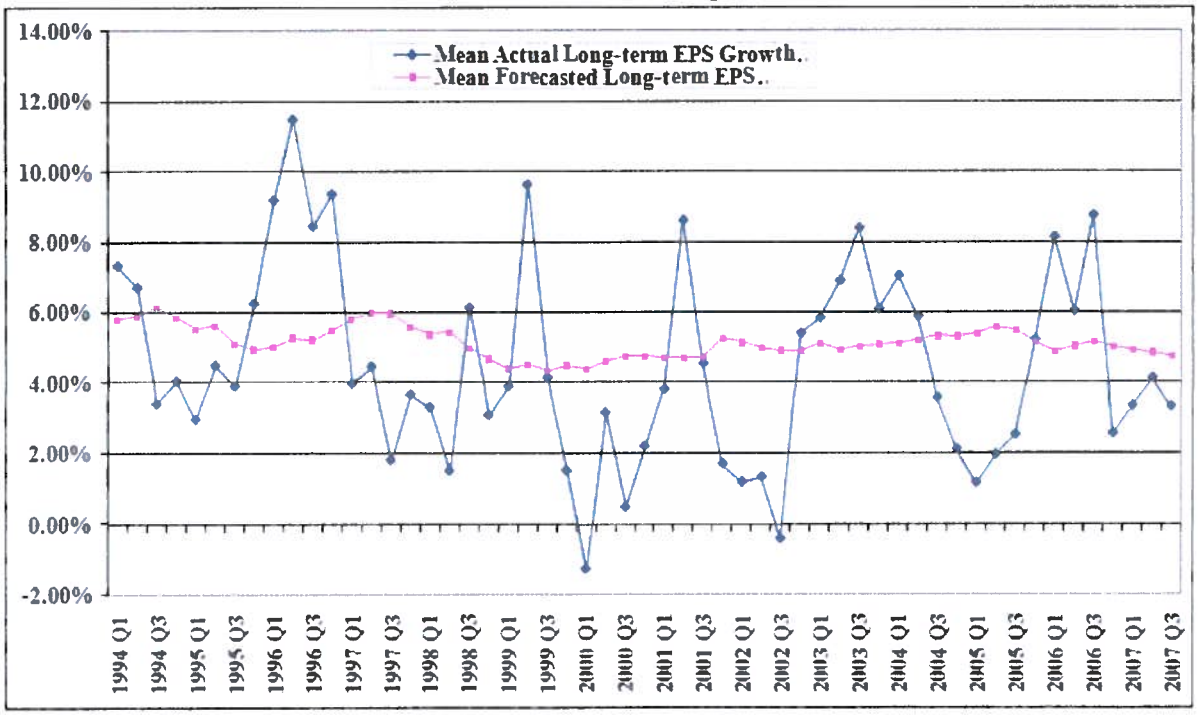


Panel A
Long-Term Forecasted Versus Actual EPS Growth Rates
Electric Utility Companies
1988-2008



Data Source: IBES

Panel B
Long-Term Forecasted Versus Actual EPS Growth Rates
Gas Distribution Companies



Panel A
Value Line 3-5 year EPS Growth Rate Forecasts

	Average Projected EPS Growth rate	Number of Negative EPS Growth Projections	Percent of Negative EPS Growth Projections
2,333 Companies	14.70%	43	1.80%

Value Line Investment Survey, June, 2012

Panel B
Historical Five-Year EPS Growth Rates for Value Line Companies

	Average Historical EPS Growth rate	Number with Negative Historical EPS Growth	Percent with Negative Historical EPS Growth
2,219 Companies	3.90%	844	38.00%

Value Line Investment Survey, June, 2012

Appendix C
Building Blocks Equity Risk Premium

A. THE BUILDING BLOCKS MODEL

Ibbotson and Chen (2003) evaluate the ex post historical mean stock and bond returns in what is called the Building Blocks approach.[1] They use 75 years of data and relate the compounded historical returns to the different fundamental variables employed by different researchers in building ex ante expected equity risk premiums. Among the variables included were inflation, real EPS and DPS growth, ROE and book value growth, and price-earnings ("P/E") ratios. By relating the fundamental factors to the ex post historical returns, the methodology bridges the gap between the ex post and ex ante equity risk premiums. Ilmanen (2003) illustrates this approach using the geometric returns and five fundamental variables – inflation ("CPI"), dividend yield ("D/P"), real earnings growth ("RG"), repricing gains ("PEGAIN"), and return interaction/reinvestment ("INT").[2] This is shown on page 1 of Exhibit JRW-C1. The first column breaks down the 1926-2000 geometric mean stock return of 10.7% into the different return components demanded by investors: the historical U.S. Treasury bond return (5.2%), the excess equity return (5.2%), and a small interaction term (0.3%). This 10.7% annual stock return over the 1926-2000 period can then be broken down into the following fundamental elements: inflation (3.1%), dividend yield (4.3%), real earnings growth (1.8%), repricing gains (1.3%) associated with higher P/E ratios, and a small interaction term (0.2%).

