COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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| IN THE MATTER OF: THE APPLICATION | ) | |
| OF KENTUCKY UTILITIES COMPANY | ) | Case No. |
| FOR AN ADJUSTMENT OF ITS | ) | 2014-00371 |
| ELECTRIC RATES | ) | |

**AFFIDAVIT OF Dr. J. Randall Woolridge**

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| | ) | |
| Commonwealth of Pennsylvania | ) | |
| | ) | |

Dr. J. Randall Woolridge, being first duly sworn, states the following: The prepared Pre-Filed Direct Testimony and the Schedules attached thereto constitute the direct testimony of Affiant in the above-styled case. Affiant states that he would give the answers set forth in the Pre-Filed Direct Testimony if asked the questions propounded therein. Affiant further states that, to the best of his knowledge, his statements made are true and correct. Further affiant saith not.

_____
Dr. J. Randall Woolridge

SUBSCRIBED AND SWORN to before me this ____ day of _____, 2015.

_____
NOTARY PUBLIC

My Commission Expires:_____

**KENTUCKY PUBLIC SERVICE COMMISSION**

**Case No. 2014-00371**

# KENTUCKY UTILITIES COMPANY

## COST OF CAPITAL

**DIRECT TESTIMONY**

**OF**

**J. RANDALL WOOLRIDGE, PH.D.**

**ON BEHALF OF**
**KENTUCKY OFFICE OF ATTORNEY GENERAL**
**March 6, 2015**

# KENTUCKY UTILITIES COMPANY
## Case No. 2014-00371

### Direct Testimony of J. Randall Woolridge, Ph. D.

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## LIST OF EXHIBITS


| Exhibit | Title |
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| JRW-2 | Treasury Yields |
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| JRW-4 | Summary Financial Statistics for Proxy Groups |
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| JRW-6 | The Relationship Between Expected ROE and Market-to-Book Ratios |
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**KENTUCKY UTILITIES COMPANY**
**Case No. 2014-00371**

**Summary of Direct Testimony of**
**J. Randall Woolridge, Ph. D.**

Dr. Woolridge is testifying as to the appropriate cost of capital for Kentucky Utilities ("KU") Company. He has also evaluated the testimony and rate of return recommendation, and testimony of KU witnesses Mr. Kent W. Blake, Dr. William E. Avera and Mr. Adrien McKenzie.

KU has proposed a capital structure that includes 2.98% short-term debt, 44.4% long-term debt and 53.03% common equity. Their cost of capital recommendation also includes short-term and long-term debt cost rates of 0.90% and 4.07% and a common equity cost rate or return on equity ("ROE") of 10.50%. Dr. Woolridge has adjusted the capital structure ratios of KU to be more reflective of the capital structures of electric utility companies and KU's company, PPL Corporation ("PPL"). His capital structure includes 50.0% debt and 50.0% common equity. He has used the Company's proposed debt cost rates. Dr. Woolridge has applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to a proxy group of publicly-held electric utility Company ("Electric Proxy Group") as well as the group developed by the Dr. Avera and Mr. McKenzie ("Avera/McKenzie Proxy Group"). Based on his equity cost rate range of 7.9% to 8.8%, he recommends an equity cost rate of 8.75% for KU. Using his capital structure and senior capital cost rates, he recommends an overall fair rate of return or cost of capital of 6.31%.

Dr. Woolridge also provides a critique of the ROE testimony of Dr. Avera and Mr. McKenzie. One major point of difference is the opposing views about the state of capital markets and capital costs. Dr. Avera and Mr. McKenzie note that while interest rates and capital costs are at historically low levels due to the financial crisis and the monetary stimulus, they point to forecasts of higher interest rates to indicate that capital costs are about to increase. Dr. Woolridge notes that (1) the economy has been growing for over four years and unemployment is down to 5.6%; (2) inflationary expectations and interest rates remain at historically low levels and are likely to stay there for some time; (3) reflective of the improved economic conditions, corporate earnings growth, and low interest rates, the stock market is at an all-time high; and (4) economists' forecasts of higher interest rates cited by Dr. Avera and Mr. McKenzie have consistently been incorrect in the past.

Dr. Woolridge also highlights several issues with Dr. Avera and Mr. McKenzie's equity cost rate studies. In particular, he notes that (1) they have ignored their low-end DCF results, (2) they have used inflated base interest rates and risk premiums in their CAPM and Utility Risk Premium studies; and (3) they have included adjustments for size and flotation costs.

Dr. Woolridge concludes whereas his 8.75% ROE recommendation is below the average authorized ROEs for electric utilities, he notes that state-level authorized ROEs tend to lag behind interest rates and capital costs, and that the trend is lower ROEs and the norm is below 10.0%.

**Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.**

A. 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

**Q. WHAT IS THE SCOPE OF YOUR TESTIMONY IN THIS PROCEEDING?**

A. I have been asked by Kentucky Office of Attorney General ("OAG") to provide an opinion as to the fair rate of return or cost of capital for Kentucky Utilities, Inc. ("KU" or the "Company") and to evaluate the cost of capital testimony of the Company.

**Q. HOW IS YOUR TESTIMONY ORGANIZED?**

A. First, I summarize my cost of capital recommendation for the Company and review the primary areas of contention on the Company's rate of return position. Second, I provide an assessment of capital costs in today's capital markets. Third, I discuss the selection of a proxy group of electric utility companies for estimating the cost of equity capital for the Company. Fourth, I discuss the Company's recommended capital structure and debt cost rates. Fifth, I provide an overview of the concept of the cost of equity capital, and then estimate the equity cost rate for the Company. Finally, I critique KU's rate of

return analysis and testimony. A table of contents is provided just after the title page.

**Q. PLEASE REVIEW THE ALTERNATIVE RECOMMENDATIONS REGARDING THE APPROPRIATE RATE OF RETURN FOR THE COMPANY.**

A. The Company's proposed capital structure and senior capital cost rates are provided by Mr. Kent W. Blake. I have adjusted the capital structure ratios of KU to be more reflective of the capital structures of electric utility companies and KU's parent company, PPL Corporation ("PPL"). This capital structure includes 50.0% debt and 50.0% common equity. I have employed the Company's proposed debt cost rates. Dr. William E. Avera and Mr. Adrien M. McKenzie have recommended a common equity cost rate of 10.64% for the Company. I have applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to a proxy group of publicly-held electric utility companies ("Electric Proxy Group") as well as the group developed by Dr. Avera and Mr. McKenzie ("Avera/McKenzie Proxy Group"). My analysis indicates an equity cost rate of 8.75% is appropriate for the Company. This figure represents the upper end of my equity cost rate range of 7.9% to 8.8%. With my proposed capital structure and senior capital cost rates, I am recommending an overall fair rate of return or cost of capital of 6.31%. This is summarized in Exhibit JRW-1.

**Q. PLEASE INITIALLY SUMMARIZE THE REGULATORY GUIDELINES ESTABLISHED FOR THE PURPOSE OF DETERMINING THE**

**APPROPRIATE ROE FOR A PUBLIC UTILITY.**

A. The United States Supreme Court established the guiding principles for establishing a fair return on capital for regulated public utilities in two cases: (1) *Bluefield* and (2) *Hope*.[1] In those cases, the Court recognized that the fair rate of return on equity should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital.

**Q. PLEASE REVIEW THE BASIC DIFFERENCES BETWEEN THE STATE OF THE MARKETS AND CAPITAL COSTS.**

A. A major point of difference between Dr. Avera and Mr. McKenzie and myself involves our opposing views about the state of capital markets and capital costs. Dr. Avera and Mr. McKenzie note that interest rates and capital costs are at historically low levels due to the financial crisis and the monetary stimulus provided by the Federal Reserve. However, they claim that with the end of the Federal Reserve's bond buying program and with growing concerns over ongoing political and economic conditions in the U.S. and abroad, interest rates and capital costs are going up. To support this claim, they cite forecasts of higher interest rates and states that "the KPSC should consider near-term forecasts for public utility bond yields in assessing the reasonableness of individual cost of equity estimates and in evaluating a fair ROE for KU."[2]

In my opinion, this outlook on the markets and capital costs has proven to be

[1] *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("*Hope*") and *Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923)("*Bluefield").*
[2] Avera/McKenzie Testimony, P. 17.

incorrect in the past and is way off the mark currently. The facts are: (1) the economy has been growing for over four years and unemployment is down to 5.6%; (2) inflationary expectations and interest rates remain at historically low levels and are likely to stay there for some time; (3) reflective of the improved economic conditions, corporate earnings growth, and low interest rates, the stock market is at an all-time high; and (4) economists' forecasts of higher interest rates cited by Dr. Avera and Mr. McKenzie have consistently been incorrect in the past. Overall, the economy and capital markets have recovered and are looking to the future, and with low interest rates and high stock prices, capital costs continue to be at historically low levels.

**Q. WHAT ARE THE PRIMARY ISSUES WITH RESPECT TO MEASURING THE COST OF EQUITY CAPITAL IN THIS PROCEEDING?**

A. There are two primary errors in Dr. Avera and Mr. McKenzie's DCF analysis. First, they have eliminated over 20% of their results because they believe these DCF estimates are too low. Second, their DCF growth rate is based exclusively on the projected long-term earnings per share ("EPS") growth rates of Wall Street analysts. I provide empirical evidence that demonstrates the long-term earnings growth rates of these 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 market or equity risk premium. The major area of disagreement involves the measurement and magnitude of the market risk premium. In short, Dr. Avera and Mr. McKenzie'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 and Mr. McKenzie use a projected market risk premium that includes an expected market return of 13.1%. Dr. Avera and Mr. McKenzie's projected market return uses analysts' long-term 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 5.5%, which: (1) factors all three approaches into estimating an equity premium; and (2) employs the results of many studies of the market 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 CFOs.

In estimating a cost of equity capital, in addition to the DCF and CAPM approaches, Dr. Avera and Mr. McKenzie have also used a Utility Risk Premium ("URP") approach and have included a flotation cost adjustment of 0.14% in their rate of return recommendation. In the URP model, their risk premium is based on the

historical relationship between the yields on long-term utility bonds and authorized 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 marketplace 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 and Mr. McKenzie's URP approach and its results reflect other factors used by utility commissions in authorizing ROEs in addition to capital costs. This may be especially true when the authorized ROE data includes 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 utility bond yields. Third, the historic risk premium is inflated as a measure of investors' required risk premium since 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.

**Q. HOW DO DR. AVERA AND MR. MCKENZIE'S URP ESTIMATES COMPARE TO THE ACTUAL STATE-LEVEL AUTHORIZED ROES?**

A. Their URP equity cost rate estimates overstate actual state-level authorized ROES. The authorized ROES for electric utilities have gradually decreased in recent years.

These authorized ROES declined from 10.01% in 2012, to 9.8% in 2013, to 9.76% in 2014, according to Regulatory Research Associates.[3]

**Q. PLEASE DISCUSS YOUR RECOMMENDATION IN LIGHT OF THE STATE-LEVEL AUTHORIZED ROES?**

A. Whereas my recommendation in this proceeding is below the average state-level authorized ROEs, my recommended ROE reflects the historically low capital cost rates in the markets. In my opinion, the ROEs authorized by state utility commissions have lagged behind capital market cost rates. And I believe that this has been particularly true in recent years as some commissions have been reluctant to authorize ROEs below 10%. However, the trend has clearly been towards lower ROEs, and the norm now is clearly below 10%. Hence, I believe that my recommended ROE reflects our historically low capital cost rates, and these low capital cost rates are finally being recognized by state utility commissions.

**Q. WHAT OTHER ISSUES DO YOU HAVE WITH THE EQUITY COST RATE ANALYSES OF DR. AVERA AND MR. MCKENZIE?**

A. There are several other less significant issues in Dr. Avera and Mr. McKenzie's equity cost rate analyses. In their CAPM analysis, they have: (1) used a projected risk-free rate that is about 200 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 unwarranted flotation cost and size adjustments. Dr. Avera and Mr. McKenzie have

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

also used several other ROE analyses which they refer to as "checks of reasonableness" on their 10.64% 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 the Company. I highlight a number of errors in these ROE benchmark analyses.

**Q. PLEASE SUMMARIZE THE PRIMARY AREAS OF DISAGREEMENT IN THIS PROCEEDING.**

A. In summary, the primary areas of disagreement in measuring the Company's cost of capital are: (1) our opposing views regarding the state of the markets and capital costs; (2) the Company's proposed capital structure; (3) the DCF equity cost rate estimates, and in particular, (a) Dr. Avera and Mr. McKenzie's ignoring over 20% of their low-end results, and (b) Dr. Avera and Mr. McKenzie's exclusive use of the earnings per share growth rates of Wall Street analysts and *Value Line*; (4) the base interest rate and market or equity risk premium in the URP and CAPM approaches; and (5) whether or not equity cost rate adjustments are needed to account for size and flotation costs.

## II. CAPITAL COSTS IN TODAY'S MARKETS

**Q. PLEASE DISCUSS CAPITAL COSTS IN U.S. MARKETS.**

A. 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 10-year U.S. Treasury bonds from 1953 to the present are provided on Panel A of Exhibit JRW-2. These yields peaked in the early 1980s and have generally declined since that time. These yields fell to below 3.0% in 2008 as a result of the financial crisis. From 2008 until 2011, these rates fluctuated between 2.5% and 3.5%. In 2012, the yields on 10-year Treasuries declined from 2.5% to 1.5% as the Federal Reserve initiated its Quantitative Easing III ("QEIII") program to support a low interest rate environment. These yields increased from mid-2012 to about 3.0% as of December of 2013 on speculation of a tapering of the Federal Reserve's QEIII policy. Since that time, the ten-year Treasury yield declined and bottomed out at 1.7% in January of 2015. This yield has since increased to 2.1%.

Panel B on Exhibit 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 premium 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 (like bond risk premiums) since 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.[4] 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.

**Q. PLEASE DISCUSS INTEREST RATES ON LONG-TERM UTILITY BONDS.**

A. Panel A of Exhibit JRW-3 provides the yields on A-rated public utility bonds. These yields peaked in November 2008 at 7.75% and henceforth declined significantly. These yields declined to below 4.0% in mid-2013, and then increased with interest rates in general to the 4.85% range as of late 2013. They have since declined to about 4.0%.

Panel B of Exhibit JRW-3 provides the yield spreads between long-term A-

[4] See Exhibit JRW-11, p. 5-6.

rated public utility bonds relative to the yields on 20-year U.S. 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 remained in that range.

**Q. PLEASE PROVIDE MORE DETAILS ABOUT THE FEDERAL RESERVE'S QEIII POLICY AND INTEREST RATES.**

A. On September 13, 2012, the Federal Reserve released its policy statement relating to QEIII. In its statement, the Federal Reserve announced that it intended to expand and extend its purchasing of long-term securities to about $85 billion per month.[5] The Federal Open Market Committee ("FOMC") also indicated that it intended to keep the target for the federal funds rate between 0 to 1/4 percent through at least mid-2015. In subsequent meetings over the next year, the Federal Reserve reiterated the continuation of its bond buying program and tied future monetary policy moves to unemployment rates and the level of interest rates.[6]

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 speculation was fueled by more positive economic data on jobs and the economy. The speculation led to an increase in interest rates, with the ten-year Treasury yield increasing to

[5] Board of Governors of the Federal Reserve System, *Statement Regarding Transactions in Agency Mortgage-Backed Securities and Treasury Securities* (Sept. 13, 2012).
[6] Board of Governors of the Federal Reserve System, *FOMC Statement* (Dec. 12, 2012).

about 3.0% as of December 2013. Due to continuing positive economic data, the Federal Reserve did decide to reduce its purchases of mortgage-backed securities and Treasuries by $5 billion per month beginning in January of 2014. Despite the announcement, the equity markets reacted positively to the news of the QEIII tapering due to the clarity provided by the FOMC on the future of the monetary stimulus, interest rates, and economic activity.

**Q. PLEASE DISCUSS THE FEDERAL RESERVE'S ACTIONS IN 2014.**

A. The January 29, 2014, FOMC meeting was historic as Janet Yellen took over from Ben Bernanke as Fed Chairman. The FOMC also tapered its bond buying program by another $5 billion per month beginning in February.[7] In subsequent monthly meetings during 2014, the FOMC noted that it saw improvement in the economy and the housing and labor markets, and it continued to taper its bond buying program. In its October 28-29 meeting, the FOMC put an end to its bond buying program, primarily due to improving economic conditions and, in particular, the better employment market.[8] The announcement was expected, and speculation grew as to when the Federal Reserve would change course in its "highly accommodative" monetary policy and move to increase short-term interest rates. This speculation continued through the end of 2014 and into 2015 as the economy has continued to advance and the unemployment rate has declined to 5.6%. With the improvement in the economy and the labor and housing markets, the FOMC focused on the sluggish pace of inflation. In its release following its January, 2015 meeting, the FOMC noted the following:

[7] Board of Governors of the Federal Reserve System, *FOMC Statement* (Jan. 29, 2014).
[8] Board of Governors of the Federal Reserve System, *FOMC Statement* (Nov. 19, 2014).

> Labor market conditions have improved further, with strong job gains and a lower unemployment rate. On balance, a range of labor market indicators suggests that underutilization of labor resources continues to diminish. Household spending is rising moderately; recent declines in energy prices have boosted household purchasing power. Business fixed investment is advancing, while the recovery in the housing sector remains slow. Inflation has declined further below the Committee's longer-run objective, largely reflecting declines in energy prices. Market-based measures of inflation compensation have declined substantially in recent months; survey-based measures of longer-term inflation expectations have remained stable.[9]

On the issue as to when short-term interest rates may be increased, the FOMC opted to provide a cautionary outlook for the markets:

> 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. [10]

**Q. HOW HAVE THE MARKETS REACTED TO THE FEDERAL RESERVE'S SCALE BACK AND END OF QEIII?**

A. The yield on the ten-year Treasury note was 3.0% as of January 2, 2014. This yield trended down during 2014, and bottomed out at 1.7% in January of 2015. This yield has since increased to 2.1%.[11]

[9] Board of Governors of the Federal Reserve System, *FOMC Statement* (January 28, 2015).
[10] *Ibid.*
[11] 10-Year Treasury Constant Maturity Rate, http://research.stlouisfed.org/fred2/series/DGS10/downloaddata..

**Q. DR. AVERA AND MR. MCKENZIE CLAIM THAT CAPITAL COSTS ARE ABOUT TO INCREASE AND POINT TO FORECASTS OF HIGHER INTEREST RATES AS PROOF. PLEASE RESPOND.**

A. Dr. Avera and Mr. McKenzie and I have significantly different views on the current state of the markets and capital costs. While Dr. Avera and Mr. McKenzie acknowledge that interest rates and capital costs are at historically low levels, they claim that with the end of the Federal Reserve's QEIII program and with concerns over political and economic conditions in the U.S. and abroad, interest rates and capital costs are going up. To support this claim, they cite forecasts of higher interest rates and note that the KPSC should consider these forecasts for public utility yields in setting a fair ROE for the Company.

However, I believe that Dr. Avera and Mr. McKenzie's outlook on the markets and capital costs is way off the mark. There are several factors that support an alternative view.

First, the economy has been growing for over four years, and, as noted above, the Federal Reserve continues to see continuing strength in the economy. The labor market has improved better than expected, with unemployment now down to 5.6%.

Second, interest rates remain at historically low levels and are likely to stay there for some time. There are two factors driving the continued lower interest rates: (1) as noted by the FOMC, inflationary expectations in the U.S. remain very low and are below the FOMC's target of 2.0%; and (2) global economic growth – including Europe and Asia – remains stagnant. As a result, while the yields on ten-year U.S. Treasury bonds are low by historic standards, these yields are well above the

government bond yields in Germany, Japan, and the United Kingdom. As a result, U.S. Treasuries offer an attractive yield relative to those of other major governments around the world, thereby attracting capital to the U.S. and keeping U.S. interest rates down.

Third, reflective of the economic conditions and earnings growth and low interest rates, the stock market is at an all-time high. The S&P 500 provided a return of 32% in 2013 and added another 13% in 2014.

Finally, Dr. Avera and Mr. McKenzie reference forecasts of higher interest as evidence that capital costs are about to increase significantly. In fact, with the end of the Fed's QEIII program, economists have been predicting higher interest rates for some time. However, these forecasts have proven to be wrong. In fact, all the economists in Bloomberg's interest rate survey forecasted interest rates would increase in 2014, and 100% of economists were wrong. According to the *Market Watch* article:

> The survey of economists' yield projections is generally skewed toward rising rates — only a few times since early 2009 have a majority of respondents to the Bloomberg survey thought rates would fall. But the unanimity of the rising rate forecasts in the spring was a stark reminder of how one-sided market views can become. It also teaches us that economists can be universally wrong.[12]

[12] Ben Eisen, *Yes, 100% of economists were dead wrong about yields*, MARKET WATCH, October 22, 2014.

As a final note on this issue, these consensus forecasts of economists that interest rates are going higher seem to be continually wrong. In fact, in 2014, *Bloomberg* reported that the Federal Reserve Bank of New York has stopped using the interest rate estimates of professional forecasters in the Bank's interest rate model due to the unreliability of those forecasters' interest rate forecasts.[13]

**Q. PLEASE SUMMARIZE YOUR THOUGHTS ON THE STATE OF THE MARKETS AND CAPITAL COSTS.**

A. Overall, the economy and capital markets have recovered and are looking to the future, and, with low interest rates and high stock prices, capital costs continue to be at historically low levels.

## III. PROXY GROUP SELECTION

**Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF RETURN RECOMMENDATION FOR THE COMPANY.**

A. To develop a fair rate of return recommendation for the Company, I have evaluated the return requirements of investors on the common stock of a proxy group of publicly-held electric utility companies ("Electric Proxy Group"). I have also employed the group developed by Dr. Avera and Mr. McKenzie ("Avera/McKenzie Proxy Group").

[13] Susanne Walker & Liz Capo McCormick, *Unstoppable $100 Trillion Bond Market Renders Models Useless*, BLOOMBERG.COM (June 2, 2014), http://www.bloomberg.com/news/2014-06-01/the-unstoppable-100-trillion-bond-market-renders-models-useless.html.

