

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

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In the Matter of:

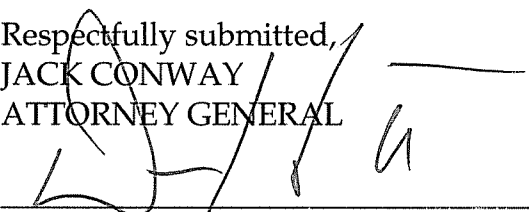
APPLICATION OF KENTUCKY POWER)
COMPANY FOR APPROVAL OF ITS 2011)
ENVIRONMENTAL COMPLIANCE PLAN,)
FOR APPROVAL OF ITS AMENDED)
ENVIRONMENTAL COST RECOVERY)
SURCHARGE TARIFF, AND FOR THE)
GRANT OF A CERTIFICATE OF PUBLIC)
CONVENIENCE AND NECESSITY FOR THE)
CONSTRUCTION AND ACQUISITION OF)
RELATED FACILITIES)

CASE NO. 2011-00401

ATTORNEY GENERAL'S PRE-FILED TESTIMONY

Comes now the intervenor, the Attorney General of the Commonwealth of Kentucky, by and through his Office of Rate Intervention, and files the following testimony in the above-styled matter.

Respectfully submitted,
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ATTORNEY GENERAL



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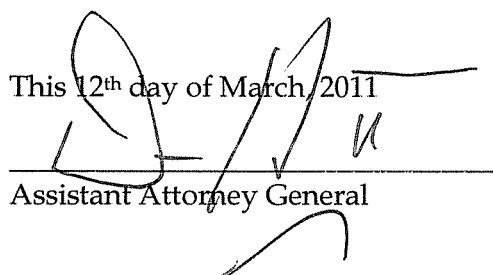
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This 12th day of March, 2011


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APPLICATION OF KENTUCKY POWER)
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CONSTRUCTION AND ACQUISITION OF)
RELATED FACILITIES)

CASE NO. 2011-00401

**PRE-FILED DIRECT TESTIMONY
OF
DR. J. RANDALL WOOLRIDGE
ON BEHALF OF THE
OFFICE OF THE ATTORNEY GENERAL**

March 12, 2012

**Kentucky Power Company
Case No. 2011-00401
Direct Testimony of
Dr. J. Randall Woolridge**

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LIST OF EXHIBITS

Exhibit

Title

JRW-1	Weighted Average Cost of Capital
JRW-2	Interest Rates – Treasury Yields and Utility Bonds
JRW-3	Treasury Yields and Yield Spreads
JRW-4	Summary Financial Statistics for Proxy Group
JRW-5	Capital Structure Ratios and Debt Cost Rate
JRW-6	The Relationship Between ROE and Market-to-Book Ratios
JRW-7	Public Utility Capital Cost Indicators
JRW-8	Industry Average Betas
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JRW-11	CAPM Study
JRW-12	DCF Growth Rate Analysis
APPENDIX A	Qualifications of Dr. J. Randall Woolridge
APPENDIX B	Research on Analysts' Long-Term EPS Growth Rate Forecasts
APPENDIX C	Building Blocks Equity Risk Premium

1 **I. IDENTIFICATION OF WITNESS AND PURPOSE OF TESTIMONY**

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

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

12
13 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**
14 **PROCEEDING?**

15 A. I have been asked by the Kentucky Office of Attorney General (“OAG”) to
16 provide an opinion as to the overall fair rate of return or cost of capital for the
17 Kentucky Power Company (“KPC” or “Company”) for its environmental cost
18 recovery (“ECR”) investment. The Company has requested to earn a return on
19 equity of 10.5%.

20
21 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

22 A. First I review my cost of capital recommendation for KPC. Second, I provide an
23 assessment of capital costs in today’s capital markets. Third, I discuss the

1 selection of a proxy group of electric utility companies for estimating the cost of
2 capital for KPC. Fourth, I present my recommendations for the Company's
3 capital structure and debt cost rate. Fifth, I discuss the concept of the cost of
4 equity capital, and then estimate the equity cost rate for KPC. Finally, I review
5 alternative financing proposals for the Company's ECR investment.
6

7 **Q. PLEASE DISCUSS THE COMPANY'S PROPOSED ROE FOR ECR.**

8 A. The Company plans to add \$955 million in environmental compliance projects
9 in the coming years. KPC Witness Ms. Munsey has proposed to earn an
10 overall pre-tax rate of return of 10.69% on this investment. This figure is
11 based on the settlement in Case No. 2010-00318, which was dated September
12 7, 2010. This overall rate of return uses the capital structure and capital cost
13 rates as of April 30, 2010, which was used in Case No. 2010-00318. The
14 settled upon ROE in that case was 10.5%. Ms. Munsey provides **no** additional
15 support for the overall rate of return or ROE in his testimony.

16 **Q. HOW DO THE CAPITAL COST INDICATORS COMPARE TODAY**
17 **TO THOSE EMPLOYED IN CASE 2010-00318?**

18 A. In Exhibit JRW-2, I provide the yields on ten-year Treasury bonds and thirty-
19 year, BBB-rated utility bonds for the six month periods – April 2010 to
20 September, 2010, and September 2011 to February 2012. Current interest
21 rates and capital costs are below those at the time of Case No 2010-00318.
22 Panel A of Exhibit JRW-2 shows the yields on ten-year Treasury bonds. The

1 average ten-year Treasury yields for these two periods are 3.29% and 1.99%,
2 respectively. These yields suggest a decline in capital costs. Panel B of
3 Exhibit JRW-2 shows the yields on thirty-year public utility bonds for the
4 same six month periods. The average yields for these periods are 5.87% and
5 4.88%, respectively. These yields also indicate a decline in utility capital
6 costs, albeit not as large as the change indicated by the Treasury data.
7

8 **Q. PLEASE REVIEW YOUR RECOMMENDATIONS REGARDING THE**
9 **APPROPRIATE RATE OF RETURN FOR KPC.**

10 A. I have used the Company's proposed capital structure and short-term and
11 long-term debt cost rates. I applied the Discounted Cash Flow Model
12 ("DCF") and the Capital Asset Pricing Model ("CAPM") to a proxy group of
13 publicly-held electric utility companies ("Electric Proxy Group"). My analysis
14 indicates that an equity cost rate of 8.60% is appropriate for the Electric Proxy
15 Group. For KPC, I have added 40 basis points to this figure to reflect the
16 Company's lower bond rating and common equity ratio. As such, I am
17 employing an equity cost rate of 9.0% for KPC. Using my capital structure
18 and debt and equity cost rates, I recommend an overall pre-tax rate of return
19 of 7.37% for KPC.
20

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

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

1 A. Long-term capital cost rates for U.S. corporations are a function of the
2 required returns on risk-free securities plus a risk premium. The risk-free rate
3 of interest is the yield on long-term U.S Treasury yields. The yields on ten-
4 year U.S. Treasury bonds from 1953 to the present are provided on page 1 of
5 Exhibit JRW-3. These yields peaked in the early 1980s and have generally
6 declined since that time. In the summer of 2003, these yields hit a 60-year
7 low at 3.33%. They subsequently increased and fluctuated between the 4.0%
8 and 5.0% levels over the next four years in response to ebbs and flows in the
9 economy. Ten-year Treasury yields began to decline in mid-2007 at the
10 beginning of the financial crisis. In 2008 Treasury yields declined to below
11 3.0% as a result of the expansion of the mortgage and subprime market credit
12 crisis, the turmoil in the financial sector, the government bailout of financial
13 institutions, the monetary stimulus provided by the Federal Reserve, and the
14 economic recession. From 2008 until 2011, these rates fluctuated between
15 2.5% and 3.5%. Over the past six months, the yields on ten-year Treasuries
16 have declined from 2.5% to just below 2.0% as economic uncertainties have
17 persisted.

18 Panel B on page 1 of Exhibit JRW-3 shows the differences in yields
19 between ten-year Treasuries and Moody's Baa rated bonds since the year
20 2000. This differential primarily reflects the additional risk required by bond
21 investors for the risk associated with investing in corporate bonds. The
22 difference also reflects, to some degree, yield curve changes over time. The
23 Baa rating is the lowest of the investment grade bond ratings for corporate

1 bonds. The yield differential hovered in the 2.0% to 3.0% area until 2005,
2 declined to 1.5% until late 2007, and then increased significantly in response
3 to the financial crisis. This differential peaked at 6.0% at the height of the
4 financial crisis in early 2009, due to tightening in credit markets, which
5 increased corporate bond yields and the “flight to quality,” which decreased
6 treasury yields. The differential subsequently declined and has been in the
7 2.5% to 3.0% range over the past three years.