[1] Roger Ibbotson and Peng Chen, "Long Run Returns: Participating in the Real Economy," *Financial Analysts Journal*, (January 2003).

[2] Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management*, (Winter 2003), p. 11.

The third column in the graph on page 1 of Exhibit JRW-C1 shows current inputs to estimate an ex ante expected market return. These inputs include the following:

CPI – To assess expected inflation, I have employed expectations of the short-term and long-term inflation rate. Long-term inflation forecasts are available in the Federal Reserve Bank of Philadelphia's publication entitled *Survey of Professional Forecasters*. While this survey is published quarterly, only the first quarter survey includes long-term forecasts of gross domestic product ("GDP") growth, inflation, and market returns. In the first quarter 2014 survey, published on February 15, 2014, the median long-term (10-year) expected inflation rate as measured by the CPI was 2.30% (see Panel A of page 2 of Exhibit JRW-C1).

The University of Michigan's Survey Research Center surveys consumers on their short-term (one-year) inflation expectations on a monthly basis. As shown on page 3 of Exhibit JRW-C1, the current short-term expected inflation rate is 3.1 %.

As a measure of expected inflation, I will use the average of the long-term (2.3%) and short-term (3.0%) inflation rate measures, or 2.65%.

D/P – As shown on page 4 of Exhibit JRW-C1, the dividend yield on the S&P 500 has fluctuated from 1.0% to almost 3.5% from 2000-2010. Ibbotson and Chen (2003) report that the long-term average dividend yield of the S&P 500 is 4.3%. As of February 2014, the indicated S&P 500 dividend yield was 2.1%. I will use this figure in my ex ante risk premium analysis.

RG – To measure expected real growth in earnings, I use the historical real earnings growth rate S&P 500 and the expected real GDP growth rate. The S&P 500 was created in 1960 and includes 500 companies which come from ten different sectors of the economy. On page 5 of Exhibit JRW-C1, real EPS growth is computed using the CPI as a measure of inflation. The real growth figure over 1960-2011 period for the S&P 500 is 2.8%.

The second input for expected real earnings growth is expected real GDP growth. The rationale is that over the long-term, corporate profits have averaged 5.50% of U.S. GDP.[3] Expected real GDP growth, according to the Federal Reserve Bank of Philadelphia's *Survey of Professional Forecasters,* is 2.6% (see Panel B of page 2 of Exhibit JRW-C1).

Given these results, I will use 2.75%, for real earnings growth.

PEGAIN – PEGAIN is the repricing gain associated with an increase in the P/E ratio. It accounted for 1.3% of the 10.7% annual stock return in the 1926-2000 period. In estimating an ex ante expected stock market return, one issue is whether investors expect P/E ratios to increase from their current levels. The P/E ratios for the S&P 500 over the past 25 years are shown on page 4 of Exhibit JRW-C1. The run-up and eventual peak in P/Es in the year 1999 is very evident in the chart. The average P/E declined until late 2006, and then increased to higher high levels, primarily due to the decline in EPS as a result of the financial crisis and the recession. As of February, 2014, the average P/E for the S&P 500 was 15.1X, which is in line with the historic average. Since the current figure is

[3]Marc. H. Goedhart, et al, "The Real Cost of Equity," *McKinsey on Finance* (Autumn 2002), p.14.

near the historic average, a PEGAIN would not be appropriate in estimating an ex ante expected stock market return.

Expected Return formBuilding Blocks Approach - The current expected market return is represented by the last column on the right in the graph entitled "Decomposing Equity Market Returns: The Building Blocks Methodology" set forth on page 1 of Exhibit JRW-C1. As shown, the expected market return of 7.50% is composed of 2.65% expected inflation, 2.10% dividend yield, and 2.75% real earnings growth rate.