**Q. PLEASE DESCRIBE YOUR PROXY GROUP OF COMPANIES.**

A. The selection criteria for the Electric 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 six months, 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 twenty-nine companies. Summary financial statistics for the proxy group are listed in Exhibit JRW-4.[14] The median operating revenues and net plant among members of the Electric Proxy Group are $3,464.9 million and $10,876.0 million, respectively. The group receives 81% of its revenues from regulated electric operations, has a BBB+ bond rating from Standard & Poor's, a current common equity ratio of 47.0%, and an earned return on common equity of 9.6%.

**Q. PLEASE DESCRIBE THE AVERA/MCKENZIE PROXY GROUP.**

[14] 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.

A. Dr. Avera and Mr. McKenzie's group is smaller and includes twenty electric utilities. Although I believe that my group provides a more comprehensive sample to estimate an equity cost rate for the Company, I will also include the Avera/McKenzie Proxy Group in my analysis.

Summary financial statistics for Dr. Avera and Mr. McKenzie's proxy group is provided in Panel B of page 1 of Exhibit JRW-4. The median operating revenues and net plant for the Avera/McKenzie Proxy Group are $8,338.3 million and $16,745.0 million, respectively. The group receives 70% of its revenues from regulated electric operations, has an A-/BBB+ bond rating from S&P, a current common equity ratio of 48.0%, and a current earned return on common equity of 10.2%.

**Q. HOW DOES THE INVESTMENT RISK OF THE COMPANY COMPARE TO THAT OF YOUR ELECTRIC PROXY GROUP AND THE AVERA/MCKENZIE PROXY GROUP?**

A. I believe that bond ratings provide a good assessment of the investment risk of a company. KU's issuer credit rating is BBB according to S&P and A3 according to Moody's. KU's S&P rating is slightly below the averages for the two proxy groups, and its Moody's rating is slightly above the averages for the two groups.

In addition, on page 2 of Exhibit JRW-4, I have assessed the riskiness of the Company's parent, PPL, relative to the Electric and Avera/McKenzie Proxy Groups using five different risk measures published by *Value Line*. These measures include Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price Stability.

These risk measures suggest that the Company's parent, PPL, is roughly equal in risk than the averages for the groups. PPL has a lower Beta which suggests lower risk, but PPL has lower Safety and Earnings Predictability, which suggests higher risk. Given these results, and primary weighting KU's bond rating, I believe that the two groups represent a risk comparable group for KU.

## IV. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

**Q. WHAT IS KU'S RECOMMENDED CAPITAL STRUCTURE FOR RATEMAKING PURPOSES?**

A. KU's recommended capital structure includes 2.98% short-term debt, 44.4% long-term debt and 53.03% common equity. This is provided in Panel A of page 1 of Exhibit JRW-5.

**Q. HOW DOES KU'S RECOMMENDED CAPITAL STRUCTURE COMPARE TO THAT OF ITS PARENT COMPANY, PPL?**

A. Panel B of page 1 of Exhibit JRW-5 shows PPL's capitalization ratios. PPL's capital structure includes 2.98% short-term debt, 60.43% long-term debt, and 36.59% common equity. These ratios highlight the fact PPL's capitalization includes a much lower common equity ratio and hence much more financial risk than the capital structure proposed by KU.

**Q. DOES PPL'S CAPITALIZATION HAVE AN IMPACT ON THE BOND RATINGS AND CAPITAL COSTS OF KU?**

A. Yes, most definitely. The capitalization of PPL has a direct impact on the bond ratings and capital costs of KU. This was highlighted in a recent S&P report for KU. S&P reports that (1) KU's ratings are a function of the consolidated credit profile of PPL; and (2) PPL carries a 'Significant' financial risk profile.

> The stand-alone credit profile of 'a-' for KU reflects our view of its business and financial risk profile and is two notches stronger than the group credit profile of PPL, which is currently 'bbb.' Under our group rating methodology, we consider KU to be a core subsidiary of the PPL group reflecting our view that the company is highly unlikely to be sold and has a strong long-term commitment from senior management. Moreover, there are no meaningful insulation measures in place that protect KU from its parent, and therefore, the ICR (Issuer Credit Rating) for KU is equal to the PPL GCP.[15]

S&P also lists KU's link to PPL's credit quality as a weakness in KU's credit rating.

**Q. PLEASE DISCUSS THE CAPITAL STRUCTURES OF THE COMPANIES IN THE ELECTRIC GROUP.**

A. Page 1, Panel C of Exhibit JRW-5 provides the average capitalization ratios for the companies in the Electric Proxy Group. Page 2 of Exhibit JRW-5 provides the supporting company data. The average capitalization ratios for the proxy group are 5.32% short-term debt, 47.11% long-term debt, 0.66% preferred stock, and 46.90% common equity. These are the capital structure ratios for the holding companies that trade in the markets and are used to estimate an equity cost rate for KU. These ratios

[15] Attachment to Response to AG-1, Question No. 181, Standard & Poor's Rating Services, Kentucky Utilities Company, July 18, 2014, Page 5.

indicate that the Electric Proxy Group has, on average, a lower common equity ratio than proposed by KU, and a much higher common equity ratio than PPL.

**Q. BASED ON THESE OBSERVATIONS, WHAT DO YOU CONCLUDE ABOUT THE COMPANY'S PROPOSED CAPITAL STRUCTURE?**

A. KU has proposed a capital structure that has more common equity and less financial risk than the capital structures of other electric utilities companies as well as KU's parent, PPL. As noted above, this is especially significant since (1) the proxy groups include the companies that are used to estimate an equity cost rate for KU, and (2) the much lower common equity ratio and higher financial risk of PPL directly impacts KU's credit ratings and therefore capital costs.

**Q. GIVEN THIS DISCUSSION, WHAT CAPITAL STRUCTURE ARE YOU RECOMMENDING FOR KU?**

A. I am adjusting the Company's proposed capital structure so as to include a common equity ratio of 50.0%. This seems especially fair to the Company given the observations above. In Panel D of page 1 of Exhibit JRW-5, I adjust the long-term debt capital structure ratio by a factor of 1.06 so that short-term debt plus long-term debt amounts to 50% of the capitalization. Likewise, the common equity ratio is adjusted downwards to the 50% level. My recommended capital structure for KU is 3.17% short-term debt, 46.83% long-term debt, and 50.0% common equity.

**Q. ARE YOU USING THE UTILITY'S RECOMMENDED SHORT-TERM AND LONG-TERM DEBT COST RATES?**

A. Yes, I am using the Company's proposed short-term debt cost rate of 0.90% and long-term debt cost rate of 4.07%.

## V. THE COST OF COMMON EQUITY CAPITAL

### A. OVERVIEW

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

A. 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).

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

A. 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:

> 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.
>
> 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. [16]

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.

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

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

A. 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:

> 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.[17]

| *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 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 Exhibit JRW-6. The average R-squares for the electric, gas, and water companies are 0.78, 0.63, and 0.49, respectively.[18] This demonstrates the strong positive relationship between ROEs and market-to-book ratios for public utilities.

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

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

[18] 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.

A. Exhibit 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 increased to the 4.85% range in 2013, and have since declined to about 4.25%.

Page 2 of Exhibit 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 Exhibit 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 range during the decade. The average declined to about 1.10X in 2009, but has since increased to 1.40X as of 2013.

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

A. 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.

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

A. 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 that of most other industries.

Exhibit 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.* The study shows that the investment risk of utilities is very low. The average betas for electric (average of east, central, and west), water, and gas

utility companies are 0.73, 0.74, and 0.80, respectively. As such, the cost of equity for utilities is among the lowest of all industries in the U.S. according to the CAPM.

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

A. 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 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.

**Q. HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY CAPITAL FOR THE COMPANY?**

A. I rely primarily on the DCF model to estimate the cost of equity capital. Given the investment valuation process and the relative stability of the utility business, I believe that the DCF model provides the best measure of equity cost rates for public utilities. It is my experience that most commissions have traditionally relied on the DCF model. I have also performed a CAPM study; however, I give these results less weight because I believe that risk premium studies, of which the CAPM is one form, provide a less reliable indication of equity cost rates for public utilities.

## B. DCF ANALYSIS

**Q. PLEASE DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.**

A. 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:

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

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

**Q. IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES EMPLOYED BY INVESTMENT FIRMS?**

A. 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 Exhibit 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.

**Q. HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED RATE OF RETURN USING THE DCF MODEL?**

A. 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:

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

Where $D_1$ 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:

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

**Q. IN YOUR OPINION, IS THE CONSTANT-GROWTH DCF MODEL APPROPRIATE FOR PUBLIC UTILITIES?**

A. 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.

**Q. WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF METHODOLOGY?**

A. 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 (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.

**Q. WHAT DIVIDEND YIELDS HAVE YOU REVIEWED?**

A. 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 exhibit JRW-10 for the Electric and Avera/McKenzie 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 3.2% to 3.7%. Given this range, I will use 3.5% as the dividend yield for the Electric Proxy Group. For the Avera/McKenzie Proxy Group, provided in Panel B of page 2 of Exhibit JRW-10, the mean and median dividend yields range from 3.3% to 3.7% using the 30-day, 90-day, and 180-day average stock prices. Given this range, I am using a dividend yield of 3.5% for the Avera/McKenzie Proxy Group.

**Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT DIVIDEND YIELD.**

A. 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.[19]

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 one based on 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.

**Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR WILL YOU USE FOR YOUR DIVIDEND YIELD?**

A. I will adjust 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

[19] *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).

Regulatory Commission ("FERC").[20] The DCF equity cost rate ("K") is computed as:

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

**Q. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF MODEL.**

A. 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.

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

A. 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

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

measured by prospective earnings retention rates and earned returns on common equity.

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

A. 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). 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.

**Q. PLEASE DISCUSS THE SERVICES THAT PROVIDE ANALYSTS' EPS FORECASTS.**

A. Analysts' EPS forecasts for companies are collected and published by a number of 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 each 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 forecast 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. Zacks' estimates are also available on other websites, such as MSN money (http://money.msn.com).

**Q. PLEASE PROVIDE AN EXAMPLE OF THESE EPS FORECASTS.**

A. 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 Exhibit JRW-9. The top line shows that four analysts have provided EPS estimates for the quarter ending March 31, 2015. The mean, high and low estimates are $0.76, $0.76, and $0.76, respectively. The second line shows the quarterly EPS estimates for the quarter ending June 30, 2015 of $0.52 (mean), $0.52 (high), and $0.52 (low). Line three show the annual EPS estimates for the fiscal year ending December 2015 ($3.64 (mean), $3.69 (high), and $3.60 (low)). The quarterly and annual EPS forecasts in lines 1-3 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, two analysts have provided a long-term EPS growth rate forecast, with mean, high, and low growth rates of 4.90%, 5.00%, and 4.80%.

**Q. WHICH OF THESE EPS FORECASTS IS USED IN DEVELOPING A DCF GROWTH RATE?**

A. 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.

**Q. 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?**

A. 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.[21] 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 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

[21] 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(2011).

analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[22]

**Q. IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE UPWARD BIAS IN THE EPS GROWTH RATE FORECASTS?**

A. Yes, I do believe that investors are well aware of the bias in analysts' EPS growth rate forecasts, and therefore stock prices reflect the upward bias.

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

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

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

A. Page 3 of Exhibit 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 1.8% to 4.0%, with an average of 3.3%. For the Avera/McKenzie Proxy Group, as shown in Panel B of page 3 of Exhibit JRW-10, the historical growth measures in EPS, DPS,

[22] 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).

and BVPS, as measured by the medians, range from 2.5% to 4.0%, with an average of 3.3%.

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

A. *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the proxy groups are shown on page 4 of Exhibit 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 Exhibit JRW-10, the medians range from 4.0% to 5.5%, with an average of 4.7%. For the Avera/McKenzie Proxy Group, as shown in Panel B of page 4 of Exhibit JRW-10, the medians range from 4.3% to 5.8%, with an average of 4.8%.

Also provided on page 4 of Exhibit 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/McKenzie Proxy Group, the median prospective sustainable growth rates are 4.0% and 4.0%, respectively.

**Q. PLEASE ASSESS GROWTH FOR THE PROXY GROUPS AS MEASURED BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EPS GROWTH.**

A. 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 Exhibit JRW-10. I have reported both the mean and median growth rates for the two groups. Since 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 for each company. The mean/median of analysts' projected EPS growth rates for the Electric and Avera/McKenzie Proxy Groups are 5.1%/5.0% and 5.3%/5.1%, respectively.[23]

**Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND PROSPECTIVE GROWTH OF THE PROXY GROUPS.**

A. Page 6 of Exhibit 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 3.3%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.7%, and *Value Line*'s projected sustainable growth rate is 4.0%. The high end of the range for the Electric Proxy Group are the projected EPS growth rates of Wall Street analysts, which are 5.1% and 5.0% as measured by the mean and median growth rates. The overall range for the projected growth rate indicators is 3.3% to 5.1%. Giving primary weight to the projected EPS growth rate of Wall Street analysis, 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.

[23] 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.

The historical growth rate indicators for the Avera/McKenzie Proxy Group indicate a growth rate of 3.3%. *Value Line*'s average projected EPS, DPS, and BVPS growth rate for the group is 4.8%, and *Value Line*'s projected sustainable growth rate is 4.0%. The mean/median projected EPS growth rates of Wall Street analysts for the group are 5.3% and 5.1%. The range for the projected growth rate indicators is 3.3% to 5.3%. Giving primary weight to the projected EPS growth rate of Wall Street analysis, I believe that a growth rate of 5.25% is appropriate for the Avera/McKenzie Proxy Group. As is the case 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 Avera/McKenzie Proxy Group.

**Q. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE GROUP?**

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

| | **Dividend Yield** | **1 + ½ Growth Adjustment** | **DCF Growth Rate** | **Equity Cost Rate** |
|---|---|---|---|---|
| **Electric Proxy Group** | **3.50%** | **1.02500** | **5.00%** | **8.6%** |
| **Avera/McKenzie Proxy Group** | **3.50%** | **1.02625** | **5.25%** | **8.8%** |

The result for my Electric Proxy Group is the 3.50% dividend yield, times the one and one-half growth adjustment of 1.02500, plus the DCF growth rate of 5.00%, which results in an equity cost rate of 8.6%. The result for the Avera/McKenzie Proxy Group includes a dividend yield of 3.50%, times the one and one-half growth

adjustment of 1.02625, plus the DCF growth rate of 5.25%, which results in an equity cost rate of 8.8%.

## C. CAPITAL ASSET PRICING MODEL

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

A. 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 (K) 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:

$$\boldsymbol{K = (R_f) + ß * [E(R_m) - (R_f)]}$$

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.

**Q. PLEASE DISCUSS EXHIBIT JRW-11.**

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

**Q. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.**

A. 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 30-year maturities.

**Q. WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPM?**

A. As shown on page 2 of Exhibit JRW-11, the yield on 30-year Treasury bonds has been in the 2.5% to 4.0% range over the 2013–2015 time period. The 30-year Treasury yield is currently at lower end of this range. Given the recent range of yields and the possibility of higher interest rates, I will use 4.0% as the risk-free rate, or $R_f$, in my CAPM.

**Q. WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?**

A. 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 Exhibit 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 Exhibit JRW-11, the median betas for the companies in the Electric and Avera/McKenzie Proxy Groups are 0.70 and 0.73, respectively.

**Q. PLEASE DISCUSS THE MARKET RISK PREMIUM.**

A. The MRP 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 MRP 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 MRP is easy to define conceptually, it is difficult to measure because it requires an estimate of the expected return on the market - $E(R_m)$. As is discussed below, there are different ways to measure $E(R_m)$, and studies have come up significantly different magnitudes for $E(R_m)$. Merton Miller, 1990 Nobel Prize winner in economics, summarized the issue in this way: "I still remember the teasing we financial economists, Harry Markowitz, William Sharpe, and I, had to put up with from the physicists and chemists in Stockholm when we conceded that the basic unit of our research, the expected rate of return, was not actually observable. I tried to tease back

by reminding them of their neutrino –a particle with no mass whose presence was inferred only as a missing residual from the interactions of other particles. But that was eight years ago. In the meantime, the neutrino has been detected."[24]

**Q. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING THE MRP.**

A. Page 4 of Exhibit JRW-11 highlights the primary approaches to, and issues in, estimating the expected MRP. The traditional way to measure the MRP was to use the difference between historical average stock and bond returns. In this case, historical stock and bond returns, also called ex post returns, were 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.

[24] Merton Miller, "The History of Finance: An Eyewitness Account," *Journal of Applied Corporate Finance*, 2000, P. 3.

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.[25]

In addition, there are a number of surveys of financial professionals regarding the MRP. There also 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 400 CFOs participate in the survey.[26] 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*.[27] This survey of professional economists has been published for almost fifty years. In addition, Pablo Fernandez conducts occasional

[25] Rajnish Mehra & Edward C. Prescott, The Equity Premium: A Puzzle, *Journal of Monetary Economics*, 145 (1985).

[26] *See* DUKE/CFO MAGAZINE GLOBAL BUSINESS OUTLOOK SURVEY, www.cfosurvey.org (last accessed Dec. 15, 2014).

[27] Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters (Feb. 13, 2015)*. 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.

surveys of financial analysts and companies regarding the equity risk premiums they use in their investment and financial decision-making.[28]

**Q. PLEASE PROVIDE A SUMMARY OF THE MRP STUDIES.**

A. Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed the most comprehensive reviews to date of the research on the MRP.[29] Derrig and Orr's study evaluated the various approaches to estimating MRPs, as well as the issues with the alternative approaches and summarized the findings of the published research on the MRP. Fernandez examined four alternative measures of the MRP – historical, expected, required, and implied. He also reviewed the major studies of the MRP and presented the summary MRP results. Song provides an annotated bibliography and highlights the alternative approaches to estimating the MRP.

Page 5 of Exhibit 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 MRP. In developing page 5 of Exhibit JRW-11, I have categorized the studies as discussed on page 4 of Exhibit 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 C1 of this testimony. The Building Blocks approach is a hybrid approach employing elements of both historical and *ex ante* models.

[28] Pablo Fernandez, Pablo Linares, and Isabel Fernandez Acín, "Market Risk Premium used for 88 countries in 2014: a survey with 8,228 answers," June 20, 2014.

[29] *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).

**Q. PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-11.**

A. Page 5 of JRW-11 provides a summary of the results of the MRP studies that I have reviewed. These include the results of: (1) the various studies of the historical risk premium, (2) *ex ante* MRP studies, (3) MRP surveys of CFOs, financial forecasters, analysts, companies and academics, and (4) the Building Block approach to the MRP. There are results reported for over thirty studies, and the median MRP is 4.60%.

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

A. The studies cited on page 5 of Exhibit JRW-11 include every MRP study and survey I could identify that was published over the past decade and that provided an MRP estimate. Most of these studies were published prior to the financial crisis of 2007-2009. 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) and so were not estimating an MRP as of a specific point in time (e.g., the year 2001). To assess the effect of the earlier studies on the MRP, I have reconstructed page 5 of Exhibit JRW-11 on page 6 of Exhibit JRW-11; however, I have eliminated all studies dated before January 2, 2010. The median for this subset of studies is 5.09%.

**Q. GIVEN THESE RESULTS, WHAT MARKET OR MRP ARE YOU USING IN YOUR CAPM?**

A. Much of the data indicates that the market risk premium is in the 4.0% to 6.0% range. Several recent studies (such as Damodaran, American Appraisers, the CFO Survey, and my supply-side model), have suggested an increase in the market risk premium. Therefore, I will use 5.5%, which is in the upper end of the range, as the market or MRP.

**Q. IS YOUR *EX ANTE* MRP CONSISTENT WITH THE MRPS USED BY CFOS?**

A. Yes. In the December 2014 CFO survey conducted by *CFO Magazine* and Duke University, the expected 10-year MRP was 4.90%.

**Q. IS YOUR *EX ANTE* MRP CONSISTENT WITH THE MRPS OF PROFESSIONAL FORECASTERS?**

A. The financial forecasters in the previously referenced Federal Reserve Bank of Philadelphia survey projected both stock and bond returns. In the February 2014 survey, the median long-term expected stock and bond returns were 5.79% and 3.91%, respectively. This provides an *ex ante* MRP of 1.88% (5.79%-3.91%).

**Q. IS YOUR *EX ANTE* MRP CONSISTENT WITH THE MRPS OF FINANCIAL ANALYSTS AND COMPANIES?**

A. Yes. Pablo Fernandez recently published the results of a 2014 survey of academics, financial analysts, and companies.[30] This survey included over 8,000 responses. The median MRP employed by U.S. analysts and companies was 5.0%.

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

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

$$K = (R_f) + ß * [E(R_m) - (R_f)]$$

| | Risk-Free Rate | Beta | MRP | Equity Cost Rate |
|---|---|---|---|---|
| **Electric Proxy Group** | **4.0%** | **0.70** | **5.5%** | **7.9%** |
| **Avera/McKenzie Proxy Group** | **4.0%** | **0.73** | **5.5%** | **8.0%** |

For the Electric Proxy Group, the risk-free rate of 4.00% plus the product of the beta of 0.70 times the MRP of 5.50% results in a 7.9% equity cost rate. For the Avera/McKenzie Proxy Group, the risk-free rate of 4.00% plus the product of the beta of 0.73 times the MRP of 5.50% results in an 8.0% equity cost rate.

[30] Pablo Fernandez, Pablo Linares and Isabel Fernandez Acín, "Market Risk Premium used for 88 countries in 2014: a survey with 8,228 answers," June 20, 2014.

## D. EQUITY COST RATE SUMMARY

**Q. PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.**

A. My DCF analyses for the Electric and Avera/McKenzie Proxy Groups indicate equity cost rates of 8.6% and 8.8%, respectively. My CAPM analyses for the Electric and Avera/McKenzie Proxy Groups indicate equity cost rates of 7.9% and 8.0%.

| | DCF | CAPM |
|---|---|---|
| **Electric Proxy Group** | **8.6%** | **7.9%** |
| **Avera/McKenzie Proxy Group** | **8.8%** | **8.0%** |

**Q. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST RATE FOR THE GROUPS?**

A. Given these results, I conclude that the appropriate equity cost rate for companies in my Electric Group and the Avera/McKenzie Proxy Group is in the 7.8% to 8.8% range. However, since 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 the Company is 8.75%.