8 As previously noted, the risk premium is the return premium required
9 by investors to purchase riskier securities. The risk premium required by
10 investors to buy corporate bonds is observable based on yield differentials in
11 the markets. The equity risk premium is the return premium required to
12 purchase stocks as opposed to bonds. The equity risk premium is not readily
13 observable in the markets (as are bond risk premiums) since expected stock
14 market returns are not readily observable. As a result, equity risk premiums
15 must be estimated using market data. There are alternative methodologies to
16 estimating the equity risk premium, and the alternative approaches and equity
17 risk premium results are subject to much debate. One way to estimate the
18 equity risk premium is to compare the mean returns on bonds and stocks over
19 long historical periods. Measured in this manner, the equity risk premium has
20 been in the 5% to 7% range. However, studies by leading academics indicate
21 the forward-looking equity risk premium is actually in the 4.0% to 5.0%
22 range. These lower equity risk premium results are in line with the findings of

1 equity risk premium surveys of CFOs, academics, analysts, companies, and
2 financial forecasters.

3
4 **Q. PLEASE DESCRIBE HOW THE FINANCIAL CRISIS HAS**
5 **IMPACTED THE CAPITAL COSTS OF UTILITIES.**

6 A. The yields on United States Treasury Bonds have declined to levels not seen
7 since the 1950s. This reflects the slow economy, the “flight to quality” in the
8 credit markets, and the continued monetary stimulus provided by the Federal
9 Reserve Board. The credit market for utility debt experienced higher rates
10 during the financial crisis. However, the long-term credit market for utilities’
11 bonds has improved significantly and now utility bond yields are well below
12 their pre-financial crisis levels. Panel A of page 2 of Exhibit JRW-3 provides
13 the yields on 30-year, A, BBB+, and BBB rated public utility bonds. These
14 yields peaked in November 2008 and declined by about 200 to 300 basis
15 points (“BPs”) through the summer of 2010. During the last half of 2010,
16 these yields increased about 50 to 75 BPs. For example, the yields on “A”
17 rated utility bonds peaked at over 7.50% in November of 2008, declined to
18 5.0% in mid-2010, and then increased to 5.75% by early 2011. However, over
19 the past year, these yields have declined significantly. The current yield on
20 long-term, A-rated utility bonds is 4.14%.

21 Panel B of page 2 of Exhibit JRW-3 provides the yield spreads on
22 long-term A, BBB+, and BBB rated public utility bonds relative to long-term
23 Treasury bonds. These yield spreads increased dramatically in 2008 during the

1 peak of the financial crisis and then decreased to pre-crisis levels. For
2 example, the yield spread between 30-year, 'A' rated utility bonds and 30-
3 Year Treasury bonds increased from 1.5% to 3.5% in November of 2008.
4 This yield spread decreased to below 1.5% as of the summer of 2009, and
5 subsequently declined to 1.0% in 2011. However, the market uncertainties
6 associated primarily with the European debt crisis in mid-2011 resulted in an
7 increase in the spread between utility bond yields and Treasuries in the last
8 half of 2011. These spreads have declined in the last month, and the spread
9 between 30-year 'A' rated utility bonds and 30-Year Treasury bonds is again
10 at 1.0%.

11 In sum, while the economy continues to face significant problems, the
12 actions of the government and Federal Reserve had a large effect on the credit
13 markets. The capital costs for utilities, as measured by the yields on 30-year
14 utility bonds, have declined to below pre-financial crisis levels.

15
16 **Q. PLEASE DISCUSS THE RECENT VOLATILITY OF THE MARKETS**
17 **AND THE IMPLICATIONS FOR EQUITY COST RATES.**

18 A. Over the past six months there have been ups and downs in the volatility of
19 the markets. Market volatility increased significantly in early August of 2011
20 in association with issues associated with the European debt crisis. These
21 changes are reflected by the VIX.

1 **Q. PLEASE DISCUSS THE VIX AND ITS RECENT MOVEMENTS.**

2 A. The VIX is the stock ticker symbol for the Chicago Board Options Exchange
3 Market Volatility Index. The VIX, which is quoted as a percentage, is a
4 measure of the implied volatility of S&P 500 index options for the next 30 day
5 period. Higher levels of the VIX imply that investors expect larger market
6 upward or downward movements in the next 30 days.

7 Panel A of page 3 of Exhibit JRW-3 shows the historic levels of the
8 VIX since 1990. The VIX reached an all-time high of 60 in association with
9 the financial crisis in 2008. The VIX also spiked to 42 in the third quarter of
10 2011. To highlight recent VIX movement, Panel B of page 3 of Exhibit JRW-
11 3 shows the VIX over the past year. The VIX hovered in the 20 range until
12 late July of 2011. But then uncertainties related primarily to the impact of the
13 European debt situation on global financial markets and economies had an
14 abnormally large impact on day-to-day stock market movements. As a result,
15 the short-term volatility of the stock market increased significantly.
16 However, as these uncertainties have declined and the stock market has
17 recovered, the VIX has declined significantly. At its current level of 17, the
18 VIX is below its historic norm of 20.

19

20 **Q. HOW HAVE UTILITY STOCKS PERFORMED DURING THE**
21 **RECENT PERIOD OF HIGH MARKET VOLATILITY.**

22

1 A. Utility stocks have performed quite well during this period of uncertainty.
2 Page 4 of Exhibit JRW-3 graphs the performance of the Dow Jones Utility
3 Index versus the S&P 500 over the past year. When the S&P 500 declined by
4 over 10% in early August of 2011, utility stocks declined by much less. As
5 the S&P 500 recovered in the fourth quarter of 2011, utility stocks continued
6 to increase in value as well. In the first six weeks of trading in 2012, the S&P
7 500 has performed better than the stocks of utilities. However, this would be
8 expected since utility stocks have low risk relative to the overall stock market.
9 Just as utility stocks did not decline as much as the overall market in the third
10 quarter market decline, they have not increased in value as the overall market
11 in the recovery of the stock market over the past several months.

12

13 **Q. OVERALL, WHAT DOES YOUR REVIEW OF THE CAPITAL**
14 **MARKET CONDITIONS INDICATE ABOUT THE EQUITY COST**
15 **RATE FOR UTILITIES TODAY.**

16 A. The market data suggests that capital costs for utilities are at relatively low
17 levels. The rates on 30-year utility bonds are at a historically low level. As
18 shown on page 2 of Exhibit JRW-3, the yield on long-term 'A' rated utility
19 bonds is only 4.14%. In addition, stock market volatility, as indicated by the
20 VIX, is back to below market norms after the spike in VIX levels last August.
21 Finally, utility stocks have proven to be steady performers over the past year
22 relative to the overall market. As such, equity cost rates for utilities would

1 appear to be at relative low levels. As demonstrated later in my testimony,
2 this observation is supported by the DCF and CAPM data for electric utilities.
3

4 III. PROXY GROUP SELECTION

5 **Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR**
6 **RATE OF RETURN RECOMMENDATION FOR KPC.**

7 A. To develop a fair rate of return recommendation for KPC, I evaluated the
8 return requirements of investors on the common stock of a proxy group of
9 publicly-held electric utility companies (“Electric Proxy Group”).
10

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

12 A. My Electric Proxy Group consists of thirty-two electric utility companies. The
13 selection criteria include the following:

14 1. Listed as Electric Utility by *Value Line Investment Survey* and listed as a
15 Electric Utility or Combination Electric & Gas company and *AUS Utilities*
16 *Report*;

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

19 3. An investment grade corporate credit rating as reported by S&P and a
20 investment grade bond rating as reported by *AUS Utilities Report*;

21 4. Has paid a cash dividend for three years, without a dividend cut;

22 5. Not involved in an acquisition of another utility, and/or is the target of an

1 acquisition, in the past six months; and

2 6. Analysts' long-term EPS growth rate forecasts available from Yahoo,
3 Reuters, and/or Zack's.

4
5 The Electric Proxy Group includes thirty-two companies. Summary
6 financial statistics for the proxy group are listed on page 1 of Exhibit JRW-4.¹
7 The median operating revenues and net plant for the Electric Proxy Group are
8 \$4,491.0M and \$9,774.2M, respectively. The group receives 77% of revenues
9 from regulated electric operations, has an A-/BBB+ bond rating from Standard
10 & Poor's, a current common equity ratio of 46.0%, and an earned return on
11 common equity of 10.4%.