This expected return of 7.50% is consistent with other expected return forecasts.

1. In the first quarter 2014 *Survey of Financial Forecasters*, published on February 15, 2014 by the Federal Reserve Bank of Philadelphia, the median long-term expected return on the S&P 500 was 6.43% (see Panel D of page 2 of Exhibit JRW-C1).
2. John Graham and Campbell Harvey of Duke University conduct a quarterly survey of corporate CFOs. The survey is a joint project of Duke University and *CFO Magazine.* In the December 2013 survey, the mean expected return on the S&P 500 over the next ten years was 6.30%.[4]

B. THE BUILDING BLOCKS EQUITY RISK PREMIUM

[4] The survey results are available at www.cfosurvey.org.

The current 30-year U.S. Treasury yield is 3.5%. This ex ante equity risk premium is simply the expected market return from the Building Blocks methodology minus this risk-free rate:

Ex Ante Equity Risk Premium = 7.50% - 3.50% = 4.0%

This is only one estimate of the equity risk premium. As shown on page 6 of Exhibit JRW-11, I am also using the results of many other studies and surveys to determine an equity risk premium for my CAPM.

Exhibit JRW-C1

Decomposing Equity Market Returns
The Building Blocks Methodology

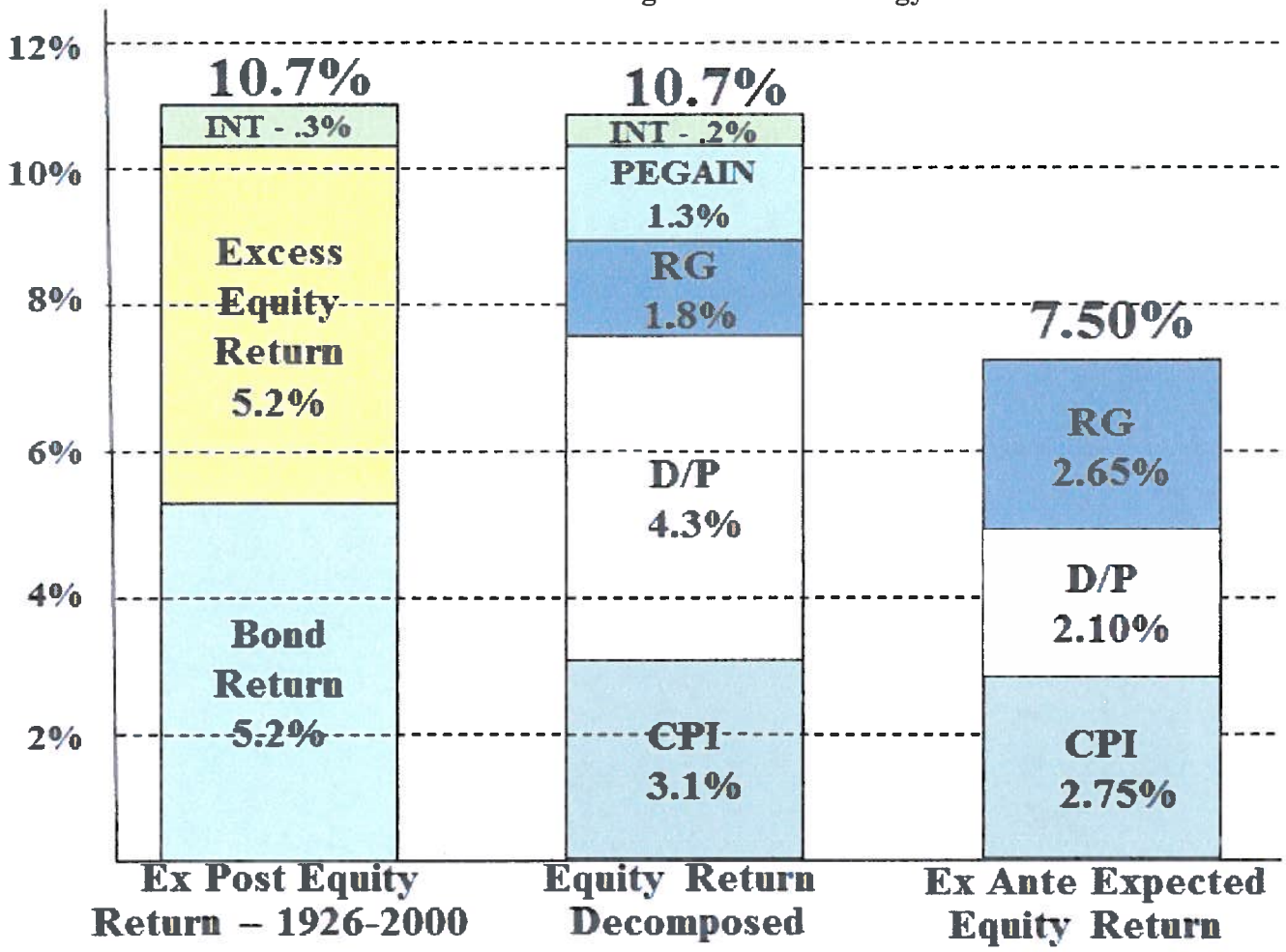


Exhibit JRW-C1

2014 Survey of Professional Forecasters
Philadelphia Federal Reserve Bank
Long-Term Forecasts

Table Seven
LONG-TERM (10 YEAR) FORECASTS

Panel A

SERIES: CPI INFLATION RATE	
STATISTIC	
MINIMUM	1.21
LOWER QUARTILE	2.05
MEDIAN	2.30
UPPER QUARTILE	2.50
MAXIMUM	3.40
MEAN	2.29
STD. DEV.	0.39
N	40
MISSING	5

Panel B

SERIES: REAL GDP GROWTH RATE	
STATISTIC	
MINIMUM	1.75
LOWER QUARTILE	2.40
MEDIAN	2.60
UPPER QUARTILE	2.80
MAXIMUM	3.50
MEAN	2.57
STD. DEV.	0.39
N	38
MISSING	7

Panel C

SERIES: PRODUCTIVITY GROWTH	
STATISTIC	
MINIMUM	1.00
LOWER QUARTILE	1.50
MEDIAN	1.80
UPPER QUARTILE	2.00
MAXIMUM	2.40
MEAN	1.76
STD. DEV.	0.37
N	29
MISSING	16

Panel D

SERIES: STOCK RETURNS (S&P 500)	
STATISTIC	
MINIMUM	2.70
LOWER QUARTILE	5.00
MEDIAN	6.00
UPPER QUARTILE	7.20
MAXIMUM	12.00
MEAN	6.43
STD. DEV.	2.07
N	27
MISSING	18

Panel E

SERIES: BOND RETURNS (10-YEAR)	
STATISTIC	
MINIMUM	2.70
LOWER QUARTILE	4.00
MEDIAN	4.35
UPPER QUARTILE	4.70
MAXIMUM	5.30
MEAN	4.25
STD. DEV.	0.64
N	33
MISSING	12

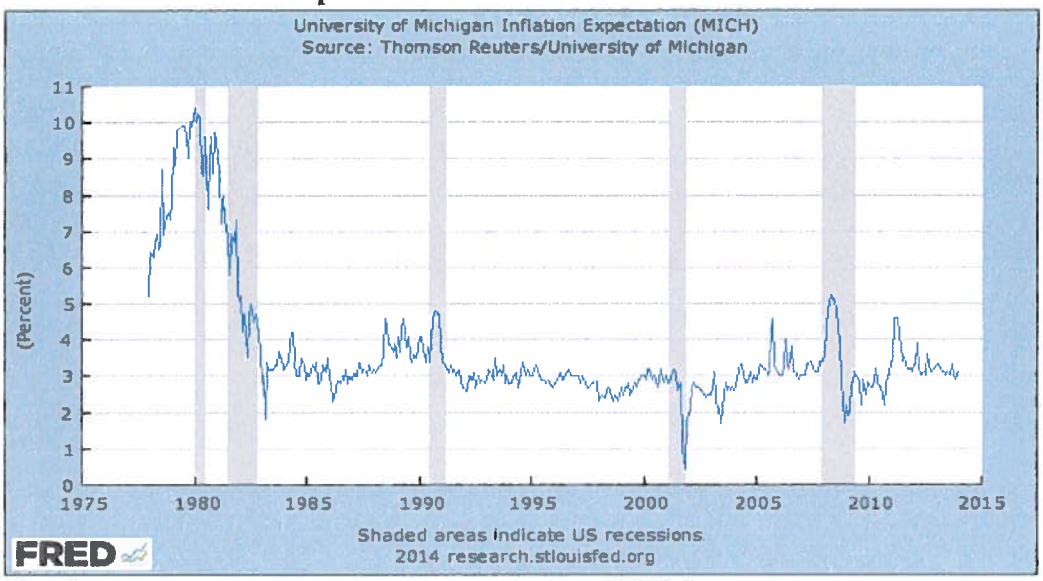
Panel F

SERIES: BILL RETURNS (3-MONTH)	
STATISTIC	
MINIMUM	0.10
LOWER QUARTILE	1.92
MEDIAN	2.50
UPPER QUARTILE	2.88
MAXIMUM	4.20
MEAN	2.37
STD. DEV.	0.85
N	32
MISSING	13

