

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

IN THE MATTER OF: THE APPLICATION)	
OF LOUISVILLE GAS AND ELECTRIC)	Case No.
COMPANY FOR AN ADJUSTMENT)	2014-00372
OF ITS ELECTRIC AND GAS RATES)	

AFFIDAVIT OF Dr. J. Randall Woolridge

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. 2014-00372

LOUISVILLE GAS & ELECTRIC COMPANY

COST OF CAPITAL

DIRECT TESTIMONY

OF

J. RANDALL WOOLRIDGE, PH.D.

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

LOUISVILLE GAS & ELECTRIC COMPANY
Case No. 2014-00372

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

TABLE OF CONTENTS

I.	Subject of Testimony and Summary of Recommendations	1
II.	Capital Costs in Today's Markets	9
III.	Proxy Group Selection	16
IV.	Capital Structure Ratios and Debt Cost Rates	20
V.	The Cost of Common Equity Capital	23
	A. Overview	23
	B. Discounted Cash Flow Analysis	31
	C. Capital Asset Pricing Model	46
	D. Equity Cost Rate Summary	56
VI.	Critique of LG&E's Rate of Return Testimony	58
	A. DCF Approach	60
	1. The Asymmetric Elimination of Low-End DCF Results	61
	2. Analyst's EPS Growth Rates	62
	B. Empirical CAPM Approach	62
	1. ECAPM Approach	65
	2. Risk-Free Interest Rate	66
	3. Market Risk Premium	67
	4. Size Adjustment	71
	C. Utility Risk Premium ("URP") Approach	74
	1. Base Yield	75
	2. Risk Premium	75
	D. Flotation Costs	77
	E. Checks of Reasonableness	79
	1. CAPM	79
	2. Expected Earnings Approach	80
	3. DCF Applied to Non-Utility Group	81
	APPENDIX A - Qualifications of Dr. J. Randall Woolridge	A
	APPENDIX B - The Research on Analysts' Long-Term EPS Growth Rate Forecasts	B
	APPENDIX C - Building Blocks Equity Risk Premium	C

LIST OF EXHIBITS

<u>Exhibit</u>	<u>Title</u>
JRW-1	Recommended Cost of Capital
JRW-2	Treasury Yields
JRW-3	Public Utility Bond Yields
JRW-4	Summary Financial Statistics for Proxy Groups
JRW-5	Capital Structure Ratios and Debt Cost Rates
JRW-6	The Relationship Between Expected ROE and Market-to-Book Ratios
JRW-7	Utility Capital Cost Indicators
JRW-8	Industry Average Betas
JRW-9	DCF Model
JRW-10	DCF Study
JRW-11	CAPM Study
JRW-12	LGE's Proposed Cost of Capital
JRW-13	Avera/McKenzie Equity Cost Rate Results
JRW-14	GDP and S&P 500 Growth Rates

LOUISVILLE GAS & ELECTRIC COMPANY
Case No. 2014-00372

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

Dr. Woolridge is testifying as to the appropriate cost of capital for Louisville Gas & Electric (“LGE”) Company. He has also evaluated the testimony and rate of return recommendation, and testimony of LGE witnesses Mr. Kent W. Blake, Dr. William E. Avera and Mr. Adrien McKenzie.

KU has proposed a capital structure that includes 4.46% short-term debt, 42.97% long-term debt and 52.75% common equity. Their cost of capital recommendation also includes short-term and long-term debt cost rates of 0.89% and 4.16% and a common equity cost rate or return on equity (“ROE”) of 10.50%. Dr. Woolridge has adjusted the capital structure ratios of LGE to be more reflective of the capital structures of electric utility and gas distribution companies and LGE’s company, PPL Corporation (“PPL”). This 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 (“Electric Proxy Group”) and gas distribution companies (“Gas Proxy Group”) as well as the group developed by the Dr. Avera and Mr. McKenzie (“Avera/McKenzie Proxy Group”). Based primarily on his DCF equity cost rate results, he recommends an equity cost rate of 8.75% for LGE’s electric utility operations and 8.60% for LGE’s gas distribution operations. Using his capital structure and senior capital cost rates, he recommends an overall fair rate of return or cost of capital of 6.31% for electric operations and 6.23% for gas distribution operations..

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% and 8.60% ROE recommendations are below the average authorized ROEs for electric utilities and gas companies, 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%.

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

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

9

10 **I. SUBJECT OF TESTIMONY AND SUMMARY OF RECOMMENDATIONS**

11

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

13

14 A. I have been asked by Kentucky Office of Attorney General (“OAG”) to provide an
15 opinion as to the fair rate of return or cost of capital for Louisville Gas & Electric
16 Company (“LGE” or the “Company”) and to evaluate the cost of capital testimony of the
17 Company.

18

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

20 A. First, I summarize my cost of capital recommendation for the Company, and review the
21 primary areas of contention on the Company’s rate of return position. Second, I provide
22 an assessment of capital costs in today’s capital markets. Third, I discuss the selection
23 of a proxy group of electric utility companies for estimating the cost of equity capital for
24 the Company. Fourth, I discuss the Company’s recommended capital structure and debt
25 cost rates. Fifth, I provide an overview of the concept of the cost of equity capital, and

1 then estimate the equity cost rate for the Company. Finally, I critique LGE's rate of
2 return analysis and testimony. A table of contents is provided just after the title page.

3

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

7 A. The Company's proposed capital structure and senior capital cost rates are provided
8 by Mr. Kent W. Blake. I have adjusted the capital structure ratios of LGE to be more
9 reflective of the capital structures of electric utility companies and LGE's parent
10 company, PPL Corporation ("PPL"). This capital structure includes 50.0% debt and
11 50.0% common equity. I have employed the Company's proposed debt cost rates.
12 Dr. William E. Avera and Mr. Adrien M. McKenzie have recommended a common
13 equity cost rate of 10.64% for the Company. I have applied the Discounted Cash Flow
14 Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to a proxy group of
15 publicly-held electric utility companies ("Electric Proxy Group"), gas distribution
16 companies ("Gas Proxy Group"), as well as the group developed by Dr. Avera and
17 Mr. McKenzie ("Avera/McKenzie Proxy Group"). My analysis indicates an equity
18 cost rate of 8.75% is appropriate for the LGE's electric utility operations and 8.60%
19 for LGE's gas distribution operations. These figures represent the upper end of my
20 equity cost rate range for the proxy groups. With my proposed capital structure and
21 senior capital cost rates, I am recommending an overall fair rate of return or cost of
22 capital of 6.30% for the electric utility operations and 6.23% for the gas distribution
23 operations. These are summarized in Exhibit JRW-1.

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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 state that “the KPSC should consider near-term forecasts for public utility bond yields in

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*”).

1 assessing the reasonableness of individual cost of equity estimates and in evaluating a
2 fair ROE for LGE.”²

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

13
14 **Q. WHAT ARE THE PRIMARY ISSUES WITH RESPECT TO MEASURING**
15 **THE COST OF EQUITY CAPITAL IN THIS PROCEEDING?**

16 A. There are two primary errors in Dr. Avera and Mr. McKenzie’s DCF analysis. First,
17 they have eliminated over 20% of their results because they believe these DCF
18 estimates are too low. Second, their DCF growth rate is based exclusively on the
19 projected long-term earnings per share (“EPS”) growth rates of Wall Street analysts.
20 I provide empirical evidence that demonstrates the long-term earnings growth rates of
21 these analysts are overly optimistic and upwardly-biased. I also show that the
22 estimated long-term EPS growth rates of *Value Line* are overstated. In developing
23 my DCF growth rate, I have used thirteen growth rate measures including historic and

² Avera/McKenzie Testimony, P. 18.

1 projected growth rate measures and have evaluated growth in dividends, book value,
2 and earnings per share.

3 The CAPM approach requires an estimate of the risk-free interest rate, beta,
4 and the market or equity risk premium. The major area of disagreement involves the
5 measurement and magnitude of the market risk premium. In short, Dr. Avera and Mr.
6 McKenzie's market risk premium is excessive and does not reflect current market
7 fundamentals. As I highlight in my testimony, there are three procedures for
8 estimating a market or equity risk premium – historic returns, surveys, and expected
9 return models. Dr. Avera and Mr. McKenzie use a projected market risk premium that
10 includes an expected market return of 13.1%. Dr. Avera and Mr. McKenzie's
11 projected market return uses analysts' long-term EPS growth rate projections to
12 compute an expected market return and market risk premium. This EPS growth rate
13 projection, and the resulting expected market return and market risk premium, include
14 unrealistic assumptions regarding future economic and earnings growth and stock
15 returns. I have used a market risk premium of 5.5%, which: (1) factors all three
16 approaches into estimating an equity premium; and (2) employs the results of many
17 studies of the market risk premium. As I note, my market risk premium reflects the
18 market risk premiums: (1) discovered in academic studies by leading finance
19 scholars; (2) employed by leading investment banks and management consulting
20 firms; and (3) that result from surveys of companies, financial forecasters, financial
21 analysts, and corporate CFOs.

22 In estimating a cost of equity capital, in addition to the DCF and CAPM
23 approaches, Dr. Avera and Mr. McKenzie have also used a Utility Risk Premium

1 (“URP”) approach and have included a flotation cost adjustment of 0.14% in their
2 rate of return recommendation. In the URP model, their risk premium is based on the
3 historical relationship between the yields on long-term utility bonds and authorized
4 ROEs for electric utility companies. There are several issues with this approach. First
5 and foremost, this approach is a gauge of commission behavior and not investor
6 behavior. Capital costs are determined in the marketplace through the financial
7 decisions of investors and are reflected in such fundamental factors as dividend
8 yields, expected growth rates, interest rates, and investors’ assessment of the risk and
9 expected return of different investments. Regulatory commissions evaluate capital
10 market data in setting authorized ROEs, but also take into account other utility and
11 rate case-specific information in setting ROEs. As such, Dr. Avera and Mr.
12 McKenzie’s URP approach and its results reflect other factors used by utility
13 commissions in authorizing ROEs in addition to capital costs. This may be especially
14 true when the authorized ROE data includes the results of rate cases that are settled
15 and not fully litigated. Second, the methodology produces an inflated measure of the
16 risk premium because the approach uses historic authorized ROEs and utility bond
17 yields, and the resulting risk premium is applied to projected utility bond yields. Third,
18 the historic risk premium is inflated as a measure of investors’ required risk premium
19 since the utilities have been selling at a market-to-book ratio in excess of 1.0. This
20 indicates that the authorized rates of return have been greater than the return that
21 investors require.

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

3 A. Their URP equity cost rate estimates overstate actual state-level authorized ROES.
4 The authorized ROES for electric utilities have gradually decreased in recent years.
5 These authorized ROES declined from 10.01% in 2012, to 9.8% in 2013, to 9.76% in
6 2014, according to Regulatory Research Associates.³

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

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

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

20 A. There are several other less significant issues in Dr. Avera and Mr. McKenzie's
21 equity cost rate analyses. In their CAPM analysis, they have: (1) used a projected

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

1 risk-free rate that is about 200 basis points above current market rates; (2) employed
2 the Empirical CAPM (“ECAPM”) version of the CAPM, which makes inappropriate
3 adjustments to the risk-free rate and the market risk premium; and (3) included
4 unwarranted flotation cost and size adjustments. Dr. Avera and Mr. McKenzie have
5 also used several other ROE analyses which they refer to as “checks of
6 reasonableness” on their 10.64% ROE recommendation. These approaches include an
7 Expected Earnings approach and a DCF analysis for a non-utility group. I show that
8 these alternative approaches do not provide an appropriate measure of the equity cost
9 rate for the Company. I highlight a number of errors in these ROE benchmark
10 analyses.

11

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

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

23

1 **II. CAPITAL COSTS IN TODAY'S MARKETS**

2

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

4 A. Long-term capital cost rates for U.S. corporations are a function of the required
5 returns on risk-free securities plus a risk premium. The risk-free rate of interest is the
6 yield on long-term U.S. Treasury bonds. The yields on 10-year U.S. Treasury bonds
7 from 1953 to the present are provided on Panel A of Exhibit JRW-2. These yields
8 peaked in the early 1980s and have generally declined since that time. These yields
9 fell to below 3.0% in 2008 as a result of the financial crisis. From 2008 until 2011,
10 these rates fluctuated between 2.5% and 3.5%. In 2012, the yields on 10-year
11 Treasuries declined from 2.5% to 1.5% as the Federal Reserve initiated its
12 Quantitative Easing III (“QEIII”) program to support a low interest rate environment.
13 These yields increased from mid-2012 to about 3.0% as of December of 2013 on
14 speculation of a tapering of the Federal Reserve’s QEIII policy. Since that time, the
15 ten-year Treasury yield declined and bottomed out at 1.7% in January of 2015. This
16 yield has since increased to 2.1%.

17 Panel B on Exhibit JRW-2 shows the differences in yields between ten-year
18 Treasuries and Moody’s Baa-rated bonds since the year 2000. This differential
19 primarily reflects the additional risk premium required by bond investors for the risk
20 associated with investing in corporate bonds as opposed to obligations of the U.S.
21 Treasury. The difference also reflects, to some degree, yield curve changes over
22 time. The Baa rating is the lowest of the investment grade bond ratings for corporate
23 bonds. The yield differential hovered in the 2.0% to 3.5% range until 2005, declined
24 to 1.5% until late 2007, and then increased significantly in response to the financial

1 crisis. This differential peaked at 6.0% at the height of the financial crisis in early
2 2009 due to tightening in credit markets, which increased corporate bond yields, and
3 the “flight to quality,” which decreased Treasury yields. The differential subsequently
4 declined, and has been in the 2.5% to 3.5% range over the past four years.

5 The risk premium is the return premium required by investors to purchase
6 riskier securities. The risk premium required by investors to buy corporate bonds is
7 observable based on yield differentials in the markets. The market risk premium is
8 the return premium required to purchase stocks as opposed to bonds. The market or
9 equity risk premium is not readily observable in the markets (like bond risk
10 premiums) since expected stock market returns are not readily observable. As a
11 result, equity risk premiums must be estimated using market data. There are
12 alternative methodologies to estimate the equity risk premium, and these alternative
13 approaches and equity risk premium results are subject to much debate. One way to
14 estimate the equity risk premium is to compare the mean returns on bonds and stocks
15 over long historical periods. Measured in this manner, the equity risk premium has
16 been in the 5% to 7% range.⁴ However, studies by leading academics indicate that
17 the forward-looking equity risk premium is actually in the 4.0% to 6.0% range.
18 These lower equity risk premium results are in line with the findings of equity risk
19 premium surveys of CFOs, academics, analysts, companies, and financial forecasters.

20

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

22 A. Panel A of Exhibit JRW-3 provides the yields on A-rated public utility bonds. These
23 yields peaked in November 2008 at 7.75% and henceforth declined significantly.

⁴ See Exhibit JRW-11, p. 5-6.

1 These yields declined to below 4.0% in mid-2013, and then increased with interest
2 rates in general to the 4.85% range as of late 2013. They have since declined to about
3 4.0%.

4 Panel B of Exhibit JRW-3 provides the yield spreads between long-term A-
5 rated public utility bonds relative to the yields on 20-year U.S. Treasury bonds.
6 These yield spreads increased dramatically in the third quarter of 2008 during the
7 peak of the financial crisis and have decreased significantly since that time. For
8 example, the yield spreads between 20-year U.S. Treasury bonds and A-rated utility
9 bonds peaked at 3.4% in November 2008, declined to about 1.5% in the summer of
10 2012, and have remained in that range.

11

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

14 A. On September 13, 2012, the Federal Reserve released its policy statement relating to
15 QEIII. In its statement, the Federal Reserve announced that it intended to expand and
16 extend its purchasing of long-term securities to about \$85 billion per month.⁵ The
17 Federal Open Market Committee ("FOMC") also indicated that it intended to keep
18 the target for the federal funds rate between 0 to 1/4 percent through at least mid-
19 2015. In subsequent meetings over the next year, the Federal Reserve reiterated the
20 continuation of its bond buying program and tied future monetary policy moves to
21 unemployment rates and the level of interest rates.⁶

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).

1 Beginning in May of 2013, the speculation in the markets was that the Federal
2 Reserve’s bond buying program would be tapered or scaled back. This speculation
3 was fueled by more positive economic data on jobs and the economy. The speculation
4 led to an increase in interest rates, with the ten-year Treasury yield increasing to
5 about 3.0% as of December 2013. Due to continuing positive economic data, the
6 Federal Reserve did decide to reduce its purchases of mortgage-backed securities and
7 Treasuries by \$5 billion per month beginning in January of 2014. Despite the
8 announcement, the equity markets reacted positively to the news of the QEIII
9 tapering due to the clarity provided by the FOMC on the future of the monetary
10 stimulus, interest rates, and economic activity.

11
12 **Q. PLEASE DISCUSS THE FEDERAL RESERVE’S ACTIONS IN 2014.**

13 A. The January 29, 2014, FOMC meeting was historic as Janet Yellen took over from
14 Ben Bernanke as Fed Chairman. The FOMC also tapered its bond buying program
15 by another \$5 billion per month beginning in February.⁷ In subsequent monthly
16 meetings during 2014, the FOMC noted that it saw improvement in the economy and
17 the housing and labor markets and it continued to taper its bond buying program. In
18 its October 28-29 meeting, the FOMC put an end to its bond buying program
19 primarily due to improving economic conditions and, in particular, the better
20 employment market.⁸ The announcement was expected, and speculation grew as to
21 when the Federal Reserve would change course in its “highly accommodative”
22 monetary policy and move to increase short-term interest rates. This speculation
23 continued through the end of 2014 and into 2015 as the economy has continued to

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).