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

14 **Q. WHAT CAPITAL STRUCTURE AND DEBT COST RATE ARE**
15 **PROPOSED BY KPC FOR THE ECR INVESTMENT?**

16 A. KPC Witness Ms. Munsey has proposed to use the capital structure and debt
17 cost rates that were approved in Case No. 2010-00318. This capital structure
18 includes 0% short-term debt, 4.12% accounts receivable financing, 51.94%
19 long-term debt, and 43.94% common equity. The associated senior capital

¹ In my testimony, I present financial results using both mean and medians as measures of central tendency. However, due to outliers, I have used the median as a measure of central tendency.

1 cost rates are 0.83% for short-term debt, 1.22% for accounts receivable
2 financing, and 6.48% for long-term debt (see Exhibit JRW-5).

3
4 **Q. WHAT CAPITAL STRUCTURE AND DEBT COST RATE ARE YOU**
5 **EMPLOYING FOR KPC?**

6 A. I will employ the Company's proposed capital structure and senior capital cost
7 rates.

8
9 **V. THE COST OF COMMON EQUITY CAPITAL**

10 **A. OVERVIEW**

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

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

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

3
4 **Q. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN**
5 **THE 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
8 the marginal investor would deem sufficient to compensate for risk and the
9 time value of money. In equilibrium, the expected and required rates of return
10 on a company's common stock are equal.

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

22 In the real world, firms can achieve competitive advantage due to
23 product market imperfections. Most notably, companies can gain competitive

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

9 James M. McTaggart, founder of the international management
10 consulting firm Marakon Associates, described this essential relationship
11 between the return on equity, the cost of equity, and the market-to-book ratio
12 in the following manner:²

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

26 A company's ROE over time, relative to its cost of
27 equity, also determines whether it is worth more or less
28 than its book value. If its ROE is consistently greater
29 than the cost of equity capital (the investor's minimum
30 acceptable return), the business is economically

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

1 profitable and its market value will exceed book value.
2 If, however, the business earns an ROE consistently
3 less than its cost of equity, it is economically
4 unprofitable and its market value will be less than book
5 value.

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

12
13 **Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE**
14 **RELATIONSHIP BETWEEN RETURN ON EQUITY AND MARKET-**
15 **TO-BOOK RATIOS.**

16 A. This relationship is discussed in a classic Harvard Business School case study
17 entitled "A Note on Value Drivers." On page 2 of that case study, the author
18 describes the relationship very succinctly:³

19 For a given industry, more profitable firms – those able
20 to generate higher returns per dollar of equity – should
21 have higher market-to-book ratios. Conversely, firms
22 which are unable to generate returns in excess of their
23 cost of equity should sell for 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>

³ Benjamin Esty, "A Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997.

1 To assess the relationship by industry, as suggested above, I
2 performed a regression study between estimated return on equity (“ROE”) and
3 market-to-book ratios using natural gas distribution, electric utility and water
4 utility companies. I used all companies in these three industries that are
5 covered by *Value Line* and have estimated ROE and market-to-book ratio
6 data. The results are presented in Panels A-C of Exhibit JRW-6. The
7 average R-squares for the electric, gas, and water companies are 0.65, 0.60,
8 and 0.92, respectively.⁴ This demonstrates the strong positive relationship
9 between ROEs and market-to-book ratios for public utilities.

10
11 **Q. WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF**
12 **EQUITY CAPITAL FOR PUBLIC UTILITIES?**

13 A. Exhibit JRW-7 provides indicators of public utility equity cost rates over the
14 past decade. Page 1 shows the yields on long-term ‘A’ rated public utility
15 bonds. These yields peaked in the early 2000s at over 8.0%, declined to about
16 5.0% in 2005, and rose to 6.0% in 2006 and 2007. They stayed in that 6.0%
17 range until the third quarter of 2008 when they spiked to almost 7.5% during
18 the financial crisis. They have since retreated and are now below 5.0%.

19 Page 2 of Exhibit JRW-7 provides the dividend yields for the proxy
20 group. The dividend yields for the Electric Proxy Group generally declined
21 over the decade until 2007. They increased in 2008 and 2009 in response to

⁴ 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 the financial crisis, but declined in the last two years and stood at 4.75% as of
2 2011.

3 Average earned returns on common equity and market-to-book ratios
4 for the group are on page 3 of Exhibit JRW-7. The average earned returns on
5 common equity for the Electric Proxy Group have been in the 9.0%-12.0%
6 range over the past decade, and ended 2011 at 10.0%. The average market-to-
7 book ratio for the group has been in the 1.20X to 1.80X during the decade.
8 The average bottomed out at 1.20X in 2009, but has since increased to 1.40X
9 as of 2011.

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

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

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

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

Exhibit JRW-8 provides an assessment of investment risk for 100 industries as measured by beta, which according to modern capital market theory, is the only relevant measure of investment risk. These betas come from the *Value Line Investment Survey* and are compiled annually by Aswath Damodaran of New York University.⁵ The study shows that the investment risk of utilities is very low. The average beta for electric, water, and gas utility companies are 0.73, 0.66, and 0.66, respectively. These are well below the *Value Line* average of 1.15. As such, the cost of equity for utilities is among the lowest of all industries in the U.S.

⁵ Available at <http://www.stern.nyu.edu/~adamodar>.

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

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

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

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

1 consideration the firm involved as well as current conditions in the economy
2 and the financial markets.

3
4 **Q. HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY**
5 **CAPITAL FOR THE COMPANY?**

6 A. I rely primarily on the discounted cash flow (“DCF”) model to estimate the
7 cost of equity capital. Given the investment valuation process and the relative
8 stability of the utility business, I believe that the DCF model provides the best
9 measure of equity cost rates for public utilities. It is my experience that this
10 Commission has traditionally relied on the DCF method. I have also
11 performed a capital asset pricing model (“CAPM”) study, but I give these
12 results less weight because I believe that risk premium studies, of which the
13 CAPM is one form, provide a less reliable indication of equity cost rates for
14 public utilities.

15
16 **B. DCF ANALYSIS**

17 **Q. DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF**
18 **MODEL.**

19 A. According to the DCF model, the current stock price is equal to the discounted
20 value of all future dividends that investors expect to receive from investment
21 in the firm. As such, stockholders’ returns ultimately result from current as
22 well as future dividends. As owners of a corporation, common stockholders
23 are entitled to a *pro rata* share of the firm’s earnings. The DCF model

1 presumes that earnings that are not paid out in the form of dividends are
2 reinvested in the firm so as to provide for future growth in earnings and
3 dividends. The rate at which investors discount future dividends, which
4 reflects the timing and riskiness of the expected cash flows, is interpreted as
5 the market's expected or required return on the common stock. Therefore, this
6 discount rate represents the cost of common equity. Algebraically, the DCF
7 model can be expressed as:

$$8 \quad P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_n}{(1+k)^n}$$

9
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11
12 where P is the current stock price, D_n is the dividend in year n, and k is the
13 cost of common equity.

14
15 **Q. IS THE DCF MODEL CONSISTENT WITH VALUATION**
16 **TECHNIQUES EMPLOYED BY INVESTMENT FIRMS?**

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

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

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

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

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

18
19 **Q. HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR**
20 **REQUIRED RATE OF RETURN USING THE DCF MODEL?**

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

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

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

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

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

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

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

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

Q. PLEASE DISCUSS EXHIBIT JRW-10.

A. My DCF analysis is provided in Exhibit JRW-10. The DCF summary is on page 1 of this Exhibit, and the supporting data and analysis for the dividend yield and expected growth rate are provided on the following pages of the Exhibit.

Q. WHAT DIVIDEND YIELDS ARE YOU EMPLOYING IN YOUR DCF ANALYSIS FOR THE PROXY GROUP?

A. The dividend yields on the common stock for the companies in the proxy group are provided on page 2 of Exhibit JRW-10 for the six-month period

1 ending February 2012. For the DCF dividend yields for the Group, I use the
2 average of the six month and February 2012 dividend yields. The table below
3 shows these dividend yields.
4

Proxy Group	February 2012 Dividend Yield	6-Month Median Dividend Yield	DCF Dividend Yield
Electric Proxy Group	4.4%	4.5%	4.45%

5
6 **Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE**
7 **SPOT DIVIDEND YIELD.**

8 A. According to the traditional DCF model, the dividend yield term relates to the
9 dividend yield over the coming period. As indicated by Professor Myron
10 Gordon, who is commonly associated with the development of the DCF model
11 for popular use, this is obtained by: (1) multiplying the expected dividend
12 over the coming quarter by 4 and (2) dividing this dividend by the current
13 stock price to determine the appropriate dividend yield for a firm, that pays
14 dividends on a quarterly basis.⁶

15 In applying the DCF model, some analysts adjust the current dividend
16 for growth over the coming year as opposed to the coming quarter. This can
17 be complicated because firms tend to announce changes in dividends at
18 different times during the year. As such, the dividend yield computed based
19 on presumed growth over the coming quarter as opposed to the coming year

⁶ *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).