**Q. PLEASE INDICATE WHY AN 8.75% RETURN IS APPROPRIATE FOR THE COMPANY AT THIS TIME.**

A. There are a number of reasons why an 8.75% return on equity is appropriate and fair for the Company in this case:

1. As shown in Exhibit 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. In addition, given the low inflationary expectations and the slow global economic growth, interest rates are likely to remain at low levels for some time.

3. As highlighted by Mr. McKenzie and Dr. Avera, KU has a number of rate adjustment mechanisms for environmental costs and demand side management that serve to reduce the riskiness of KU.

4. As previously indicated, the authorized ROEs for electric utilities have gradually decreased in recent years. These authorized ROEs have declined from 10.01% in 2012, to 9.8% in 2013, to 9.76% in 2014, according to Regulatory Research Associates. In my opinion, these authorized ROEs have lagged behind capital market cost rates. This has been especially true in recent years as some state commissions have been reluctant to authorize ROEs below 10%. However, the trend has been towards lower ROEs, and the norm now is below ten percent. Hence, I believe that my recommended ROEs reflect our present historically low capital cost rates, and these low capital cost rates are finally being recognized by state utility commissions.

**Q. DO YOU BELIEVE THAT YOUR 8.75% MEETS *HOPE* AND *BLUEFIELD* STANDARDS?**

A. Yes. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's

financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital. KU's average earned ROE over the past three years (2011-2013) is 8.3%.[31] KU has been able to raise capital on attractive terms and its credit rating has been upgraded. The Company issued $250 million in first mortgage, 30-year bonds in November of 2013 at 4.65%. In addition, on January 31, 2014, Moody's upgraded KU to an issuer rating of A3, and in July of 2014 S&P put KU on CreditWatch with positive implications. Therefore, I do believe that my ROE recommendation meets the criteria established in the *Hope* and *Bluefield* decisions.

## VI. CRITIQUE OF KU'S RATE OF RETURN TESTIMONY

**Q. PLEASE SUMMARIZE THE COMPANY'S COST OF CAPITAL RECOMMENDATION.**

A. KU witness Mr. Kent W. Blake provides the recommended capital structure and debt cost rates, and Dr. Avera and Mr. McKenzie recommend a common equity cost rate for KU. The Company's recommended capital structure includes 2.98% short-term debt, 44.4% long-term debt and 53.03% common equity. The Company proposes a short-term debt cost rate of 0.90% and a long-term debt cost rate of 4.07%. Dr. Avera and Mr. McKenzie have recommended a ROE or common equity cost rate of 10.64%, but the Company has elected to use 10.50% in its application. This rate of return recommendation is summarized on page 1 of Exhibit JRW-12.

[31] Attachment_to_KU_AG_1-184_-__1 (1).

**Q. WHAT ISSUES DO YOU HAVE WITH THE COMPANY'S COST OF CAPITAL POSITION?**

A. The primary areas of disagreement in measuring the Company's cost of capital are: (1) our opposing views regarding the state of the markets and capital costs; (2) the Company's proposed capital structure; (3) the DCF equity cost rate estimates, and in particular, (a) Dr. Avera and Mr. McKenzie's ignoring over 20% of their low-end results, and (b) Dr. Avera and Mr. McKenzie's exclusive use of the earnings per share growth rates of Wall Street analysts and *Value Line*; (4) the base interest rate and market or equity risk premium in the URP and CAPM approaches; and (5) whether or not equity cost rate adjustments are needed to account for size and flotation costs.

There are several other less significant issues in Dr. Avera and Mr. McKenzie's equity cost rate analyses. In their CAPM analysis, they have: (1) used a projected risk-free rate that is more than 150 basis points above current market rates; and (2) employed the Empirical CAPM ("ECAPM") version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium. Dr. Avera and Mr. McKenzie have also used several other ROE analyses which they refer to as "checks of reasonableness" on their 10.64% 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 the Company.

The alternative views on the state of the capital markets and the capital structure issue was previously discussed. The discussion below focusses on Dr. Avera and Mr. McKenzie's recommended equity cost rate.

**Q. PLEASE REVIEW DR. AVERA AND MR. MCKENZIE'S EQUITY COST RATE APPROACHES.**

A. Dr. Avera and Mr. McKenzie use their proxy group and employ DCF, CAPM, and URP equity cost rate approaches. Dr. Avera and Mr. McKenzie's equity cost rate estimates for KU are summarized on page 1 of Exhibit JRW-13. Based on these figures, and including a flotation cost adjustment of 0.14%, they conclude that the appropriate equity cost rate for the Company is 10.64%.

## A. DCF Approach

**Q. PLEASE SUMMARIZE DR. AVERA AND MR. MCKENZIE'S DCF ESTIMATES.**

A. On pages 27-40 of their testimony and in their Exhibit Nos. 5 and 6, Dr. Avera and Mr. McKenzie develop an equity cost rate by applying the DCF model to the Avera/McKenzie Proxy Group. Dr. Avera and Mr. McKenzie's DCF results are summarized on Page 2 of Exhibit 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 and Mr. McKenzie use five measures of projected EPS growth – the projected EPS growth of Wall Street analysts as compiled by IBES, Reuters, and Zacks, *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 9.1% for the Avera/McKenzie Proxy Group.

**Q. WHAT ARE THE ERRORS IN DR. AVERA AND MR. MCKENZIE'S DCF ANALYSES?**

A. The primary issues in Dr. Avera and Mr. McKenzie's DCF analyses are: (1) the asymmetric elimination of low-end DCF results - they have ignored over 20% of the low DCF results for their constant-growth DCF model application; and (2) the excessive use of the EPS growth rate forecasts of Wall Street analysts and *Value Line* - the DCF growth rate in their DCF models employ the overly optimistic and upwardly-biased EPS growth rate estimates of Wall Street analysts and *Value Line.*

1. The Asymmetric Elimination of Low-End DCF Results

**Q. PLEASE ADDRESS DR. AVERA AND MR. MCKENZIE'S ASYMMETRIC ELIMINATION OF DCF RESULTS.**

A. A very significant error with Dr. Avera and Mr. McKenzie's DCF equity cost rate analyses is their asymmetric elimination of DCF results. Page 2 of Exhibit JRW-13 provides Dr. Avera and Mr. McKenzie's DCF results for their utility group. In deriving a DCF equity cost rate, Dr. Avera and Mr. McKenzie have labeled equity cost rates below 7.5% and above 17.7% as extreme outliers.[32] These screens eliminate 22 of their 100 DCF results, or 22%. 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 and Mr. McKenzie bias their DCF equity cost rate study and report a higher DCF equity cost rate than the data indicate. In my DCF analysis, I have used the

[32] 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.

median as a measure of central tendency so as to not give outlier results too much weight. My approach also avoids biasing the results by including all data in the analysis and not selectively eliminating outcomes.

On page 2 of Exhibit JRW-13, I have recalculated Dr. Avera and Mr. McKenzie's DCF equity cost rate for the Avera/McKenzie Proxy Group without eliminating the so-called extreme outliers. The actual mean and median DCF equity cost rates, using all observations in the analysis, average 8.8% and 8.9%, respectively. As such, Dr. Avera and Mr. McKenzie's asymmetric elimination of low-end DCF results distorts their reported DCF ROEs.

2. Analysts EPS Growth Rates

**Q. PLEASE REVIEW DR. AVERA AND MR. MCKENZIE'S DCF GROWTH RATE.**

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

**Q. PLEASE DISCUSS DR. AVERA AND MR. MCKENZIE'S USE OF THE PROJECTED EPS GROWTH RATES OF WALL STREET ANALYSTS AND *VALUE LINE* IN THEIR DCF MODELS.**

A. A very significant issue with Dr. Avera and Mr. McKenzie's DCF analyses is their reliance on the EPS growth rate forecasts of Wall Street analysts and *Value Line*.

**Q. WHY IS IT ERRONEOUS TO RELY EXCLUSIVELY ON THE EPS FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE?**

A. There are several issues with using the EPS growth rate forecasts of Wall Street analysts and *Value Line* as DCF growth rates. First, as discussed above, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings 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, 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.

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

A. 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, as mentioned, the 2011 study by Lacina, Lee, and Xu 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. As such, the weight given to analysts' projected EPS growth rate should be limited. And 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 2007 study by Easton and Sommers 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. These issues are addressed in more detail in Appendix B.

### B. Empirical CAPM Approach

**Q. PLEASE DISCUSS DR. AVERA AND MR. MCKENZIE'S CAPM.**

A. On pages 40-44 of their testimony and in Exhibit No. 7, Dr. Avera and Mr. McKenzie estimate an equity cost rate by applying a CAPM model to their proxy group. Dr. Avera and Mr. McKenzie have not used a traditional CAPM, but rather a variant of the traditional CAPM, the Empirical CAPM ("ECAPM"). The CAPM approach requires an estimate of the risk-free interest rate, Beta, and the MRP. They calculate a CAPM equity cost rate using the current long-term Treasury bond yield of 3.4%, a projected

bond yield of 4.7%, and Betas from *Value Line*. A market risk premium is computed for each risk-free rate, and both are based on an expected stock market return of 13.1%. They also add a size premium to their CAPM equity cost rate. The ECAPM version of the CAPM makes adjustments to the risk-free rate and the market risk premium in calculating an equity cost rate. Their ECAPM equity cost rates using current/projected interest rates and including/excluding a size premium result in a range from 11.1% to 12.2%.

**Q. WHAT ARE THE ERRORS IN DR. AVERA AND MR. MCKENZIE'S ECAPM ANALYSIS?**

A. The primary errors with Dr. Avera and Mr. McKenzie's ECAPM analysis are: (1) the use of the ECAPM version of the CAPM; (2) the current and projected risk-free interest rates that are used; (3) the expected market return of 13.1% that is used to compute the market risk premiums; and (4) the size adjustment that is used.

1. ECAPM Approach

**Q. WHAT ISSUES DO YOU HAVE WITH DR. AVERA AND MR. MCKENZIE'S ECAPM?**

A. 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 and Mr. McKenzie use 0.25 and 0.75 factors to boost the MRP measure but provide no empirical justification for those figures.

Beyond the lack of any theoretical or empirical validation of the ECAPM itself, there are two errors in Dr. Avera and Mr. McKenzie's version of the ECAPM. I am not aware of any tests of the CAPM that use adjusted betas such as those used by Dr. Avera and Mr. McKenzie. 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.

2. Risk-Free Interest Rate

**Q. PLEASE DISCUSS THE BASE YIELD OF DR. AVERA AND MR. MCKENZIE'S ECAPM ANALYSIS.**

A. Dr. Avera and Mr. McKenzie use current and projected risk-free interest rates of 3.4% and 4.7% in their ECAPM. These figures are inflated as the current yield on long-term Treasury bonds is below 3.0%.

3. Market Risk Premium

**Q. PLEASE ASSESS DR. AVERA AND MR. MCKENZIE'S MARKET RISK PREMIUMS DERIVED FROM APPLYING THE DCF MODEL TO THE S&P 500.**

A. The primary problem with Dr. Avera and Mr. McKenzie's CAPM analysis is the magnitude of the market or equity risk premium. Dr. Avera and Mr. McKenzie develop 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 and Mr. McKenzie's estimated market return of 13.1% for the S&P 500 equals the sum of the dividend yield of 2.3% and expected EPS growth rate of 10.8%. The expected EPS growth rate is the average of the expected EPS growth rates from IBES. The primary error in this approach is Dr. Avera and Mr. McKenzie's 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.

**Q. BEYOND YOUR PREVIOUS DISCUSSION OF THE UPWARD BIAS IN WALL STREET ANALYSTS' EPS GROWTH RATE FORECASTS, WHAT OTHER EVIDENCE CAN YOU PROVIDE THAT DR. AVERA AND MR. MCKENZIE'S S&P 500 GROWTH RATE IS EXCESSIVE?**

A. A long-term EPS growth rate of 10.8% 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 and Mr. McKenzie's projected EPS growth rate of 10.8%; (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 Exhibit 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** | **6.6%** |
| **S&P 500 Stock Price** | **6.8%** |
| **S&P 500 EPS** | **6.9%** |
| **S&P 500 DPS** | **5.6%** |
| **Average** | **6.5%** |

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

A. 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 are presented in Panel A of page 3 of Exhibit JRW-14 and in the table below.

**Historic GDP Growth Rates**

| | |
|---|---|
| **10-Year Average** | **3.6%** |
| **20-Year Average** | **4.4%** |
| **30-Year Average** | **5.0%** |
| **40-Year Average** | **6.2%** |
| **50-Year Average** | **6.7%** |

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

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

A. There are several forecasts of annual GDP growth that are available from financial forecasters and government agencies. These are listed in Panel B of page 3 of Exhibit JRW-14. The mean 10-year nominal GDP growth forecast (as of February 2015) by economists in the recent *Survey of Professional Forecasters* is 4.7%. 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%.

**Q. WHY IS GDP GROWTH RELEVANT IN YOUR DISCUSSION OF DR. AVERA AND MR. MCKENZIE'S USE OF THE LONG-TERM EPS GROWTH RATES IN DEVELOPING A MARKET RISK PREMIUM FOR THEIR CAPM?**

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

**Q. PLEASE HIGHLIGHT THE RESEARCH ON THE LINK BETWEEN ECONOMIC AND EARNINGS GROWTH AND EQUITY RETURNS.**

A. Brad Cornell of the California Institute of Technology published a study in 2010 on GDP growth, earnings growth, and equity returns. He found that long-term EPS growth in the U.S. is directly related to GDP growth, with GDP growth providing an upward limit on EPS growth. In addition, he found that long-term stock returns are

determined by long-term earnings growth. He concluded with the following observations:[33]

> 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 and Mr. McKenzie's projected earnings growth rates and implied expected stock market returns and MRPs are not indicative of the realities of the U.S. economy and stock market. As such, their expected CAPM equity cost rate is significantly overstated.

**Q. PLEASE PROVIDE A SUMMARY ASSESSMENT OF DR. AVERA AND MR. MCKENZIE'S PROJECTED MRP DERIVED FROM EXPECTED MARKET RETURNS.**

A. Dr. Avera and Mr. McKenzie's market risk premium derived from their DCF application to the S&P 500 is inflated due to errors and bias in their study. Investment banks, consulting firms, and CFOs use the MRP 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 since they must continually assess and evaluate capital costs for

[33] Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* (Jan./Feb. 2010), p. 63.

their companies. They are well aware of the historical stock and bond return studies of Ibbotson. The CFOs in the December 2014 *CFO Magazine* – Duke University Survey of over 400 CFOs shows an expected return on the S&P 500 of 7.20% over the next ten years. In addition, the financial forecasters in the February 2015 Federal Reserve Bank of Philadelphia survey expect an annual market return of 5.79% 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.

4. Size Adjustment

**Q. PLEASE DISCUSS DR. AVERA AND MR. MCKENZIE'S SIZE ADJUSTMENT.**

A. Dr. Avera and Mr. McKenzie include a size adjustment in their CAPM 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 a 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.[34] 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, accounting standards, and information disclosure, utilities are much different than industrials, which could account for the lack of a size premium.

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

A. 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

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

assumption of monthly portfolio rebalancing and the serial correlation in historic small firm returns.[35]

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 a 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 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:

> 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. [36]

[35] *See* Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics*, pp. 371-86, (1983).
[36] Ching-Chih Lu, "The Size Premium in the Long Run," 2009 Working Paper, SSRN abstract no. 1368705.

## C. Utility Risk Premium ("URP") Approach

**Q. PLEASE DISCUSS DR. AVERA AND MR. MCKENZIE'S URP APPROACH.**

A. On pages 44-48 of their testimony and in their Exhibit No. 8, Dr. Avera and Mr. McKenzie estimate an equity cost rate of 10.09% using a current utility bond yield, and an equity cost rate of 11.25% using a projected utility bond yield. Dr. Avera and Mr. McKenzie develop an equity cost rate by: (1) regressing the annual authorized returns on equity for electric utility companies from 1974 to 2013 time period on the yields on Moody's long-term public utility bonds; and (2) adding the appropriate risk premium established in (1) to current and projected Moody's long-term public utility bond yields of 4.73% and 6.75%, respectively.

**Q. WHAT ARE THE ISSUES WITH DR. AVERA AND MR. MCKENZIE'S URP APPROACH?**

A. The base yield and the measurement and magnitude of the risk premium.

### 1. Base Yield

**Q. PLEASE DISCUSS THE BASE YIELD OF DR. AVERA AND MR. MCKENZIE'S URP ANALYSIS.**

A. The base yield in Dr. Avera and Mr. McKenzie's URP analysis is the prospective yield on long-term, 'A' rated public utility bonds. This is erroneous for two reasons. First, the 6.75% projected yield is more than 200 basis points above current long-term utility bond

yields. Second, using the yield on these securities inflates the required return on equity for the Company in two ways: (1) long-term bonds are subject to interest rate risk, a risk which does not affect common stockholders since dividend payments (unlike bond interest payments) are not fixed but tend to increase over time; and (2) the base yield in Dr. Avera and Mr. McKenzie's risk premium study is subject to credit risk since it is not default risk-free like an obligation of the U.S. Treasury. As a result, its yield-to-maturity includes a premium for default risk and therefore is above its expected return. Hence, using a bond's yield-to-maturity as a base yield results in an overstatement of investors' return expectations.

2. Risk Premium

**Q. WHAT ARE THE ISSUES WITH DR. AVERA AND MR. MCKENZIE'S RISK PREMIUM?**

A. The most important issue is that Dr. Avera and Mr. McKenzie's risk premium is not necessarily applicable to measure investors' required rate of return. Dr. Avera and Mr. McKenzie'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 and Mr.

McKenzie's approach and results reflect 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. For example, Dr. Avera and Mr. McKenzie's analysis includes rates cases from the state of Virginia that include up to 200 basis point generation riders in the ROE decisions.

Dr. Avera and Mr. McKenzie's methodology also 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. Finally, the risk premium is inflated as a measure of investors' required risk premium since 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.

**Q. HOW DO DR. AVERA AND MR. MCKENZIE'S URP ESTIMATES COMPARE TO THE ACTUAL STATE-LEVEL AUTHORIZED ROES?**

A. Their URP equity cost rate estimates overstate actual state-level authorized ROEs. The authorized ROEs for electric utilities have gradually decreased in recent years. These authorized ROEs declined from 10.01% in 2012, to 9.8% in 2013, to 9.76% in 2014, according to Regulatory Research Associates.[37]

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

**D. Flotation Costs**

**Q. PLEASE DISCUSS DR. AVERA AND MR. MCKENZIE'S ADJUSTMENT FOR FLOTATION COSTS.**

A. Dr. Avera and Mr. McKenzie claim an upward adjustment of 0.14% to the equity cost rate recommendation to account for flotation costs. This adjustment factor is erroneous for several reasons.

First, they have not identified any current flotation costs for the Company. Therefore, the Company 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 is necessary to prevent the dilution of the existing shareholders. In this case, Dr. Avera and Mr. McKenzie justify 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, not a decrease, in the book value per share of their investment;

(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 for the Company.

**E. Checks of Reasonableness**

1. CAPM

**Q. PLEASE DISCUSS DR. AVERA AND MR. MCKENZIE'S CAPM USED AS A CHECK ONTHEIR OTHER EQUITY COST RATE APPROACHES.**

A. On pages 53-54 of their testimony and in their Exhibit No. 9, Dr. Avera and Mr. McKenzie estimate an equity cost rate in the range of 10.4% to 11.5% using the same inputs as their previous application of the CAPM. The three primary errors associated with their original ECAPM application recur here: (1) excessive current and projected risk-free interest rates of 3.4% and 4.7%, respectively; (2) primarily, an overstated market risk premium that is based on unrealistic expectations of future earnings and economic growth and stock returns; and (3) the inclusion of a size premium.

2. Expected Earnings Approach

**Q. PLEASE DISCUSS DR. AVERA AND MR. MCKENZIE'S EXPECTED EARNINGS ANALYSIS.**

A. On pages 54-56 of their testimony and in Exhibit No. 10, Dr. Avera and Mr. McKenzie estimate an equity cost rate of 10.8% for their electric group using an approach they call the Expected Earnings ("EE") approach. Their 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. Their electric group receives on average 85% of revenues from regulated electric and operations. Second, and more importantly, Dr. Avera and Mr. McKenzie's approach uses the expected returns on book value projected by *Value Line* as a proxy for investors' required return on market value equity today. The error is that the expected rate of return on book value is not equivalent to the required rate of return on market value. Furthermore, when the market to book ratio is greater than 1.0, investors' required rate of return on market value is less than their expected rate of return on book value. As such, Dr. Avera and Mr. McKenzie's expected earnings analysis overstates investors' required rate of return on equity.

### 3. DCF Applied to Non-Utility Group

**Q. PLEASE DISCUSS THE PROBLEM WITH DR. AVERA AND MR. MCKENZIE'S NON-UTILITY PROXY GROUP.**

A. On pages 56-61 of their testimony and in their Exhibit No. 11, Dr. Avera and Mr. McKenzie estimate an equity cost rate for KU using a proxy group of sixteen non-utility companies. This group includes such companies as Coca-Cola, General Mills, Johnson & Johnson, Kellogg, Kimberly-Clark, McDonald's, PepsiCo, Verizon, and Walmart.

This approach is fundamentally flawed for two reasons. First, 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. Second, and most importantly, the previously discussed 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 – this is demonstrated by the large differences between the DCF results for the Avera/McKenzie Proxy Group versus the Non-Utility Group.

**Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

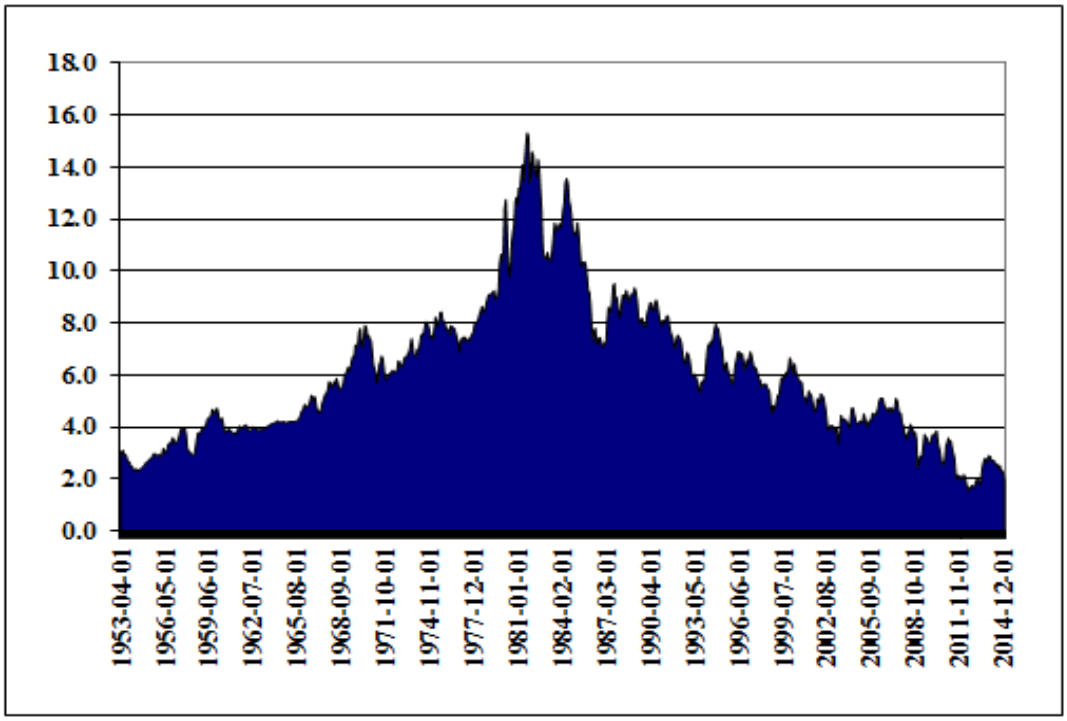
A. Yes.

**Exhibit JRW-1**
**Kentucky Utilities Company**
**Recommended Cost of Capital**

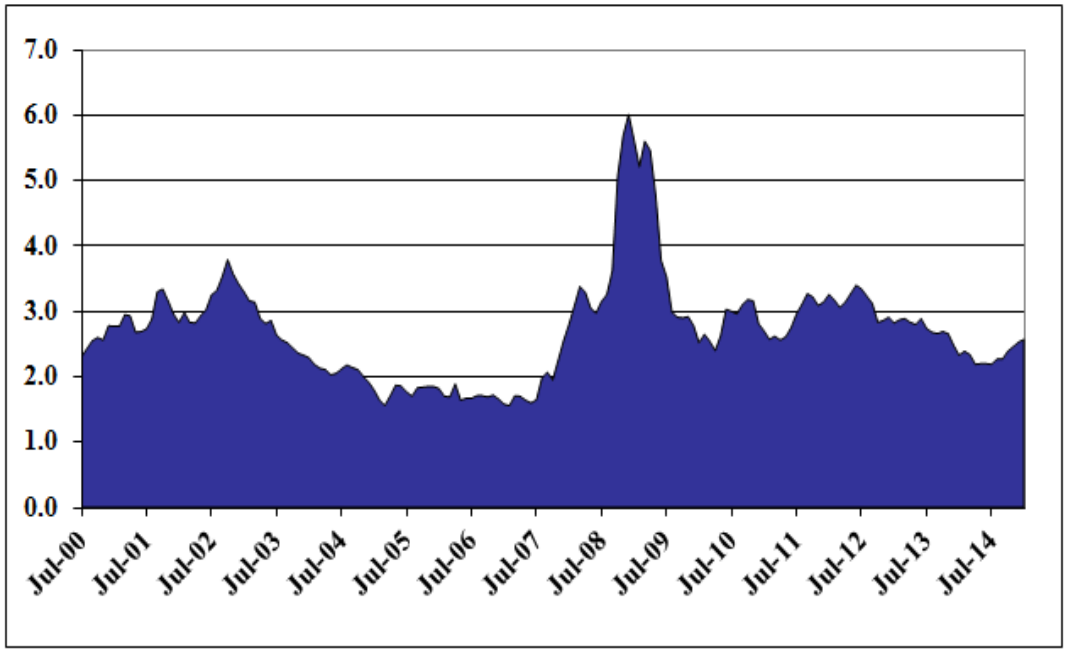
| Capital Source | Capitalization Ratio | Cost Rate | Weighted Cost Rate |
|---|---|---|---|
| **Short-Term Debt** | **3.17%** | **0.90%** | **0.03%** |
| **Long-Term Debt** | **46.83%** | **4.07%** | **1.90%** |
| **Common Equity** | **50.00%** | **8.75%** | **4.37%** |
| **Total** | **100.00%** | | **6.31%** |

# Exhibit JRW-2

## Panel A
## Ten-Year Treasury Yields
## 1953-Present

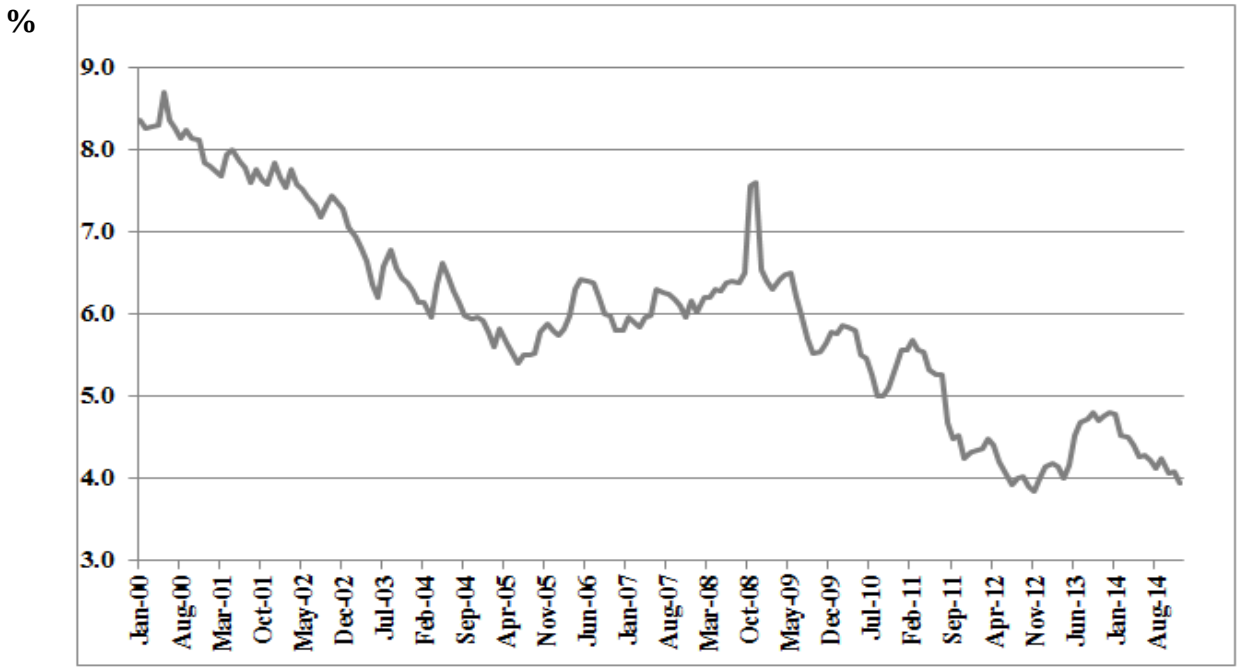



## Panel B
## Long-Term Moody's Baa Yields Minus Ten-Year Treasury Yields
## 2000-Present

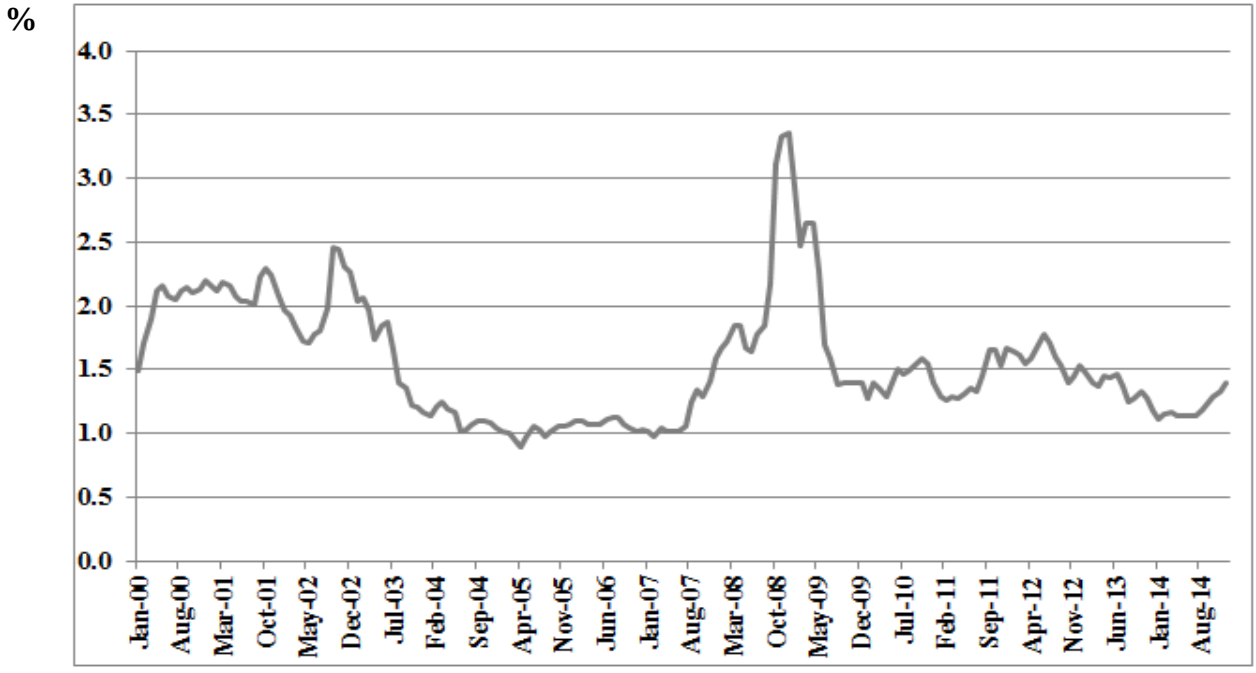



Source: Federal Reserve Bank of St. Louis, FRED Database.

**Exhibit 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

**Exhibit JRW-4**

**Kentucky Utilities Company**

**Summary Financial Statistics for Proxy Groups**

**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) | 1,114.1 | 89 | 0 | 3,121.5 | 2.6 | A- | A3 | 3.8 | MN, WI | 51.6 | 8.1 | 1.39 |
| Alliant Energy Corporation (NYSE-LNT) | 3,378.8 | 81 | 15 | 8,763.6 | 7.0 | A- | A2/A3 | 4.2 | WS,IA,IL,MN | 47.9 | 11.4 | 1.80 |
| Ameren Corporation (NYSE-AEE) | 6,005.0 | 81 | 19 | 16,991.0 | 11.3 | BBB+/BBB | Baa1 | 3.6 | IL,MO | 48.9 | 9.1 | 1.43 |
| American Electric Power Co. (NYSE-AEP) | 16,767.0 | 81 | 0 | 43,064.0 | 32.4 | BBB/BBB- | Baa1 | 3.7 | 10 States | 45.8 | 10.8 | 1.57 |
| Avista Corporation (NYSE-AVA) | 1,552.8 | 66 | 35 | 3,538.0 | 2.3 | A- | Baa1 | 3.6 | WA,ID,AK | 50.6 | 13.8 | 1.55 |
| Black Hills Corporation (NYSE-BKH) | 1,370.9 | 49 | 44 | 3,155.2 | 2.3 | BBB | A3/Baa1 | 4.1 | CO,SD,WY,MT,NE,IA,KS | 46.7 | 8.3 | 1.69 |
| CMS Energy Corporation (NYSE-CMS) | 7,157.0 | 62 | 33 | 13,045.0 | 10.1 | BBB+/BBB | A3/Baa1 | 2.9 | MI | 30.9 | 14.8 | 2.24 |
| Consolidated Edison, Inc. (NYSE-ED) | 12,957.0 | 70 | 15 | 28,890.0 | 20.2 | A-/BBB+ | A3 | 4.2 | NY,PA | 49.6 | 10.4 | 1.34 |
| Dominion Resources, Inc. (NYSE-D) | 12,678.0 | 70 | 3 | 34,884.0 | 45.41 | A- | A3/Baa1 | 4.1 | VA,NC,OH,WV | 31.6 | 13.1 | 3.92 |
| Duke Energy Corporation (NYSE-DUK) | 25,080.0 | 86 | 2 | 69,595.0 | 61.8 | BBB+ | A3 | 3.6 | NC,SC,FL,OH,KY | 49.0 | 5.4 | 1.29 |
| Edison International (NYSE-EIX) | 13,241.0 | 100 | 0 | 31,919.0 | 22.2 | BBB+ | A2/A3 | 4.8 | CA | 42.4 | 14.7 | 1.82 |
| El Paso Electric Company (NYSE-EE) | 911.3 | 100 | 0 | 1,898.6 | 1.6 | BBB+ | Baa1 | 2.7 | TX,NM | 47.0 | 9.5 | 1.52 |
| Empire District Electric Co. (NYSE-EDE) | 650.0 | 91 | 8 | 1,861.6 | 1.3 | A- | Baa1 | 3.6 | KS,MO,OK,AR | 49.0 | 9.5 | 1.40 |
| Entergy Corporation (NYSE-ETR) | 12,355.5 | 77 | 1 | 28,289.1 | 15.9 | BBB+/BBB | Baa2/Baa3 | 3.2 | LA,AR,MS,TX | 42.1 | 10.0 | 1.36 |
| FirstEnergy Corporation (ASE-FE) | 15,220.0 | 65 | 0 | 34,925.0 | 17.2 | BBB | Baa2 | 2.6 | OH,PA,NY,NJ,WV,MD | 36.8 | 5.0 | 1.15 |
| Great Plains Energy Incorporated (NYSE-GXP) | 2,554.8 | 100 | 0 | 8,122.8 | 4.5 | BBB | Baa2 | 2.9 | MO,KS | 47.1 | 6.8 | 1.10 |
| IDACORP, Inc. (NYSE-IDA) | 1,288.9 | 100 | 0 | 3,778.8 | 3.4 | A- | A3 | 6.3 | ID | 53.2 | 9.5 | 1.47 |
| MGE Energy, Inc. (NYSE-MGEE) | 629.4 | 64 | 35 | 1,197.9 | 1.6 | AA- | Aa2 | 7.5 | WI | 61.5 | 13.0 | 2.11 |
| Northeast Utilities (NYSE-NU) | 7,638.5 | 86 | 13 | 18,254.6 | 17.6 | A- | A3/Baa1 | 4.4 | CT,NH,MA | 50.8 | 7.8 | 1.47 |
| NorthWestern Corporation (NYSE-NWE) | 1,211.0 | 73 | 27 | 2,799.8 | 2.3 | NR | A3 | 2.4 | SD,MT,NE | 44.0 | 9.2 | 1.88 |
| OGE Energy Corp. (NYSE-OGE) | 2,435.8 | 100 | 0 | 6,927.1 | 7.0 | BBB+ | A3 | 4.8 | OK,AR | 50.5 | 14.3 | 2.33 |
| PG&E Corporation (NYSE-PCG) | 16,757.0 | 80 | 20 | 43,172.0 | 27.6 | BBB/BBB- | A3/Baa1 | 3.4 | CA | 49.0 | 5.1 | 1.44 |
| Pinnacle West Capital Corp. (NYSE-PNW) | 3,464.9 | 100 | 0 | 10,876.0 | 7.9 | BBB | A3/Baa1 | 4.5 | AZ | 53.4 | 9.6 | 1.47 |
| PNM Resources, Inc. (NYSE-PNM) | 1,411.9 | 100 | 0 | 4,134.5 | 2.4 | BBB | Baa2 | 2.4 | NM,TX | 45.1 | 6.2 | 1.22 |
| Portland General Electric Company (NYSE-POR) | 1,899.0 | 100 | 0 | 5,553.0 | 3.1 | A- | A3 | 2.8 | OR | 46.6 | 9.4 | 1.38 |
| SCANA Corporation (NYSE-SCG) | 4,854.0 | 53 | 21 | 12,203.0 | 8.9 | BBB+ | Baa1/Baa2 | 3.6 | SC,NC,GA | 44.2 | 11.2 | 1.48 |
| Southern Company (NYSE-SO) | 18,377.0 | 96 | 0 | 53,167.0 | 46.2 | A | A3/Baa1 | 5.6 | GA,AL,FL,MS | 44.6 | 11.4 | 1.94 |
| Westar Energy, Inc. (NYSE-WR) | 2,565.1 | 100 | 0 | 8,025.0 | 5.5 | A- | A3/Baa1 | 3.3 | KS | 45.3 | 9.8 | 1.46 |
| Xcel Energy Inc. (NYSE-XEL) | 11,488.3 | 81 | 18 | 27,630.4 | 18.7 | A- | A3 | 3.5 | MN,WI,ND,SD,MI | 44.2 | 10.1 | 1.59 |
| Mean | 7,138.4 | 83 | 11 | 18,268.4 | 14.2 | BBB+ | A3/Baa1 | 3.9 | | 46.5 | 9.9 | 1.65 |
| Median | 3,464.9 | 81 | 2 | 10,876.0 | 7.9 | BBB+ | A3/Baa1 | 3.6 | | 47.0 | 9.6 | 1.47 |

Data Source: *AUS Utility Reports*, February, 2015; Pre-Tax Interest Coverage and Primary Service Territory are from *Value Line Investment Survey*, 2015.

**Panel B**
**Avera/McKenzie 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alliant Energy Corporation (NYSE-LNT) | 3,378.8 | 81 | 15 | 8,763.6 | 7.0 | A- | A2/A3 | 4.2 | WS,IA,IL,MN | 47.9 | 11.4 | 1.80 |
| Ameren Corporation (NYSE-AEE) | 6,005.0 | 81 | 19 | 16,991.0 | 11.3 | BBB+/BBB | Baa1 | 3.6 | IL,MO | 49.8 | 8.7 | 1.67 |
| Avista Corporation (NYSE-AVA) | 1,552.8 | 66 | 35 | 3,538.0 | 2.3 | A- | Baa1 | 3.6 | WA,ID,AK | 50.6 | 13.8 | 1.55 |
| Black Hills Corporation (NYSE-BKH) | 1,370.9 | 49 | 44 | 3,155.2 | 2.3 | BBB | A3/Baa1 | 4.1 | CO,SD,WY,MT | 46.4 | 8.5 | 1.70 |
| CenterPoint Energy (NYSE-CNP) | 9,038.0 | 32 | 38 | 10,205.0 | 9.9 | A-/BBB+ | A3/Baa1 | 2.6 | TX | 34.2 | 12.5 | 2.21 |
| CMS Energy Corporation (NYSE-CMS) | 7,157.0 | 62 | 33 | 13,045.0 | 10.1 | BBB+/BBB | A3/Baa1 | 3.1 | MI | 29.2 | 13.7 | 2.75 |
| Consolidated Edison, Inc. (NYSE-ED) | 12,957.0 | 70 | 15 | 28,890.0 | 20.2 | A-/BBB+ | A3 | 4.2 | NY,PA | 50.2 | 10.0 | 1.59 |
| Dominion Resources, Inc. (NYSE-D) | 12,678.0 | 70 | 3 | 34,884.0 | 45.41 | A- | A3/Baa1 | 4.1 | VA,NC,OH,WV | 31.6 | 13.1 | 3.92 |
| DTE Energy Company (NYSE-DTE) | 11,756.0 | 45 | 16 | 16,499.0 | 15.9 | A-/BBB+ | A2/A3 | 3.5 | MI | 48.0 | 9.1 | 1.95 |
| Duke Energy Corporation (NYSE-DUK) | 25,080.0 | 86 | 2 | 69,595.0 | 61.8 | BBB+ | A3 | 3.6 | NC,SC,FL,OH,KY | 49.8 | 6.0 | 1.49 |
| Empire District Electric Co. (NYSE-EDE) | 650.0 | 91 | 8 | 1,861.6 | 1.3 | A- | Baa1 | 3.6 | KS,MO,OK,AR | 49.2 | 9.3 | 1.71 |
| Entergy Corporation (NYSE-ETR) | 12,355.5 | 77 | 1 | 28,289.1 | 15.9 | BBB+/BBB | Baa2/Baa3 | 3.2 | LA,AR,MS,TX | 42.3 | 9.8 | 1.56 |
| Northeast Utilities (NYSE-NU) | 7,638.5 | 86 | 13 | 18,254.6 | 17.6 | A- | A3/Baa1 | 4.4 | CT,NH,MA | 51.1 | 8.0 | 1.78 |
| NorthWestern Corporation (NYSE-NWE) | 1,211.0 | 73 | 27 | 2,799.8 | 2.3 | NR | A3 | 2.4 | SD,MT,NE | 43.9 | 10.5 | 2.09 |
| PG&E Corporation (NYSE-PCG) | 16,757.0 | 80 | 20 | 43,172.0 | 27.6 | BBB/BBB- | A3/Baa1 | 3.4 | CA | 50.9 | 9.3 | 1.75 |
| Public Service Enterprise Group (NYSE-PEG) | 10,431.0 | 46 | 19 | 22,836.0 | 22.0 | A-/BBB+ | A2 | 5.8 | NJ | 58.1 | 10.6 | 1.82 |
| SCANA Corporation (NYSE-SCG) | 4,854.0 | 53 | 21 | 12,203.0 | 8.9 | BBB+ | Baa1/Baa2 | 3.6 | SC,NC,GA | 44.3 | 11.2 | 1.80 |
| SEMPRA Energy (NYSE-SRE) | 10,993.0 | 32 | 42 | 26,409.0 | 27.8 | A/A- | A2/A3 | 3.7 | CA | 43.4 | 10.3 | 2.46 |
| Vectren Corporation (NYSE-VVC) | 2,614.9 | 24 | 36 | 3,348.9 | 4.1 | A/A- | A2 | 3.7 | IN,OH | 49.1 | 10.3 | 2.57 |
| Xcel Energy Inc. (NYSE-XEL) | 11,488.3 | 81 | 18 | 27,630.4 | 18.7 | A- | A3 | 3.5 | MN,WI,ND,SD,MI | 44.2 | 10.1 | 1.59 |
| Mean | 8,498.3 | 64 | 21 | 19,618.5 | 16.6 | A-/BBB+ | A3/Baa1 | 3.7 | | 45.7 | 10.3 | 1.99 |
| Median | 8,338.3 | 70 | 19 | 16,745.0 | 13.6 | A-/BBB+ | A3/Baa1 | 3.6 | | 48.0 | 10.2 | 1.79 |

Data Source: *AUS Utility Reports*, February, 2015; Pre-Tax Interest Coverage and Primary Service Territory are from *Value Line Investment Survey*, 2015.