1 advance and the unemployment rate has declined to 5.6%. With the improvement in
2 the economy and the labor and housing markets, the FOMC focused on the sluggish
3 pace of inflation. In its release following its January, 2015 meeting, the FOMC noted
4 the following:

5 Labor market conditions have improved further, with strong job gains and a
6 lower unemployment rate. On balance, a range of labor market indicators
7 suggests that underutilization of labor resources continues to
8 diminish. Household spending is rising moderately; recent declines in energy
9 prices have boosted household purchasing power. Business fixed investment
10 is advancing, while the recovery in the housing sector remains slow. Inflation
11 has declined further below the Committee's longer-run objective, largely
12 reflecting declines in energy prices. Market-based measures of inflation
13 compensation have declined substantially in recent months; survey-based
14 measures of longer-term inflation expectations have remained stable.⁹
15

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

18 When the Committee decides to begin to remove policy accommodation, it
19 will take a balanced approach consistent with its longer-run goals of
20 maximum employment and inflation of 2 percent. The Committee currently
21 anticipates that, even after employment and inflation are near mandate-
22 consistent levels, economic conditions may, for some time, warrant keeping
23 the target federal funds rate below levels the Committee views as normal in
24 the longer run.¹⁰
25

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

28 A. The yield on the ten-year Treasury note was 3.0% as of January 2, 2014. This yield
29 trended down in during 2014, and bottomed out at 1.7% in January of 2015. This
30 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 Contant Maturity Rate*, <http://research.stlouisfed.org/fred2/series/DGS10/downloaddata>.

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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.

1 Treasury bonds are low by historic standards, these yields are well above the
2 government bond yields in Germany, Japan, and the United Kingdom. As a result,
3 U.S. Treasuries offer an attractive yield relative to those of other major governments
4 around the world, thereby attracting capital to the U.S. and keeping U.S. interest rates
5 down.

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

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

16 The survey of economists' yield projections is generally skewed toward rising
17 rates — only a few times since early 2009 have a majority of respondents to
18 the Bloomberg survey thought rates would fall. But the unanimity of the
19 rising rate forecasts in the spring was a stark reminder of how one-sided
20 market views can become. It also teaches us that economists can be
21 universally wrong.¹²
22

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

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

6

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

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

12

13 **III. PROXY GROUP SELECTION**

14

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

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

22

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>.

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

2 A. The selection criteria for the Electric Proxy Group include the following:

- 3 1. At least 50% of revenues from regulated electric operations as reported by
4 *AUS Utilities Report*;
- 5 2. Listed as an Electric Utility by *Value Line Investment Survey* and listed as an
6 Electric Utility or Combination Electric & Gas Utility in *AUS Utilities Report*;
- 7 3. An investment-grade corporate credit and bond rating;
- 8 4. Has paid a cash dividend for the past six months, with no cuts or omissions;
- 9 5. Not involved in an acquisition of another utility, and not the target of an
10 acquisition, in the past six months; and
- 11 6. Analysts' long-term EPS growth rate forecasts available from Yahoo, Reuters,
12 and/or Zack's.

13 The Electric Proxy Group includes twenty-nine companies. Summary
14 financial statistics for the proxy group are listed in Exhibit JRW-4.¹⁴ The median
15 operating revenues and net plant among members of the Electric Proxy Group are
16 \$3,464.9 million and \$10,876.0 million, respectively. The group receives 81% of its
17 revenues from regulated electric operations, has a BBB+ bond rating from Standard
18 & Poor's, a current common equity ratio of 47.0%, and an earned return on common
19 equity of 9.6%.

20
21 **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.

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

5 Summary financial statistics for Dr. Avera and Mr. McKenzie's proxy group
6 is provided in Panel B of page 1 of Exhibit JRW-4. The median operating revenues
7 and net plant for the Avera/McKenzie Proxy Group are \$8,338.3 million and
8 \$16,745.0 million, respectively. The group receives 70% of its revenues from
9 regulated electric operations, has an A-/BBB+ bond rating from S&P, a current
10 common equity ratio of 48.0%, and a current earned return on common equity of
11 10.2%.

12 **Q. PLEASE DESCRIBE YOUR PROXY GROUP OF GAS DISTRIBUTION**
13 **COMPANIES.**

14 A. My Gas Proxy Group consists of eight natural gas distribution companies. These
15 companies meet the following selection criteria: (1) listed as a Natural Gas
16 Distribution, Transmission, and/or Integrated Gas Companies in *AUS Utility Reports*;
17 (2) listed as a Natural Gas Utility in the Standard Edition of the *Value Line*
18 *Investment Survey*; and (3) an investment grade bond rating by Moody's and Standard
19 & Poor's. As shown on Panel C of page 1 of Exhibit JRW-4, the companies meeting
20 these criteria include AGL Resources, Atmos Energy, Laclede Group, Northwest
21 Natural Gas Company, Piedmont Natural Gas Company, South Jersey Industries,
22 Southwest Gas, and WGL Holdings. The only companies that met these criteria and
23 were not included in the group were New Jersey Resources and UGI. These

1 companies were excluded due to their low percentage of revenues from regulated gas
2 operations.

3 Summary financial statistics for the proxy group are listed page 1 of Exhibit
4 JRW-4.¹⁵ The median operating revenues and net plant among members of the Gas
5 Proxy Group are \$1,829.8 and \$3,461.4, respectively. The group's median receives
6 69% of revenues from regulated gas operations, has an A bond rating from Standard
7 & Poor's, has a current common equity ratio of 46.2%, and has an earned return on
8 common equity of 10.0%.

9

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

13 A. I believe that bond ratings provide a good assessment of the investment risk of a
14 company. LGE's issuer credit rating is BBB according to S&P and A3 according to
15 Moody's. LGE's S&P rating is slightly below the averages for the Electric and
16 Avera/McKenzie proxy groups, and its Moody's rating is slightly above the averages
17 for the two groups. Both the S&P and Moody's rating indicate that the Gas Proxy
18 Group is less risky than PPL and the Electric and Avera/McKenzie proxy groups.

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

¹⁵ 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.

1 Stability. These risk measures suggest that the Company's parent, PPL, is roughly
2 equal in risk than the averages for the groups. PPL has a lower Beta which suggests
3 lower risk, but PPL has lower Safety and Earnings Predictability, which suggests
4 higher risk. Given these results, and primary weighting LGE's bond rating, I believe
5 that the two groups represent a risk comparable group for the electric utility
6 operations of LGE. The Gas Proxy Group, despite a higher Beta (0.80) than the two
7 groups, has better Safety and Financial Strength ratings. Relying primarily on bond
8 ratings, I believe that the Gas Proxy Group is less risky than the other two proxy
9 groups and I will rely on the results for these companies for the gas operations of
10 LGE.

11
12 **IV. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES**

13
14 **Q. WHAT IS LGE'S RECOMMENDED CAPITAL STRUCTURE FOR**
15 **RATEMAKING PURPOSES?**

16 A. LGE's recommended capital structure includes 4.46% short-term debt, 42.79% long-
17 term debt and 52.75% common equity. This is provided in Panel A of page 1 of
18 Exhibit JRW-5.

19
20 **Q. HOW DOES LGE'S RECOMMENDED CAPITAL STRUCTURE COMPARE**
21 **TO THAT OF ITS PARENT COMPANY, PPL?**

22 A. Panel B of page 1 of Exhibit JRW-5 shows PPL's capitalization ratios. PPL's capital
23 structure includes 2.98% short-term debt, 60.43% long-term debt, and 36.59%

1 common equity. These ratios highlight the fact PPL's capitalization includes a much
2 lower common equity ratio and hence much more financial risk than the capital
3 structure proposed by LGE.

4

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

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

11 The stand-alone credit profile of 'a-' for LG&E reflects our view of its
12 business and financial risk profile and is two notches stronger than the group
13 credit profile (GCP) of PPL, which is currently 'bbb.' Under our group rating
14 methodology, we consider LG&E to be a core subsidiary of the PPL group
15 reflecting our view that the company is highly unlikely to be sold and has a
16 strong long-term commitment from senior management. Moreover, there are
17 no meaningful insulation measures in place that protect LG&E from its parent,
18 and therefore, the ICR (Issuer Credit Rating) for LG&E is equal to the PPL
19 GCP.¹⁶
20

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

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

25 A. Panel C of Page 1 of Exhibit JRW-5 provides the average capitalization ratios for the
26 companies in the proxy groups. Page 2 of Exhibit JRW-5 provides the supporting

¹⁶ Attachment to Response to AG-1, Question No. 182, p. 38 of 47, Standard & Poor's Rating Services, Louisville Gas & Electric Company, July 18, 2014, Page 5.

1 company data. The average capitalization ratios for the proxy group are 5.32% short-
2 term debt, 47.11% long-term debt, 0.66% preferred stock, and 46.90% common
3 equity. The capital structures for the Avera/McKenzie and Gas Proxy Groups are also
4 provided in Panel C of Page 1 of Exhibit JRW-5. These capital structures include
5 average common equity ratios of 45.3% and 46.44%. These are the capital structure
6 ratios for the holding companies that trade in the markets and are used to estimate an
7 equity cost rate for LGE. These ratios indicate that the three proxy groups have, on
8 average, a lower common equity ratio than proposed by LGE, and a much higher
9 common equity ratio than PPL.

10

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

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

19

20 **Q. GIVEN THIS DISCUSSION, WHAT CAPITAL STRUCTURE ARE YOU**
21 **RECOMMENDING FOR LGE?**

22 A. I am adjusting the Company's proposed capital structure so as to include a common
23 equity ratio of 50.0%. This seems especially fair to the Company given the

1 observations above. In Panel D of page 1 of Exhibit JRW-5, I adjust the long-term
2 debt capital structure ratio by a factor of 1.06 so that short-term debt plus long-term
3 debt amounts to 50% of the capitalization. Likewise, the common equity ratio is
4 adjusted downwards to the 50% level. My recommended capital structure for LGE is
5 4.72% short-term debt, 45.28% long-term debt, and 50.0% common equity.

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

8 A. Yes, I am using the Company' proposed short-term debt cost rate of 0.89% and long-
9 term debt cost rate of 4.16%.

10

11 **V. THE COST OF COMMON EQUITY CAPITAL**

12

13 **A. OVERVIEW**

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

16 A. In a competitive industry, the return on a firm's common equity capital is determined
17 through the competitive market for its goods and services. Due to the capital
18 requirements needed to provide utility services and to the economic benefit to society
19 from avoiding duplication of these services, some public utilities are monopolies.
20 Because of the lack of competition and the essential nature of their services, it is not
21 appropriate to permit monopoly utilities to set their own prices. Thus, regulation
22 seeks to establish prices that are fair to consumers and, at the same time, sufficient to

1 meet the operating and capital costs of the utility (i.e., provide an adequate return on
2 capital to attract investors).

3

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

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

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

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

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

7 James M. McTaggart, founder of the international management consulting
8 firm Marakon Associates, described this essential relationship between the return on
9 equity, the cost of equity, and the market-to-book ratio in the following manner:¹⁷

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

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

30 As such, the relationship between a firm's return on equity, cost of equity, and
31 market-to-book ratio is relatively straightforward. A firm that earns a return on

¹⁷ James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1988), p. 2.

1 equity above its cost of equity will see its common stock sell at a price above its book
2 value. Conversely, a firm that earns a return on equity below its cost of equity will
3 see its common stock sell at a price below its book value.

4

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

7 A. This relationship is discussed in a classic Harvard Business School case study entitled
8 “A Note on Value Drivers.” On page 2 of that case study, the author describes the
9 relationship very succinctly:¹⁸

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

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

20 To assess the relationship by industry, as suggested above, I performed a
21 regression study between estimated ROE and market-to-book ratios using natural gas
22 distribution, electric utility, and water utility companies. I used all companies in
23 these three industries that are covered by *Value Line* and have estimated ROE and
24 market-to-book ratio data. The results are presented in Panels A-C of Exhibit JRW-6.
25 The average R-squares for the electric, gas, and water companies are 0.78, 0.63, and

¹⁸ Benjamin Esty, “A Note on Value Drivers,” Harvard Business School, Case No. 9-297-082, April 7, 1997.

1 0.49, respectively.¹⁹ This demonstrates the strong positive relationship between
2 ROEs and market-to-book ratios for public utilities.

3

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

6 A. Exhibit JRW-7 provides indicators of public utility equity cost rates over the past
7 decade. Page 1 shows the yields on long-term 'A' rated public utility bonds. These
8 yields peaked in the early 2000s at over 8.0%, declined to about 5.5% in 2005, and
9 rose to 6.0% in 2006 and 2007. They stayed in that 6.0% range until the third quarter
10 of 2008 when they spiked to almost 7.5% during the financial crisis. They declined
11 to the 4.0% range in 2012, and increased to the 4.85% range in 2013, and have since
12 declined to about 4.25%.

13 Page 2 of Exhibit JRW-7 provides the dividend yields for the Electric and Gas
14 Proxy Groups over the past decade. The dividend yields for the Electric Proxy Group
15 generally declined slightly over the decade until 2007. They increased in 2008 and
16 2009 in response to the financial crisis, but declined in the last four years and now are
17 about 4.2%. The dividend yields for this group have declined slightly over the
18 decade. The Gas Proxy Group yields declined from the year 2000 to 2007, bottomed
19 out at 3.75% in 2007, increased to 4.2% in 2009, and have since declined to 3.75%.

20 Average earned returns on common equity and market-to-book ratios for the
21 two proxy groups are on page 3 of Exhibit JRW-7. The average earned returns on
22 common equity for the Electric Proxy Group were in the 9.0%-12.0% range over the

¹⁹ 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.

1 past decade and have hovered in the 10.0% range for the past four years. The average
2 market-to-book ratio for the group was in the 1.10X to 1.80X range during the
3 decade. The average declined to about 1.10X in 2009, but has since increased to
4 1.40X as of 2013. For the Gas Proxy Group, earned returns on common equity
5 peaked at about 12.0% in 2006 and have since declined to below 10.0%. Over the
6 past decade, the average market-to-book ratios for this group have ranged from 1.50X
7 to 1.80X, with a 2013 reading of 1.6X.

8

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

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

20

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

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

9 Exhibit JRW-8 provides an assessment of investment risk for 99 industries as
10 measured by beta, which according to modern capital market theory, is the only
11 relevant measure of investment risk. These betas come from the *Value Line*
12 *Investment Survey*. The study shows that the investment risk of utilities is very low.
13 The average betas for electric (average of east, central, and west), water, and gas
14 utility companies are 0.74, 0.74, and 0.80, respectively. As such, the cost of equity
15 for utilities is among the lowest of all industries in the U.S. according to the CAPM.

16

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

19 A. The costs of debt and preferred stock are normally based on historical or book values
20 and can be determined with a great degree of accuracy. The cost of common equity
21 capital, however, cannot be determined precisely and must instead be estimated from
22 market data and informed judgment. This return to the stockholder should be

1 commensurate with returns on investments in other enterprises having comparable
2 risks.

3 According to valuation principles, the present value of an asset equals the
4 discounted value of its expected future cash flows. Investors discount these expected
5 cash flows at their required rate of return that, as noted above, reflects the time value
6 of money and the perceived riskiness of the expected future cash flows. As such, the
7 cost of common equity is the rate at which investors discount expected cash flows
8 associated with common stock ownership.

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

16

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

19 A. I rely primarily on the DCF model to estimate the cost of equity capital. Given the
20 investment valuation process and the relative stability of the utility business, I believe
21 that the DCF model provides the best measure of equity cost rates for public utilities.
22 It is my experience that most commissions have traditionally relied on the DCF
23 model. I have also performed a CAPM study; however, I give these results less

1 weight because I believe that risk premium studies, of which the CAPM is one form,
2 provide a less reliable indication of equity cost rates for public utilities.

3

4 **B. DCF ANALYSIS**

5

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

8 A. According to the DCF model, the current stock price is equal to the discounted value
9 of all future dividends that investors expect to receive from investment in the firm.

10 As such, stockholders' returns ultimately result from current as well as future
11 dividends. As owners of a corporation, common stockholders are entitled to a *pro*
12 *rata* share of the firm's earnings. The DCF model presumes that earnings that are not
13 paid out in the form of dividends are reinvested in the firm so as to provide for future
14 growth in earnings and dividends. The rate at which investors discount future
15 dividends, which reflects the timing and riskiness of the expected cash flows, is
16 interpreted as the market's expected or required return on the common stock.
17 Therefore, this discount rate represents the cost of common equity. Algebraically, the

18 DCF model can be expressed as:

$$19 \quad P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_n}{(1+k)^n}$$

20
21
22
23 where P is the current stock price, D_n is the dividend in year n, and k is the cost of
24 common equity.

25

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

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

11 1. Growth stage: Characterized by rapidly expanding sales, high profit
12 margins, and an abnormally high growth in earnings per share. Because of
13 highly profitable expected investment opportunities, the payout ratio is low.
14 Competitors are attracted by the unusually high earnings, leading to a decline
15 in the growth rate.

16 2. Transition stage: In later years, increased competition reduces profit
17 margins and earnings growth slows. With fewer new investment
18 opportunities, the company begins to pay out a larger percentage of earnings.

19 3. Maturity (steady-state) stage: Eventually, the company reaches a
20 position where its new investment opportunities offer, on average, only
21 slightly attractive ROEs. At that time, its earnings growth rate, payout ratio,
22 and ROE stabilize for the remainder of its life. The constant-growth DCF
23 model is appropriate when a firm is in the maturity stage of the life cycle.

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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?

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

11

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

14 A. One should be sensitive to several factors when using the DCF model to estimate a
15 firm's cost of equity capital. In general, one must recognize the assumptions under
16 which the DCF model was developed in estimating its components (the dividend
17 yield and the expected growth rate). The dividend yield can be measured precisely at
18 any point in time, but tends to vary somewhat over time. Estimation of expected
19 growth is considerably more difficult. One must consider recent firm performance, in
20 conjunction with current economic developments and other information available to
21 investors, to accurately estimate investors' expectations.