1 can be quite different. Consequently, it is common for analysts to adjust the
2 dividend yield by some fraction of the long-term expected growth rate.

3

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

6 A. I will adjust the dividend yield by one-half (1/2) the expected growth so as to
7 reflect growth over the coming year. This is the approach employed by the
8 Federal Energy Regulatory Commission (“FERC”).⁷ The DCF equity cost
9 rate (“K”) is computed as:

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12

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

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

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

⁷ Opinion No. 414-A, *Transcontinental Gas Pipe Line Corp.*, 84 FERC ¶61,084 (1998).

1 **Q. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY**
2 **GROUP?**

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

12
13 **Q. PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND**
14 **DIVIDENDS AS WELL AS INTERNAL GROWTH.**

15 A. Historical growth rates for EPS, DPS, and BVPS are readily available to
16 investors and are presumably an important ingredient in forming expectations
17 concerning future growth. However, one must use historical growth numbers
18 as measures of investors’ expectations with caution. In some cases, past
19 growth may not reflect future growth potential. Also, employing a single
20 growth rate number (for example, for five or ten years), is unlikely to
21 accurately measure investors’ expectations due to the sensitivity of a single
22 growth rate figure to fluctuations in individual firm performance as well as
23 overall economic fluctuations (i.e., business cycles). However, one must

1 appraise the context in which the growth rate is being employed. According
2 to the conventional DCF model, the expected return on a security is equal to
3 the sum of the dividend yield and the expected long-term growth in dividends.
4 Therefore, to best estimate the cost of common equity capital using the
5 conventional DCF model, one must look to long-term growth rate
6 expectations.

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

15
16 **Q. PLEASE DISCUSS THE SERVICES THAT PROVIDE ANALYSTS' EPS**
17 **FORECASTS.**

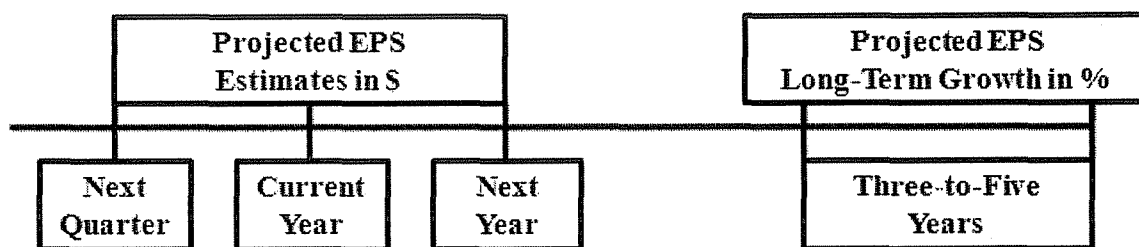
18 A. Analysts' EPS forecasts for companies are collected and published by a number
19 of different investment information services, including Institutional Brokers
20 Estimate System ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call and Reuters,
21 among others. Thompson Reuters publishes analysts' EPS forecasts under
22 different product names, including IBES, First Call, and Reuters. Bloomberg,
23 FactSet, and Zacks publish their own set of analysts' EPS forecasts for

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

13
14 **Q. PLEASE PROVIDE AN EXAMPLE.**

15 A. These services solicit the EPS forecasts of analysts of investment and financial
16 service firms and publish the average EPS estimates for future quarterly and
17 annual time periods as well as the average long-term EPS growth rate forecasts.
18 As shown in the figure below, the projected EPS near-term estimates are usually
19 provided for the next quarter, the current fiscal year, and the next fiscal year.
20 The long-term projected EPS growth rate is for a three-to-five year time period.

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Q. PLEASE PROVIDE AN EXAMPLE OF THESE EPS FORECASTS.

A. The following example provides the EPS forecasts compiled by Reuters for AEP.

Consensus Earnings Estimates
American Electric Power
www.reuters.com
February 24, 2012

	# of Estimates	Mean	High	Low
EARNINGS (per share)				
Quarter Ending Mar-12	10	0.83	0.95	0.77
Quarter Ending Jun-12	9	0.72	0.82	0.65
Year Ending Dec-12	21	3.16	3.25	3.07
Year Ending Dec-13	16	3.28	3.35	3.20
LT Growth Rate (%)	9	4.23	6.00	2.70

These figures can be interpreted as follows. The top line shows that ten analysts have provided EPS estimates for the quarter ending March 2012. The mean, high and low estimates are \$0.83, \$0.95, and \$0.77, respectively. The second line shows the quarterly EPS estimates for the quarter ending June 2012. Lines three and four show the annual EPS estimates for the fiscal years ending December 2012 and 2013. The quarterly and annual EPS forecasts in

1 lines 1-4 are expressed in dollars and cents. As in the AEP case shown here, it
2 is common for more analysts to provide estimates of annual EPS as opposed
3 to quarterly EPS. The long-term growth rate is expressed as a percent, and
4 there are usually fewer analysts providing this figure. For AEP, nine analysts
5 have provided long-term EPS growth rate forecasts, with mean, high and low
6 growth rates of 4.23%, 6.00%, and 2.70%.

7
8 **Q. WHICH OF THESE EPS FORECASTS IS USED IN DEVELOPING A**
9 **DCF GROWTH RATE?**

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

13
14 **Q. WHY ARE YOU NOT RELYING EXCLUSIVELY ON THE EPS**
15 **FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A**
16 **DCF GROWTH RATE FOR THE PROXY GROUP?**

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

1 well-known that the long-term EPS growth rate forecasts of Wall Street
2 securities analysts are overly optimistic and upwardly biased. This has been
3 demonstrated in a number of academic studies over the years. Hence, using
4 these growth rates as a DCF growth rate will provide an overstated equity cost
5 rate. This issue is discussed at length in Appendix B of this testimony.

6
7 **Q. IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE**
8 **UPWARD BIAS IN THE EPS GROWTH RATE FORECASTS?**

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

11
12 **Q. HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A**
13 **DCF EQUITY COST RATE STUDY?**

14 A. According to the DCF model, the equity cost rate is a function of the dividend
15 yield and expected growth rate. Since stock prices reflect the bias, it would
16 affect the dividend yield. In addition, the DCF growth rate needs to be adjusted
17 downward from the projected EPS growth rate to reflect the upward bias.

18
19 **Q. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE**
20 **COMPANIES IN THE GROUP AS PROVIDED IN THE *VALUE LINE***
21 ***INVESTMENT SURVEY.***

22 A. Historic growth rates for the companies in the Electric Proxy Group, as
23 published in the *Value Line Investment Survey*, are provided on page 3 of

1 Exhibit JRW-10. Due to the presence of outliers, I once again use the
2 medians in the analysis. The historical growth measures in EPS, DPS, and
3 BVPS for the Electric Proxy Group, as measured by the medians, range from -
4 1.0% to 7.3%, with an average of 3.9%.

5
6 **Q. PLEASE SUMMARIZE *VALUE LINE*'S PROJECTED GROWTH**
7 **RATES FOR THE COMPANIES IN THE PROXY GROUP.**

8 A. *Value Line*'s projections of EPS, DPS and BVPS growth for the companies in
9 the Electric Proxy Group are shown on page 4 of Exhibit JRW-10. As above,
10 due to the presence of outliers, both the mean and medians are used in the
11 analysis. For the Electric Proxy Group, the central tendency measure ranges
12 from 3.0% to 5.0%, with an average of 4.2%.

13 Also provided on page 4 of Exhibit JRW-10 are the sustainable or
14 prospective internal growth rates for the proxy group as measured by *Value*
15 *Line*'s average projected retention rate and return on shareholders' equity. As
16 noted above, sustainable or internal growth is significant and a primary driver
17 of long-run earnings growth. For the Electric Proxy Group, the average
18 prospective sustainable growth rate is 4.0%.