**Exhibit JRW-4**

**Kentucky Utilities Company**

***Value Line* Risk Metrics**

**Panel A**
**Electric Proxy Group**

| Company | Beta | Financial Strength | Safety | Earnings Predictability | Stock Price Stability |
|---|---|---|---|---|---|
| ALLETE, Inc. (NYSE-ALE) | 0.80 | A | 2 | 85 | 95 |
| Alliant Energy Corporation (NYSE-LNT) | 0.80 | A | 2 | 75 | 100 |
| Ameren Corporation (NYSE-AEE) | 0.70 | A | 2 | 90 | 100 |
| American Electric Power Co. (NYSE-AEP) | 0.75 | B++ | 2 | 90 | 100 |
| Avista Corporation (NYSE-AVA) | 0.80 | A | 2 | 75 | 95 |
| Black Hills Corporation (NYSE-BKH) | 0.90 | B+ | 3 | 40 | 85 |
| CMS Energy Corporation (NYSE-CMS) | 0.70 | B++ | 2 | 70 | 100 |
| Dominion Resources, Inc. (NYSE-D) | 0.70 | B++ | 2 | 75 | 100 |
| 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 | A | 2 | 65 | 100 |
| El Paso Electric Company (NYSE-EE) | 0.70 | B++ | 2 | 85 | 95 |
| Empire District Electric Co. (NYSE-EDE) | 0.70 | B++ | 2 | 85 | 95 |
| Entergy Corporation (NYSE-ETR) | 0.70 | B++ | 3 | 85 | 100 |
| FirstEnergy Corporation (ASE-FE) | 0.70 | B+ | 3 | 65 | 90 |
| Great Plains Energy Incorporated (NYSE-GXP) | 0.85 | B+ | 3 | 70 | 95 |
| IDACORP, Inc. (NYSE-IDA) | 0.80 | B++ | 2 | 90 | 95 |
| MGE Energy, Inc. (NYSE-MGEE) | 0.70 | A | 1 | 95 | 100 |
| Northeast Utilities (NYSE-NU) | 0.75 | B++ | 2 | 85 | 100 |
| NorthWestern Corporation (NYSE-NWE) | 0.70 | B+ | 3 | 95 | 100 |
| OGE Energy Corp. (NYSE-OGE) | 0.90 | A+ | 1 | 95 | 90 |
| PG&E Corporation (NYSE-PCG) | 0.65 | B+ | 3 | 70 | 100 |
| Pinnacle West Capital Corp. (NYSE-PNW) | 0.70 | A+ | 1 | 65 | 100 |
| PNM Resources, Inc. (NYSE-PNM) | 0.85 | B | 3 | 25 | 85 |
| Portland General Electric Company (NYSE-POI | 0.80 | B++ | 2 | 65 | 100 |
| SCANA Corporation (NYSE-SCG) | 0.75 | B++ | 2 | 100 | 100 |
| Southern Company (NYSE-SO) | 0.55 | A | 2 | 100 | 100 |
| Westar Energy, Inc. (NYSE-WR) | 0.75 | B++ | 2 | 80 | 100 |
| Xcel Energy Inc. (NYSE-XEL) | 0.65 | B++ | 2 | 100 | 100 |
| Mean | 0.73 | B++ | 2.1 | 79 | 97 |
| Median | 0.70 | B++ | 2.0 | 85 | 100 |

Data Source: *Value Line Investment Survey* , 2015.

| | | | | | |
|---|---|---|---|---|---|
| PPL Corporation (NYSE-PPL) | 0.60 | B++ | 3 | 60 | 100 |

**Panel B**
**Avera/McKenzie Proxy Group**

| Company | Beta | Financial Strength | Safety | Earnings Predictability | Stock Price Stability |
|---|---|---|---|---|---|
| Alliant Energy Corporation (NYSE-LNT) | 0.8 | A | 2 | 75 | 100 |
| Ameren Corporation (NYSE-AEE) | 0.70 | A | 2 | 90 | 100 |
| Avista Corporation (NYSE-AVA) | 0.80 | A | 2 | 75 | 95 |
| Black Hills Corporation (NYSE-BKH) | 0.90 | B+ | 3 | 40 | 85 |
| CenterPoint Energy (NYSE-CNP) | 0.75 | B++ | 2 | 90 | 95 |
| CMS Energy Corporation (NYSE-CMS) | 0.70 | B++ | 2 | 70 | 100 |
| 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 | 100 | 100 |
| Duke Energy Corporation (NYSE-DUK) | 0.60 | A | 2 | 75 | 100 |
| Empire District Electric Co. (NYSE-EDE) | 0.70 | B++ | 2 | 85 | 95 |
| Entergy Corporation (NYSE-ETR) | 0.70 | B++ | 3 | 85 | 100 |
| Northeast Utilities (NYSE-NU) | 0.75 | B++ | 2 | 85 | 100 |
| NorthWestern Corporation (NYSE-NWE) | 0.70 | B+ | 3 | 95 | 100 |
| PG&E Corporation (NYSE-PCG) | 0.65 | B+ | 3 | 70 | 100 |
| Public Service Enterprise Group (NYSE-PEG) | 0.75 | A++ | 1 | 85 | 95 |
| SCANA Corporation (NYSE-SCG) | 0.75 | B++ | 2 | 100 | 100 |
| SEMPRA Energy (NYSE-SRE) | 0.75 | A | 2 | 95 | 100 |
| Vectren Corporation (NYSE-VVC) | 0.80 | A | 2 | 85 | 95 |
| Xcel Energy Inc. (NYSE-XEL) | 0.65 | B++ | 2 | 100 | 100 |
| Mean | 0.73 | B++ | 2.1 | 83 | 98 |
| Median | 0.73 | B++ | 2.0 | 85 | 100 |

Data Source: *Value Line Investment Survey* , 2015.

**Exhibit JRW-5**
**Kentucky Utilities Company**
**Capital Structure Ratios and Debt Cost Rates**

**Panel A -KU's Proposed Capitalization Ratios and Senior Capital Cost Rates**

| Capital Source | Capitalization Ratio | Cost Rate |
|---|---|---|
| Short-Term Debt | 2.98% | 0.90% |
| Long-Term Debt | 44.00% | 4.07% |
| Common Equity | 53.03% | |
| Total | 100.00% | |

**Panel B -PPL's Capitalization Ratios**

| Capital Source | Capitalization Ratio |
|---|---|
| Short-Term Debt | 0.00% |
| Long-Term Debt | 0.00% |
| Common Equity | 0.00% |
| Total | 0.00% |

**Panel C - Electric Proxy Group Average Capitalization Ratios**

| Capital Source | Capitalization Ratio |
|---|---|
| Short-Term Debt | 5.32% |
| Long-Term Debt | 47.11% |
| Preferred Stock | 0.66% |
| Common Equity | 46.90% |
| Total | 100.00% |

**Panel D - AG's Recommended Capitalization Ratios**

| Capital Source | KU's Recommended | Adjustment Factor | OAG Recommended | Cost Rates |
|---|---|---|---|---|
| Short-Term Debt | 2.98% | 1.06 | 3.17% | 0.90% |
| Long-Term Debt | 44.00% | 1.06 | 46.83% | 4.07% |
| Common Equity | 53.03% | 0.94 | 50.00% | |
| Total | 100.00% | | 100.00% | |

**Exhibit JRW-5**
**Kentucky Utilities Company**

**Panel A**
**Capital Structure Ratios of Electric Proxy Group**

| | Short-Term Debt | Long-Term Debt | Preferred Stock | Common Stock | Total Capital |
|---|---|---|---|---|---|
| ALLETE, Inc. (NYSE-ALE) | 1.1% | 44.1% | 0.0% | 54.7% | 100.0% |
| Alliant Energy Corporation (NYSE-LNT) | 9.0% | 41.9% | 2.8% | 46.2% | 100.0% |
| Ameren Corporation (NYSE-AEE) | 6.9% | 42.0% | 1.1% | 50.0% | 100.0% |
| American Electric Power Co. (NYSE-AEP) | 6.5% | 47.8% | 0.0% | 45.7% | 100.0% |
| Avista Corporation (NYSE-AVA) | 6.6% | 48.0% | 0.0% | 45.4% | 100.0% |
| Black Hills Corporation (NYSE-BKH) | 3.0% | 50.1% | 0.0% | 46.9% | 100.0% |
| CMS Energy Corporation (NYSE-CMS) | 6.4% | 63.2% | 0.3% | 30.1% | 100.0% |
| Dominion Resources, Inc. (NYSE-D) | 7.8% | 42.5% | 0.0% | 49.6% | 100.0% |
| Consolidated Edison, Inc. (NYSE-ED) | 9.9% | 55.7% | 0.7% | 33.6% | 100.0% |
| Duke Energy Corporation (NYSE-DUK) | 3.6% | 46.3% | 0.0% | 50.1% | 100.0% |
| Edison International (NYSE-EIX) | 3.6% | 44.0% | 7.9% | 44.5% | 100.0% |
| El Paso Electric Company (NYSE-EE) | 0.7% | 51.1% | 0.0% | 48.2% | 100.0% |
| Empire District Electric Co. (NYSE-EDE) | 0.3% | 49.6% | 0.0% | 50.1% | 100.0% |
| Entergy Corporation (NYSE-ETR) | 6.4% | 51.5% | 1.3% | 40.8% | 100.0% |
| FirstEnergy Corporation (ASE-FE) | 14.5% | 47.5% | 0.0% | 38.1% | 100.0% |
| Great Plains Energy Incorporated (NYSE-GXP) | 4.0% | 48.0% | 0.5% | 47.4% | 100.0% |
| IDACORP, Inc. (NYSE-IDA) | 1.6% | 45.9% | 0.0% | 52.5% | 100.0% |
| MGE Energy, Inc. (NYSE-MGEE) | 0.4% | 39.1% | 0.0% | 60.5% | 100.0% |
| Northeast Utilities (NYSE-NU) | 8.5% | 40.6% | 0.8% | 50.1% | 100.0% |
| NorthWestern Corporation (NYSE-NWE) | 6.0% | 50.2% | 0.0% | 43.7% | 100.0% |
| OGE Energy Corp. (NYSE-OGE) | 9.2% | 39.1% | 0.0% | 51.7% | 100.0% |
| PG&E Corporation (NYSE-PCG) | 7.0% | 43.3% | 0.9% | 48.8% | 100.0% |
| Pinnacle West Capital Corp. (NYSE-PNW) | 9.0% | 36.4% | 0.0% | 54.6% | 100.0% |
| PNM Resources, Inc. (NYSE-PNM) | 6.3% | 46.8% | 0.3% | 46.6% | 100.0% |
| Portland General Electric Company (NYSE-POR) | 0.0% | 51.3% | 0.0% | 48.7% | 100.0% |
| SCANA Corporation (NYSE-SCG) | 4.1% | 51.4% | 0.0% | 44.5% | 100.0% |
| Southern Company (NYSE-SO) | 4.5% | 49.1% | 2.6% | 43.8% | 100.0% |
| Westar Energy, Inc. (NYSE-WR) | 2.6% | 48.8% | 0.0% | 48.7% | 100.0% |
| Xcel Energy Inc. (NYSE-XEL) | 4.8% | 50.7% | 0.0% | 44.5% | 100.0% |
| Mean | 5.3% | 47.1% | 0.7% | 46.9% | 100.0% |
| Median | 6.0% | 47.8% | 0.0% | 47.4% | 100.0% |

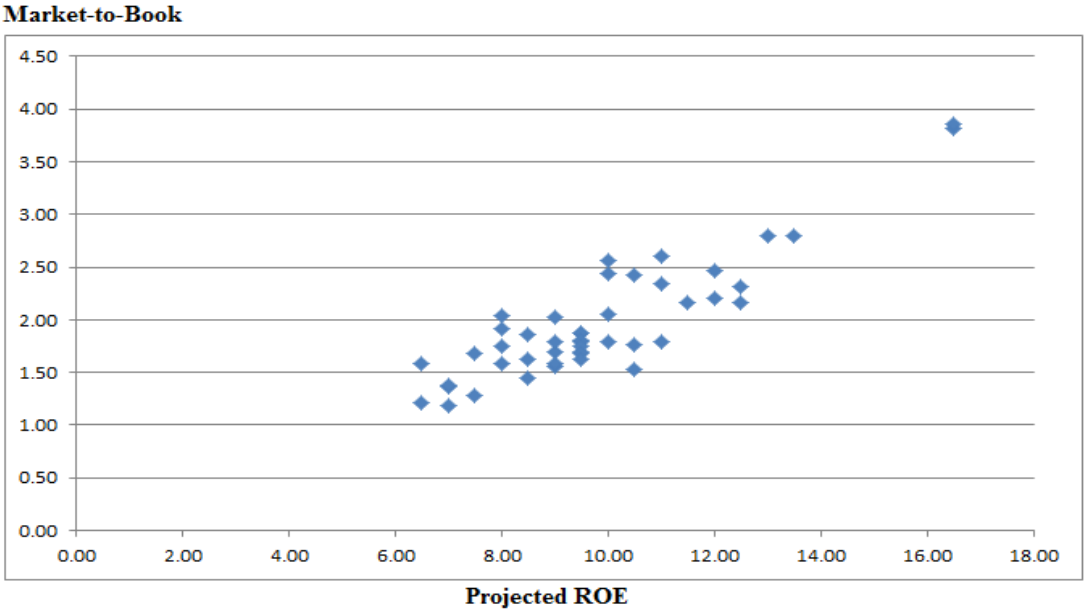
Data Source: *Value Line Investment Analyzer* , February 1, 2015.

**Panel B**
**Capital Structure Ratios of Avera/McKenzie Proxy Group**

| | Short-Term Debt | Long-Term Debt | Preferred Stock | Common Stock | Total Capital |
|---|---|---|---|---|---|
| Alliant Energy Corporation (NYSE-LNT) | 8.99% | 41.95% | 2.84% | 46.22% | 100.00% |
| Ameren Corporation (NYSE-AEE) | 6.89% | 42.04% | 1.08% | 49.98% | 100.00% |
| Avista Corporation (NYSE-AVA) | 6.57% | 47.99% | 0.00% | 45.43% | 100.00% |
| Black Hills Corporation (NYSE-BKH) | 2.96% | 50.12% | 0.00% | 46.92% | 100.00% |
| CenterPoint Energy (NYSE-CNP) | 4.26% | 61.62% | 0.00% | 34.12% | 100.00% |
| CMS Energy Corporation (NYSE-CMS) | 6.39% | 63.16% | 0.32% | 30.13% | 100.00% |
| Consolidated Edison, Inc. (NYSE-ED) | 7.85% | 42.52% | 0.00% | 49.63% | 100.00% |
| Dominion Resources, Inc. (NYSE-D) | 9.94% | 55.75% | 0.74% | 33.57% | 100.00% |
| DTE Energy Company (NYSE-DTE) | 6.37% | 44.63% | 0.00% | 49.00% | 100.00% |
| Duke Energy Corporation (NYSE-DUK) | 3.57% | 46.29% | 0.00% | 50.14% | 100.00% |
| Empire District Electric Co. (NYSE-EDE) | 0.29% | 49.63% | 0.00% | 50.08% | 100.00% |
| Entergy Corporation (NYSE-ETR) | 6.37% | 51.55% | 1.29% | 40.79% | 100.00% |
| Northeast Utilities (NYSE-NU) | 8.48% | 40.57% | 0.81% | 50.14% | 100.00% |
| NorthWestern Corporation (NYSE-NWE) | 6.05% | 50.25% | 0.00% | 43.71% | 100.00% |
| PG&E Corporation (NYSE-PCG) | 7.02% | 43.29% | 0.86% | 48.83% | 100.00% |
| Public Service Enterprise Group (NYSE-PEG) | 4.14% | 38.71% | 0.00% | 57.15% | 100.00% |
| SCANA Corporation (NYSE-SCG) | 4.10% | 51.43% | 0.00% | 44.47% | 100.00% |
| SEMPRA Energy (NYSE-SRE) | 7.06% | 46.94% | 0.08% | 45.92% | 100.00% |
| Vectren Corporation (NYSE-VVC) | 2.87% | 51.81% | 0.00% | 45.31% | 100.00% |
| Xcel Energy Inc. (NYSE-XEL) | 4.83% | 50.71% | 0.00% | 44.46% | 100.00% |
| Mean | 5.7% | 48.5% | 0.4% | 45.3% | 100.0% |
| Median | 6.4% | 48.8% | 0.0% | 46.1% | 100.0% |

Data Source: *Value Line Investment Analyzer* , February 1, 2015.

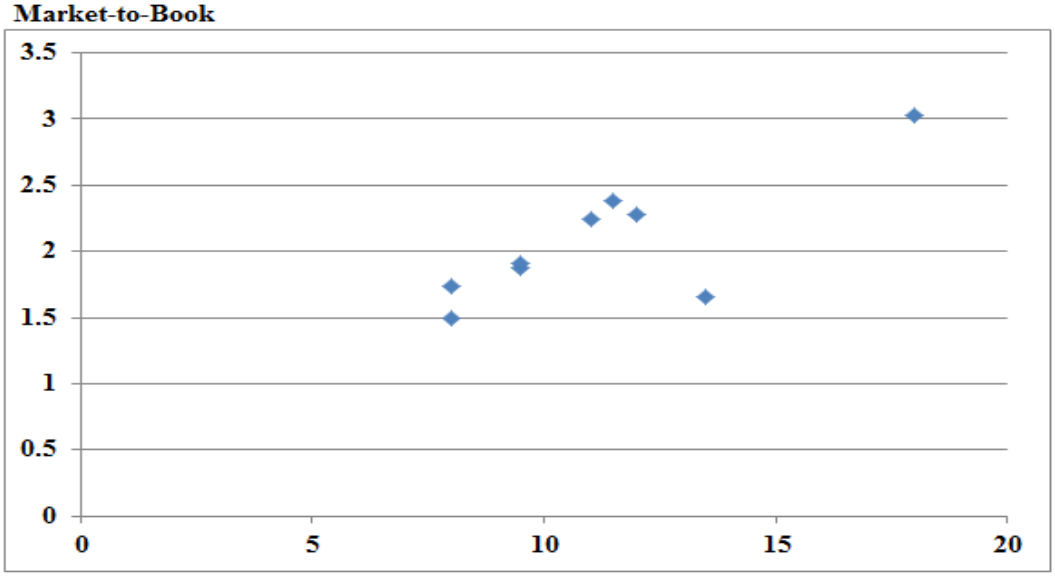
## Exhibit JRW-6
## Electric Utilities
## Panel A