22

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

1 A. I have calculated the dividend yields for the companies in the proxy groups using the
2 current annual dividend and the 30-day, 90-day, and 180-day average stock prices.
3 These dividend yields are provided on page 2 of exhibit JRW-10 for the Electric and
4 Avera/McKenzie Proxy Groups, respectively. For the Electric Proxy Group, the mean
5 and median dividend yields using 30-day, 90-day, and 180-day average stock prices
6 range from 3.2% to 3.7%. Given this range, I will use 3.5% as the dividend yield for
7 the Electric Proxy Group. For the Avera/McKenzie Proxy Group, provided in Panel
8 B of page 2 of Exhibit JRW-10, the mean and median dividend yields range from
9 3.3% to 3.7% using the 30-day, 90-day, and 180-day average stock prices. Given this
10 range, I am using a dividend yield of 3.5% for the Avera/McKenzie Proxy Group. For
11 the Gas Proxy Group, the median dividend yields using the 30-day, 90-day, and 180-
12 day average stock prices range from 3.2% to 3.6%. Given this range, I use 3.5% as
13 the dividend yield for the Gas Proxy Group.

14

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

17 A. According to the traditional DCF model, the dividend yield term relates to the
18 dividend yield over the coming period. As indicated by Professor Myron Gordon,
19 who is commonly associated with the development of the DCF model for popular use,
20 this is obtained by: (1) multiplying the expected dividend over the coming quarter by

1 4, and (2) dividing this dividend by the current stock price to determine the
2 appropriate dividend yield for a firm that pays dividends on a quarterly basis.²⁰

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

10

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

13 A. I will adjust the dividend yield by one-half (1/2) the expected growth so as to reflect
14 growth over the coming year. This is the approach employed by the Federal Energy
15 Regulatory Commission (“FERC”).²¹ The DCF equity cost rate (“K”) is computed
16 as:

17

18

19

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

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

²⁰ *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).

²¹ Opinion No. 414-A, *Transcontinental Gas Pipe Line Corp.*, 84 FERC ¶ 61,084 (1998).

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

6

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

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

18

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

21 A. Historical growth rates for EPS, DPS, and BVPS are readily available to investors
22 and are presumably an important ingredient in forming expectations concerning
23 future growth. However, one must use historical growth numbers as measures of

1 investors' expectations with caution. In some cases, past growth may not reflect
2 future growth potential. Also, employing a single growth rate number (for example,
3 for five or ten years) is unlikely to accurately measure investors' expectations, due to
4 the sensitivity of a single growth rate figure to fluctuations in individual firm
5 performance as well as overall economic fluctuations (i.e., business cycles). One
6 must appraise the context in which the growth rate is being employed. According to
7 the conventional DCF model, the expected return on a security is equal to the sum of
8 the dividend yield and the expected long-term growth in dividends. Therefore, to best
9 estimate the cost of common equity capital using the conventional DCF model, one
10 must look to long-term growth rate expectations.

11 Internally generated growth is a function of the percentage of earnings
12 retained within the firm (the earnings retention rate) and the rate of return earned on
13 those earnings (the return on equity). The internal growth rate is computed as the
14 retention rate times the return on equity. Internal growth is significant in determining
15 long-run earnings and, therefore, dividends. Investors recognize the importance of
16 internally generated growth and pay premiums for stocks of companies that retain
17 earnings and earn high returns on internal investments.

18

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

21 A. Analysts' EPS forecasts for companies are collected and published by a number of
22 investment information services, including Institutional Brokers Estimate System
23 ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call, and Reuters, among others.

1 Thompson Reuters publishes analysts' EPS forecasts under different product names,
2 including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, and Zacks each publish
3 their own set of analysts' EPS forecasts for companies. These services do not reveal:
4 (1) the analysts who are solicited for forecasts; or (2) the identity of the analysts who
5 actually provide the EPS forecasts that are used in the compilations published by the
6 services. I/B/E/S, Bloomberg, FactSet, and First Call are fee-based services. These
7 services usually provide detailed reports and other data in addition to analysts' EPS
8 forecasts. Thompson Reuters and Zacks do provide limited EPS forecast data free-of-
9 charge on the internet. Yahoo finance (<http://finance.yahoo.com>) lists Thompson
10 Reuters as the source of its summary EPS forecasts. The Reuters website
11 (www.reuters.com) also publishes EPS forecasts from Thompson Reuters, but with
12 more detail. Zacks (www.zacks.com) publishes its summary forecasts on its website.
13 Zacks estimates are also available on other websites, such as MSN money
14 (<http://money.msn.com>).

15

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

17 A. The following example provides the EPS forecasts compiled by Reuters for Alliant
18 Energy Corp. (stock symbol "LNT"). The figures are provided on page 2 of Exhibit
19 JRW-9. The top line shows that four analysts have provided EPS estimates for the
20 quarter ending March 31, 2015. The mean, high and low estimates are \$0.76, \$0.76,
21 and \$0.76, respectively. The second line shows the quarterly EPS estimates for the
22 quarter ending June 30, 2015 of \$0.52 (mean), \$0.52 (high), and \$0.52 (low). Line
23 three show the annual EPS estimates for the fiscal year ending December 2015 (\$3.64

1 (mean), \$3.69 (high), and \$3.60 (low)). The quarterly and annual EPS forecasts in
2 lines 1-3 are expressed in dollars and cents. As in the LNT case shown here, it is
3 common for more analysts to provide estimates of annual EPS as opposed to
4 quarterly EPS. The bottom line shows the projected long-term EPS growth rate,
5 which is expressed as a percentage. For LNT, two analysts have provided a long-
6 term EPS growth rate forecast, with mean, high, and low growth rates of 4.90%,
7 5.00%, and 4.80%.

8

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

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

14

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

18 A. There are several issues with using the EPS growth rate forecasts of Wall Street
19 analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is
20 the dividend growth rate, not the earnings growth rate. Nonetheless, over the very
21 long term, dividend and earnings will have to grow at a similar growth rate.
22 Therefore, consideration must be given to other indicators of growth, including
23 prospective dividend growth, internal growth, as well as projected earnings growth.

1 Second, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts' long-
2 term earnings growth rate forecasts are not more accurate at forecasting future
3 earnings than naïve random walk forecasts of future earnings.²² Employing data over
4 a twenty-year period, these authors demonstrate that using the most recent year's EPS
5 figure to forecast EPS in the next 3-5 years proved to be just as accurate as using the
6 EPS estimates from analysts' long-term earnings growth rate forecasts. In the
7 authors' opinion, these results indicate that analysts' long-term earnings growth rate
8 forecasts should be used with caution as inputs for valuation and cost of capital
9 purposes. Finally, and most significantly, it is well known that the long-term EPS
10 growth rate forecasts of Wall Street securities analysts are overly optimistic and
11 upwardly biased. This has been demonstrated in a number of academic studies over
12 the years. This issue is discussed at length in Appendix B of this testimony. Hence,
13 using these growth rates as a DCF growth rate will provide an overstated equity cost
14 rate. On this issue, a study by Easton and Sommers (2007) found that optimism in
15 analysts' growth rate forecasts leads to an upward bias in estimates of the cost of
16 equity capital of almost 3.0 percentage points.²³

17

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

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

²² 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)

²³ 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).

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

3 A. According to the DCF model, the equity cost rate is a function of the dividend yield and
4 expected growth rate. Because stock prices reflect the bias, it would affect the dividend
5 yield. In addition, the DCF growth rate needs to be adjusted downward from the
6 projected EPS growth rate to reflect the upward bias.

7
8 **Q. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN**
9 **THE PROXY GROUPS, AS PROVIDED BY *VALUE LINE*.**

10 A. Page 3 of Exhibit JRW-10 provides the 5- and 10-year historical growth rates for
11 EPS, DPS, and BVPS for the companies in the two proxy groups, as published in the
12 *Value Line Investment Survey*. The median historical growth measures for EPS, DPS,
13 and BVPS for the Electric Proxy Group, as provided in Panel A, range from 1.8% to
14 4.0%, with an average of 3.3%. For the Avera/McKenzie Proxy Group, as shown in
15 Panel B of page 3 of Exhibit JRW-10, the historical growth measures in EPS, DPS,
16 and BVPS, as measured by the medians, range from 2.5% to 4.0%, with an average of
17 3.5%. For the Gas Proxy Group, as shown in Panel C of page 3 of Exhibit JRW-10,
18 the median historical growth measures for EPS, DPS, and BVPS range from 3.0% to
19 6.0%, with an average of 4.5%.

20

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

1 A. *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the
2 proxy groups are shown on page 4 of Exhibit JRW-10. As stated above, due to the
3 presence of outliers, the medians are used in the analysis. For the Electric Proxy
4 Group, as shown in Panel A of page 4 of Exhibit JRW-10, the medians range from
5 4.0% to 5.5%, with an average of 4.7%. For the Avera/McKenzie Proxy Group, as
6 shown in Panel B of page 4 of Exhibit JRW-10, the medians range from 4.3% to
7 5.8%, with an average of 4.8%. For the Gas Proxy Group, as shown in Panel C of
8 page 4 of Exhibit JRW-10, the medians range from 4.0% to 7.0%, with an average of
9 5.3%.

10 Also provided on page 4 of Exhibit JRW-10 are the prospective sustainable
11 growth rates for the companies in the two proxy groups as measured by *Value Line's*
12 average projected retention rate and return on shareholders' equity. As noted above,
13 sustainable growth is a significant and a primary driver of long-run earnings growth.
14 For the Electric Proxy Group and the Avera/McKenzie Proxy Group, the median
15 prospective sustainable growth rates are 4.0% and 4.0%, respectively. For the Gas
16 Proxy Group, the median prospective sustainable growth rates is 4.6%.

17
18 **Q. PLEASE ASSESS GROWTH FOR THE PROXY GROUPS AS MEASURED**
19 **BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EPS GROWTH.**

20 A. Yahoo, Zacks, and Reuters collect, summarize, and publish Wall Street analysts'
21 long-term EPS growth rate forecasts for the companies in the proxy groups. These
22 forecasts are provided for the companies in the proxy groups on page 5 of Exhibit
23 JRW-10. I have reported both the mean and median growth rates for the two groups.

1 Since there is considerable overlap in analyst coverage between the three services, and
2 not all of the companies have forecasts from the different services, I have averaged the
3 expected five-year EPS growth rates from the three services for each company to arrive
4 at an expected EPS growth rate for each company. The mean/median of analysts'
5 projected EPS growth rates for the Electric, Avera/McKenzie, and Gas Proxy Groups
6 are 5.1%/5.0%, 5.3%/5.1%, and 4.8%/5.0%, respectively.²⁴

7

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

10 A. Page 6 of Exhibit JRW-10 shows the summary DCF growth rate indicators for the
11 proxy groups.

12 The historical growth rate indicators for my Electric Proxy Group imply a
13 baseline growth rate of 3.3%. The average of the projected EPS, DPS, and BVPS
14 growth rates from *Value Line* is 4.7%, and *Value Line*'s projected sustainable growth
15 rate is 4.0%. The high end of the range for the Electric Proxy Group are the projected
16 EPS growth rates of Wall Street analysts, which are 5.1% and 5.0% as measured by
17 the mean and median growth rates. The overall range for the projected growth rate
18 indicators is 3.3% to 5.1%. Giving primary weight to the projected EPS growth rate
19 of Wall Street analysis, I will use 5.0% as the DCF growth rate for the Electric Proxy
20 Group. This growth rate figure is clearly in the upper end of the range of historic and
21 projected growth rates for the Electric Proxy Group.

²⁴ 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.

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

9 For the Gas Proxy Group, the historical growth rate indicators for the Gas
10 Proxy Group imply a baseline growth rate of 4.5%. The average of the projected
11 EPS, DPS, and BVPS growth rates from *Value Line* is 5.3%, and *Value Line*'s
12 projected sustainable growth rate is 4.6%. The projected EPS growth rates of Wall
13 Street analysts are 5.0% and 4.8% as measured by the mean and median growth rates.
14 The overall range for the projected growth rate indicators is 4.5% to 5.3%. Giving
15 more weight to the projected EPS growth rate of Wall Street analysts, I believe that a
16 growth rate of 5.0% is appropriate. As is the case for the other two proxy groups, this
17 growth rate figure is clearly in the upper end of the range of historic and projected
18 growth rates for the Gas Proxy Group.

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

22 A. My DCF-derived equity cost rates for the groups are summarized on page 1 of
23 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%
Gas Proxy Group	3.50%	1.02500	5.00%	8.6%

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C. CAPITAL ASSET PRICING MODEL

12

13

Q. PLEASE DISCUSS THE CAPITAL ASSET PRICING MODEL (“CAPM”).

14

A. The CAPM is a risk premium approach to gauging a firm’s cost of equity capital.

15

According to the risk premium approach, the cost of equity (K) is the sum of the

16

interest rate on a risk-free bond (R_f) and a risk premium (RP), as in the following:

17

$$K = R_f + RP$$

18

19

The yield on long-term Treasury securities is normally used as R_f . Risk

20

premiums are measured in different ways. The CAPM is a theory of the risk and

21

expected returns of common stocks. In the CAPM, two types of risk are associated

1 with a stock: firm-specific risk or unsystematic risk, and market or systematic risk,
2 which is measured by a firm's beta. The only risk that investors receive a return for
3 bearing is systematic risk.

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

$$6 \quad K = (R_f) + \beta * [E(R_m) - (R_f)]$$

7 Where:

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

16
17 To estimate the required return or cost of equity using the CAPM requires
18 three inputs: the risk-free rate of interest (R_f), the beta (β), and the expected equity or
19 market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it is
20 represented by the yield on long-term Treasury bonds. β , the measure of systematic
21 risk, is a little more difficult to measure because there are different opinions about
22 what adjustments, if any, should be made to historical betas due to their tendency to
23 regress to 1.0 over time. And finally, an even more difficult input to measure is the
24 expected equity or market risk premium $[(E(R_m) - (R_f))]$. I will discuss each of these
25 inputs below.

26

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

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

3

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

5 A. The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free
6 rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn,
7 has been considered to be the yield on U.S. Treasury bonds with 30-year maturities.

8

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

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

15

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

17 A. Beta (β) is a measure of the systematic risk of a stock. The market, usually taken to
18 be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement
19 as the market also has a beta of 1.0. A stock whose price movement is greater than
20 that of the market, such as a technology stock, is riskier than the market and has a
21 beta greater than 1.0. A stock with below average price movement, such as that of a
22 regulated public utility, is less risky than the market and has a beta less than 1.0.

1 Estimating a stock's beta involves running a linear regression of a stock's return on
2 the market return.

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

7 Several online investment information services, such as Yahoo and Reuters,
8 provide estimates of stock betas. Usually these services report different betas for the
9 same stock. The differences are usually due to: (1) the time period over which the β
10 is measured; and (2) any adjustments that are made to reflect the fact that betas tend
11 to regress to 1.0 over time. In estimating an equity cost rate for the proxy group, I am
12 using the betas for the companies as provided in the *Value Line Investment Survey*.
13 As shown on page 3 of Exhibit JRW-11, the median betas for the companies in the
14 Electric, Avera/McKenzie, and Gas Proxy Groups are 0.70, 0.73, and 0.80.
15 respectively.

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

17 A. The MRP is equal to the expected return on the stock market (e.g., the expected return
18 on the S&P 500, $E(R_m)$) minus the risk-free rate of interest (R_f). The MRP is the
19 difference in the expected total return between investing in equities and investing in
20 "safe" fixed-income assets, such as long-term government bonds. However, while
21 the MRP is easy to define conceptually, it is difficult to measure because it requires
22 an estimate of the expected return on the market - $E(R_m)$. As is discussed below, there
23 are different ways to measure $E(R_m)$, and studies have come up significantly different

1 magnitudes for $E(R_m)$. Merton Miller, 1990 Nobel Prize winner in economics,
2 summarized the issue in this way: “I still remember the teasing we financial
3 economists, Harry Markowitz, William Sharpe, and I, had to put up with from the
4 physicists and chemists in Stockholm when we conceded that the basic unit of our
5 research, the expected rate of return, was not actually observable. I tried to tease back
6 by reminding them of their neutrino –a particle with no mass whose presence was
7 inferred only as a missing residual from the interactions of other particles. But that
8 was eight years ago. In the meantime, the neutrino has been detected.”²⁵

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

11 A. Page 4 of Exhibit JRW-11 highlights the primary approaches to, and issues in,
12 estimating the expected MRP. The traditional way to measure the MRP was to use
13 the difference between historical average stock and bond returns. In this case,
14 historical stock and bond returns, also called ex post returns, were used as the
15 measures of the market’s expected return (known as the ex ante or forward-looking
16 expected return). This type of historical evaluation of stock and bond returns is often
17 called the “Ibbotson approach” after Professor Roger Ibbotson, who popularized this
18 method of using historical financial market returns as measures of expected returns.
19 Most historical assessments of the equity risk premium suggest an equity risk
20 premium range of 5% to 7% above the rate on long-term U.S. Treasury bonds.
21 However, this can be a problem because: (1) ex post returns are not the same as ex

²⁵ Merton Miller, “The History of Finance: An Eyewitness Account,” *Journal of Applied Corporate Finance*, 2000, P. 3.

1 ante expectations; (2) market risk premiums can change over time, increasing when
2 investors become more risk-averse and decreasing when investors become less risk-
3 averse; and (3) market conditions can change such that ex post historical returns are
4 poor estimates of ex ante expectations.

5 The use of historical returns as market expectations has been criticized in
6 numerous academic studies as discussed later in my testimony. The general theme of
7 these studies is that the large equity risk premium discovered in historical stock and
8 bond returns cannot be justified by the fundamental data. These studies, which fall
9 under the category “Ex Ante Models and Market Data,” compute ex ante expected
10 returns using market data to arrive at an expected equity risk premium. These studies
11 have also been called “Puzzle Research” after the famous study by Mehra and
12 Prescott in which the authors first questioned the magnitude of historical equity risk
13 premiums relative to fundamentals.²⁶

14 In addition, there are a number of surveys of financial professionals regarding
15 the MRP. There also have been several published surveys of academics on the equity
16 risk premium. *CFO Magazine* conducts a quarterly survey of CFOs, which includes
17 questions regarding their views on the current expected returns on stocks and bonds.
18 Usually, over 400 CFOs participate in the survey.²⁷ Questions regarding expected
19 stock and bond returns are also included in the Federal Reserve Bank of
20 Philadelphia’s annual survey of financial forecasters, which is published as the *Survey*

²⁶ Rajnish Mehra & Edward C. Prescott, The Equity Premium: A Puzzle, *Journal of Monetary Economics*, 145 (1985).