Source: Philadelphia Federal Reserve Bank, Survey of Professional Forecasters, February 15, 2014.

Exhibit JRW-C1

University of Michigan Survey Research Center
Expected Short-Term Inflation Rate

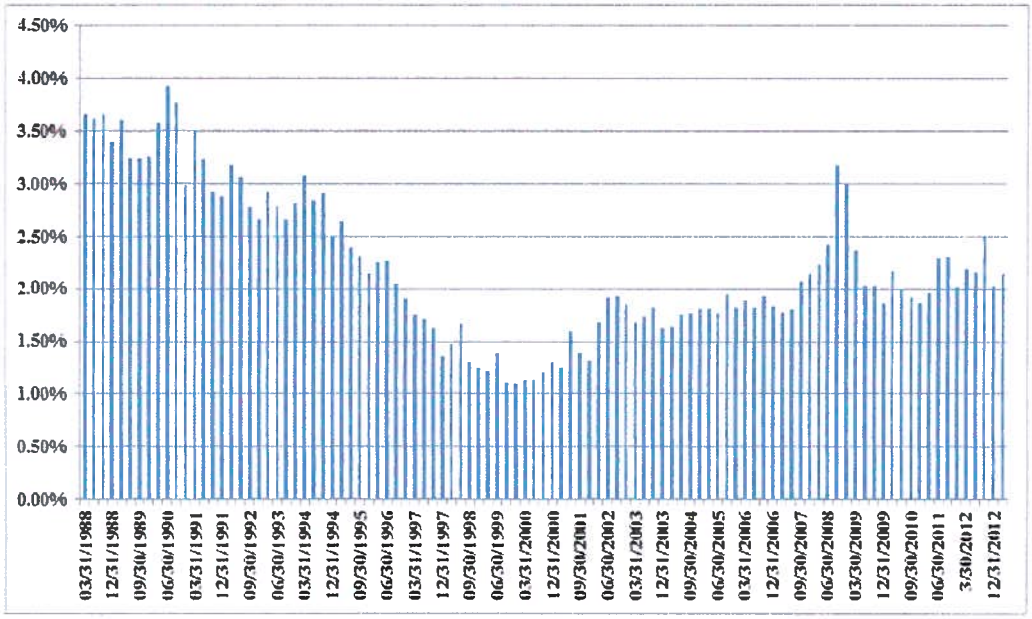


Data Source: http://research.stlouisfed.org/fred2/series/MICH?cid=98

Exhibit JRW-C1

Decomposing Equity Market Returns
The Building Blocks Methodology

S&P 500 Dividend Yield



S&P 500 P/E Ratio

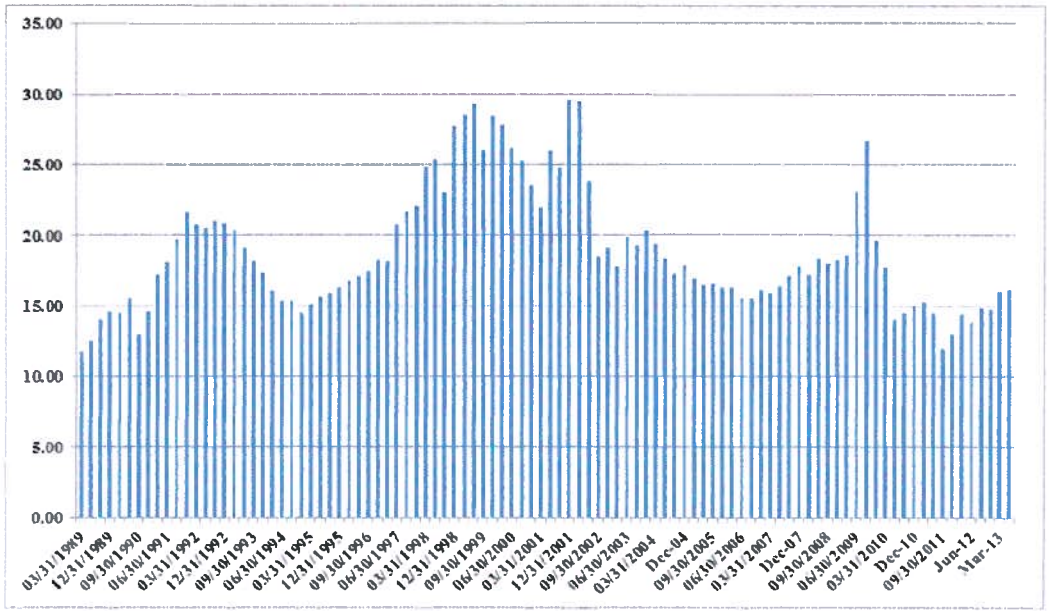


Exhibit JRW-C1

Real S&P 500 EPS Growth Rate

Year	S&P 500 EPS	Annual Inflation CPI	Inflation Adjustment Factor	Real S&P 500 EPS	
1960	3.10	1.48%	1.00	3.10	
1961	3.37	0.67%	1.01	3.35	
1962	3.67	1.22%	1.02	3.60	
1963	4.13	1.65%	1.04	3.99	
1964	4.76	1.19%	1.05	4.54	
1965	5.30	1.92%	1.07	4.96	
1966	5.41	3.35%	1.10	4.90	
1967	5.46	3.04%	1.14	4.80	
1968	5.72	4.72%	1.19	4.80	
1969	6.10	6.11%	1.26	4.83	
1970	5.51	5.49%	1.33	4.13	10-Year
1971	5.57	3.36%	1.38	4.04	2.91%
1972	6.17	3.41%	1.43	4.33	
1973	7.96	8.80%	1.55	5.13	
1974	9.35	12.20%	1.74	5.37	
1975	7.71	7.01%	1.86	4.14	
1976	9.75	4.81%	1.95	4.99	
1977	10.87	6.77%	2.08	5.22	
1978	11.64	9.03%	2.27	5.12	
1979	14.55	13.31%	2.57	5.65	
1980	14.99	12.40%	2.89	5.18	10-Year
1981	15.18	8.94%	3.15	4.82	2.29%