Value Line Investment Survey, 2015

**R-Square = .78, N=46**

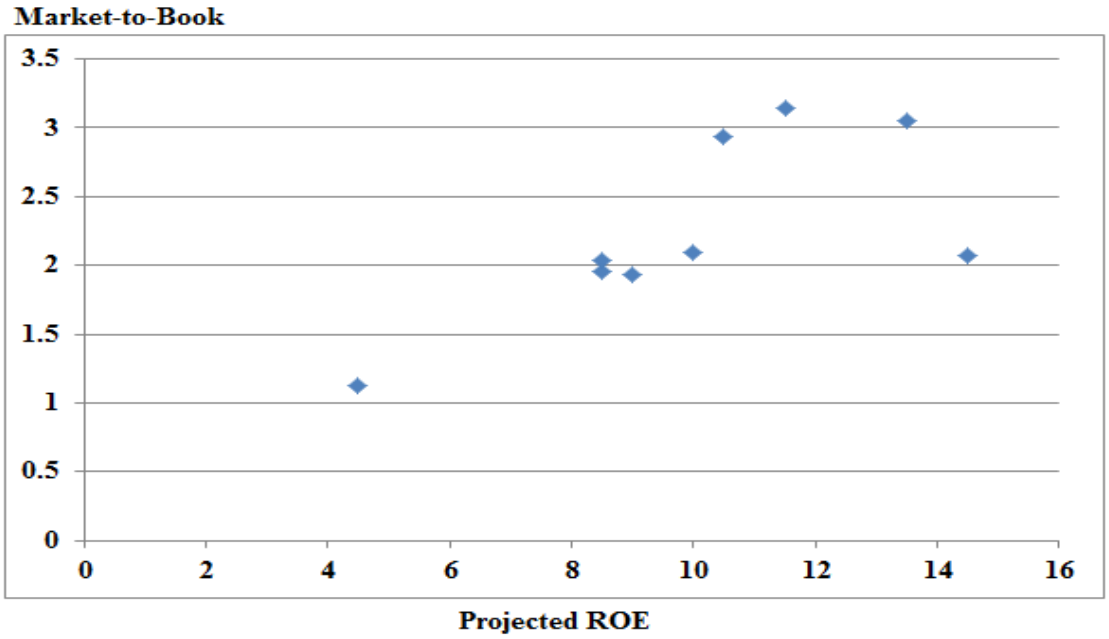
## Panel B
## Gas Companies




Value Line Investment Survey, 2015

**R-Square = .63, N=9**

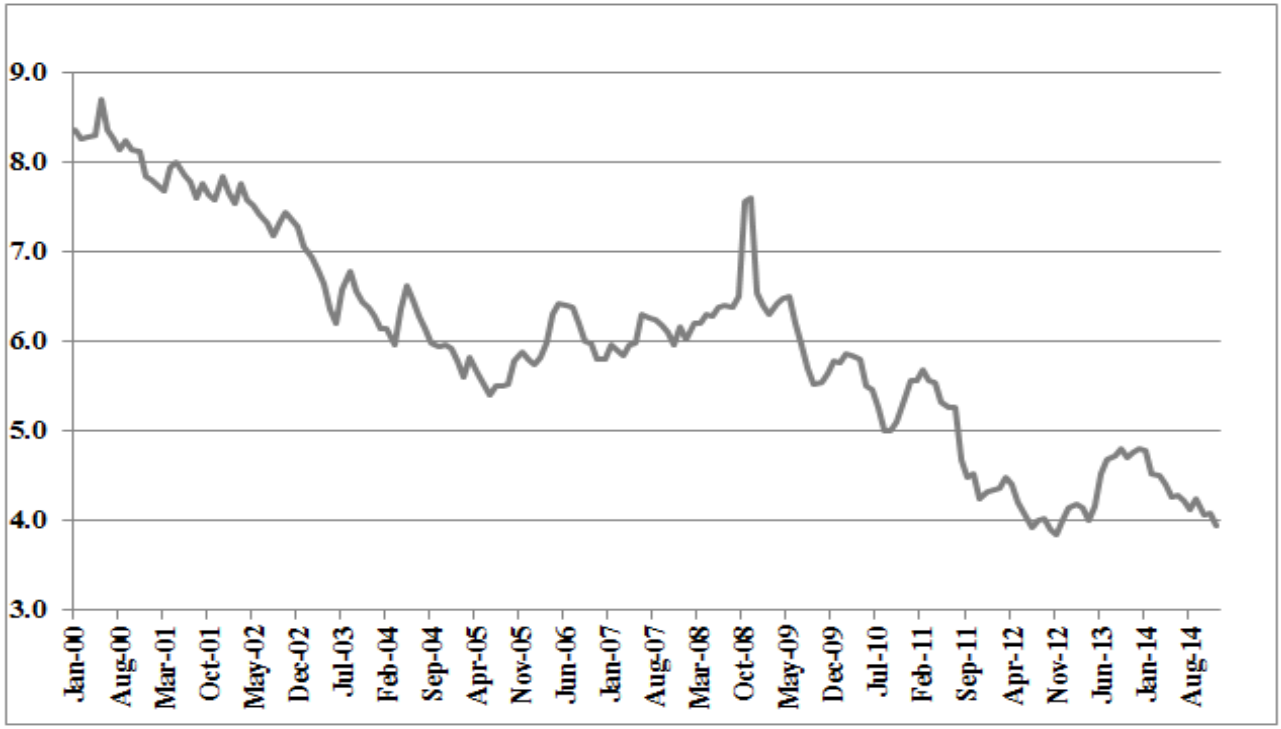
**Exhibit JRW-6**
**Water Companies**
**Panel C**




Value Line Investment Survey, 2015

**R-Square = .49, N=9**

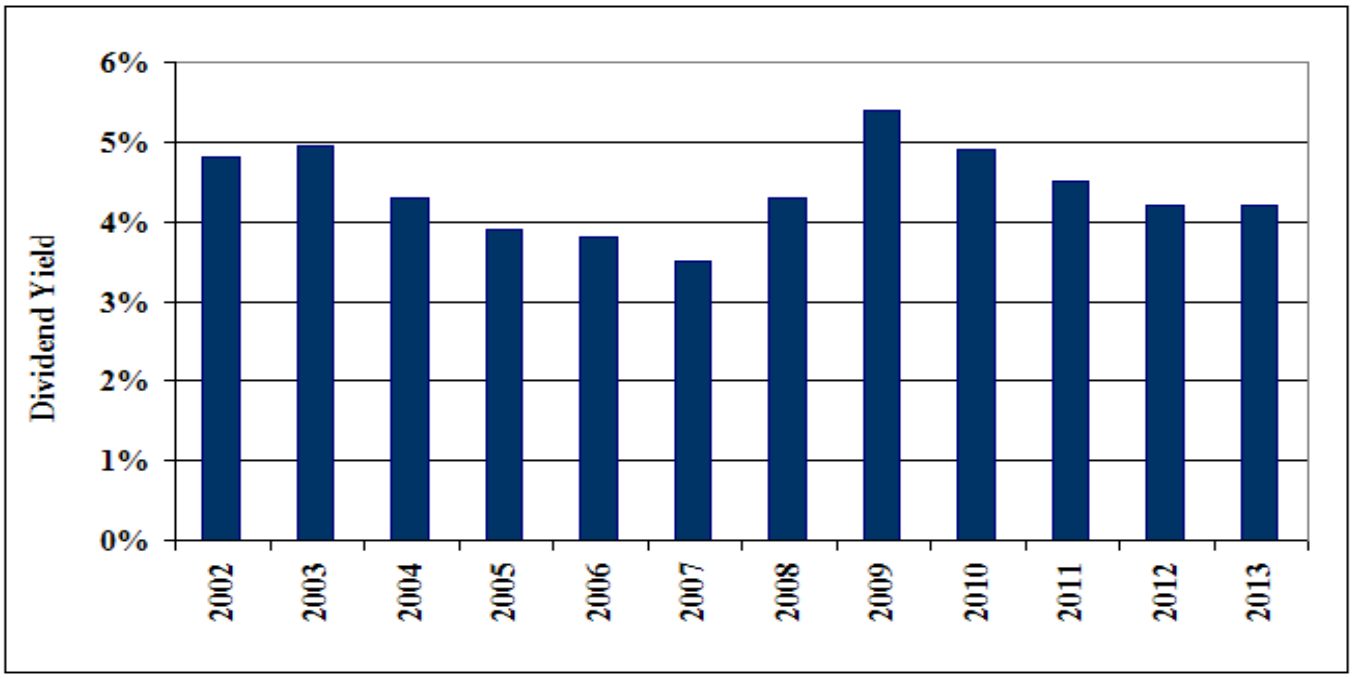
**Exhibit JRW-7**
**Long-Term 'A' Rated Public Utility Bonds**




**Data Source: Mergent Bond Record**

**Exhibit JRW-7**

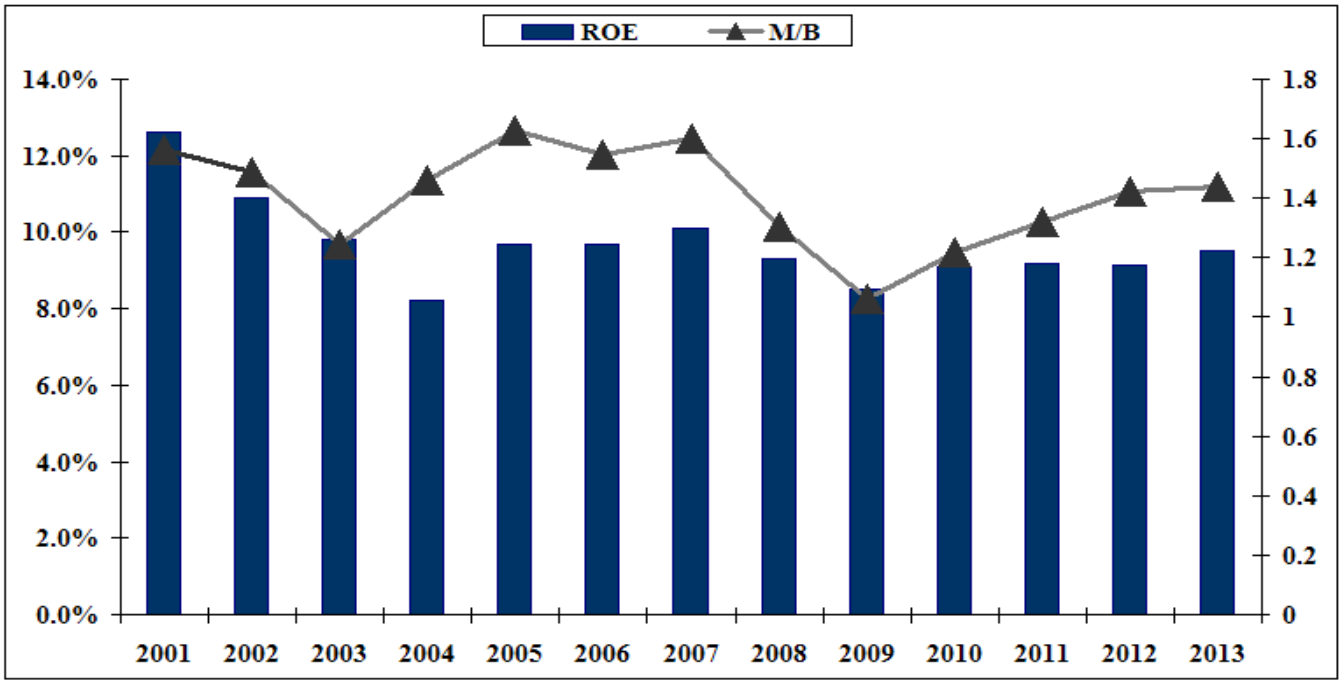
**Electric Utility Average Dividend Yield**




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

**Exhibit JRW-7**

**Electric Utility Average Return on Equity and Market-to-Book Ratios**




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

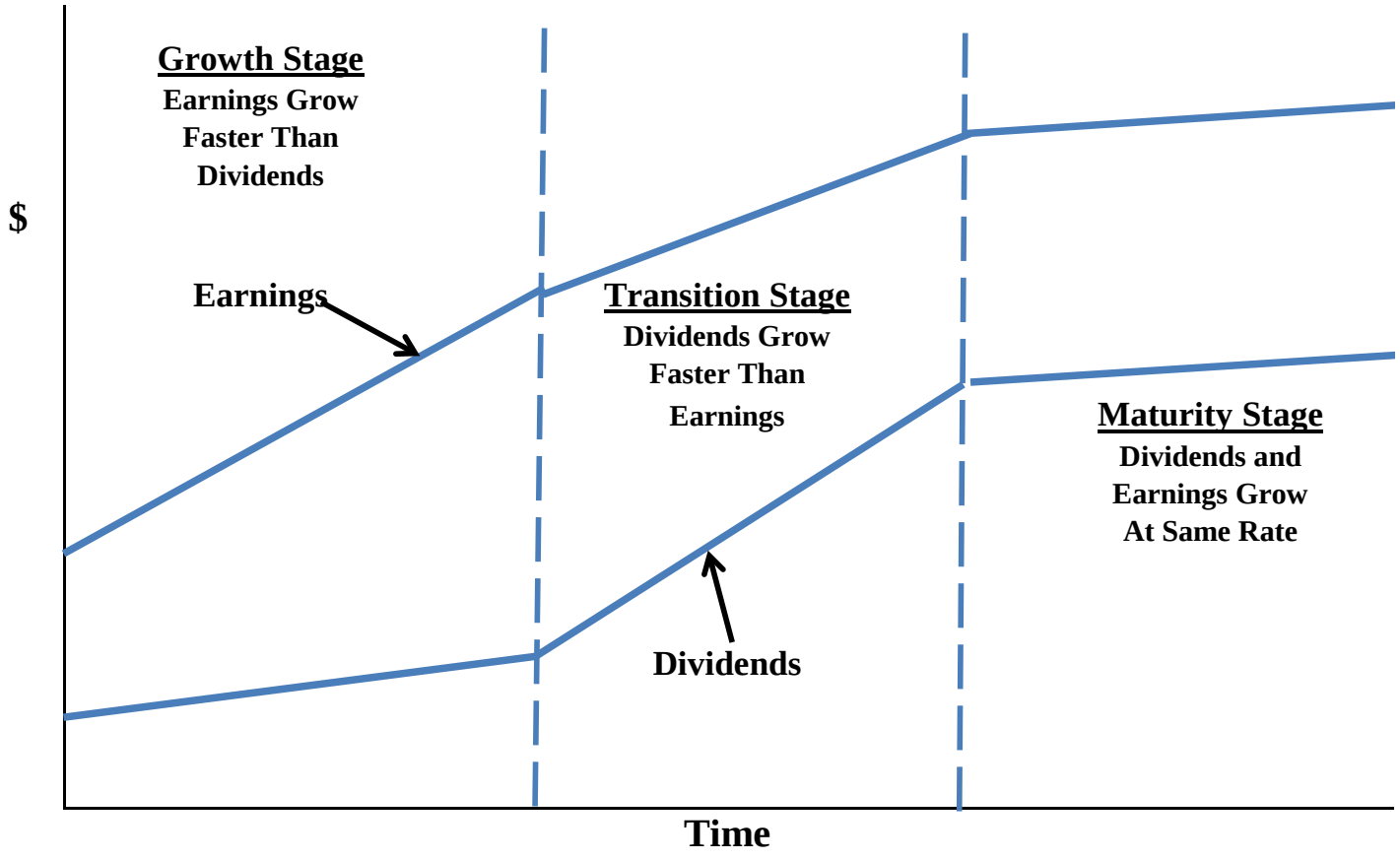
**Exhibit JRW-8**

**Industry Average Betas**

| Industry Name | Beta | Industry Name | Beta | Industry Name | Beta |
|---|---|---|---|---|---|
| Homebuilding | 1.47 | Apparel | 1.18 | Retail (Softlines) | 1.00 |
| Coal | 1.47 | Office Equip/Supplies | 1.18 | Oil/Gas Distribution | 0.99 |
| Heavy Truck & Equip | 1.46 | Advertising | 1.18 | Foreign Electronics | 0.99 |
| Auto Parts | 1.40 | Entertainment Tech | 1.17 | Med Supp Non-Invasive | 0.99 |
| Oilfield Svcs/Equip. | 1.40 | Computers/Peripherals | 1.17 | Cable TV | 0.99 |
| Metals & Mining (Div.) | 1.39 | Automotive | 1.17 | Retail Building Supply | 0.99 |
| Petroleum (Producing) | 1.37 | Securities Brokerage | 1.16 | R.E.I.T. | 0.98 |
| Steel | 1.37 | Retail (Hardlines) | 1.16 | Retail Automotive | 0.98 |
| Newspaper | 1.34 | Trucking | 1.15 | Restaurant | 0.97 |
| Building Materials | 1.33 | Financial Svcs. (Div.) | 1.15 | Telecom. Utility | 0.94 |
| Metal Fabricating | 1.33 | E-Commerce | 1.15 | Information Services | 0.94 |
| Hotel/Gaming | 1.32 | Educational Services | 1.14 | Pharmacy Services | 0.93 |
| Maritime | 1.32 | Internet | 1.13 | Environmental | 0.92 |
| Semiconductor Equip | 1.31 | Recreation | 1.12 | Drug | 0.92 |
| Railroad | 1.30 | Paper/Forest Products | 1.12 | Med Supp Invasive | 0.92 |
| Public/Private Equity | 1.29 | Bank | 1.12 | Funeral Services | 0.92 |
| Electrical Equipment | 1.28 | Entertainment | 1.12 | Thrift | 0.91 |
| Insurance (Life) | 1.28 | Publishing | 1.11 | Precious Metals | 0.90 |
| Semiconductor | 1.28 | Wireless Networking | 1.10 | Retail Store | 0.89 |
| Human Resources | 1.27 | Computer Software | 1.09 | Reinsurance | 0.88 |
| Chemical (Diversified) | 1.24 | Bank (Midwest) | 1.09 | Beverage | 0.86 |
| Electronics | 1.23 | Industrial Services | 1.08 | Household Products | 0.85 |
| Chemical (Specialty) | 1.23 | Toiletries/Cosmetics | 1.07 | Food Processing | 0.84 |
| Furn/Home Furnishings | 1.23 | Medical Services | 1.04 | Insurance (Prop/Cas.) | 0.84 |
| Machinery | 1.23 | Biotechnology | 1.04 | Retail/Wholesale Food | 0.81 |
| Engineering & Const | 1.23 | Air Transport | 1.04 | Investment Co. | 0.80 |
| Petroleum (Integrated) | 1.21 | Aerospace/Defense | 1.03 | Natural Gas Utility | 0.80 |
| Natural Gas (Div.) | 1.20 | Packaging & Container | 1.03 | Pipeline MLPs | 0.79 |
| Precision Instrument | 1.20 | IT Services | 1.03 | Electric Utility (West) | 0.77 |
| Power | 1.20 | Shoe | 1.03 | Electric Util. (Central) | 0.76 |
| Chemical (Basic) | 1.20 | Telecom. Services | 1.03 | Tobacco | 0.74 |
| Diversified Co. | 1.19 | Healthcare Information | 1.01 | Water Utility | 0.74 |
| Telecom. Equipment | 1.19 | Investment Co.(Foreign) | 1.01 | Electric Utility (East) | 0.70 |

Source: ValueLine Investment Survey, February, 2015.

**Exhibit JRW-9**
**DCF Model**




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

**Exhibit JRW-9**
**DCF Model**
**Consensus Earnings Estimates**
**Alliant Energy Corp ("LNT")**
www.reuters.com
**2/1/2015**

| | # of Estimates | Mean | High | Low |
|---|---|---|---|---|
| **Earnings (per share)** | | | | |
| Quarter Ending Mar-15 | 1 | 0.76 | 0.76 | 0.76 |
| Quarter Ending Jun-15 | 1 | 0.52 | 0.52 | 0.52 |
| Year Ending Dec-15 | 9 | 3.64 | 3.69 | 3.60 |
| LT Growth Rate (%) | 2 | 4.90 | 5.00 | 4.80 |

Data Source: www.reuters.com

# Exhibit JRW-10

## Kentucky Utilities Company
## Discounted Cash Flow Analysis

### Panel A
### Electric Proxy Group

| | |
|---|---|
| **Dividend Yield*** | **3.50%** |
| **Adjustment Factor** | **1.025** |
| **Adjusted Dividend Yield** | **3.6%** |
| **Growth Rate**** | **5.00%** |
| **Equity Cost Rate** | **8.6%** |

*** Page 2 of Exhibit JRW-10**

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

### Panel B
### Avera/McKenzie Proxy Group

| | |
|---|---|
| **Dividend Yield*** | **3.50%** |
| **Adjustment Factor** | **1.02625** |
| **Adjusted Dividend Yield** | **3.6%** |
| **Growth Rate**** | **5.25%** |
| **Equity Cost Rate** | **8.8%** |

*** Page 2 of Exhibit JRW-10**

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

**Exhibit JRW-10**
**Kentucky Utilities Company**
**Monthly Dividend Yields**

**Panel A**
**Electric Proxy Group**

| Company | Annual Dividend | Dividend Yield 30 Day | Dividend Yield 90 Day | Dividend Yield 180 Day |
|---|---|---|---|---|
| ALLETE, Inc. (NYSE-ALE) | $ 2.02 | 3.6% | 3.9% | 4.0% |
| Alliant Energy Corporation (NYSE-LNT) | $ 2.20 | 3.3% | 3.5% | 3.7% |
| Ameren Corporation (NYSE-AEE) | $ 1.64 | 3.6% | 3.8% | 4.0% |
| American Electric Power Co. (NYSE-AEP) | $ 2.12 | 3.4% | 3.6% | 3.8% |
| Avista Corporation (NYSE-AVA) | $ 1.27 | 3.5% | 3.7% | 3.8% |
| Black Hills Corporation (NYSE-BKH) | $ 1.62 | 3.1% | 3.1% | 3.0% |
| CMS Energy Corporation (NYSE-CMS) | $ 1.16 | 3.2% | 3.5% | 3.7% |
| Consolidated Edison, Inc. (NYSE-ED) | $ 2.60 | 3.8% | 4.1% | 4.4% |
| Dominion Resources, Inc. (NYSE-D) | $ 2.40 | 3.1% | 3.3% | 3.4% |
| Duke Energy Corporation (NYSE-DUK) | $ 3.18 | 3.7% | 3.9% | 4.2% |
| Edison International (NYSE-EIX) | $ 1.67 | 2.5% | 2.7% | 2.8% |
| El Paso Electric Company (NYSE-EE) | $ 1.12 | 2.8% | 2.9% | 3.0% |
| Empire District Electric Co. (NYSE-EDE) | $ 1.04 | 3.4% | 3.7% | 4.0% |
| Entergy Corporation (NYSE-ETR) | $ 3.32 | 3.8% | 4.0% | 4.2% |
| FirstEnergy Corporation (ASE-FE) | $ 1.44 | 3.6% | 3.9% | 4.1% |
| Great Plains Energy Incorporated (NYSE-GXP) | $ 0.98 | 3.4% | 3.7% | 3.8% |
| IDACORP, Inc. (NYSE-IDA) | $ 1.88 | 2.8% | 3.0% | 3.2% |
| MGE Energy, Inc. (NYSE-MGEE) | $ 1.13 | 2.5% | 2.6% | 2.7% |
| Northeast Utilities (NYSE-NU) | $ 1.67 | 3.1% | 3.3% | 3.5% |
| NorthWestern Corporation (NYSE-NWE) | $ 1.60 | 2.8% | 3.0% | 3.2% |
| OGE Energy Corp. (NYSE-OGE) | $ 1.00 | 2.8% | 2.8% | 2.8% |
| PG&E Corporation (NYSE-PCG) | $ 1.82 | 3.3% | 3.6% | 3.8% |
| Pinnacle West Capital Corp. (NYSE-PNW) | $ 2.38 | 3.4% | 3.8% | 4.0% |
| PNM Resources, Inc. (NYSE-PNM) | $ 0.80 | 2.7% | 2.8% | 2.9% |
| Portland General Electric Company (NYSE-POR) | $ 1.12 | 2.9% | 3.1% | 3.2% |
| SCANA Corporation (NYSE-SCG) | $ 2.10 | 3.4% | 3.7% | 3.9% |
| Southern Company (NYSE-SO) | $ 2.10 | 4.2% | 4.4% | 4.6% |
| Westar Energy, Inc. (NYSE-WR) | $ 1.40 | 3.3% | 3.6% | 3.7% |
| Xcel Energy Inc. (NYSE-XEL) | $ 1.20 | 3.3% | 3.5% | 3.7% |
| Mean | | 3.2% | 3.5% | 3.6% |
| Median | | 3.3% | 3.6% | 3.7% |

Data Sources: http://quote.yahoo.com, February 1, 2015.