²⁷ See DUKE/CFO MAGAZINE GLOBAL BUSINESS OUTLOOK SURVEY, www.cfosurvey.org (last accessed Dec. 15, 2014).

1 of *Professional Forecasters*.²⁸ This survey of professional economists has been
2 published for almost fifty years. In addition, Pablo Fernandez conducts occasional
3 surveys of financial analysts and companies regarding the equity risk premiums they
4 use in their investment and financial decision-making.²⁹

5
6 **Q. PLEASE PROVIDE A SUMMARY OF THE MRP STUDIES.**

7 A. Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed the most
8 comprehensive reviews to date of the research on the MRP.³⁰ Derrig and Orr’s study
9 evaluated the various approaches to estimating MRPs, as well as the issues with the
10 alternative approaches and summarized the findings of the published research on the
11 MRP. Fernandez examined four alternative measures of the MRP – historical,
12 expected, required, and implied. He also reviewed the major studies of the MRP and
13 presented the summary MRP results. Song provides an annotated bibliography and
14 highlights the alternative approaches to estimating the MRP.

15 Page 5 of Exhibit JRW-11 provides a summary of the results of the primary
16 risk premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as
17 other more recent studies of the MRP. In developing page 5 of Exhibit JRW-11, I
18 have categorized the studies as discussed on page 4 of Exhibit JRW-11. I have also

²⁸ 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.

²⁹ 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.

³⁰ 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).

1 included the results of the “Building Blocks” approach to estimating the equity risk
2 premium, including a study I performed, which is presented in Appendix C1 of this
3 testimony. The Building Blocks approach is a hybrid approach employing elements
4 of both historical and *ex ante* models.

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

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

12
13 **Q. PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT RISK**
14 **PREMIUM STUDIES AND SURVEYS.**

15 A. The studies cited on page 5 of Exhibit JRW-11 include every MRP study and survey I
16 could identify that was published over the past decade and that provided an MRP
17 estimate. Most of these studies were published prior to the financial crisis of 2007-
18 2009. In addition, some of these studies were published in the early 2000s at the
19 market peak. It should be noted that many of these studies (as indicated) used data
20 over long periods of time (as long as fifty years of data) and so were not estimating an
21 MRP as of a specific point in time (e.g., the year 2001). To assess the effect of the
22 earlier studies on the MRP, I have reconstructed page 5 of Exhibit JRW-11 on page 6

1 of Exhibit JRW-11; however, I have eliminated all studies dated before January 2,
2 2010. The median for this subset of studies is 5.09%.

3
4 **Q. GIVEN THESE RESULTS, WHAT MARKET OR MRP ARE YOU USING IN**
5 **YOUR CAPM?**

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

11
12 **Q. IS YOUR *EX ANTE* MRP CONSISTENT WITH THE MRPS USED BY**
13 **CFOS?**

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

16
17 **Q. IS YOUR *EX ANTE* MRP CONSISTENT WITH THE MRPS OF**
18 **PROFESSIONAL FORECASTERS?**

19 A. The financial forecasters in the previously referenced Federal Reserve Bank of
20 Philadelphia survey projected both stock and bond returns. In the February 2014
21 survey, the median long-term expected stock and bond returns were 5.79% and
22 3.91%, respectively. This provides an *ex ante* MRP of 1.88% (5.79%-3.91%).

23

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

3 A. Yes. Pablo Fernandez recently published the results of a 2014 survey of academics,
4 financial analysts, and companies.³¹ This survey included over 8,000 responses. The
5 median MRP employed by U.S. analysts and companies was 5.0%.

6

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

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

10

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

	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%
Gas Proxy Group	4.0%	0.80	5.5%	8.4%

11

12 For the Electric Proxy Group, the risk-free rate of 4.00% plus the product of the beta
13 of 0.70 times the MRP of 5.50% results in a 7.9% equity cost rate. For the
14 Avera/McKenzie Proxy Group, the risk-free rate of 4.00% plus the product of the
15 beta of 0.73 times the MRP of 5.50% results in an 8.0% equity cost rate. For the Gas
16 Proxy Group, the risk-free rate of 4.00% plus the product of the beta of 0.80 times the
17 MRP of 5.50% results in an 8.4% equity cost rate.

18

19

³¹ 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.

1 **D. EQUITY COST RATE SUMMARY**

2

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

4 A. My DCF analyses for the Electric, Avera/McKenzie and Gas Proxy Groups indicate
5 equity cost rates of 8.6%, 8.8%, and 8.6%, respectively. My CAPM analyses for the
6 three proxy groups indicate equity cost rates of 7.9%, 8.0%, and 8.4%

	DCF	CAPM
Electric Proxy Group	8.6%	7.9%
Avera/McKenzie Proxy Group	8.8%	8.0%
Gas Proxy Group	8.6%	8.4%

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

9 A. Given these results, I conclude that the appropriate equity cost rate for companies in
10 my Electric Group and the Avera/McKenzie Proxy Group is in the 7.8% to 8.8%
11 range. However, since I rely primarily on the DCF model, I am using the upper end
12 of the range as the equity cost rate. Therefore, I conclude that the appropriate equity
13 cost rate for the Company’s electric utility operations is 8.75%. For the Gas Proxy
14 Group, these results indicate an equity cost rate of 8.6% and 8.4%. Since my
15 previous analysis suggests that the gas group is less risky than the other two groups,
16 and again relying primarily on the DCF results, I conclude that an equity cost rate of
17 8.6% is appropriate for LGE’s gas distribution operations.

18

1 **Q. PLEASE INDICATE WHY RETURNS OF 8.75% AND 8.6% ARE**
2 **APPROPRIATE FOR THE COMPANY AT THIS TIME.**

3 A. There are a number of reasons these ROEs are appropriate and fair for the Company
4 in this case:

5 1. As shown in Exhibit JRW-8, the electric utility and gas distribution
6 industries are among the lowest risk industries in the U.S. as measured by beta. As
7 such, the cost of equity capital for these industries is amongst the lowest in the U.S.,
8 according to the CAPM.

9 2. As shown in Exhibits JRW-2 and JRW-3, capital costs for utilities, as
10 indicated by long-term bond yields, are still at historically low levels. In addition,
11 given the low inflationary expectations and the slow global economic growth, interest
12 rates are likely to remain at low levels for some time.

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

16 4. As previously indicated, the authorized ROEs for electric utilities have
17 gradually decreased in recent years. These authorized ROEs have declined from
18 10.01% in 2012, to 9.8% in 2013, to 9.76% in 2014, according to Regulatory
19 Research Associates. In my opinion, these authorized ROEs have lagged behind
20 capital market cost rates. This has been especially true in recent years as some state
21 commissions have been reluctant to authorize ROEs below 10%. However, the trend
22 has been towards lower ROEs, and the norm now is below ten percent. Hence, I
23 believe that my recommended ROEs reflect our present historically low capital cost

1 rates, and these low capital cost rates are finally being recognized by state utility
2 commissions.

3

4 **Q. DO YOU BELIEVE THAT YOUR ROE RECOMMENDATIONS MEET**
5 ***HOPE AND BLUEFIELD* STANDARDS?**

6 A. Yes. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on
7 capital should be: (1) comparable to returns investors expect to earn on other
8 investments of similar risk; (2) sufficient to assure confidence in the company's
9 financial integrity; and (3) adequate to maintain and support the company's credit and
10 to attract capital. LGE's average earned ROE over the past three years (2011-2013)
11 is 9.49%.³² LGE has been able to raise capital on attractive terms and its credit rating
12 has been upgraded. The Company issued \$250 million in first mortgage, 30-year
13 bonds in November of 2013 at 4.65%. In addition, on January 31, 2014, Moody's
14 upgraded LGE to an issuer rating of A3 and in July of 2014 S&P put LGE on
15 CreditWatch with positive implications. Therefore, I do believe that my ROE
16 recommendation meets the criteria established in the *Hope* and *Bluefield* decisions.

17

18 **VI. CRITIQUE OF LGE'S RATE OF RETURN TESTIMONY**

19

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

22 A. LGE witness Mr. Kent W. Blake provides the recommended capital structure and
23 debt cost rates, and Dr. Avera and Mr. McKenzie recommend a common equity cost

³² Attachment_to_LGE_AG_1-185_-_1 (1).

1 rate for LGE. LGE's recommended capital structure includes 4.46% short-term debt,
2 42.79% long-term debt and 52.75% common equity. The Company proposes a short-
3 term debt cost rate of 0.89% and a long-term debt cost rate of 4.16%. Dr. Avera and
4 Mr. McKenzie have recommended a ROE or common equity cost rate of 10.64%, but
5 the Company has elected to use 10.50% in its application. This rate of return
6 recommendation is summarized on page 1 of Exhibit JRW-12.

7

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

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

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

1 refer to as “checks of reasonableness” on their 10.64% ROE recommendation. These
2 approaches include an Expected Earnings approach and a DCF analysis for a non-
3 utility group. I show that these alternative approaches do not provide an appropriate
4 measure of the equity cost rate for the Company.

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

8

9 **Q. PLEASE REVIEW DR. AVERA AND MR. MCKENZIE’S EQUITY COST**
10 **RATE APPROACHES.**

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

16

17 **A. DCF Approach**

18

19 **Q. PLEASE SUMMARIZE DR. AVERA AND MR. MCKENZIE’S DCF**
20 **ESTIMATES.**

21 A. On pages 27-40 of their testimony and in their Exhibit Nos. 5 and 6, Dr. Avera and Mr.
22 McKenzie develop an equity cost rate by applying the DCF model to the
23 Avera/McKenzie Proxy Group. Dr. Avera and Mr. McKenzie’s DCF results are

1 summarized on page 2 of Exhibit JRW-13. In the traditional DCF approach, the equity
2 cost rate is the sum of the dividend yield and expected growth. For the DCF growth
3 rate, Dr. Avera and Mr. McKenzie use five measures of projected EPS growth – the
4 projected EPS growth of Wall Street analysts as compiled by IBES, Reuters, and Zack’s,
5 *Value Line’s* projected EPS projected growth rate, and a measure of sustainable growth
6 as computed by the sum of internal (“br”) and external (“sv”) growth. The average of
7 the mean DCF results is 9.1% for the Avera/McKenzie Proxy Group.

8

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

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

17

18 1. The Asymmetric Elimination of Low-End DCF Results

19

20

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

23 A. A very significant error with Dr. Avera and Mr. McKenzie’s DCF equity cost rate
24 analyses is their asymmetric elimination of DCF results. Page 2 of Exhibit JRW-13
25 provides Dr. Avera and Mr. McKenzie’s DCF results for their utility group. In deriving

1 a DCF equity cost rate, Dr. Avera and Mr. McKenzie have labeled equity cost rates
2 below 7.5% and above 17.7% as extreme outliers.³³ These screens eliminate 22 of their
3 100 DCF results, or 22%. All of the eliminated DCF results are on the low end. By
4 eliminating low-end outliers and not also eliminating the same number of high-end
5 outliers, Dr. Avera and Mr. McKenzie bias their DCF equity cost rate study and report a
6 higher DCF equity cost rate than the data indicate. In my DCF analysis, I have used the
7 median as a measure of central tendency so as to not give outlier results too much
8 weight. My approach also avoids biasing the results by including all data in the analysis
9 and not selectively eliminating outcomes.

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

16

17

2. Analysts EPS Growth Rates

18

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

³³ 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.

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

4

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

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

10

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

14 A. There are several issues with using the EPS growth rate forecasts of Wall Street
15 analysts and *Value Line* as DCF growth rates. First, as discussed above, the
16 appropriate growth rate in the DCF model is the dividend growth rate, not the
17 earnings growth rate. Therefore, consideration must be given to other indicators of
18 growth, including prospective dividend growth, internal growth, as well as projected
19 earnings growth. Second, and most significantly, it is well-known that the long-term
20 EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and
21 upwardly biased. This has been demonstrated in a number of academic studies over
22 the years. In addition, I demonstrate that *Value Line's* EPS growth rate forecasts are
23 consistently too high. Hence, using these growth rates as a DCF growth rate will

1 provide an overstated equity cost rate.

2

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

6 A. It seems highly unlikely that investors today would rely excessively on the EPS
7 growth rate forecasts of Wall Street analysts and ignore other growth rate measures in
8 arriving at expected growth. As I previously indicated, the appropriate growth rate in
9 the DCF model is the dividend growth rate, not the earnings growth rate. Hence,
10 consideration must be given to other indicators of growth, including historic growth,
11 prospective dividend growth, internal growth, as well as projected earnings growth.
12 In addition, as mentioned, the 2011 study by Lacina, Lee, and Xu has shown that
13 analysts' long-term earnings growth rate forecasts are not more accurate at
14 forecasting future earnings than naïve random walk forecasts of future earnings. As
15 such, the weight given to analysts' projected EPS growth rate should be limited. And
16 finally, and most significantly, it is well-known that the long-term EPS growth rate
17 forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.
18 Hence, using these growth rates as a DCF growth rate produces an overstated equity
19 cost rate. A 2007 study by Easton and Sommers found that optimism in analysts'
20 growth rate forecasts leads to an upward bias in estimates of the cost of equity capital
21 of almost 3.0 percentage points. These issues are addressed in more detail in
22 Appendix B.

23

1 **B. Empirical CAPM Approach**

2

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

4 A. On pages 40-44 of their testimony and in Exhibit No. 7, Dr. Avera and Mr. McKenzie
5 estimate an equity cost rate by applying a CAPM model to their proxy group. Dr. Avera
6 and Mr. McKenzie have not used a traditional CAPM, but rather a variant of the
7 traditional CAPM, the Empirical CAPM (“ECAPM”). The CAPM approach requires
8 an estimate of the risk-free interest rate, Beta, and the MRP. They calculate a CAPM
9 equity cost rate using the current long-term Treasury bond yield of 3.4%, a projected
10 bond yield of 4.7%, and Betas from *Value Line*. A market risk premium is computed
11 for each risk-free rate, and both are based on an expected stock market return of 13.1%.
12 They also add a size premium to their CAPM equity cost rate. The ECAPM version of
13 the CAPM makes adjustments to the risk-free rate and the market risk premium in
14 calculating an equity cost rate. Their ECAPM equity cost rates using current/projected
15 interest rates and including/excluding a size premium result in a range from 11.1% to
16 12.2%.

17

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

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

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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 provides 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.

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

4

5

6

3. Market Risk Premium

7

8 **Q. PLEASE ASSESS DR. AVERA AND MR. MCKENZIE'S MARKET RISK**
9 **PREMIUMS DERIVED FROM APPLYING THE DCF MODEL TO THE S&P**
10 **500.**

11 A. The primary problem with Dr. Avera and Mr. McKenzie's CAPM analysis is the
12 magnitude of the market or equity risk premium. Dr. Avera and Mr. McKenzie develop
13 an expected market risk premium by: (1) applying the DCF model to the S&P 500 to get
14 an expected market return; and (2) subtracting the risk-free rate of interest. Dr. Avera
15 and Mr. McKenzie's estimated market return of 13.1% for the S&P 500 equals the
16 sum of the dividend yield of 2.3% and expected EPS growth rate of 10.8%. The
17 expected EPS growth rate is the average of the expected EPS growth rates from
18 IBES. The primary error in this approach is Dr. Avera and Mr. McKenzie's expected
19 DCF growth rate. As discussed in Appendix B, the expected EPS growth rates of
20 Wall Street analysts are upwardly biased. In addition, as explained below, the
21 projected growth rate is inconsistent with economic and earnings growth in the U.S.

22

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

5 A. A long-term EPS growth rate of 10.8% is not consistent with historic as well as
6 projected economic and earnings growth in the U.S for several reasons: (1) long-term
7 EPS and economic growth, as measured by GDP, is about ½ of Dr. Avera and Mr.
8 McKenzie's projected EPS growth rate of 10.8%; (2) more recent trends in GDP
9 growth, as well as projections of GDP growth, suggest slower economic and earnings
10 growth in the future; and (3) over time, EPS growth tends to lag behind GDP growth.

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

16 **GDP, S&P 500 Stock Price, EPS, and DPS Growth**
17 **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%

18

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

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

4 **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%

5
6 These data clearly suggest that nominal GDP growth in recent decades has slowed to the
7 4.0% to 5.0% area.

8

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

11 A. There are several forecasts of annual GDP growth that are available from financial
12 forecasters and government agencies. These are listed in Panel B of page 3 of Exhibit
13 JRW-14. The mean 10-year nominal GDP growth forecast (as of February 2015) by
14 economists in the recent *Survey of Professional Forecasters* is 4.7%. The Energy
15 Information Administration (EIA), in its projections used in preparing *Annual Energy*
16 *Outlook*, forecasts long-term nominal GDP growth of 4.5% for the period 2011-2040.
17 The Congressional Budget Office, in its forecasts for the period 2014 to 2024,
18 projects a nominal GDP growth rate of 4.8%.