1982	13.82	3.87%	3.27	4.22	
1983	13.29	3.80%	3.40	3.91	
1984	16.84	3.95%	3.53	4.77	
1985	15.68	3.77%	3.67	4.28	
1986	14.43	1.13%	3.71	3.89	
1987	16.04	4.41%	3.87	4.14	
1988	24.12	4.42%	4.04	5.97	
1989	24.32	4.65%	4.23	5.75	
1990	22.65	6.11%	4.49	5.05	10-Year
1991	19.30	3.06%	4.63	4.17	-0.26%
1992	20.87	2.90%	4.76	4.38	
1993	26.90	2.75%	4.89	5.50	
1994	31.75	2.67%	5.02	6.32	
1995	37.70	2.54%	5.15	7.32	
1996	40.63	3.32%	5.32	7.64	
1997	44.09	1.70%	5.41	8.15	
1998	44.27	1.61%	5.50	8.05	
1999	51.68	2.68%	5.64	9.16	
2000	56.13	3.39%	5.84	9.62	10-Year
2001	38.85	1.55%	5.93	6.56	6.66%
2002	46.04	2.38%	6.07	7.59	
2003	54.69	1.88%	6.18	8.85	
2004	67.68	3.26%	6.38	10.60	
2005	76.45	3.52%	6.61	11.57	
2006	87.72	2.03%	6.74	13.01	
2007	82.54	4.08%	7.02	11.76	
2008	65.39	0.90%	7.08	9.24	
2009	59.65	2.72%	7.27	8.20	
2010	83.66	1.50%	7.38	11.33	10-Year
2011	97.05	2.96%	7.60	12.77	1.65%
2012	102.47	1.74%	7.73	13.25	
2013	107.45	**0.015**	7.85	13.69	
Data Source: http://pages.stern.nyu.edu/~adamodar/				Real EPS Growth	**2.8%**

Summary: Testimony Direct Testimony of J. Randall Woolridge, Ph.D., on Behalf of the Office of the Ohio Consumers' Counsel electronically filed by Ms. Deb J. Bingham on behalf of Grady, Maureen R. Ms.