19
20 **Q. PLEASE ASSESS GROWTH FOR THE PROXY GROUP AS**
21 **MEASURED BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR**
22 **EPS GROWTH.**

1 A. Yahoo, Zack's, and Reuters collect, summarize, and publish Wall Street
2 analysts' five-year EPS growth rate forecasts for the companies in the proxy
3 group. These growth rate forecasts are available free of charge on the
4 internet. These forecasts are provided for the companies in the Electric Proxy
5 Group on page 5 of Exhibit JRW-10. The medians of the analysts' projected
6 EPS growth rates for the Electric Group is 4.2%.⁸

7 **Q. WHY HAVE YOU AVERAGED THE PROJECTED GROWTH RATES**
8 **OF THESE THREE SERVICES?**

9 A. I have averaged the expected five-year EPS growth rates from the three services
10 for each company to arrive at an expected EPS growth rate by company. There
11 are several reasons that I am averaging the published of the three services.
12 First, while these services do not indicate the analysts who have provided the
13 projected EPS growth rates, I believe there is overlap in analyst coverage
14 between the three services, and not all of the companies have forecasts from the
15 different services. Second, in addition to the upwardly biased nature of the
16 EPS growth rate forecasts of Wall Street analysts, it is obvious that there is
17 not one EPS growth rate forecast that is the consensus projected EPS growth
18 rate. For example, a review of page 5 of Exhibit JRW-10 indicates that only
19 two companies have the same expected growth rate from the three different
20 services (Cleco and MGE). In addition, whereas the ultimate source of the

⁸ Since there is considerable overlap in analyst coverage between the three services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the three services for each company to arrive at an expected EPS growth rate by company.

1 EPS growth rates forecasts of Yahoo and www.reuters.com is Thompson
2 Reuters, in many cases they publish different EPS growth rate forecasts for
3 the same company. For the companies in the Electric Proxy Group, Yahoo
4 and Reuters have the same forecast for only five of the 32 companies. Finally,
5 I am unaware of any studies that evaluate the coverage and accuracy of the
6 alternative providers of analysts' EPS growth rate forecasts. Therefore, in my
7 opinion, it is appropriate to average the results of the three sources.

8 **Q. ARE YOU ELIMINATING THE RESULTS FOR COMPANIES THAT**
9 **HAVE NEGATIVE PROJECTED EPS GROWTH RATES?**

10 A. No. Since I am using the results for all of companies in the Electric proxy
11 Group, it is not appropriate to eliminate EPS growth rates that are at the high
12 or low end of the distribution of the EPS growth rate forecasts. I have
13 employed the median as a measure of central tendency to reduce the impact of
14 extreme observations on the overall results.

15
16 **Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL**
17 **AND PROSPECTIVE GROWTH OF THE PROXY GROUP.**

18 A. The summary DCF growth rate indicators for the Electric Proxy Group are
19 shown on page 6 of Exhibit JRW-10. The average of the growth rate
20 indicators for the Electric Proxy Group is 4.1%. The average *Value Line's*
21 projected growth rates in EPS, DPS, and BVPS is 4.2% and *Value Line's*
22 sustainable growth rate is 4.0%. The average of analysts' projected EPS

1 growth rates is 4.2%. The average of the projected and prospective growth
 2 rate indicators for the Group is 4.1%. Given these results, and giving more
 3 weight to the projections, an expected DCF growth rate of 4.1% is reasonable.

4
 5 **Q. BASED ON THE ABOVE ANALYSIS, WHAT IS YOUR INDICATED**
 6 **COMMON EQUITY COST RATE FOR THE DCF MODEL?**

7 A. My DCF-derived equity cost rates for the group is:

8
 9
 10
 11 DCF Equity Cost Rate (k) = $\frac{D}{P}$ + g
 12
 13

14 **DCF Equity Cost Rates**

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	4.45%	1.02050	4.10%	8.6%

15
 16 These results are summarized on page 1 of Exhibit JRW-10.

17
 18 **C. CAPM RESULTS**

19 **Q. PLEASE DISCUSS THE CAPM.**

20 A. The CAPM is a risk premium approach to gauging a firm's cost of equity
 21 capital. According to the risk premium approach, the cost of equity is the sum
 22 of the interest rate on a risk-free bond (R_f) and a risk premium (RP), and is
 23 illustrated as follows:

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$$k = R_f + RP$$

The yield on long-term U.S. Treasury securities is normally used as R_f . Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock: (1) firm-specific risk or unsystematic risk and (2) market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

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

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

Where:

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

To estimate the required return or cost of equity using the CAPM requires three inputs: (1) the risk-free rate of interest (R_f), (2) the beta (β), and (3) the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it is the yield on long-term U.S. Treasury bonds. β , the measure of systematic risk, is a little more difficult to measure because there are different opinions about what adjustments, if any, should be made to

1 historical betas due to their tendency to regress to 1.0 over time. And finally,
2 an even more difficult input to measure is the expected equity or market risk
3 premium ($E(R_m) - (R_f)$). I discuss each of these inputs below.

4

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

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

8

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

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

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

16 A. The yield on 30-year Treasury bonds has been in the 3.0% to 4.0% range over
17 the last twelve months. These rates are currently at the lower end of this range
18 – hovering around 3.0%. Given the recent range of yields, and the prospect of
19 higher rates in the future, I will use 4.0%, as the risk-free rate, or R_f , in my
20 CAPM.

21

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

2 A. Beta (β) is a measure of the systematic risk of a stock. The market, usually
3 taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same
4 price movement as the market also has a beta of 1.0. A stock whose price
5 movement is greater than that of the market, such as a technology stock, is
6 riskier than the market and has a beta greater than 1.0. A stock with below
7 average price movement, such as that of a regulated public utility, is less risky
8 than the market and has a beta less than 1.0. Estimating a stock's beta involves
9 running a linear regression of a stock's return on the market return.

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

15 Numerous online investment information services, such as Yahoo and
16 Reuters, provide estimates of stock betas. Usually these services report
17 different betas for the same stock. The differences are usually due to: (1) the
18 time period over which the beta is measured and (2) any adjustments that are
19 made to reflect the fact that betas tend to regress to 1.0 over time. In
20 estimating an equity cost rate for the Electric Proxy Group, I use the betas for
21 the companies as provided in the *Value Line Investment Survey*. As shown on
22 page 3 of Exhibit JRW-11, the median beta for the companies in the Electric
23 Proxy Group is 0.70.

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

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

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

A. Page 4 of Exhibit JRW-11 highlights the primary approaches to, and issues in, estimating the expected equity risk premium. The traditional way to measure the equity risk premium was to use the difference between historical average stock and bond returns. In this case, historical stock and bond returns, also called ex post returns, were used as the measures of the market’s expected return (known as the ex ante or forward-looking expected return). This type of historical evaluation of stock and bond returns is often called the “Ibbotson Approach” after Professor Roger Ibbotson who popularized this method of using historical financial market returns as measures of expected returns. Most historical assessments of the equity risk premium suggest an equity risk

1 premium of 5% to 7% above the rate on long-term U.S. Treasury bonds.
2 However, this can be a problem because: (1) *ex post* returns are not the same
3 as *ex ante* expectations, (2) market risk premiums can change over time,
4 increasing when investors become more risk-averse and decreasing when
5 investors become less risk-averse, and (3) market conditions can change such
6 that *ex post* historical returns are poor estimates of *ex ante* expectations.

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

16 In addition, there are a number of surveys of financial professionals
17 regarding the equity risk premium. There have been several published surveys
18 of academics on the equity risk premium. *CFO Magazine* conducts a quarterly
19 survey of CFOs which includes questions regarding their views on the current
20 expected returns on stocks and bonds. Usually over 500 CFOs participate in

⁹ The problems with using *ex post* historical returns as measures of *ex ante* expectations will be discussed at length later in my testimony.

¹⁰ R. Mehra and Edward Prescott, “The Equity Premium: A Puzzle,” *Journal of Monetary Economics* (1985).

1 the survey.¹¹ Questions regarding expected stock and bond returns are also
2 included in the Federal Reserve Bank of Philadelphia’s annual survey of
3 financial forecasters which is published as the *Survey of Professional*
4 *Forecasters*.¹² This survey of professional economists has been published for
5 almost 50 years. In addition, Pablo Fernandez conducts occasional surveys of
6 financial analysts and companies regarding the equity risk premiums they use
7 in their investment and financial decision-making.

8
9 **Q. PLEASE PROVIDE A SUMMARY OF THE EQUITY RISK PREMIUM**
10 **STUDIES.**

11 A. Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed
12 the most comprehensive reviews to date of the research on the equity risk
13 premium.¹³ Derrig and Orr’s study evaluated the various approaches to
14 estimating equity risk premiums as well as the issues with the alternative
15 approaches and summarized the findings of the published research on the
16 equity risk premium. Fernandez examined four alternative measures of the
17 equity risk premium – historical, expected, required, and implied. He also
18 reviewed the major studies of the equity risk premium and presented the

¹¹ See www.cfosurvey.org.

¹² Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, (February 11, 2011). 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.