19

20 **Q. WHY IS GDP GROWTH RELEVANT IN YOUR DISCUSSION OF DR. AVERA**
21 **AND MR. MCKENZIE'S USE OF THE LONG-TERM EPS GROWTH RATES**

1 **IN DEVELOPING A MARKET RISK PREMIUM FOR THEIR CAPM?**

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

4

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

7 A. Brad Cornell of the California Institute of Technology published a study in 2010 on
8 GDP growth, earnings growth, and equity returns. He found that long-term EPS
9 growth in the U.S. is directly related to GDP growth, with GDP growth providing an
10 upward limit on EPS growth. In addition, he found that long-term stock returns are
11 determined by long-term earnings growth. He concluded with the following
12 observations:³⁴

13 The long-run performance of equity investments is fundamentally linked to
14 growth in earnings. Earnings growth, in turn, depends on growth in real GDP.
15 This article demonstrates that both theoretical research and empirical research
16 in development economics suggest relatively strict limits on future growth. In
17 particular, real GDP growth in excess of 3 percent in the long run is highly
18 unlikely in the developed world. In light of ongoing dilution in earnings per
19 share, this finding implies that investors should anticipate real returns on U.S.
20 common stocks to average no more than about 4–5 percent in real terms.
21

22 Given current inflation in the 2% to 3% range, the results imply nominal
23 expected stock market returns in the 7% to 8% range. As such, Dr. Avera and Mr.
24 McKenzie’s projected earnings growth rates and implied expected stock market
25 returns and MRPs are not indicative of the realities of the U.S. economy and stock
26 market. As such, their expected CAPM equity cost rate is significantly overstated.

³⁴ Bradford Cornell, “Economic Growth and Equity Investing,” *Financial Analysts Journal* (Jan./Feb. 2010), p. 63.

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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 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.

1 A. Dr. Avera and Mr. McKenzie include a size adjustment in their CAPM approach for
2 the size of the companies in the utility group. This adjustment is based on the
3 historical stock market returns studies as performed by Morningstar (formerly
4 Ibbotson Associates). There are numerous errors in using historical market returns to
5 compute risk premiums. These errors provide inflated estimates of expected risk
6 premiums. Among the errors are survivorship bias (only successful companies
7 survive – poor companies do not survive) and unattainable return bias (the Ibbotson
8 procedure presumes monthly portfolio rebalancing). The net result is that Ibbotson’s
9 size premiums are poor measures for risk adjustment to account for the size of a
10 utility.

11 In addition, Professor Annie Wong has tested for a size premium in utilities
12 and concluded that, unlike industrial stocks, utility stocks do not exhibit a significant
13 size premium.³⁵ As explained by Professor Wong, there are several reasons why such a
14 size premium would not be attributable to utilities. Utilities are regulated closely by
15 state and federal agencies and commissions, and hence, their financial performance is
16 monitored on an ongoing basis by both the state and federal governments. In addition,
17 public utilities must gain approval from government entities for common financial
18 transactions such as the sale of securities. Furthermore, unlike their industrial
19 counterparts, accounting standards and reporting are fairly standardized for public
20 utilities. Finally, a utility’s earnings are predetermined to a certain degree through the
21 ratemaking process in which performance is reviewed by state commissions and other
22 interested parties. Overall, in terms of regulation, government oversight, performance

³⁵ Annie Wong, “Utility Stocks and the Size Effect: An Empirical Analysis,” *Journal of the Midwest Finance Association*, pp. 95-101, (1993).

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

3
4 **Q. PLEASE DISCUSS THE RESEARCH ON THE SIZE PREMIUM IN**
5 **ESTIMATING THE EQUITY COST RATE.**

6 A. As noted, there are errors in using historical market returns to compute risk
7 premiums. With respect to the small firm premium, Richard Roll (1983) found that
8 one-half of the historic return premium for small companies disappears once biases
9 are eliminated and historic returns are properly computed. The error arises from the
10 assumption of monthly portfolio rebalancing and the serial correlation in historic
11 small firm returns.³⁶

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

³⁶ See Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics*, pp. 371-86, (1983).

1 periods (and without annual rebalancing), Lu finds that the size premium disappears
2 within two years. Lu's conclusion with respect to the size premium is:³⁷

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

11

12 **C. Utility Risk Premium ("URP") Approach**

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

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

23

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

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

³⁷ Ching-Chih Lu, "The Size Premium in the Long Run," 2009 Working Paper, SSRN abstract no. 1368705.

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1. Base Yield

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

5

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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.

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2. Risk Premium

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

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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

24

1 Mr. McKenzie's URP approach is a gauge of *commission* behavior and not *investor*
2 behavior. Capital costs are determined in the market place through the financial
3 decisions of investors and are reflected in such fundamental factors as dividend
4 yields, expected growth rates, interest rates, and investors' assessment of the risk and
5 expected return of different investments. Regulatory commissions evaluate capital
6 market data in setting authorized ROEs but also take into account other utility- and
7 rate case-specific information in setting ROEs. As such, Dr. Avera and Mr.
8 McKenzie's approach and results reflect other factors such as capital structure, credit
9 ratings and other risk measures, service territory, capital expenditures, energy supply
10 issues, rate design, investment and expense trackers, and other factors used by utility
11 commissions in determining an appropriate ROE in addition to capital costs. For
12 example, Dr. Avera and Mr. McKenzie's analysis includes rates cases from the state
13 of Virginia that include up to 200 basis point generation riders in the ROE decisions.

14 Dr. Avera and Mr. McKenzie's methodology also produces an inflated measure
15 of the risk premium because the approach uses historic authorized ROEs and utility
16 bond yields, and the resulting risk premium is applied to projected utility bond yields.
17 Finally, the risk premium is inflated as a measure of investors' required risk premium
18 since the utilities have been selling at a market-to-book ratio in excess of 1.0. This
19 indicates that the authorized rates of return have been greater than the return that
20 investors require.

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

23 A. Their URP equity cost rate estimates overstate actual state-level authorized ROEs.

1 The authorized ROEs for electric utilities have gradually decreased in recent years.
2 These authorized ROEs declined from 10.01% in 2012, to 9.8% in 2013, to 9.76% in
3 2014, according to Regulatory Research Associates.³⁸

4

5 **D. Flotation Costs**

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

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

12 First, they have not identified any current flotation costs for the Company.
13 Therefore, the Company is requesting annual revenues in the form of a higher return
14 on equity for flotation costs that have not been identified.

15 Second, it is commonly argued that a flotation cost adjustment is necessary to
16 prevent the dilution of the existing shareholders. In this case, Dr. Avera and Mr.
17 McKenzie justify a flotation cost adjustment by referring to bonds and the manner in
18 which issuance costs are recovered by including the amortization of bond flotation
19 costs in annual financing costs. However, this is incorrect for several reasons:

20 (1) If an equity flotation cost adjustment is similar to a debt flotation cost
21 adjustment, the fact that the market-to-book ratios for electric utility companies are
22 over 1.5X actually suggests that there should be a flotation cost reduction (and not an

³⁸ *Regulatory Focus*, Regulatory Research Associates. The authorized ROEs exclude the authorized ROEs in Virginia which include generation adders.

1 increase) to the equity cost rate. This is because when (a) a bond is issued at a price
2 in excess of face or book value, and (b) the difference between market price and the
3 book value is greater than the flotation or issuance costs, the cost of that debt is lower
4 than the coupon rate of the debt. The amount by which market values of electric
5 utility companies are in excess of book values is much greater than flotation costs.
6 Hence, if common stock flotation costs were exactly like bond flotation costs, and
7 one was making an explicit flotation cost adjustment to the cost of common equity,
8 the adjustment would be downward;

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

16 (3) Flotation costs consist primarily of the underwriting spread or fee and not
17 out-of-pocket expenses. On a per-share basis, the underwriting spread is the
18 difference between the price the investment banker receives from investors and the
19 price the investment banker pays to the company. Therefore, these are not expenses
20 that must be recovered through the regulatory process. Furthermore, the underwriting
21 spread is known to the investors who are buying the new issue of stock and who are
22 well aware of the difference between the price they are paying to buy the stock and
23 the price that the company is receiving. The offering price which they pay is what

1 matters when investors decide to buy a stock based on its expected return and risk
2 prospects. Therefore, the company is not entitled to an adjustment to the allowed
3 return to account for those costs; and

4 (4) Flotation costs, in the form of the underwriting spread, are a form of a
5 transaction cost in the market. They represent the difference between the price paid
6 by investors and the amount received by the issuing company. Whereas the Company
7 believes that it should be compensated for these transaction costs, it has not accounted
8 for other market transaction costs in determining its cost of equity. Most notably,
9 brokerage fees that investors pay when they buy shares in the open market are another
10 market transaction cost. Brokerage fees increase the effective stock price paid by
11 investors to buy shares. If the Company had included these brokerage fees or
12 transaction costs in its DCF analysis, the higher effective stock prices paid for stocks
13 would lead to lower dividend yields and equity cost rates. This would result in a
14 downward adjustment to their DCF equity cost rate for the Company.

15

16 **E. Checks of Reasonableness**

17

18 1. CAPM

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

22 A. On pages 53-54 of their testimony and in their Exhibit No. 9, Dr. Avera and Mr.
23 McKenzie estimate an equity cost rate in the range of 10.4% to 11.5% using the same

1 inputs as their previous application of the CAPM. The three primary errors associated
2 with their original ECAPM application recur here: (1) excessive current and projected
3 risk-free interest rates of 3.4% and 4.7%, respectively; (2) primarily, an overstated
4 market risk premium that is based on unrealistic expectations of future earnings and
5 economic growth and stock returns; and (3) the inclusion of a size premium.

6

7

2. Expected Earnings Approach

8

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

11

A. On pages 54-56 of their testimony and in Exhibit No. 10, Dr. Avera and Mr. McKenzie
12 estimate an equity cost rate of 10.8% for their electric group using an approach they
13 call the Expected Earnings (“EE”) approach. Their methodology simply involves
14 using the expected ROE for the companies in the proxy group as estimated by *Value*
15 *Line*. This approach is fundamentally flawed for several reasons. First, these ROE
16 results include the profits associated with the *unregulated* operations of the utility
17 proxy group. Their electric group receives on average 85% of revenues from
18 regulated electric and operations. Second, and more importantly, Dr. Avera and Mr.
19 McKenzie’s approach uses the expected returns on book value projected by *Value*
20 *Line* as a proxy for investors’ required return on market value equity today. The error
21 is that the expected rate of return on book value is not equivalent to the required rate
22 of return on market value. Furthermore, when the market to book ratio is greater than
23 1.0, investors’ required rate of return on market value is less than their expected rate

1 of return on book value. As such, Dr. Avera and Mr. McKenzie's expected earnings
2 analysis overstates investors' required rate of return on equity.

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3. DCF Applied to Non-Utility Group

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

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

13 This approach is fundamentally flawed for two reasons. First, while many of
14 these companies are large and successful, their lines of business are vastly different
15 from the electric utility business and they do not operate in a highly regulated
16 environment. Second, and most importantly, the previously discussed upward bias in
17 the EPS growth rate forecasts of Wall Street analysts is particularly severe for non-utility
18 companies and therefore the DCF equity cost rate estimates for this group are
19 particularly overstated – this is demonstrated by the large differences between the DCF
20 results for the Avera/McKenzie Proxy Group versus the Non-Utility Group.

21

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

23 A. Yes.

Exhibit JRW-1
Louisville Gas & Electric Co.
Recommended Cost of Capital

Panel A
Electric Utility Operations

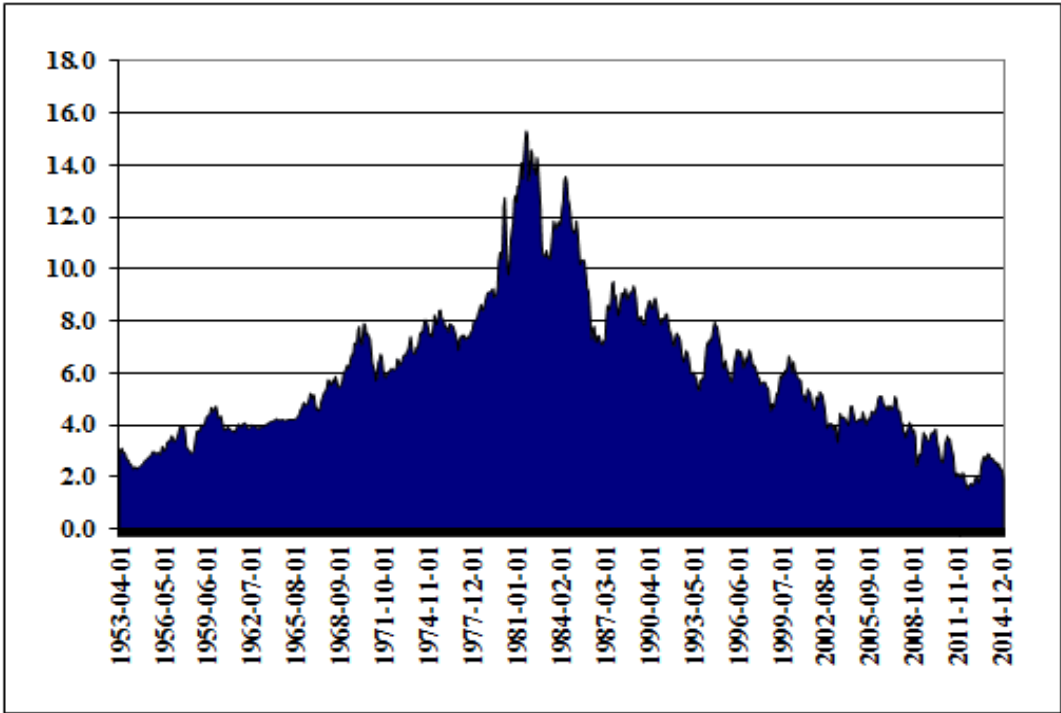
Capital Source	Capitalization Ratio*	Cost Rate	Weighted Cost Rate
Short-Term Debt	4.72%	0.89%	0.04%
Long-Term Debt	45.28%	4.16%	1.88%
Common Equity	50.00%	8.75%	4.38%
Total	100.00%		6.30%

Panel B
Gas Distribution Operations

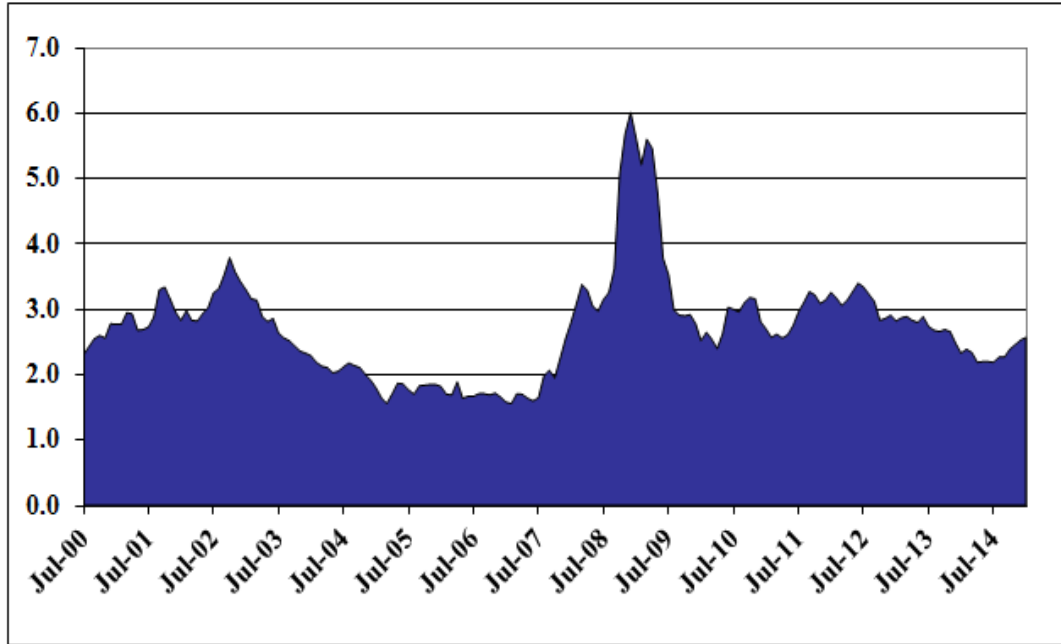
Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Short-Term Debt	4.72%	0.89%	0.04%
Long-Term Debt	45.28%	4.16%	1.88%
Common Equity	50.00%	8.60%	4.30%
Total	100.00%		6.23%