**Panel B**
**Avera/McKenzie Proxy Group**

| Company | Annual Dividend | Dividend Yield 30 Day | Dividend Yield 90 Day | Dividend Yield 180 Day |
|---|---|---|---|---|
| Alliant Energy Corporation (NYSE-LNT) | $ 2.20 | 3.3% | 3.5% | 3.7% |
| Ameren Corporation (NYSE-AEE) | $ 1.64 | 3.6% | 3.8% | 4.0% |
| Avista Corporation (NYSE-AVA) | $ 1.27 | 3.5% | 3.7% | 3.8% |
| Black Hills Corporation (NYSE-BKH) | $ 1.62 | 3.1% | 3.1% | 3.0% |
| CenterPoint Energy (NYSE-CNP) | $ 0.99 | 4.3% | 4.2% | 4.1% |
| CMS Energy Corporation (NYSE-CMS) | $ 1.16 | 3.2% | 3.5% | 3.7% |
| Consolidated Edison, Inc. (NYSE-ED) | $ 2.60 | 3.8% | 4.1% | 4.4% |
| Dominion Resources, Inc. (NYSE-D) | $ 2.40 | 3.1% | 3.3% | 3.4% |
| DTE Energy Company (NYSE-DTE) | $ 2.76 | 3.1% | 3.3% | 3.5% |
| Duke Energy Corporation (NYSE-DUK) | $ 3.18 | 3.7% | 3.9% | 4.2% |
| Empire District Electric Co. (NYSE-EDE) | $ 1.04 | 3.4% | 3.7% | 4.0% |
| Entergy Corporation (NYSE-ETR) | $ 3.32 | 3.8% | 4.0% | 4.2% |
| Northeast Utilities (NYSE-NU) | $ 1.67 | 3.1% | 3.3% | 3.5% |
| NorthWestern Corporation (NYSE-NWE) | $ 1.60 | 2.8% | 3.0% | 3.2% |
| PG&E Corporation (NYSE-PCG) | $ 1.82 | 3.3% | 3.6% | 3.8% |
| Public Service Enterprise Group (NYSE-PEG) | $ 1.48 | 3.5% | 3.7% | 3.8% |
| SCANA Corporation (NYSE-SCG) | $ 2.10 | 3.4% | 3.7% | 3.9% |
| SEMPRA Energy (NYSE-SRE) | $ 2.64 | 2.4% | 2.4% | 2.5% |
| Vectren Corporation (NYSE-VVC) | $ 1.52 | 3.2% | 3.4% | 3.6% |
| Xcel Energy Inc. (NYSE-XEL) | $ 1.20 | 3.3% | 3.5% | 3.7% |
| Mean | | 3.3% | 3.5% | 3.7% |
| Median | | 3.3% | 3.6% | 3.7% |

**Data Sources: http://quote.yahoo.com, February 1, 2015.**

**Exhibit JRW-10**

**Kentucky Utilities Company**
**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) | 6.0 | 0.5 | 3.0 | 4.5 | 7.0 | 3.0 |
| Ameren Corporation (NYSE-AEE) | -2.5 | -4.5 | 1.5 | -4.0 | -9.0 | -2.0 |
| American Electric Power Co. (NYSE-AEP) | 0.5 | -1.5 | 3.5 | 1.5 | 4.0 | 4.5 |
| Avista Corporation (NYSE-AVA) | 5.5 | 9.0 | 3.5 | 6.5 | 13.5 | 3.5 |
| Black Hills Corporation (NYSE-BKH) | -3.0 | 2.5 | 3.5 | 2.0 | 1.5 | 2.0 |
| CMS Energy Corporation (NYSE-CMS) | | 1.0 | 1.5 | 13.0 | nmf | 4.0 |
| Consolidated Edison, Inc. (NYSE-ED) | 2.0 | 1.0 | 4.0 | 3.0 | 1.0 | 4.0 |
| Dominion Resources, Inc. (NYSE-D) | 4.0 | 5.0 | 2.0 | 2.5 | 7.5 | 2.5 |
| Duke Energy Corporation (NYSE-DUK) | | | | 4.5 | 11.5 | 0.5 |
| Edison International (NYSE-EIX) | 7.5 | | 8.5 | 2.5 | 2.5 | 3.0 |
| El Paso Electric Company (NYSE-EE) | 11.0 | | 8.0 | 8.5 | | 8.0 |
| Empire District Electric Co. (NYSE-EDE) | 3.0 | -3.5 | 1.5 | 2.5 | -7.0 | 1.5 |
| Entergy Corporation (NYSE-ETR) | 6.0 | 9.0 | 4.0 | 1.5 | 5.0 | 5.0 |
| FirstEnergy Corporation (ASE-FE) | | 3.0 | 2.5 | -11.0 | | 2.0 |
| Great Plains Energy Incorporated (NYSE-GXP) | -3.5 | -6.5 | 5.0 | -2.0 | -12.5 | 3.5 |
| IDACORP, Inc. (NYSE-IDA) | 5.5 | -2.5 | 4.5 | 10.0 | 3.0 | 5.5 |
| MGE Energy, Inc. (NYSE-MGEE) | 5.5 | 1.5 | 6.5 | 5.5 | 2.0 | 5.5 |
| Northeast Utilities (NYSE-NU) | 6.0 | 9.5 | 5.0 | 9.0 | 11.0 | 8.0 |
| NorthWestern Corporation (NYSE-NWE) | | | | 10.0 | 3.0 | 3.5 |
| OGE Energy Corp. (NYSE-OGE) | 9.5 | 2.0 | 8.0 | 7.5 | 3.0 | 8.5 |
| PG&E Corporation (NYSE-PCG) | 9.5 | | 11.0 | -5.5 | 5.0 | 4.5 |
| Pinnacle West Capital Corp. (NYSE-PNW) | 1.5 | 3.5 | 2.0 | 4.0 | 2.5 | 1.0 |
| PNM Resources, Inc. (NYSE-PNM) | -2.5 | 0.5 | 1.5 | 8.0 | -6.0 | -1.0 |
| Portland General Electric Company (NYSE-POR) | | | | 3.0 | 4.5 | 2.0 |
| SCANA Corporation (NYSE-SCG) | 3.0 | 4.5 | 4.5 | 3.0 | 2.5 | 4.5 |
| Southern Company (NYSE-SO) | 4.0 | 3.5 | 5.5 | 3.5 | 4.0 | 5.5 |
| Westar Energy, Inc. (NYSE-WR) | 12.5 | 2.0 | 2.5 | 4.5 | 4.0 | 4.0 |
| Xcel Energy Inc. (NYSE-XEL) | 3.5 | -0.5 | 2.5 | 5.5 | 3.5 | 4.5 |
| Mean | 4.1 | 1.8 | 4.2 | 3.5 | 2.7 | 3.7 |
| Median | 4.0 | 1.8 | 3.5 | 3.5 | 3.0 | 4.0 |
| Average of Median Figures = | | | | 3.3 | | |

Data Source: *Value Line Investment Survey.*

**Panel B**
**Avera/McKenzie Proxy Group**

| Company | *Value Line* Historic Growth | | | | | |
|---|---|---|---|---|---|---|
| | Past 10 Years | | | Past 5 Years | | |
| | Earnings | Dividends | Book Value | Earnings | Dividends | Book Value |
| Alliant Energy Corporation (NYSE-LNT) | 6.0 | 0.5 | 3.0 | 4.5 | 7.0 | 3.0 |
| Ameren Corporation (NYSE-AEE) | -2.5 | -4.5 | 1.5 | -4.0 | -9.0 | -2.0 |
| Avista Corporation (NYSE-AVA) | 5.5 | 9.0 | 3.5 | 6.5 | 13.5 | 3.5 |
| Black Hills Corporation (NYSE-BKH) | -3.0 | 2.5 | 3.5 | 2.0 | 1.5 | 2.0 |
| CenterPoint Energy (NYSE-CNP) | -1.0 | -2.0 | -1.0 | 0.5 | 4.0 | 13.0 |
| CMS Energy Corporation (NYSE-CMS) | | 1.0 | 1.5 | 13.0 | nmf | 4.0 |
| Consolidated Edison, Inc. (NYSE-ED) | 2.0 | 1.0 | 4.0 | 3.0 | 1.0 | 4.0 |
| Dominion Resources, Inc. (NYSE-D) | 4.0 | 5.0 | 2.0 | 2.5 | 7.5 | 2.5 |
| DTE Energy Company (NYSE-DTE) | 2.5 | 1.5 | 4.0 | 7.5 | 3.0 | 4.0 |
| Duke Energy Corporation (NYSE-DUK) | | | | 4.5 | 11.5 | 0.5 |
| Empire District Electric Co. (NYSE-EDE) | 3.0 | -3.5 | 1.5 | 2.5 | -7.0 | 1.5 |
| Entergy Corporation (NYSE-ETR) | 6.0 | 9.0 | 4.0 | 1.5 | 5.0 | 5.0 |
| Northeast Utilities (NYSE-NU) | 6.0 | 9.5 | 5.0 | 9.0 | 11.0 | 8.0 |
| NorthWestern Corporation (NYSE-NWE) | | | | 10.0 | 3.0 | 3.5 |
| PG&E Corporation (NYSE-PCG) | 9.5 | | 11.0 | -5.5 | 5.0 | 4.5 |
| Public Service Enterprise Group (NYSE-PEG) | 3.5 | 2.5 | 7.5 | 2.0 | 3.5 | 8.5 |
| SCANA Corporation (NYSE-SCG) | 3.0 | 4.5 | 4.5 | 3.0 | 2.5 | 4.5 |
| SEMPRA Energy (NYSE-SRE) | 4.5 | 8.5 | 11.5 | | 12.5 | 6.5 |
| Vectren Corporation (NYSE-VVC) | 2.0 | 3.0 | 3.5 | 1.5 | 2.0 | 3.0 |
| Xcel Energy Inc. (NYSE-XEL) | 3.5 | -0.5 | 2.5 | 5.5 | 3.5 | 4.5 |
| Mean | 3.2 | 2.8 | 4.1 | 3.7 | 4.3 | 4.2 |
| Median | 3.5 | 2.5 | 3.5 | 3.0 | 3.5 | 4.0 |
| Average of Median Figures = | | | | 3.3 | | |

Data Source: *Value Line Investment Survey.*

**Exhibit JRW-10**

**Kentucky Utilities Company**
**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 | 5.0 | 9.0% | 37.0% | 3.3% |
| Alliant Energy Corporation (NYSE-LNT) | 6.0 | 4.5 | 4.0 | 12.0% | 32.0% | 3.8% |
| Ameren Corporation (NYSE-AEE) | 4.5 | 2.0 | 1.5 | 9.5% | 41.0% | 3.9% |
| American Electric Power Co. (NYSE-AEP) | 4.5 | 4.5 | 4.0 | 10.0% | 37.0% | 3.7% |
| Avista Corporation (NYSE-AVA) | 5.5 | 4.5 | 4.0 | 8.5% | 34.0% | 2.9% |
| Black Hills Corporation (NYSE-BKH) | 9.5 | 3.5 | 4.0 | 9.0% | 43.0% | 3.9% |
| CMS Energy Corporation (NYSE-CMS) | 6.5 | 6.0 | 6.0 | 13.5% | 42.0% | 5.7% |
| Consolidated Edison, Inc. (NYSE-ED) | 2.5 | 2.5 | 3.5 | 9.0% | 36.0% | 3.2% |
| Dominion Resources, Inc. (NYSE-D) | 7.5 | 7.5 | 5.5 | 17.0% | 38.0% | 6.5% |
| Duke Energy Corporation (NYSE-DUK) | 5.0 | 2.5 | 2.5 | 8.0% | 35.0% | 2.8% |
| Edison International (NYSE-EIX) | 2.5 | 9.5 | 5.5 | 11.0% | 47.0% | 5.2% |
| El Paso Electric Company (NYSE-EE) | 1.5 | 7.0 | 5.0 | 9.0% | 47.0% | 4.2% |
| Empire District Electric Co. (NYSE-EDE) | 4.0 | 4.5 | 3.0 | 9.0% | 38.0% | 3.4% |
| Entergy Corporation (NYSE-ETR) | 1.5 | 2.5 | 4.0 | 10.5% | 43.0% | 4.5% |
| FirstEnergy Corporation (ASE-FE) | 3.5 | -3.5 | 3.0 | 8.0% | 48.0% | 3.8% |
| Great Plains Energy Incorporated (NYSE-GXP) | 6.0 | 5.5 | 2.5 | 7.5% | 38.0% | 2.9% |
| IDACORP, Inc. (NYSE-IDA) | 1.5 | 8.0 | 4.0 | 8.5% | 42.0% | 3.6% |
| MGE Energy, Inc. (NYSE-MGEE) | 9.0 | 4.0 | 6.0 | 13.5% | 59.0% | 8.0% |
| Northeast Utilities (NYSE-NU) | 8.0 | 7.0 | 4.5 | 9.5% | 43.0% | 4.1% |
| NorthWestern Corporation (NYSE-NWE) | 6.5 | 6.5 | 6.5 | 9.5% | 40.0% | 3.8% |
| OGE Energy Corp. (NYSE-OGE) | 5.5 | 9.5 | 6.5 | 12.0% | 44.0% | 5.3% |
| PG&E Corporation (NYSE-PCG) | 8.0 | 2.5 | 4.5 | 9.5% | 42.0% | 4.0% |
| Pinnacle West Capital Corp. (NYSE-PNW) | 4.0 | 3.0 | 4.0 | 9.5% | 35.0% | 3.3% |
| PNM Resources, Inc. (NYSE-PNM) | 11.0 | 12.0 | 3.5 | 9.5% | 51.0% | 4.8% |
| Portland General Electric Company (NYSE-POR) | 5.0 | 4.5 | 4.0 | 9.0% | 45.0% | 4.1% |
| SCANA Corporation (NYSE-SCG) | 6.0 | 3.0 | 5.5 | 10.5% | 49.0% | 5.1% |
| Southern Company (NYSE-SO) | 4.0 | 3.5 | 3.0 | 13.5% | 31.0% | 4.2% |
| Westar Energy, Inc. (NYSE-WR) | 6.0 | 3.0 | 5.0 | 9.5% | 45.0% | 4.3% |
| Xcel Energy Inc. (NYSE-XEL) | 5.5 | 5.0 | 4.5 | 10.0% | 41.0% | 4.1% |
| Mean | 5.4 | 4.8 | 4.3 | 10.2% | 41.5% | 4.2% |
| Median | 5.5 | 4.5 | 4.0 | 9.5% | 42.0% | 4.0% |
| Average of Median Figures = | | 4.7 | | | | 4.0% |

Data Source: *Value Line Investment Survey.*

**Panel B**
**Avera/McKenzie 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 |
| Alliant Energy Corporation (NYSE-LNT) | 6.0 | 4.5 | 4.0 | 12.0% | 32.0% | 3.8% |
| Ameren Corporation (NYSE-AEE) | 4.5 | 2.0 | 1.5 | 9.5% | 41.0% | 3.9% |
| Avista Corporation (NYSE-AVA) | 5.5 | 4.5 | 4.0 | 8.5% | 34.0% | 2.9% |
| Black Hills Corporation (NYSE-BKH) | 9.5 | 3.5 | 4.0 | 9.0% | 43.0% | 3.9% |
| CenterPoint Energy (NYSE-CNP) | 5.0 | 8.0 | 2.5 | 15.0% | 37.0% | 5.6% |
| CMS Energy Corporation (NYSE-CMS) | 6.5 | 6.0 | 6.0 | 13.5% | 42.0% | 5.7% |
| Consolidated Edison, Inc. (NYSE-ED) | 2.5 | 2.5 | 3.5 | 9.0% | 36.0% | 3.2% |
| Dominion Resources, Inc. (NYSE-D) | 7.5 | 7.5 | 5.5 | 17.0% | 38.0% | 6.5% |
| DTE Energy Company (NYSE-DTE) | 5.5 | 5.0 | 4.5 | 9.5% | 37.0% | 3.5% |
| Duke Energy Corporation (NYSE-DUK) | 5.0 | 2.5 | 2.5 | 8.0% | 35.0% | 2.8% |
| Empire District Electric Co. (NYSE-EDE) | 4.0 | 4.5 | 3.0 | 9.0% | 38.0% | 3.4% |
| Entergy Corporation (NYSE-ETR) | 1.5 | 2.5 | 4.0 | 10.5% | 43.0% | 4.5% |
| Northeast Utilities (NYSE-NU) | 8.0 | 7.0 | 4.5 | 9.5% | 43.0% | 4.1% |
| NorthWestern Corporation (NYSE-NWE) | 6.5 | 6.5 | 6.5 | 9.5% | 40.0% | 3.8% |
| PG&E Corporation (NYSE-PCG) | 8.0 | 2.5 | 4.5 | 9.5% | 42.0% | 4.0% |
| Public Service Enterprise Group (NYSE-PEG) | 3.0 | 2.5 | 5.0 | 10.5% | 47.0% | 4.9% |
| SCANA Corporation (NYSE-SCG) | 6.0 | 3.0 | 5.5 | 10.5% | 49.0% | 5.1% |
| SEMPRA Energy (NYSE-SRE) | 6.0 | 6.0 | 4.5 | 11.5% | 50.0% | 5.8% |
| Vectren Corporation (NYSE-VVC) | 9.0 | 3.5 | 2.5 | 14.0% | 42.0% | 5.9% |
| Xcel Energy Inc. (NYSE-XEL) | 5.5 | 5.0 | 4.5 | 10.0% | 41.0% | 4.1% |
| Mean | 5.8 | 4.5 | 4.1 | 10.8% | 40.5% | 4.4% |
| Median | 5.8 | 4.5 | 4.3 | 9.8% | 41.0% | 4.0% |
| Average of Median Figures = | | 4.8 | | | | 4.0% |

**Exhibit JRW-10**

**Kentucky Utilities Company**
**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% | N/A | N/A | 6.0% |
| Alliant Energy Corporation (NYSE-LNT) | 4.9% | 4.9% | 4.9% | 4.9% |
| Ameren Corporation (NYSE-AEE) | 8.9% | 8.4% | 8.9% | 8.7% |
| American Electric Power Co. (NYSE-AEP) | 5.1% | 4.8% | 5.1% | 5.0% |
| Avista Corporation (NYSE-AVA) | 5.0% | N/A | N/A | 5.0% |
| Black Hills Corporation (NYSE-BKH) | 7.0% | N/A | N/A | 7.0% |
| CMS Energy Corporation (NYSE-CMS) | 6.7% | 6.1% | 6.7% | 6.5% |
| Consolidated Edison, Inc. (NYSE-ED) | 3.5% | 3.0% | 2.4% | 3.0% |
| Dominion Resources, Inc. (NYSE-D) | 6.5% | 5.9% | 6.5% | 6.3% |
| Duke Energy Corporation (NYSE-DUK) | 4.8% | 4.8% | 4.8% | 4.8% |
| Edison International (NYSE-EIX) | 3.5% | 8.1% | 3.5% | 5.1% |
| El Paso Electric Company (NYSE-EE) | 7.0% | 6.7% | N/A | 6.9% |
| Empire District Electric Co. (NYSE-EDE) | 3.0% | 3.0% | N/A | 3.0% |
| Entergy Corporation (NYSE-ETR) | 0.3% | 3.0% | 0.3% | 1.2% |
| FirstEnergy Corporation (ASE-FE) | -3.9% | -3.5% | -3.9% | -3.8% |
| Great Plains Energy Incorporated (NYSE-GXP) | 4.6% | 4.8% | 4.6% | 4.7% |
| IDACORP, Inc. (NYSE-IDA) | 4.0% | 4.0% | 4.0% | 4.0% |
| MGE Energy (NDQ-MGEE) | 4.0% | N/A | N/A | 4.0% |
| Northeast Utilities (NYSE-NU) | 5.9% | 6.7% | 5.9% | 6.1% |
| NorthWestern Corporation (NYSE-NWE) | 7.1% | 7.1% | 7.1% | 7.1% |
| OGE Energy Corp. (NYSE-OGE) | 6.2% | 6.1% | 6.2% | 6.1% |
| PG&E Corporation (NYSE-PCG) | 8.8% | 7.5% | 8.8% | 8.4% |
| Pinnacle West Capital Corp. (NYSE-PNW) | 4.2% | 4.0% | 4.2% | 4.1% |
| PNM Resources, Inc. (NYSE-PNM) | 9.9% | 8.9% | 9.9% | 9.5% |
| Portland General Electric Company (NYSE-POR) | 8.0% | 8.0% | 8.0% | 8.0% |
| SCANA Corporation (NYSE-SCG) | 5.4% | 4.9% | 5.4% | 5.2% |
| Southern Company (NYSE-SO) | 3.3% | 3.6% | 3.3% | 3.4% |
| Westar Energy, Inc. (NYSE-WR) | 3.4% | 3.8% | 3.4% | 3.5% |
| Xcel Energy Inc. (NYSE-XEL) | 4.5% | 4.2% | 4.5% | 4.4% |
| Mean | 5.1% | 5.1% | 5.0% | 5.1% |
| Median | 5.0% | 4.9% | 4.9% | 5.0% |

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, February 1, 2015.