¹³ See Richard Derrig and 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 summary equity risk premium results. Song provides an annotated
2 bibliography and highlights the alternative approaches to estimating the equity
3 risk summary.

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

13
14 **Q. PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-11.**

15 A. Page 5 of Exhibit JRW-11 provides a summary of the results of the equity risk
16 premium studies that I have reviewed. These include the results of: (1) the
17 various studies of the historical risk premium, (2) *ex ante* equity risk premium
18 studies, (3) equity risk premium surveys of CFOs, Financial Forecasters,
19 analysts, companies and academics, and (4) the Building Block approaches to
20 the equity risk premium. There are results reported for over thirty studies, and
21 the median equity risk premium is 4.91%.

22

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

3 A. The studies cited on page 5 of Exhibit JRW-11 include all equity risk
4 premium studies and surveys I could identify that were published over the past
5 decade and that provided an equity risk premium estimate. Most of these
6 studies were published prior to the financial crisis of the past two years. In
7 addition, some of these studies were published in the early 2000s at the market
8 peak. It should be noted that many of these studies (as indicated) used data
9 over long periods of time (as long as fifty years of data) and so they were not
10 estimating an equity risk premium as of a point in time (e.g., the year 2001).
11 To assess the effect of the earlier studies on the equity risk premium, on page
12 6 of Exhibit JRW-11 I have reconstructed page 5 of Exhibit JRW-11, but I
13 have eliminated all studies dated before January 2, 2010. The median for this
14 subset of studies is 4.95%.

15
16 **Q. GIVEN THESE RESULTS, WHAT EQUITY RISK PREMIUM ARE**
17 **YOU USING IN YOUR CAPM?**

18 A. I use the median equity risk premium for the 2010-12 studies and surveys,
19 which is 4.95%.

20
21 **Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH**
22 **THE EQUITY RISK PREMIUMS USED BY CFOS?**

1 A. Yes. In the December CFO survey conducted by *CFO Magazine* and Duke
2 University, the expected 10-year equity risk premium was 4.3%.

3

4 **Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH**
5 **THE EQUITY RISK PREMIUMS OF PROFESSIONAL**
6 **FORECASTERS?**

7 A. Yes. The financial forecasters in the February 10, 2012 Federal Reserve Bank
8 of Philadelphia survey project both stock and bond returns. As shown on
9 Panels D and E of page 8 of Exhibit JRW-11, the median long-term expected
10 stock and bond returns were 6.8% and 4.0%, respectively. This provides an
11 *ex ante* equity risk premium of 2.8%.

12

13 **Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH**
14 **THE EQUITY RISK PREMIUMS OF FINANCIAL ANALYSTS AND**
15 **COMPANIES?**

16 A. Yes. Pablo Fernandez recently published the results of a 2011 survey of
17 financial analysts and companies. This survey included over 6,000 responses.
18 The median equity risk premium employed by both U.S. analysts and
19 companies was 5.0% and 5.2%.

20

21 **Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH**
22 **THE EQUITY RISK PREMIUMS USED BY THE LEADING**
23 **CONSULTING FIRMS?**

1 A. Yes. McKinsey & Co. is widely recognized as the leading management
2 consulting firm in the world. It published a study entitled “The Real Cost of
3 Equity” in which the McKinsey authors developed an *ex ante* equity risk
4 premium for the U.S. In reference to the decline in the equity risk premium,
5 as well as what is the appropriate equity risk premium to employ for corporate
6 valuation purposes, the McKinsey authors concluded the following:

7 We attribute this decline not to equities becoming less
8 risky (the inflation-adjusted cost of equity has not
9 changed) but to investors demanding higher returns in
10 real terms on government bonds after the inflation
11 shocks of the late 1970s and early 1980s. We believe
12 that using an equity risk premium of 3.5 to 4 percent in
13 the current environment better reflects the true long-
14 term opportunity cost of equity capital and hence will
15 yield more accurate valuations for companies.¹⁴

16

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

19 A. The results of my CAPM study for the proxy group are provided below:

20

21

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

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Electric Proxy Group	4.0%	0.70	4.95%	7.5%

22

These results are summarized on page 1 of Exhibit JRW-11.

23

24

VI. EQUITY COST RATE SUMMARY

¹⁴ Marc H. Goedhart, *et al.*, “The Real Cost of Equity,” *McKinsey on Finance* (Autumn 2002), p. 15.

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

2 A. The results for my DCF and CAPM analyses for the proxy group of electric
3 utility companies are indicated below:

	DCF	CAPM
Electric Proxy Group	8.6%	7.5%

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

6 A. These results indicate that the appropriate equity cost rate for the Electric
7 Proxy Group is in the 7.5% to 8.6% range. However, since I give primary
8 weight to the results of the DCF model, I believe that the appropriate equity
9 cost rate is in the upper end of this range. Hence, I will use 8.6% as my equity
10 cost rate for the group.

11

1 **Q. WHAT IS YOUR ESTIMATED EQUITY COST RATE FOR KPC?**

2 A. As indicated by its BBB bond rating, KPC's overall risk is slightly higher than
3 the Electric Proxy Group, which has an average bond rating of A-/BBB+. In
4 addition, KPC's proposed capital structure includes a common equity ratio of
5 43.94%, which is lower than the common equity ratio of the Electric Proxy
6 Group which is 46.0% (See Exhibit JRW-4). Page 2 of Exhibit JRW-1 shows
7 the average yields on 30-year, utility bonds rated BBB and BBB+ over the
8 past year. The average yield spread between the yields on the bonds of these
9 two rating classes is about 20 BPs. To account for the bond rating and
10 common equity risk differences, I will use 2X this yield differential, or 40
11 BPs, and a risk adjustment for KPC. Adding this risk adjustment factor and
12 the equity cost rate for the Electric Proxy Group, I estimate an equity cost rate
13 of 9.0% for KPC.

14
15 **Q. PLEASE INDICATE WHY A 9.0% RETURN IS APPROPRIATE FOR**
16 **KPC AT THIS TIME.**

17 A. There are several reasons why a 9.0% ROE is an appropriate for the Company
18 in this case. First, as shown in Exhibit JRW-8, the electric utility industry is
19 among the lowest risk industries as measured by *Value Line's* beta. As such,
20 the cost of equity capital for the industry is among the lowest in the U.S.
21 according to the CAPM. Second, as shown in Exhibit JRW-3, capital costs
22 for utilities, as indicated by long-term bond yields, have declined to
23 historically low levels. Third, the volatility of the stock market, as measured

1 by VIX, has declined significantly in recent months and is now below its
2 historic norms; Fourth, in the face of much market volatility in the past year,
3 utility stocks have proven to be relatively low risk, steady performers. And
4 Fifth, while the financial markets have recovered significantly since the
5 financial crisis, the economy has not. The economic times are still viewed as
6 being difficult, with over eight percent unemployment. As a result, interest
7 rates and inflation are at relatively low levels, and hence the expected returns
8 on financial assets – from savings accounts to Treasury bills to common
9 stocks – are low. Therefore, in my opinion, a 9.0% return is appropriate for
10 KPC.

11
12 **Q. WHAT IS YOUR CONCLUSION CONCERNING THE COST OF**
13 **CAPITAL?**

14 A. From a ratepayer perspective, the effect of the magnitude of the escalating
15 costs could be quite formidable. I have provided evidence that the cost of
16 capital for the Company is lower today compared to recent years. Capital
17 costs for utilities have declined significantly, especially in the last six months.
18 As such, using the 10.5% ROE from the last rate case is not appropriate. This
19 is especially relevant in this proceeding, given the fact that the risks associated
20 with ECR operations would appear to be lower than with the regular
21 operations of the utility.