Exhibit JRW-2

Panel A
Ten-Year Treasury Yields
1953-Present

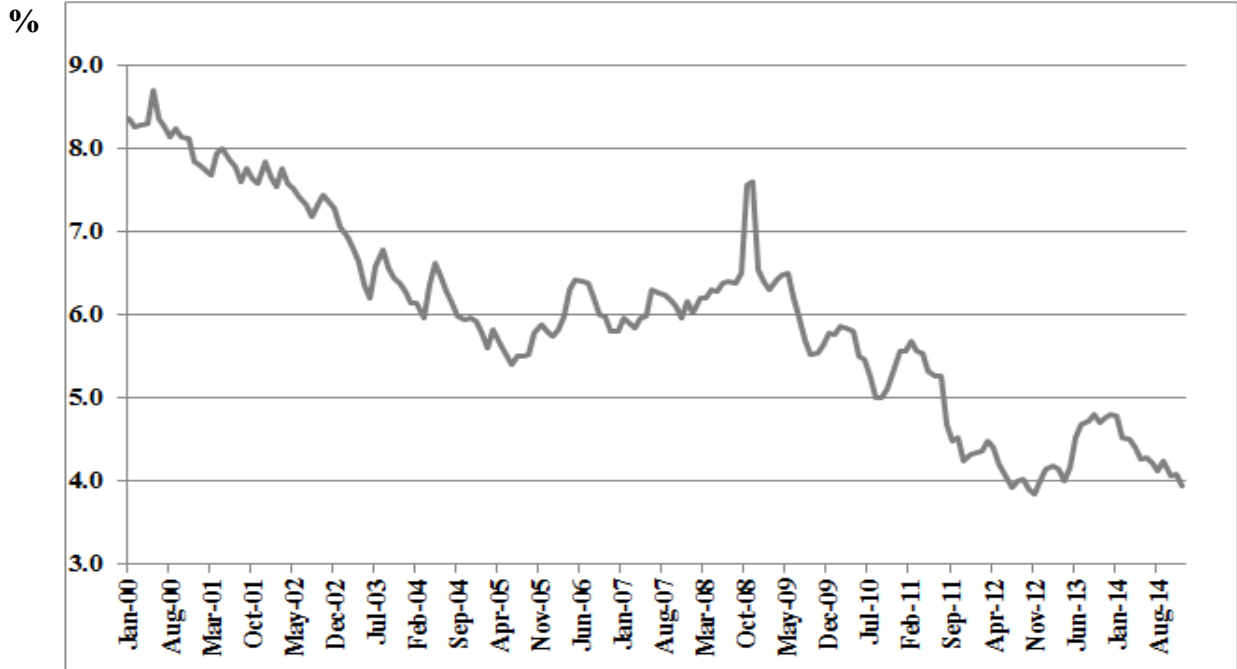


Panel B
Long-Term Moody's Baa Yields Minus Ten-Year Treasury Yields
2000-Present

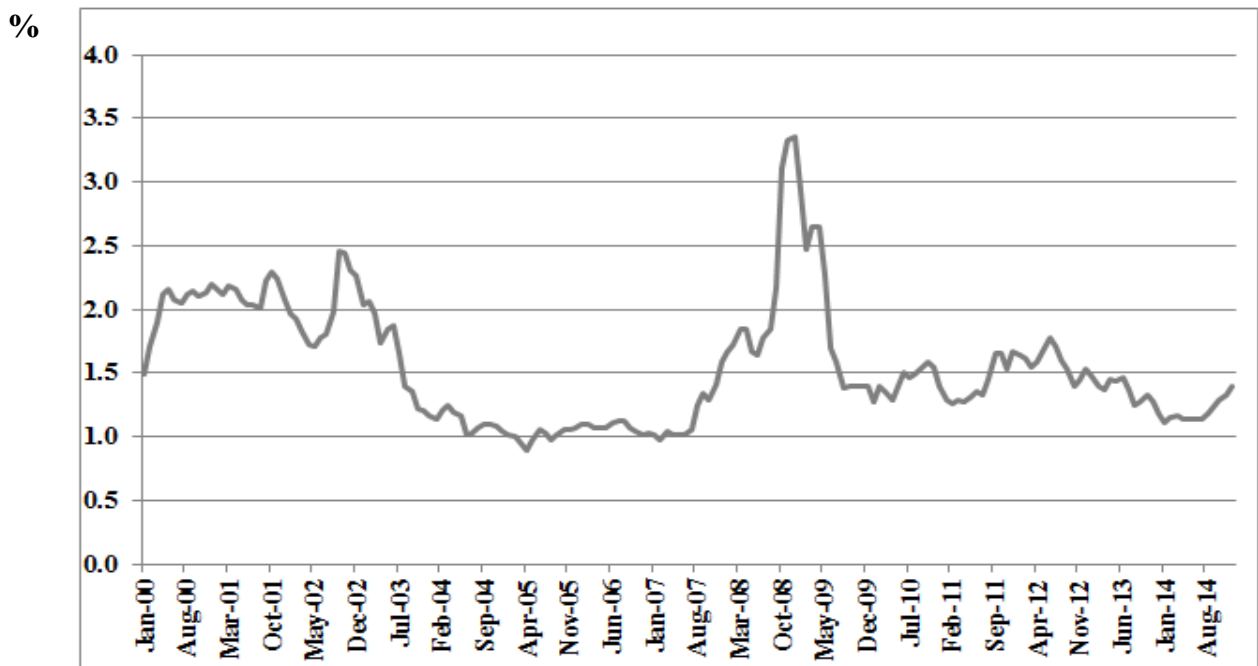


Source: Federal Reserve Bank of St. Louis, FRED Database.

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

Louisville Gas & Electric Co.

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)	1114.1	89	0	3121.5	2.6	A-	A3	3.8	MN, WI	51.6	8.1	1.39
Alliant Energy Corporation (NYSE-LNT)	3378.8	81	15	8763.6	7.0	A-	A2/A3	4.2	WS,IA,IL,MN	47.9	11.4	1.80
Ameren Corporation (NYSE-AEE)	6005.0	81	19	16991.0	11.3	BBB+/BBB	Baa1	3.6	IL,MO	48.9	9.1	1.43
American Electric Power Co. (NYSE-AEP)	16767.0	81	0	43064.0	32.4	BBB/BBB-	Baa1	3.7	10 States	45.8	10.8	1.57
Avista Corporation (NYSE-AVA)	1552.8	66	35	3538.0	2.3	A-	Baa1	3.6	WA, ID, AK	50.6	13.8	1.55
Black Hills Corporation (NYSE-BKH)	1370.9	49	44	3155.2	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)	7157.0	62	33	13045.0	10.1	BBB+/BBB	A3/Baa1	2.9	MI	30.9	14.8	2.24
Consolidated Edison, Inc. (NYSE-ED)	12957.0	70	15	28890.0	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)	25080.0	86	2	69595.0	61.8	BBB+	A3	3.6	NC, SC, FL, OH, KY	49.0	5.4	1.29
Edison International (NYSE-EIX)	13241.0	100	0	31919.0	22.2	BBB+	A2/A3	4.8	CA	42.4	14.7	1.82
El Paso Electric Company (NYSE-EE)	911.3	100	0	1898.6	1.6	BBB+	Baa1	2.7	TX, NM	47.0	9.5	1.52
Empire District Electric Co. (NYSE-EDE)	650.0	91	8	1861.6	1.3	A-	Baa1	3.6	KS, MO, OK, AR	49.0	9.5	1.40
Entergy Corporation (NYSE-ETR)	12355.5	77	1	28289.1	15.9	BBB+/BBB	Baa2/Baa3	3.2	LA, AR, MS, TX	42.1	10.0	1.36
FirstEnergy Corporation (NYSE-FE)	15220.0	65	0	34925.0	17.2	BBB	Baa2	2.6	OH, PA, NY, NJ, WV, MD	36.8	5.0	1.15
Great Plains Energy Incorporated (NYSE-GXP)	2554.8	100	0	8122.8	4.5	BBB	Baa2	2.9	MO, KS	47.1	6.8	1.10
IDACORP, Inc. (NYSE-IDA)	1288.9	100	0	3778.8	3.4	A-	A3	6.3	ID	53.2	9.5	1.47
MGE Energy, Inc. (NYSE-MGEE)	629.4	64	35	1197.9	1.6	AA-	Aa2	7.5	WI	61.5	13.0	2.11
Northeast Utilities (NYSE-NU)	7638.5	86	13	18254.6	17.6	A-	A3/Baa1	4.4	CT, NH, MA	50.8	7.8	1.47
NorthWestern Corporation (NYSE-NWE)	1211.0	73	27	2799.8	2.3	NR	A3	2.4	SD, MT, NE	44.0	9.2	1.88
OGE Energy Corp. (NYSE-OGE)	2435.8	100	0	6927.1	7.0	BBB+	A3	4.8	OK, AR	50.5	14.3	2.33
PG&E Corporation (NYSE-PCG)	16757.0	80	20	43172.0	27.6	BBB/BBB-	A3/Baa1	3.4	CA	49.0	5.1	1.44
Pinnacle West Capital Corp. (NYSE-PNW)	3464.9	100	0	10876.0	7.9	BBB	A3/Baa1	4.5	AZ	53.4	9.6	1.47
PNM Resources, Inc. (NYSE-PNM)	1411.9	100	0	4134.5	2.4	BBB	Baa2	2.4	NM, TX	45.1	6.2	1.22
Portland General Electric Company (NYSE-POR)	1899.0	100	0	5553.0	3.1	A-	A3	2.8	OR	46.6	9.4	1.38
SCANA Corporation (NYSE-SCG)	4854.0	53	21	12203.0	8.9	BBB+	Baa1/Baa2	3.6	SC, NC, GA	44.2	11.2	1.48
Southern Company (NYSE-SO)	18377.0	96	0	53167.0	46.2	A	A3/Baa1	5.6	GA, AL, FL, MS	44.6	11.4	1.94
Westar Energy, Inc. (NYSE-WR)	2565.1	100	0	8025.0	5.5	A-	A3/Baa1	3.3	KS	45.3	9.8	1.46
Xcel Energy Inc. (NYSE-XEL)	11488.3	81	18	27630.4	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.

Panel C
Gas 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
AGL Resources Inc. (NYSE-GAS)	5,383.0	0	71	8,925.0	6.0	A-/BBB+	A2/A3	6.0	GA, TN, VA, NJ, FL, MD, IL	45.4	11.8	1.63
Atmos Energy Corporation (NYSE-ATO)	4,940.9	0	64	6,725.9	5.4	A-	A2	3.9	LA, KY, TX, MS, CO, KS, KY	53.8	10.1	1.73
Laclede Group, Inc. (NYSE-LG)	1,627.2	0	99	2,768.9	2.3	A+	A3	4.3	MO, AL	41.4	6.6	1.45
Northwest Natural Gas Co. (NYSE-NWN)	774.5	0	97	2,107.1	1.3	AA-	A1	6.5	OR, WA	46.9	8.0	1.70
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	1,484.2	0	100	3,910.0	3.0	A	A2	3.4	NC, SC, TN	44.5	11.6	2.22
South Jersey Industries, Inc. (NYSE-SJI)	830.3	0	59	2,010.9	1.9	A	A2	4.0	NJ	42.7	11.4	2.23
Southwest Gas Corporation (NYSE-SWX)	2,032.4	0	67	3,608.3	2.7	A-	A3	4.1	AZ, NV, CA	50.1	9.9	1.83
WGL Holdings, Inc. (NYSE-WGL)	2,780.9	0	52	3,314.4	2.5	A+	A1	5.7	DC, MD, VA	51.4	8.4	2.14
Mean	2,481.7	0	76	4,171.3	3.1	A	A2	4.7		47.0	9.7	1.87
Median	1,829.8	0	69	3,461.4	2.6	A	A2	4.2		46.2	10.0	1.78

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

Exhibit JRW-4
Louisville Gas & Electric Co.
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-POE)	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
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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.

Panel C
Gas Proxy Group

Company	Beta	Financial Strength	Safety Rank	Earnings Predictability	Price Stability
AGL Resources Inc. (NYSE-GAS)	0.80	A	1	80	100
Atmos Energy Corporation (NYSE-ATO)	0.80	A	1	90	95
Laclede Group, Inc. (NYSE-LG)	0.70	B++	2	85	100
Northwest Natural Gas Co. (NYSE-NWN)	0.70	A	1	100	100
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	0.80	B++	2	95	95
South Jersey Industries, Inc. (NYSE-SJI)	0.80	A	2	95	95
Southwest Gas Corporation (NYSE-SWX)	0.85	B++	3	75	95
WGL Holdings, Inc. (NYSE-WGL)	0.75	A	1	85	95
Mean	0.78	A	1.6	88	97
Median	0.80	A	1.6	88	95

Data Source: Value Line Investment Survey, 2014.

Exhibit JRW-5
Louisville Gas & Electric Co.
Capital Structure Ratios and Debt Cost Rates

Panel A - LG&E's Proposed Capitalization Ratios and Senior Capital Cost Rates

Capital Source	Capitalization Ratio	Cost Rate
Short-Term Debt	4.46%	0.89%
Long-Term Debt	42.79%	4.16%
Common Equity	52.75%	
Total	100.00%	

Panel B - PPL's Capitalization Ratios

Capital Source	Capitalization Ratio
Short-Term Debt	2.98%
Long-Term Debt	60.43%
Common Equity	36.59%
Total	100.00%

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 C - Avera McKenzie Proxy Group Average Capitalization Ratios

Capital Source	Capitalization Ratio
Short-Term Debt	5.75%
Long-Term Debt	48.55%
Preferred Stock	0.40%
Common Equity	45.30%
Total	100.00%

Panel C - Gas Proxy Group Average Capitalization Ratios

Capital Source	Capitalization Ratio
Short-Term Debt	12.86%
Long-Term Debt	40.55%
Preferred Stock	0.15%
Common Equity	46.44%
Total	100.00%

Panel D - AG's Recommended Capitalization Ratios

Capital Source	LG&E's Recommended	Adjustment Factor	OAG Recommended	Cost Rates
Short-Term Debt	4.46%	1.06	4.72%	0.89%
Long-Term Debt	42.79%	1.06	45.28%	4.16%
Common Equity	52.75%	0.95	50.00%	
Total	100.00%		100.00%	

Exhibit JRW-5
Louisville Gas & Electric Co.

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 (NYSE-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%	0.66%	46.9%	100.0%
Median	6.0%	47.8%	0.00%	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	5.75%	48.5%	0.40%	45.3%	100.0%
Median	6.37%	48.8%	0.00%	46.1%	100.0%

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

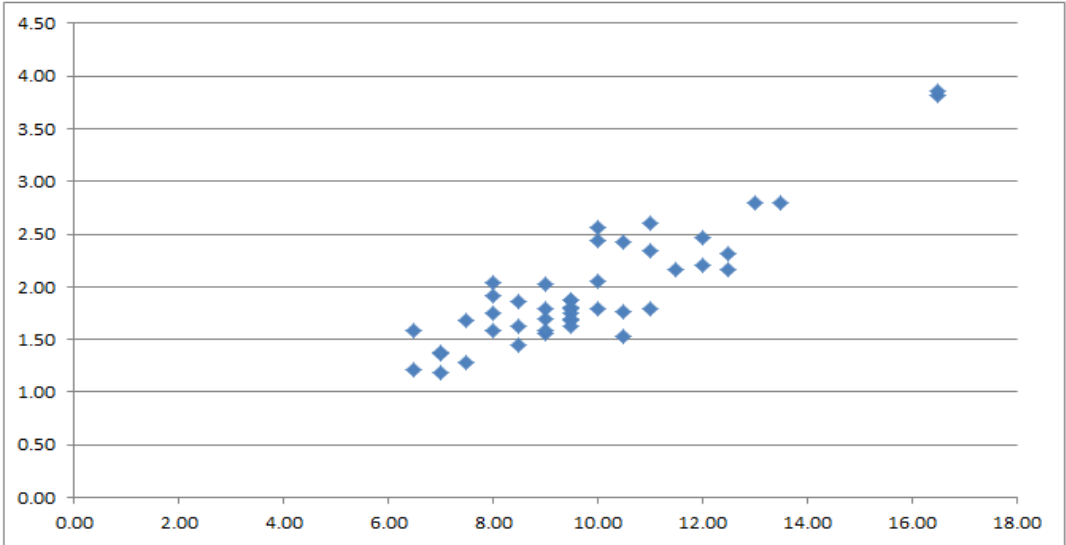
Panel C
Capital Structure Ratios of Gas Proxy Group

	Short-Term Debt	Long-Term Debt	Preferred Stock	Common Stock	Total Capital
AGL Resources Inc. (NYSE-GAS)	19.84%	41.06%	0.00%	39.10%	100.00%
Atmos Energy Corporation (NYSE-ATO)	3.43%	42.80%	0.00%	53.78%	100.00%
Laclede Group, Inc. (NYSE-LG)	7.87%	50.76%	0.00%	41.37%	100.00%
Northwest Natural Gas Co. (NYSE-NWN)	14.76%	40.53%	0.00%	44.71%	100.00%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	17.46%	41.03%	0.00%	41.51%	100.00%
South Jersey Industries, Inc. (NYSE-SJI)	19.92%	36.15%	0.00%	43.94%	100.00%
Southwest Gas Corporation (NYSE-SWX)	0.40%	49.25%	0.00%	50.36%	100.00%
WGL Holdings, Inc. (NYSE-WGL)	19.18%	22.84%	1.23%	56.76%	100.00%
Mean	12.86%	40.55%	0.15%	46.4%	100.0%
Median	16.11%	41.05%	0.00%	44.3%	100.0%