**Panel B**
**Avera/McKenzie Proxy Group**

| Company | Yahoo | Zacks | Reuters | Mean |
|---|---|---|---|---|
| Alliant Energy Corporation (NYSE-LNT) | 4.9% | 4.9% | 4.9% | 4.9% |
| Ameren Corporation (NYSE-AEE) | 8.9% | 8.4% | 8.9% | 8.7% |
| Avista Corporation (NYSE-AVA) | 5.0% | N/A | N/A | 5.0% |
| Black Hills Corporation (NYSE-BKH) | 7.0% | N/A | N/A | 7.0% |
| CenterPoint Energy (NYSE-CNP) | 3.5% | 4.8% | 3.5% | 3.9% |
| CMS Energy Corporation (NYSE-CMS) | 6.7% | 6.1% | 6.7% | 6.5% |
| Consolidated Edison, Inc. (NYSE-ED) | 3.5% | 3.0% | 2.4% | 3.0% |
| Dominion Resources, Inc. (NYSE-D) | 6.5% | 5.9% | 6.5% | 6.3% |
| DTE Energy Company (NYSE-DTE) | 6.2% | 6.2% | 6.2% | 6.2% |
| Duke Energy Corporation (NYSE-DUK) | 4.8% | 4.8% | 4.8% | 4.8% |
| Empire District Electric Co. (NYSE-EDE) | 3.0% | 3.0% | N/A | 3.0% |
| Entergy Corporation (NYSE-ETR) | 0.3% | 3.0% | 0.3% | 1.2% |
| Northeast Utilities (NYSE-NU) | 5.9% | 6.7% | 5.9% | 6.1% |
| NorthWestern Corporation (NYSE-NWE) | 7.1% | 7.1% | 7.1% | 7.1% |
| PG&E Corporation (NYSE-PCG) | 8.8% | 7.5% | 8.8% | 8.4% |
| Public Service Enterprise Group (NYSE-PEG) | 2.7% | 3.0% | 2.7% | 2.8% |
| SCANA Corporation (NYSE-SCG) | 5.4% | 4.9% | 5.4% | 5.2% |
| SEMPRA Energy (NYSE-SRE) | 7.6% | 7.9% | 7.6% | 7.7% |
| Vectren Corporation (NYSE-VVC) | 4.5% | 5.0% | 4.5% | 4.7% |
| Xcel Energy Inc. (NYSE-XEL) | 4.5% | 4.2% | 4.5% | 4.4% |
| Mean | 5.3% | 5.3% | 5.3% | 5.3% |
| Median | 5.2% | 5.0% | 5.4% | 5.1% |

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, February 1, 2015.

**Exhibit JRW-10**

**Kentucky Utilities Company**
**DCF Growth Rate Indicators**

**Electric and Avera/McKenzie Proxy Groups**
**Summary Growth Rates**

| Growth Rate Indicator | Electric Proxy Group | Avera/McKenzie Proxy Group |
|---|---|---|
| Historic *Value Line* Growth in EPS, DPS, and BVPS | 3.3% | 3.3% |
| Projected *Value Line* Growth in EPS, DPS, and BVPS | 4.7% | 4.8% |
| Sustainable Growth ROE * Retention Rate | 4.0% | 4.0% |
| Projected EPS Growth from Yahoo, Zacks, and Reuters - Mean/Median | 5.1%/5.0% | 5.3%/5.1% |

**Exhibit JRW-11**

**Kentucky Utilities Company**
**Capital Asset Pricing Model**

**Panel A**
**Electric Proxy Group**

| | |
|---|---|
| **Risk-Free Interest Rate** | **4.00%** |
| **Beta*** | **0.70** |
| **Ex Ante Equity Risk Premium**** | **5.50%** |
| **CAPM Cost of Equity** | **7.9%** |

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

**Panel B**
**Avera/McKenzie Proxy Group**

| | |
|---|---|
| **Risk-Free Interest Rate** | **4.00%** |
| **Beta*** | **0.73** |
| **Ex Ante Equity Risk Premium**** | **5.50%** |
| **CAPM Cost of Equity** | **8.0%** |

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

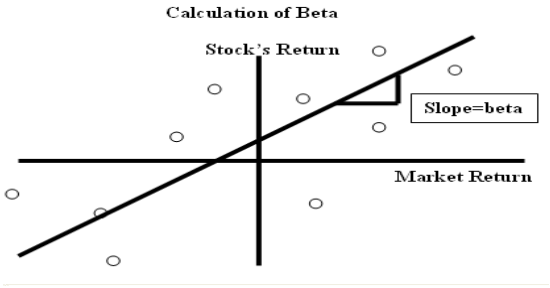
**Exhibit JRW-11**

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


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

**Exhibit JRW-11**

**Panel A**
**Betas**




**Panel A**
**Electric Proxy Group**

| Company Name | Beta |
|---|---|
| ALLETE, Inc. (NYSE-ALE) | 0.80 |
| Alliant Energy Corporation (NYSE-LNT) | 0.80 |
| Ameren Corporation (NYSE-AEE) | 0.70 |
| American Electric Power Co. (NYSE-AEP) | 0.75 |
| Avista Corporation (NYSE-AVA) | 0.80 |
| Black Hills Corporation (NYSE-BKH) | 0.90 |
| CMS Energy Corporation (NYSE-CMS) | 0.70 |
| Dominion Resources, Inc. (NYSE-D) | 0.70 |
| Consolidated Edison, Inc. (NYSE-ED) | 0.60 |
| 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 |
| Entergy Corporation (NYSE-ETR) | 0.70 |
| FirstEnergy Corporation (ASE-FE) | 0.70 |
| Great Plains Energy Incorporated (NYSE-GXP) | 0.85 |
| IDACORP, Inc. (NYSE-IDA) | 0.80 |
| MGE Energy, Inc. (NYSE-MGEE) | 0.70 |
| Northeast Utilities (NYSE-NU) | 0.75 |
| NorthWestern Corporation (NYSE-NWE) | 0.70 |
| OGE Energy Corp. (NYSE-OGE) | 0.90 |
| PG&E Corporation (NYSE-PCG) | 0.65 |
| Pinnacle West Capital Corp. (NYSE-PNW) | 0.70 |
| PNM Resources, Inc. (NYSE-PNM) | 0.85 |
| Portland General Electric Company (NYSE-POR) | 0.80 |
| SCANA Corporation (NYSE-SCG) | 0.75 |
| Southern Company (NYSE-SO) | 0.55 |
| Westar Energy, Inc. (NYSE-WR) | 0.75 |
| Xcel Energy Inc. (NYSE-XEL) | 0.65 |
| Mean | 0.73 |
| Median | 0.70 |

Data Source: *Value Line Investment Survey* , 2015.

**Panel B**
**Avera/McKenzie Proxy Group**

| Company Name | Beta |
|---|---|
| Alliant Energy Corporation (NYSE-LNT) | 0.8 |
| Ameren Corporation (NYSE-AEE) | 0.70 |
| Avista Corporation (NYSE-AVA) | 0.80 |
| Black Hills Corporation (NYSE-BKH) | 0.90 |
| CenterPoint Energy (NYSE-CNP) | 0.75 |
| CMS Energy Corporation (NYSE-CMS) | 0.70 |
| 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 |
| Empire District Electric Co. (NYSE-EDE) | 0.70 |
| Entergy Corporation (NYSE-ETR) | 0.70 |
| Northeast Utilities (NYSE-NU) | 0.75 |
| NorthWestern Corporation (NYSE-NWE) | 0.70 |
| PG&E Corporation (NYSE-PCG) | 0.65 |
| Public Service Enterprise Group (NYSE-PEG) | 0.75 |
| SCANA Corporation (NYSE-SCG) | 0.75 |
| SEMPRA Energy (NYSE-SRE) | 0.75 |
| Vectren Corporation (NYSE-VVC) | 0.80 |
| Xcel Energy Inc. (NYSE-XEL) | 0.65 |
| Mean | 0.73 |
| Median | 0.73 |

Data Source: *Value Line Investment Survey* , 2015.

**Exhibit 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<br><br>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).

**Exhibit JRW-11**

**Kentucky Utilities Company**
**Capital Asset Pricing Model**
**Equity Risk Premium**

| Category | Category | Study Authors | Publication Date | Time Period Of Study | Methodology | Return Measure | Range Low | Range High | Midpoint of Range | Mean | Median |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Historical Risk Premiu** | **Historical Risk Premium** | | | | | | | | | | |
| | | Ibbotson | 2014 | 1926-2012 | Historical Stock Returns - Bond Returns | Arithmetic | | | | 6.20% | |
| | | | | | | Geometric | | | | 4.60% | |
| | | Damodaran | 2015 | 1928-2014 | Historical Stock Returns - Bond Returns | Arithmetic | | | | 6.25% | |
| | | | | | | Geometric | | | | 4.60% | |
| | | Dimson, Marsh, Staunton | 2014 | 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 (Puzzl** | **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% | |
| | | Duarte & Rosa - NY Fed | 2013 | projection | Projections from 29 Models | | | | | 5.40% | |
| | | Duff & Phelps | 2014 | Projection | Normalized with 4.0% Long-Term Treasury Yield | | | | | 5.00% | |
| | | Mschchowski - VL - 2014 | 2014 | Projection | Fundamentals - Expected Return Minus 10-Year Treasury Rate | | | | | 5.50% | |
| | | American Appraisal Quarterly ERP | 2015 | Projection | Fundamental Economic and Market Factors | | | | | 6.00% | |
| | | Damodaran | 2015 | Projection | Fundamentals - Implied from FCF to Equity Model | | | | | 6.02% | |
| | | **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% | |
| **Surveys** | | John Shoven | 2001 | Projected for 75 Years | Fundamentals (D/P, P/E, GDP Growth) | | 3.00% | 3.50% | 3.25% | 3.25% | |
| | | Median | | | | | | | | | 4.25% |
| | **Surveys** | | | | | | | | | | |
| | | New York Fed | 2013 | Five-Year | Survey of Wall Street Firms | | | | | 5.20% | |
| | | Survey of Financial Forecasters | 2015 | 10-Year Projection | About 20 Financial Forecastsers | | | | | 1.88% | |
| | | Duke - CFO Magazine Survey | 2014 | 10-Year Projection | Approximately 350 CFOs | | | | | 4.90% | |
| | | Welch - Academics | 2008 | 30-Year Projection | Random Academics | | 5.00% | 5.74% | 5.37% | 5.37% | |
| **Building Block** | | Fernandez - Academics, Analysts, and Compar | 2014 | Long-Term | Survey of Academics, Analysts, and Companies | | | | | 5.00% | |
| | | Median | | | | | | | | | 4.95% |
| | **Building Block** | | | | | | | | | | |
| | | Ibbotson and Chen | 2014 | Projection | Historical Supply Model (D/P & Earnings Growth) | Arithmetic | | | 6.12% | 5.10% | |
| | | | | | | Geometric | | | 4.08% | | |
| | | 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% | | |
| **Mean** | | Woolridge | | 2015 | Current Supply Model (D/P & Earnings Growth) | | | | | 4.75% | |
| **Median** | | Median | | | | | | | | | 4.12% |
| Sources: | **Mean** | | | | | | | | | | **4.61%** |
| | **Median** | | | | | | | | | | **4.60%** |

**Exhibit JRW-11**

**Kentucky Utilities Company**
**Capital Asset Pricing Model**
**Equity Risk Premium**

**Summary of 2010-15 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 | 2015 | 1928-2014 | Historical Stock Returns - Bond Returns | Arithmetic | | | | 6.25% | |
| | | | | | Geometric | | | | 4.60% | |
| | Dimson, Marsh, Staunton | 2014 | 1900-2013 | Historical Stock Returns - Bond Returns | Arithmetic | | | | | |
| | | | | | Geometric | | | | 4.50% | |
| | Median | | | | | | | | | 5.23% |
| **Ex Ante Models (Puzzle Research)** | | | | | | | | | | |
| | Siegel - Rethink ERP | 2011 | Projection | Real Stock Returns and Components | | | | | 5.50% | |
| | Duarte & Rosa - NY Fed | 2013 | Projection | Projections from 29 Models | | | | | 5.40% | |
| | Duff & Phelps | 2014 | Projection | Normalized with 4.0% Long-Term Treasury Yield | | | | | 5.00% | |
| | Mschchowski - VL - 2014 | 2014 | Projection | Fundamentals - Expected Return Minus 10-Year Treasury Rate | | | | | 5.50% | |
| | American Appraisal Quarterly ERP | 2015 | Projection | Fundamental Economic and Market Factors | | | | | 6.00% | |
| | Damodaran | 2015 | Projection | Fundamentals - Implied from FCF to Equity Model | | | | | 6.02% | |
| | Median | | | | | | | | | 5.50% |
| **Surveys** | | | | | | | | | | |
| | New York Fed | 2013 | Five-Year | Survey of Wall Street Firms | | | | | 5.20% | |
| | Survey of Financial Forecasters | 2015 | 10-Year Projection | About 20 Financial Forecastsers | | | | | 1.88% | |
| | Duke - CFO Magazine Survey | 2014 | 10-Year Projection | Approximately 350 CFOs | | | | | 4.90% | |
| | Fernandez - Academics, Analysts, and Companies | 2014 | Long-Term | Survey of Academics, Analysts, and Companies | | | | | 5.00% | |
| | Median | | | | | | | | | 4.95% |
| **Building Block** | | | | | | | | | | |
| | Ibbotson and Chen | 2014 | Projection | Historical Supply Model (D/P & Earnings Growth) | Arithmetic | | | 6.12% | 5.10% | |
| | | | | | Geometric | | | 4.08% | | |
| | 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 | 2015 | Projection | Current Supply Model (D/P & Earnings Growth) | Geometric | | | | 4.75% | |
| | Median | | | | | | | | | 4.12% |
| **Mean** | | | | | | | | | | **4.95%** |
| **Median** | | | | | | | | | | **5.09%** |

**Exhibit JRW-12**

**Kentucky Utilities Company**
**Company's Proposed Cost of Capital**

| Capital Source | Capitalization Ratio | Cost Rate | Weighted Cost Rate |
|---|---|---|---|
| Short-Term Debt | 2.98% | 0.90% | 0.03% |
| Long-Term Debt | 44.00% | 4.07% | 1.79% |
| Common Equity | 53.03% | 10.50% | 5.57% |
| Total | 100.00% | | 7.38% |

**Exhibit JRW-13**
**Dr. Avera's Equity Cost Rate Results**

| **DCF** | **Average** | **Midpoint** |
|---|---|---|
| Value Line | 9.7% | 10.1% |
| IBES | 9.7% | 10.5% |
| Zacks | 9.6% | 10.4% |
| Reuters | 9.6% | 10.5% |
| Internal br + sv | 9.6% | 9.5% |
| **Empirical CAPM - 2014 Yield** | | |
| Unadjusted | 11.1% | 11.1% |
| Size Adjusted | 11.9% | 11.9% |
| **Empirical CAPM - 2015-2018 Yield** | | |
| Unadjusted | 11.4% | 11.4% |
| Size Adjusted | 12.2% | 12.1% |
| **Utility Risk Premium** | | |
| 2014 Bond Yields | 10.1% | |
| 2015-2018 Bond Yields | 11.2% | |
| **Cost of Equity Recommendation** | | |
| Cost of Equity Range | 9.6% -- 11.4% | |
| Recommended Point Estimate | 10.50% | |
| **Flotation Cost Adjustment** | | |
| Dividend Yield | 3.80% | |
| Flotation Cost Percentage | 3.60% | |
| Adjustment | 0.14% | |
| **ROE Recommendation** | **10.64%** | |

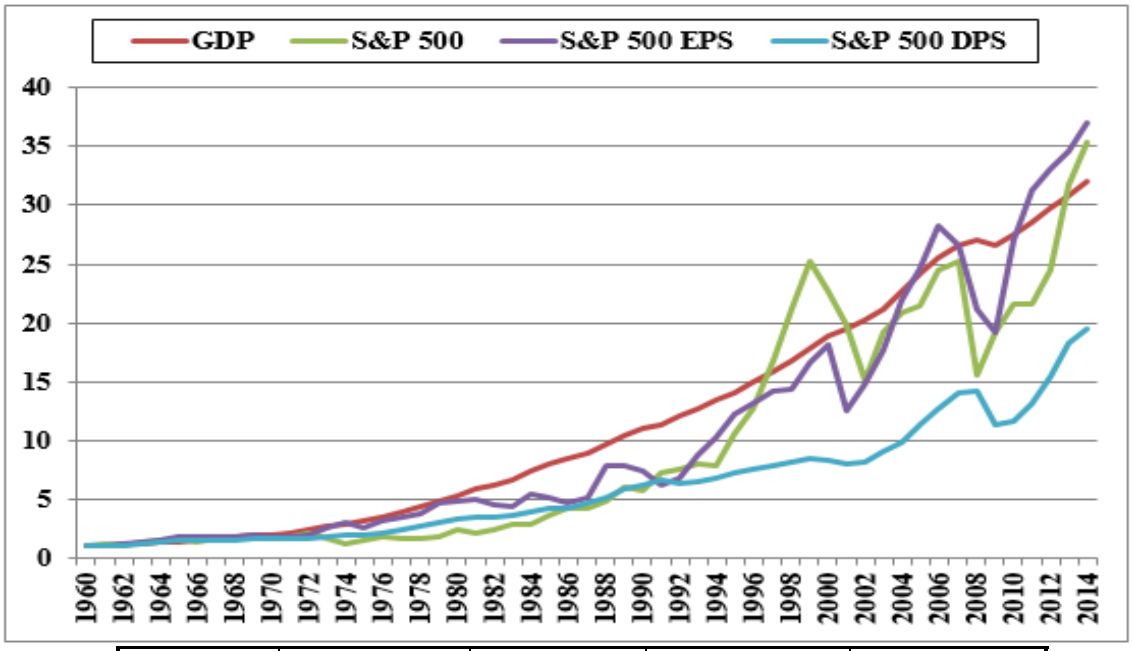
**Exhibit JRW-13**
**The Impact of Avera DCF Eliminations**
**Electric Group**

| | Company | Earnings Growth V Line | IBES | Zacks | Reuters | br+sv Growth |
|---|---|---|---|---|---|---|
| 1 | Alliant Energy | 9.5% | 8.2% | 8.7% | 8.7% | 8.8% |
| 2 | Ameren Corp. | 8.7% | 13.1% | 12.5% | 13.1% | 8.2% |
| 3 | Avista Corp. | 9.6% | 9.1% | NA | NA | 7.2% |
| 4 | Black Hills Corp. | 12.6% | 10.1% | NA | NA | 7.2% |
| 5 | CenterPoint Energy | 7.6% | 8.0% | 8.6% | 8.0% | 7.2% |
| 6 | CMS Energy Corp. | 10.3% | 10.6% | 9.9% | 10.6% | 10.1% |
| 7 | Consolidated Edison | 6.5% | 7.2% | 7.4% | 7.2% | 7.6% |
| 8 | Dominion Resources | 9.1% | 9.8% | 9.1% | 9.8% | 10.4% |
| 9 | DTE Energy Co. | 10.1% | 9.5% | 9.9% | 9.5% | 7.9% |
| 10 | Duke Energy Corp. | 9.4% | 9.1% | 9.1% | 9.1% | 7.3% |
| 11 | Empire District Elec | 8.1% | 7.1% | 7.1% | 7.1% | 7.3% |
| 12 | Entergy Corp. | 5.4% | 5.7% | 3.4% | 6.9% | 8.6% |
| 13 | Northeast Utilities | 11.7% | 10.0% | 10.2% | 9.7% | 8.1% |
| 14 | NorthWestern Corp. | 6.9% | 10.4% | 10.4% | 10.4% | 7.1% |
| 15 | PG&E Corp. | 9.0% | 10.9% | 9.6% | 10.9% | 6.9% |
| 16 | Pub Sv Enterprise Grp | 6.1% | 5.9% | 6.2% | 8.3% | 8.9% |
| 17 | SCANA Corp. | 9.2% | 8.8% | 8.6% | 8.8% | 9.2% |
| 18 | Sempra Energy | 8.6% | 10.1% | 10.1% | 10.1% | 8.3% |
| 19 | Vectren Corp. | 12.6% | 8.1% | 8.3% | 8.1% | 11.4% |
| 20 | Xcel Energy, Inc. | 9.4% | 8.4% | 8.1% | 9.0% | 8.7% |
| | **Reported DCF Equity Cost Rates** | | | | | **Average** |
| | **Average (b)** | **9.4%** | **9.1%** | **9.1%** | **9.3%** | **8.3%** **9.1%** |
| | **Actual DCF Equity Cost Rates** | | | | | **Average** |
| | **Average** | **9.0%** | **9.0%** | **8.7%** | **9.2%** | **8.3%** **8.8%** |
| | **Median** | **9.2%** | **9.1%** | **8.9%** | **9.1%** | **8.2%** **8.9%** |

**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 | 815.1 | 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 | 1428.6 | 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 | 2632.2 | 107.94 | 14.55 | 5.97 | |
| 1980 | 2862.5 | 135.76 | 14.99 | 6.44 | |
| 1981 | 3211.0 | 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 | 4346.8 | 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 | 6174.1 | 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 | 7308.8 | 459.27 | 31.75 | 13.36 | |
| 1995 | 7664.1 | 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 | 9089.2 | 1229.23 | 44.27 | 16.20 | |
| 1999 | 9660.6 | 1469.25 | 51.68 | 16.71 | |
| 2000 | 10284.8 | 1320.28 | 56.13 | 16.27 | |
| 2001 | 10621.8 | 1148.09 | 38.85 | 15.74 | |
| 2002 | 10977.5 | 879.82 | 46.04 | 16.08 | |
| 2003 | 11510.7 | 1111.91 | 54.69 | 17.88 | |
| 2004 | 12274.9 | 1211.92 | 67.68 | 19.41 | |
| 2005 | 13093.7 | 1248.29 | 76.45 | 22.38 | |
| 2006 | 13855.9 | 1418.30 | 87.72 | 25.05 | |
| 2007 | 14477.6 | 1468.36 | 82.54 | 27.73 | |
| 2008 | 14718.6 | 903.25 | 65.39 | 28.05 | |
| 2009 | 14418.7 | 1115.10 | 59.65 | 22.31 | |
| 2010 | 14964.4 | 1257.64 | 83.66 | 23.12 | |
| 2011 | 15517.9 | 1257.60 | 97.05 | 26.02 | **Average** |
| 2012 | 16163.2 | 1426.19 | 102.47 | 30.44 | |
| 2013 | 16768.1 | 1848.36 | 107.45 | 36.28 | |
| 2014 | 17420.7 | 2058.90 | 114.74 | 38.57 | |
| **Growth Rates** | **6.63** | **6.83** | **6.92** | **5.65** | **6.51** |

**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 | 6.63% | 6.83% | 6.92% | 5.65% |

**Panel A**
**Historic GDP Growth Rates**

| | |
|---|---|
| **10-Year Average** | **3.6%** |
| **20-Year Average** | **4.4%** |
| **30-Year Average** | **5.0%** |
| **40-Year Average** | **6.2%** |
| **50-Year Average** | **6.7%** |

**Calculated from Page 1 of Exhibit 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** | **4.7%** |
| **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