22
23 **Q. ARE THERE ALTERNATIVE FINANCING PLANS THAT COULD**

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**OFFSET THE LARGE RATE INCREASES ASSOCIATED WITH THE
COMPANY'S ECR?**

A. Yes. It would appear that securitization is a financing plan to consider in this case. While I am not an expert in the matter, I am generally familiar with the concept. It is my understanding that a number of states have adopted laws that allow for securitization. The ultimate effect is to lower the company's financial risk while also helping to reduce financing costs for specific utility projects and thereby reduce end-users' bills.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

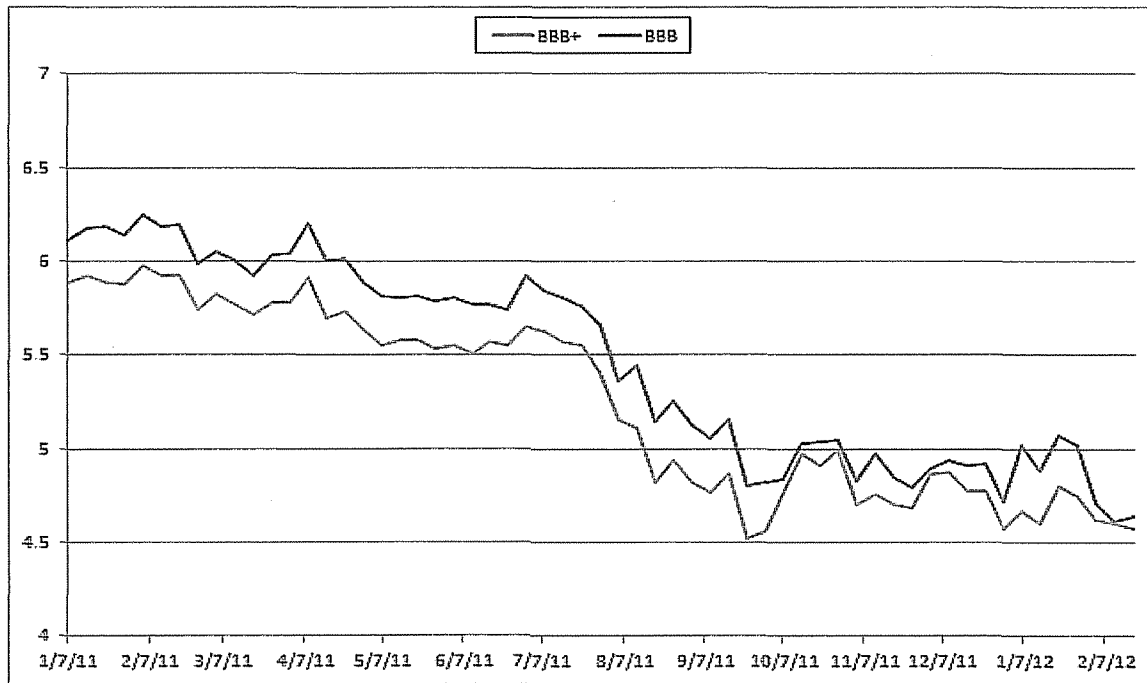
A. Yes, it does.

Exhibit JRW-1
Kentucky Power Company
Cost of Capital

Kentucky Power Company
Weighted Average Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Short-Term Debt	0.00%	0.83%	0.00%
A/R Financing	4.12%	1.22%	0.05%
Long-Term Debt	51.94%	6.48%	3.37%
Common Equity	43.94%	9.00%	3.95%
Total Capital	100.0%		7.37%

Exhibit JRW-1
Yield Differential - Long-Term Utility Bonds - Ratings BBB+ and BBB



Average Basis Point Differential - 21

Panel A
Ten-Year Treasury Yields
2010 and 2011

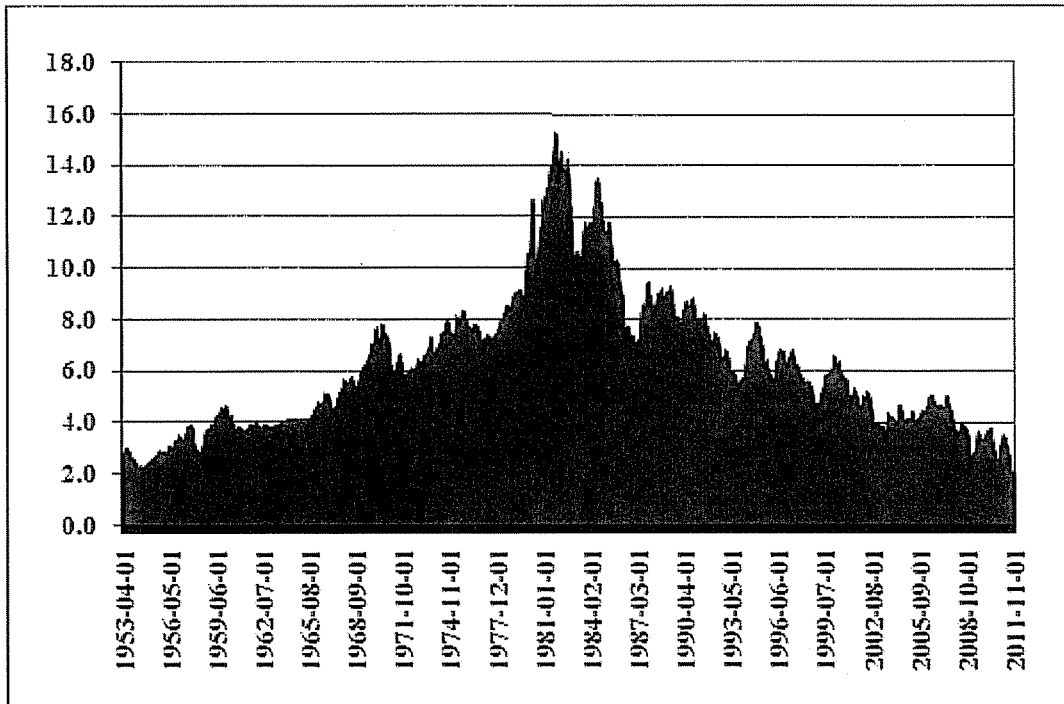
4/2/10	3.96	9/16/11	2.08
5/3/10	3.72	10/17/11	2.18
6/3/10	3.39	11/17/11	1.96
7/2/10	3.00	12/16/11	1.86
8/3/10	2.94	1/17/12	1.87
9/3/10	2.72	2/17/12	2.01
Average	3.29	Average	1.99

Panel B
Thirty-Year, BBB-Rated Public Utility Bonds
2010 and 2011

4/9/2010	6.34	9/23/11	4.80
05/07/10	5.92	10/28/11	5.05
06/04/10	5.90	11/25/11	4.80
7/9/10	5.84	12/23/11	4.92
8/6/10	5.71	1/20/12	5.07
9/3/10	5.53	2/17/12	4.64
Average	5.87	Average	4.88