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

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

Market-to-Book

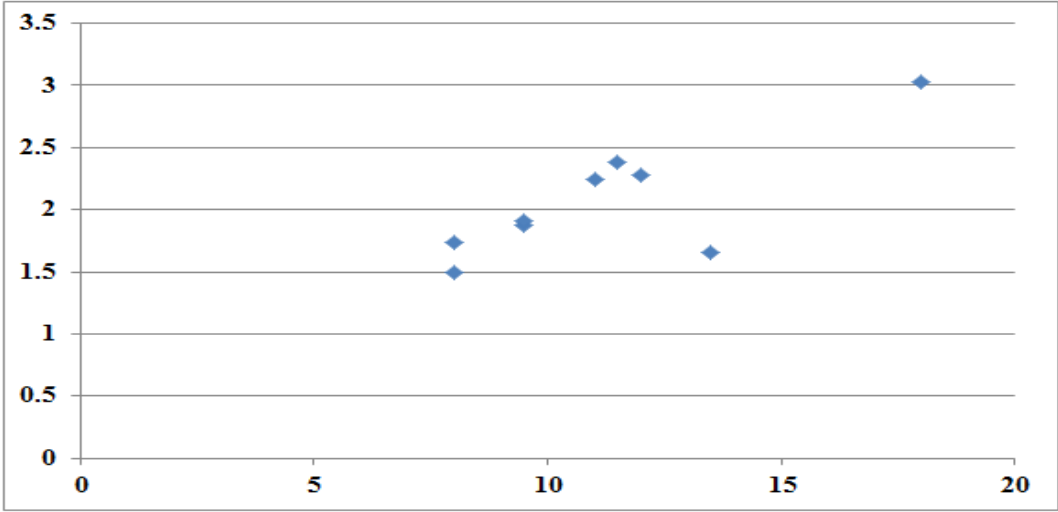


Value Line Investment Survey, 2015

R-Square = .78, N=46

**Panel B
Gas Companies**

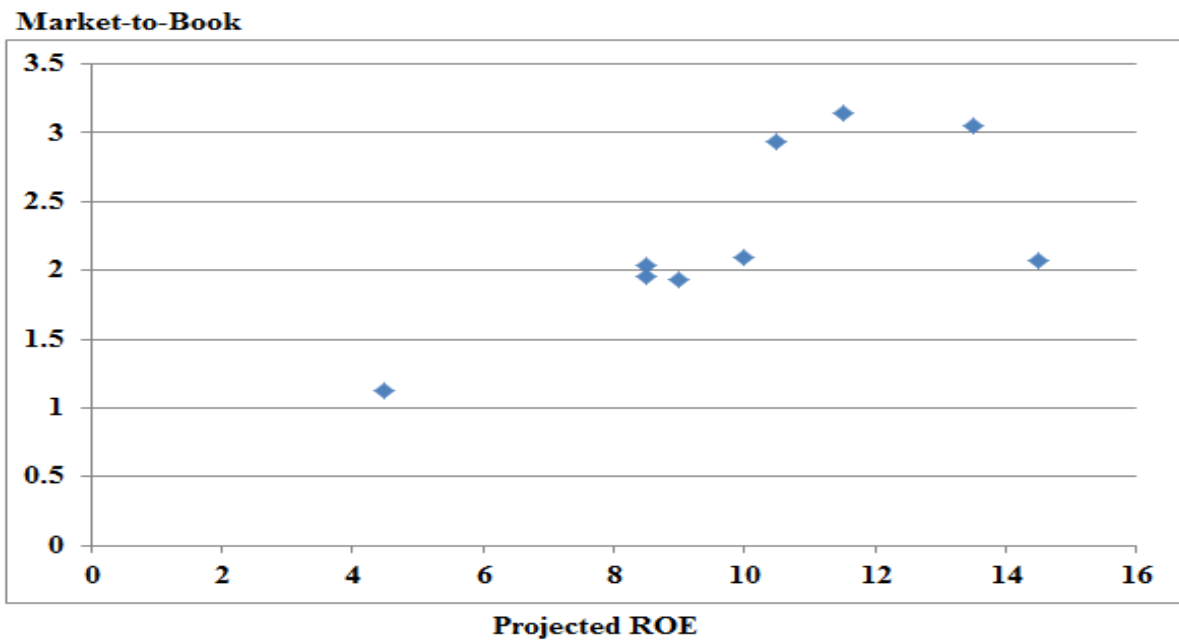
Market-to-Book



Value Line Investment Survey, 2015

R-Square = .63, N=9

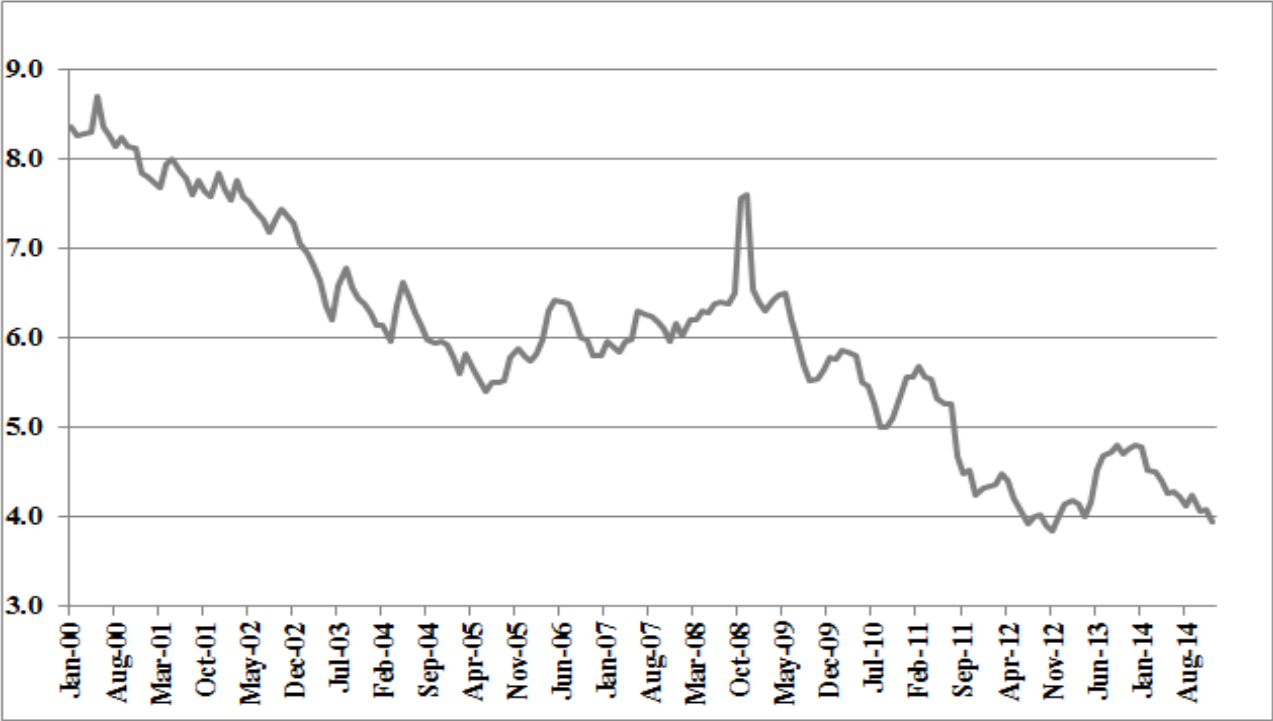
Exhibit JRW-6
Water Companies
Panel C



Value Line Investment Survey, 2015

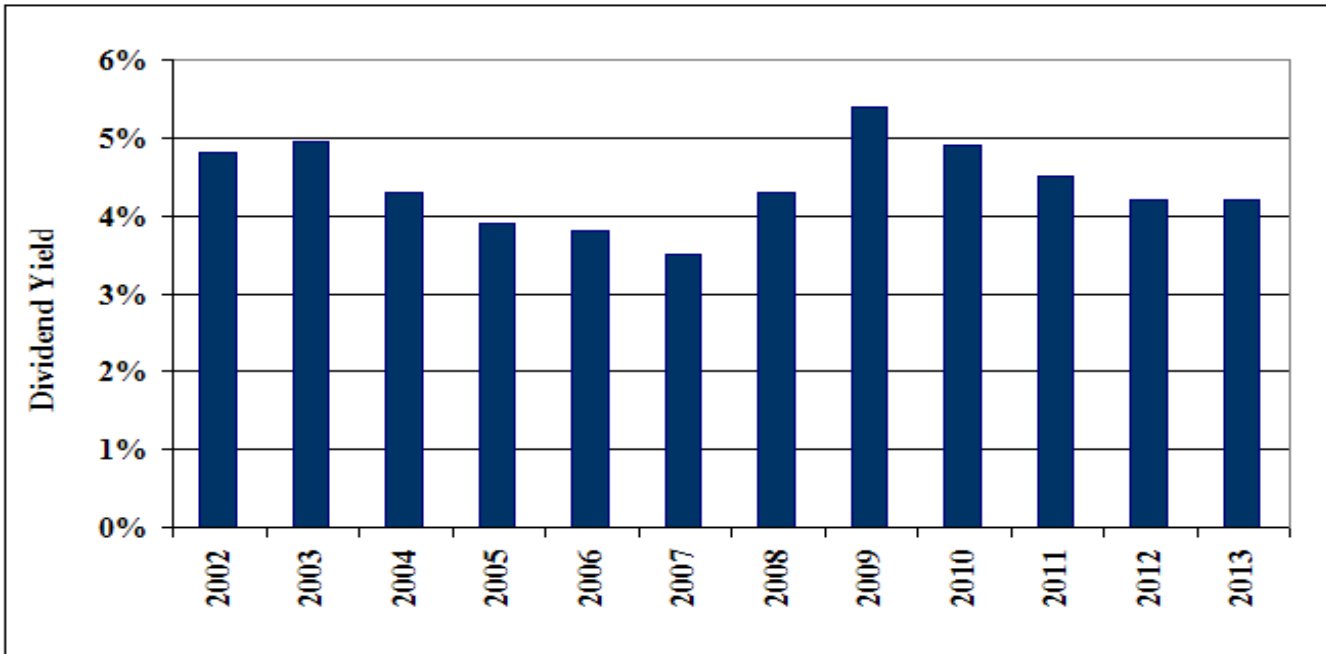
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Exhibit JRW-7
Long-Term 'A' Rated Public Utility Bonds



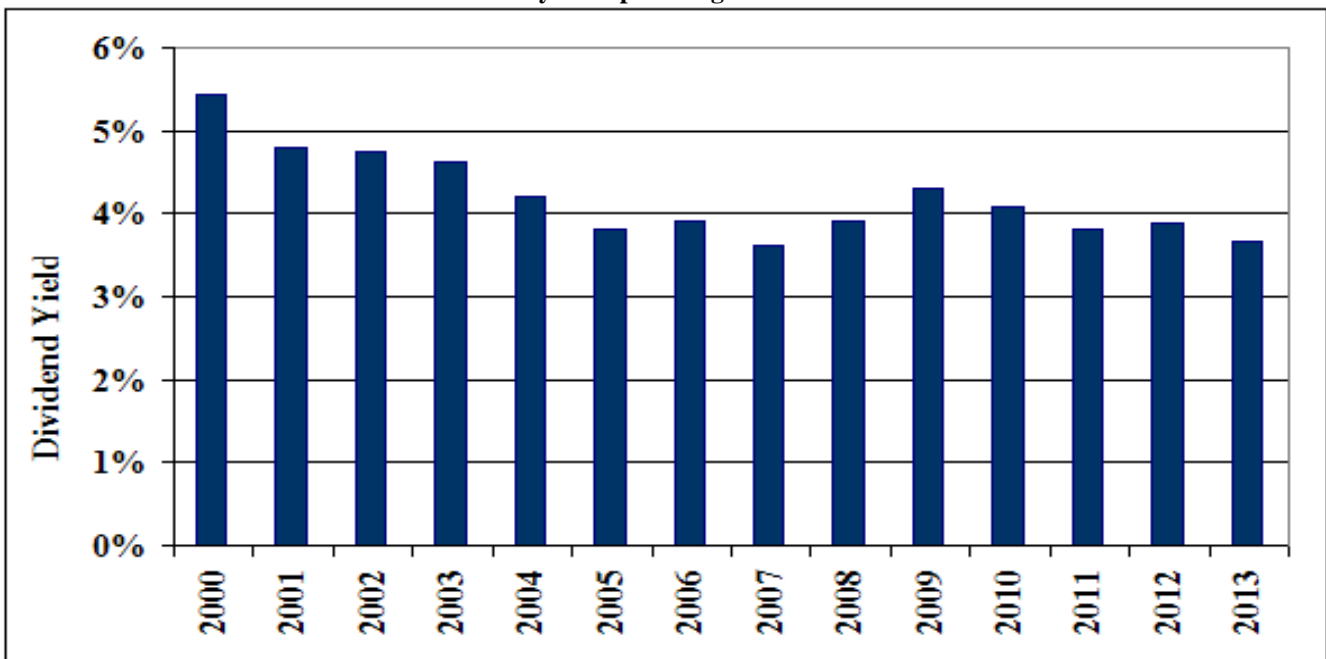
Data Source: Mergent Bond Record

Exhibit JRW-7
Panel A
Electric Utility Average Dividend Yield



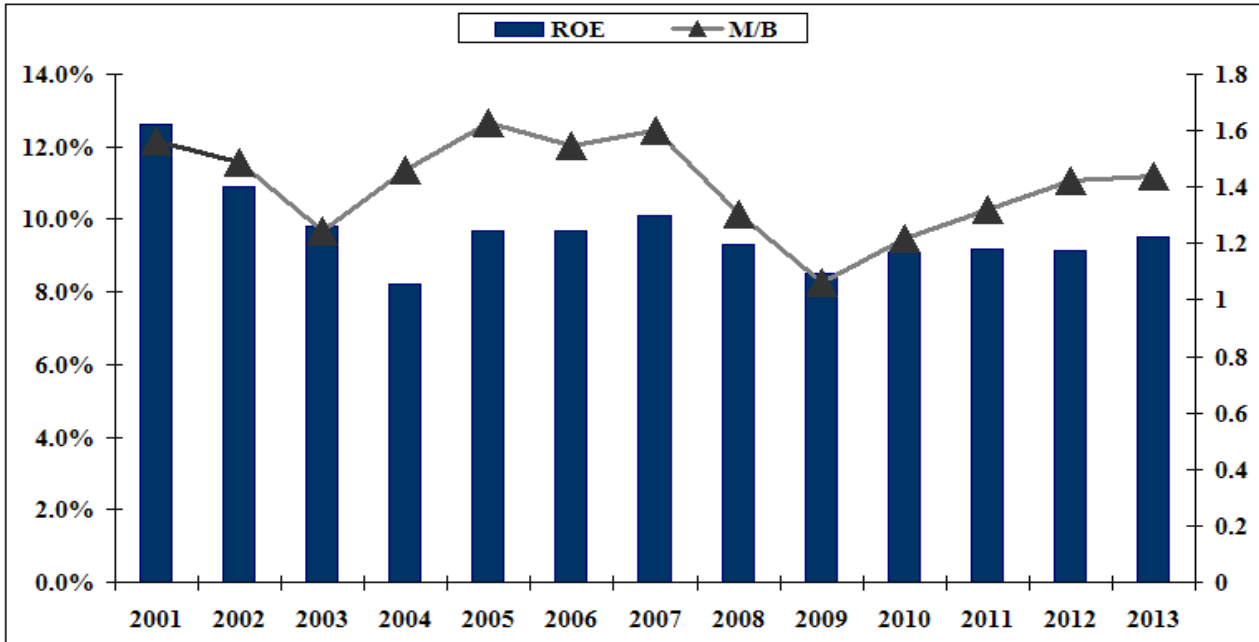
Data Source: Value Line Investment Survey.

Panel B
Gas Proxy Group Average Dividend Yield



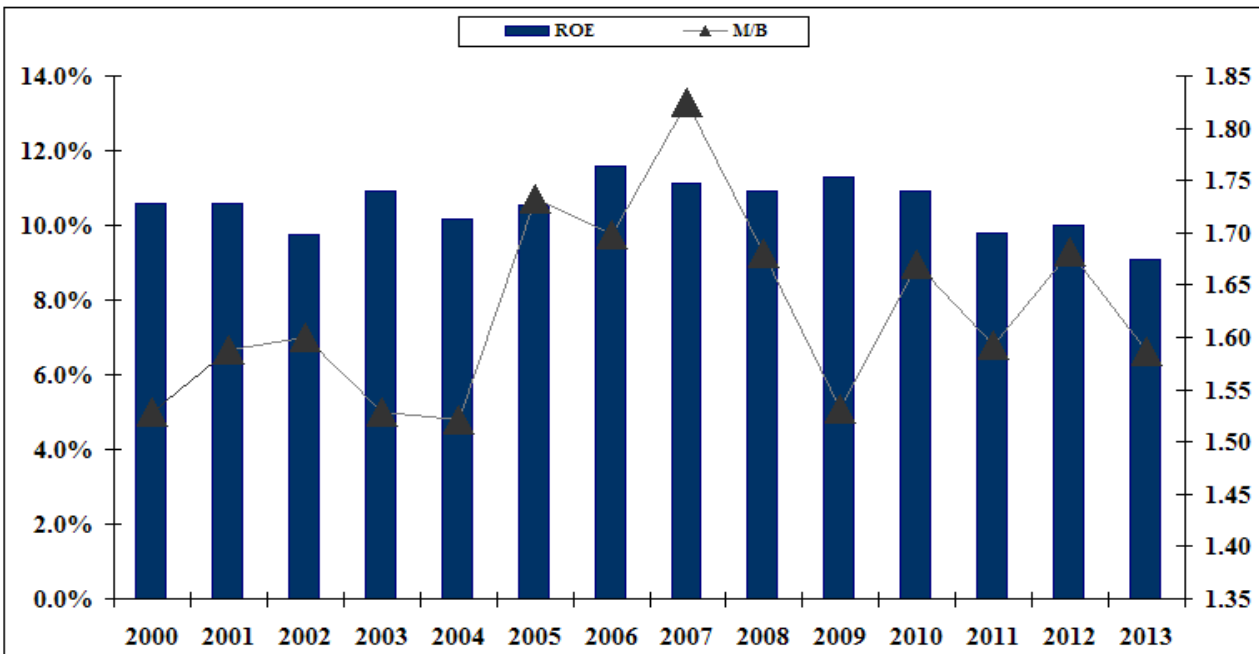
Data Source: Value Line Investment Survey.

Exhibit JRW-7
 Panel A
 Electric Utility Average Return on Equity and Market-to-Book Ratios



Data Source: Value Line Investment Survey.

Panel B
 Gas Proxy Group Average Return on Equity and Market-to-Book Ratios



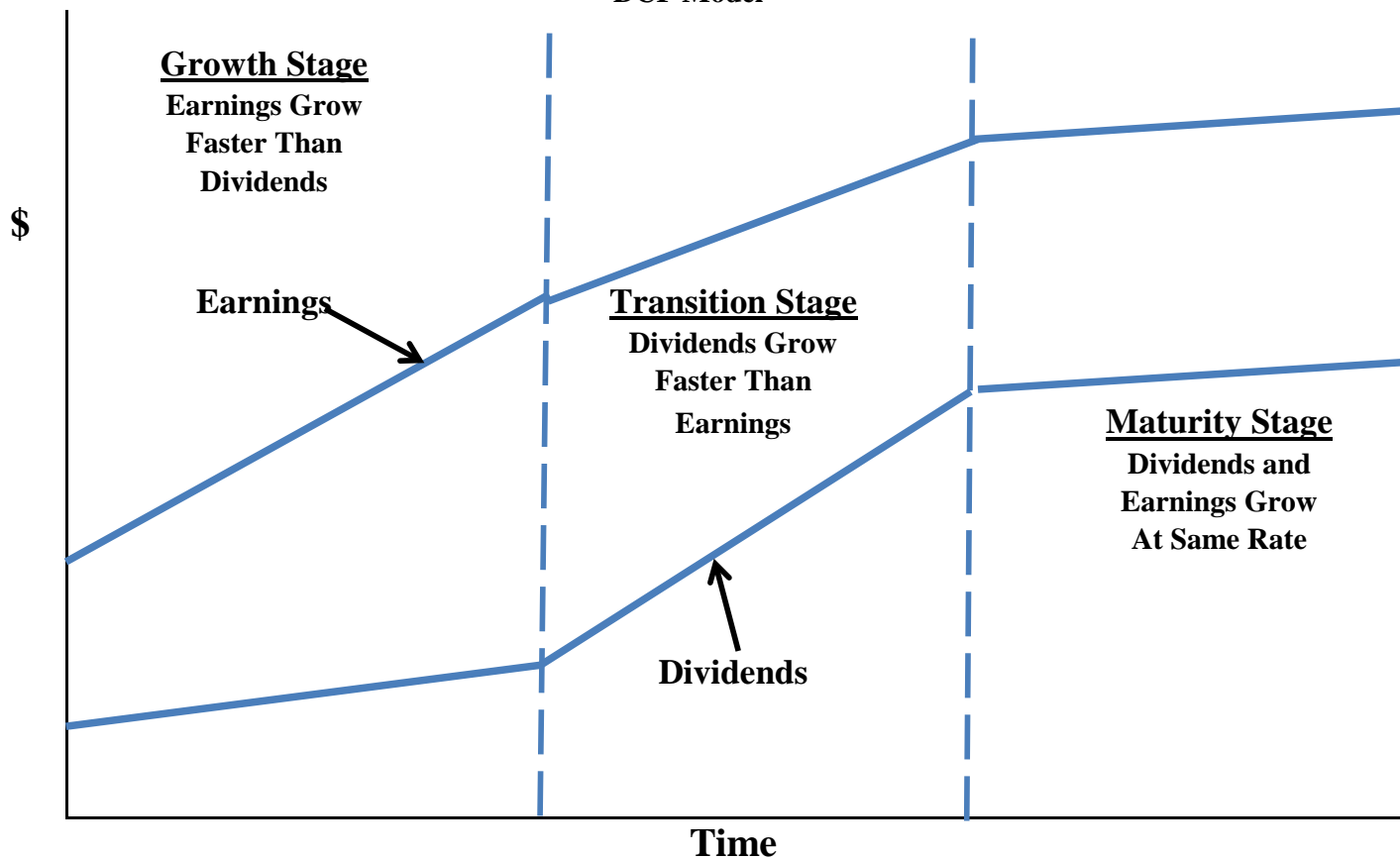
Data Source: Value Line Investment Survey.

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

**Louisville Gas & Electric Co.
Discounted Cash Flow Analysis**

**Panel A
Electric Proxy Group**

Dividend Yield*	3.50%
Adjustment Factor	<u>1.025</u>
Adjusted Dividend Yield	3.6%
Growth Rate**	<u>5.00%</u>
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	<u>1.02625</u>
Adjusted Dividend Yield	3.6%
Growth Rate**	<u>5.25%</u>
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

**Panel C
Gas Proxy Group**

Dividend Yield*	3.50%
Adjustment Factor	<u>1.025</u>
Adjusted Dividend Yield	3.6%
Growth Rate**	<u>5.00%</u>
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

Exhibit JRW-10
 Louisville Gas & Electric Co.
 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.

Panel C
 Gas Proxy Group

Company	Annual Dividend	Dividend Yield 30 Day	Dividend Yield 90 Day	Dividend Yield 180 Day
AGL Resources Inc. (NYSE-GAS)	\$ 1.96	3.6%	3.7%	3.7%
Atmos Energy Corporation (NYSE-ATO)	\$ 1.56	2.8%	2.9%	3.0%
Laclede Group, Inc. (NYSE-LG)	\$ 1.84	3.4%	3.6%	3.8%
Northwest Natural Gas Co. (NYSE-NWN)	\$ 1.86	3.7%	4.0%	4.1%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	\$ 1.28	3.2%	3.4%	3.5%
South Jersey Industries, Inc. (NYSE-SJI)	\$ 2.01	3.4%	3.5%	3.6%
Southwest Gas Corporation (NYSE-SWX)	\$ 1.46	2.4%	2.5%	2.7%
WGL Holdings, Inc. (NYSE-WGL)	\$ 1.76	3.2%	3.6%	3.9%
Mean		3.2%	3.4%	3.5%
Median		3.3%	3.5%	3.6%

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

Exhibit JRW-10

Louisville Gas & Electric Co.
 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
Data Source: Value Line Investment Survey.			Average of Median Figures =			3.3

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
Data Source: Value Line Investment Survey.			Average of Median Figures =			3.3

Panel C
 Gas Proxy Group

Company	Value Line Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
AGL Resources Inc. (NYSE-GAS)	2.5%	5.5%	8.5%	-3.0%	3.0%	6.5%
Atmos Energy Corporation (NYSE-ATO)	4.0%	1.5%	6.0%	3.0%	1.5%	4.0%
Laclede Group, Inc. (NYSE-LG)	5.0%	2.0%	6.0%	1.0%	2.5%	7.0%
New Jersey Resources Corp. (NYSE-NJR)	6.5%	6.5%	8.0%	5.5%	8.5%	4.5%
Northwest Natural Gas Co. (NYSE-NWN)	2.5%	3.5%	3.5%	-2.5%	4.5%	3.5%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	5.0%	5.0%	5.0%	3.5%	5.5%	3.0%
South Jersey Industries, Inc. (NYSE-SJI)	9.0%	8.0%	9.0%	5.5%	10.0%	7.5%
Southwest Gas Corporation (NYSE-SWX)	9.5%	4.0%	5.0%	9.5%	6.5%	4.5%
WGL Holdings, Inc. (NYSE-WGL)	3.0%	2.5%	4.0%	2.5%	3.0%	4.0%
Mean	5.2%	4.3%	6.1%	2.8%	5.0%	4.9%
Median	5.0%	4.0%	6.0%	3.0%	4.5%	4.5%
Data Source: Value Line Investment Survey, 2014.			Average of Median Figures =			4.5%

Exhibit JRW-10

Louisville Gas & Electric Co.
 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%
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 (NYSE-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%
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%

Panel C
 Gas 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
	AGL Resources Inc. (NYSE-GAS)	10.5%	4.5%	4.0%	12.0%	44.0%
Atmos Energy Corporation (NYSE-ATO)	7.5%	3.5%	6.5%	9.0%	50.0%	4.5%
Laclede Group, Inc. (NYSE-LG)	8.0%	5.0%	6.5%	10.0%	46.0%	4.6%
Northwest Natural Gas Co. (NYSE-NWN)	6.5%	2.5%	4.0%	9.5%	36.0%	3.4%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	5.0%	3.0%	5.0%	11.5%	37.0%	4.3%
South Jersey Industries, Inc. (NYSE-SJI)	8.0%	8.0%	6.0%	14.5%	46.0%	6.7%
Southwest Gas Corporation (NYSE-SWX)	6.0%	7.0%	4.5%	11.0%	55.0%	6.1%
WGL Holdings, Inc. (NYSE-WGL)	5.0%	2.5%	3.5%	11.0%	42.0%	4.6%
Mean	7.1%	4.5%	5.0%	11.1%	44.5%	4.9%
Median	7.0%	4.0%	4.8%	11.0%	45.0%	4.6%
Average of Median Figures =		5.3%			Median =	4.6%

Data Source: Value Line Investment Survey, 2014.

Exhibit JRW-10

Louisville Gas & Electric Co.
 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.

Panel C
 Gas Proxy Group

Company	Yahoo	Zacks	Reuters	Mean
AGL Resources Inc. (NYSE-GAS)	n/a	4.0%	-1.0%	1.5%
Atmos Energy Corporation (NYSE-ATO)	7.0%	7.0%	7.0%	7.0%
Laclede Group, Inc. (NYSE-LG)	5.4%	5.2%	5.4%	5.3%
Northwest Natural Gas Co. (NYSE-NWN)	4.0%	4.0%	n/a	4.0%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	5.0%	5.0%	6.0%	5.3%
South Jersey Industries, Inc. (NYSE-SJI)	6.0%	6.0%	n/a	6.0%
Southwest Gas Corporation (NYSE-SWX)	4.0%	5.5%	n/a	4.8%
WGL Holdings, Inc. (NYSE-WGL)	5.5%	5.3%	2.9%	4.6%
Mean	5.3%	5.2%	4.1%	4.8%
Median	5.4%	5.2%	5.4%	5.0%

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

Exhibit JRW-10

Louisville Gas & Electric Co.
 DCF Growth Rate Indicators

Electric, Avera/McKenzie, and Gas Proxy Groups
 Summary Growth Rates

Growth Rate Indicator	Electric Proxy Group	Avera/McKenzie Proxy Group	Gas Proxy Group
Historic <i>Value Line</i> Growth in EPS, DPS, and BVPS	3.3%	3.3%	4.5%
Projected <i>Value Line</i> Growth in EPS, DPS, and BVPS	4.7%	4.8%	5.3%
Sustainable Growth ROE * Retention Rate	4.0%	4.0%	4.6%
Projected EPS Growth from Yahoo, Zacks, and Reuters - Mean/Median	5.1%/5.0%	5.3%/5.1%	5.0%/4.8%

Exhibit JRW-11

**Louisville Gas & Electric Co.
Capital Asset Pricing Model**

**Panel A
Electric Proxy Group**

Risk-Free Interest Rate	4.00%
Beta*	0.70
<u>Ex Ante Equity Risk Premium**</u>	<u>5.50%</u>
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
<u>Ex Ante Equity Risk Premium**</u>	<u>5.50%</u>
CAPM Cost of Equity	8.0%

* See page 3 of Exhibit JRW-11

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

**Panel C
Gas Proxy Group**

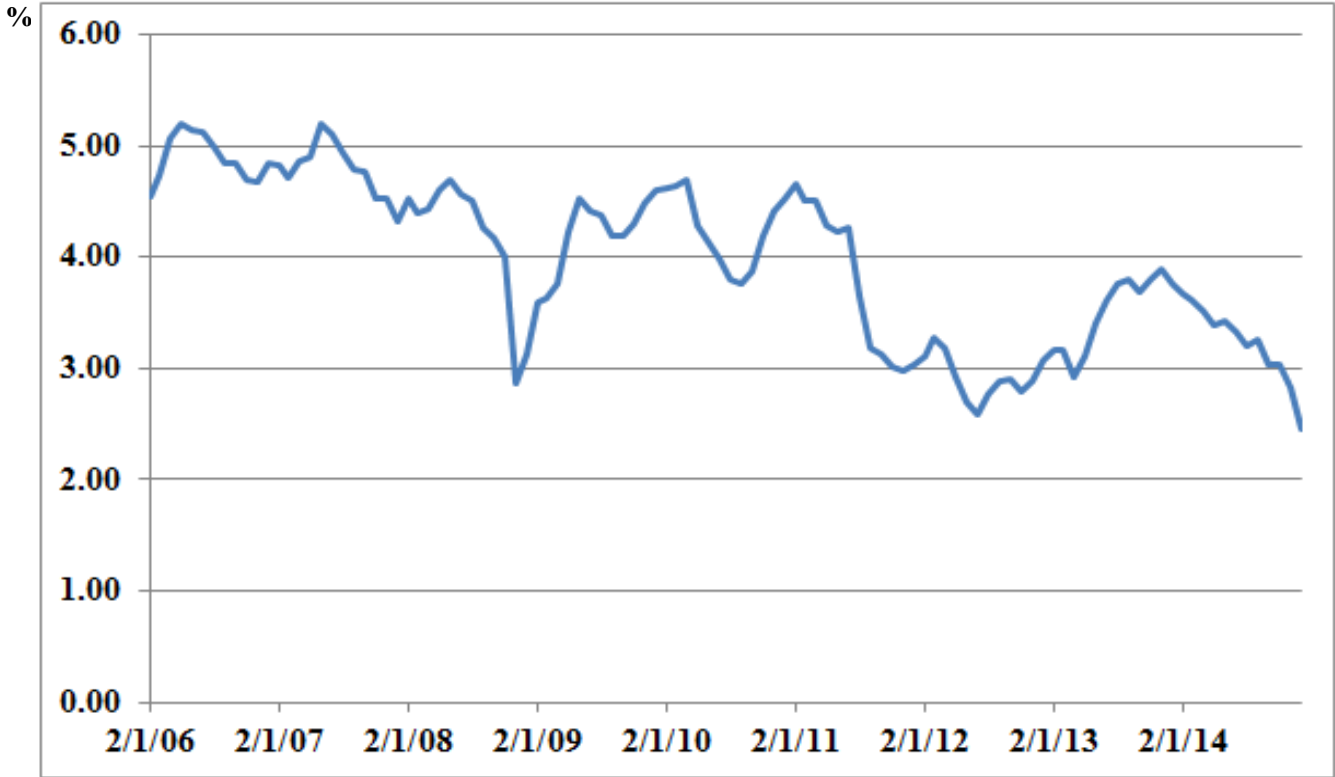
Risk-Free Interest Rate	4.00%
Beta*	0.80
<u>Ex Ante Equity Risk Premium**</u>	<u>5.50%</u>
CAPM Cost of Equity	8.4%

* See page 3 of Exhibit JRW-11

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

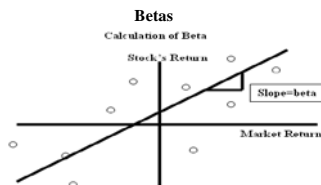
Exhibit JRW-11

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



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

Exhibit JRW-11



Panel A
 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)	0.80
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.

Panel C
 Gas Proxy Group

Company Name	Beta
AGL Resources Inc. (NYSE-GAS)	0.80
Atmos Energy Corporation (NYSE-ATO)	0.80
Laclede Group, Inc. (NYSE-LG)	0.70
Northwest Natural Gas Co. (NYSE-NWN)	0.70
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	0.80
South Jersey Industries, Inc. (NYSE-SJI)	0.80
Southwest Gas Corporation (NYSE-SWX)	0.85
WGL Holdings, Inc. (NYSE-WGL)	0.75
Mean	0.78
Median	0.80

Data Source: Value Line Investment Survey, 2014.

**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 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-12

Louisville Gas & Electric Co.
Company's Proposed Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Short-Term Debt	4.46%	0.89%	0.03%
Long-Term Debt	42.79%	4.16%	1.79%
Common Equity	52.75%	10.50%	5.57%
Total	100.00%		7.38%

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

<u>DCF</u>	<u>Average</u>	<u>Midpoint</u>
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%
<u>Empirical CAPM - 2014 Yield</u>		
Unadjusted	11.1%	11.1%
Size Adjusted	11.9%	11.9%
<u>Empirical CAPM - 2015-2018 Yield</u>		
Unadjusted	11.4%	11.4%
Size Adjusted	12.2%	12.1%
<u>Utility Risk Premium</u>		
2014 Bond Yields	10.1%	
2015-2018 Bond Yields	11.2%	
<u>Cost of Equity Recommendation</u>		
Cost of Equity Range	9.6% --	11.4%
Recommended Point Estimate	10.50%	
<u>Flotation Cost Adjustment</u>		
Dividend Yield	3.80%	
Flotation Cost Percentage	3.60%	
Adjustment	0.14%	
<u>ROE Recommendation</u>		
	10.64%	

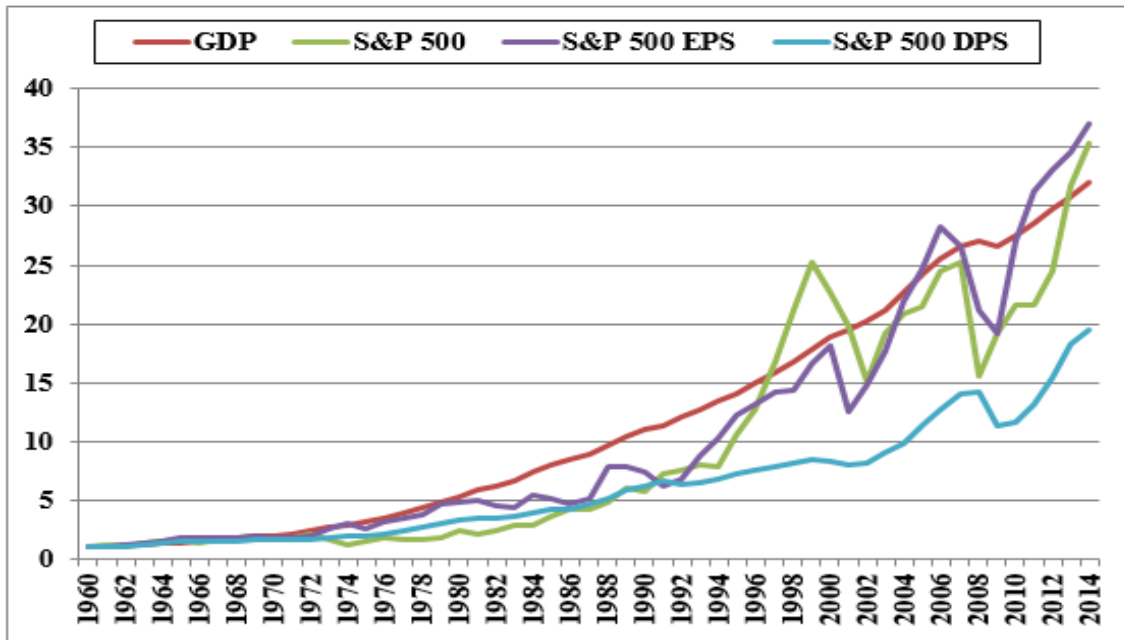
Exhibit JRW-13
The Impact of Avera DCF Eliminations
Electric Group

	<u>Company</u>	<u>Earnings Growth</u>				<u>br+sv</u>
		<u>V Line</u>	<u>IBES</u>	<u>Zacks</u>	<u>Reuters</u>	<u>Growth</u>
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%
<u>Reported DCF Equity Cost Rates</u>						<u>Average</u>
	Average (b)	9.4%	9.1%	9.1%	9.3%	8.3%
<u>Actual DCF Equity Cost Rates</u>						<u>Average</u>
	Average	9.0%	9.0%	8.7%	9.2%	8.3%
	Median	9.2%	9.1%	8.9%	9.1%	8.2%

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>