Exhibit JRW-3

Panel A
Ten-Year Treasury Yields
1953-Present



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

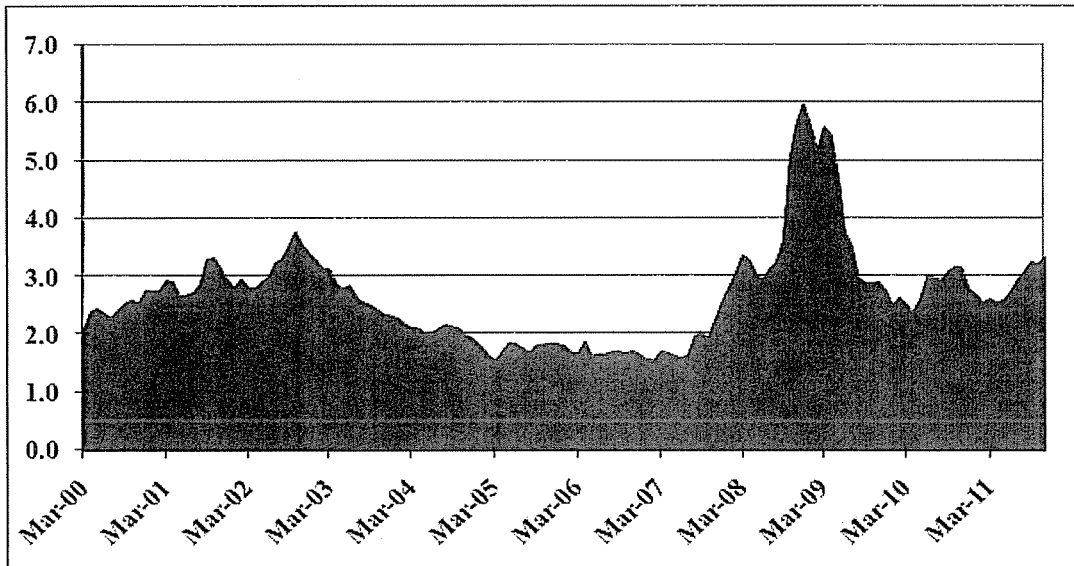
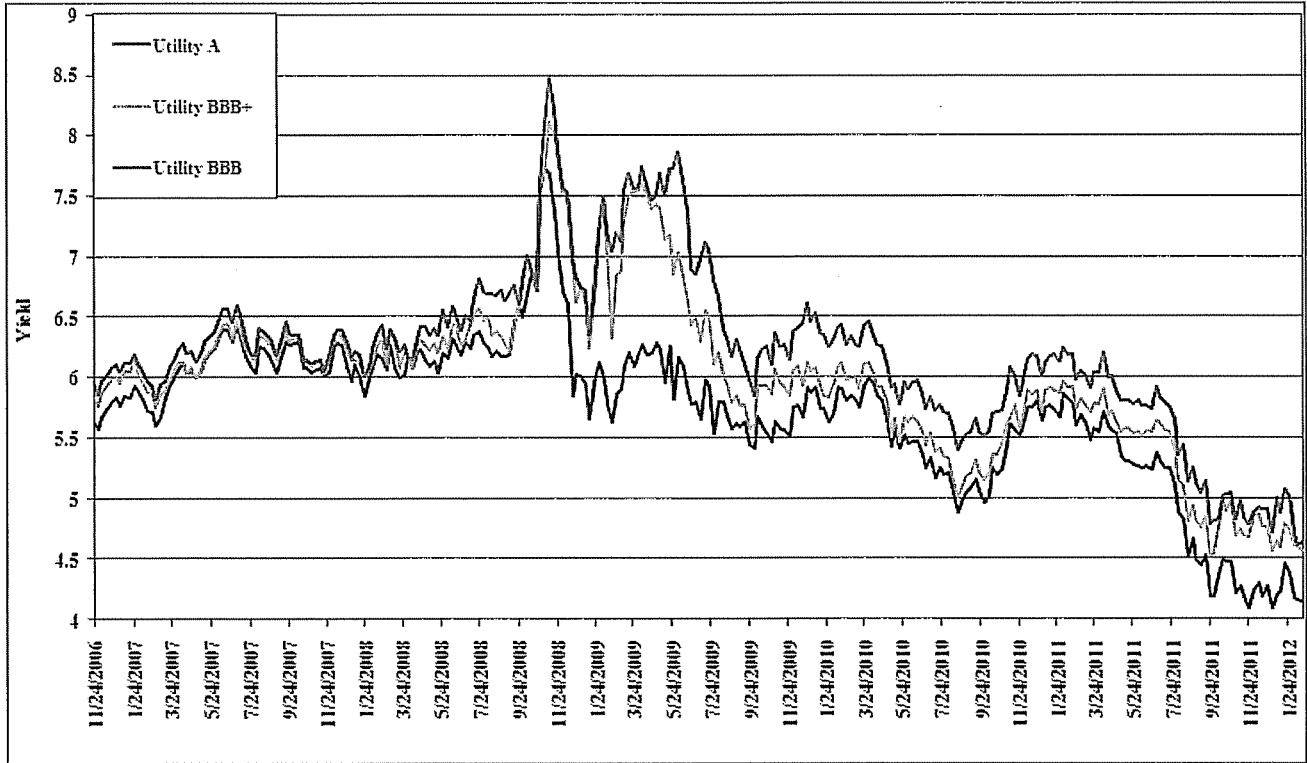


Exhibit JRW-3
Panel A
Thirty-Year Public Utility Yields



Panel B
Thirty-Year Public Utility Yield Spread Over Treasuries

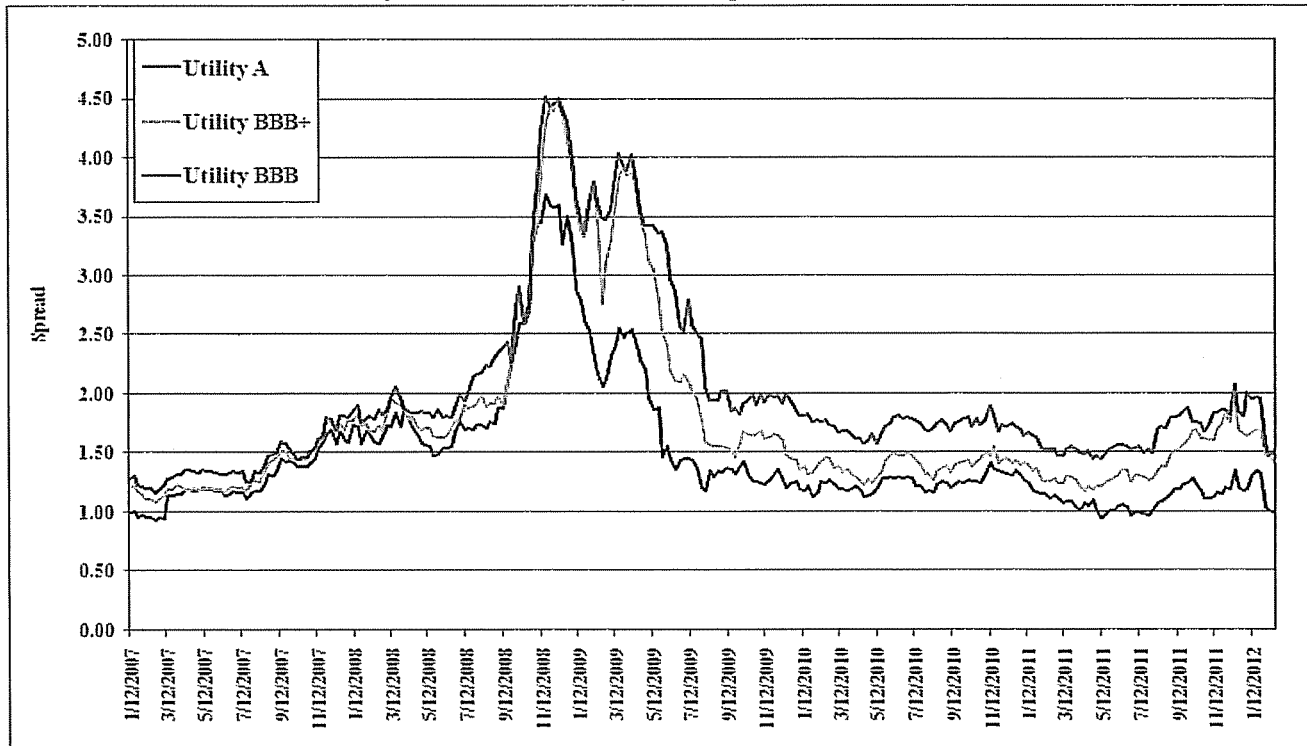
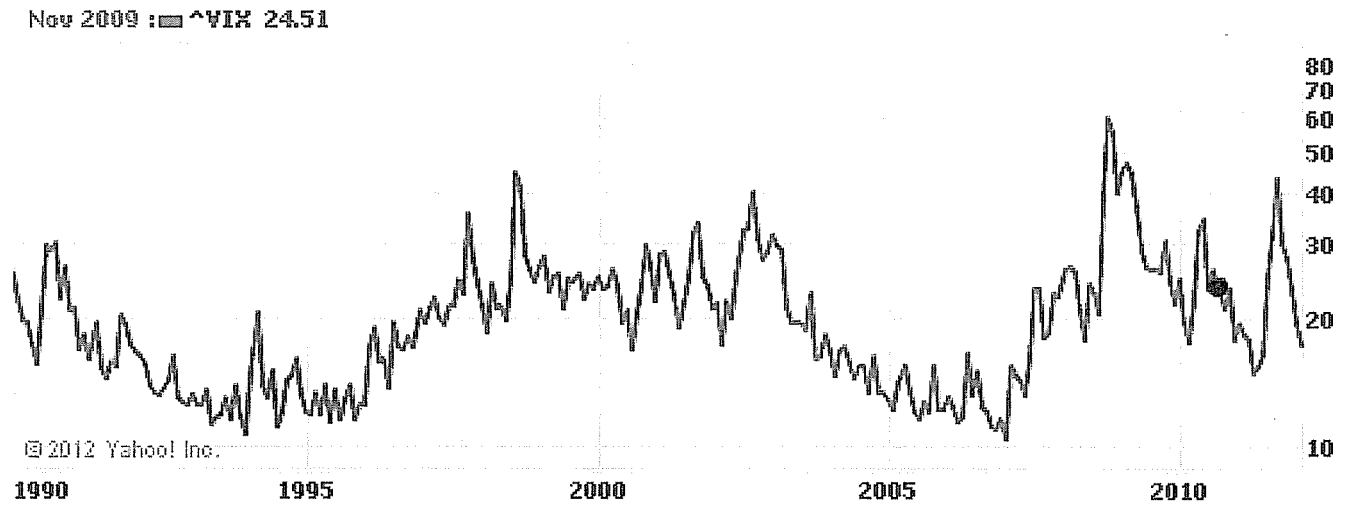


Exhibit JRW-3
Panel A
S&P 500 - VIX - 1990-Present



Panel B
S&P 500 - VIX - Last Year



Exhibit JRW-3

Dow Jones Utility Index vs. S&P 500 - 12 Months

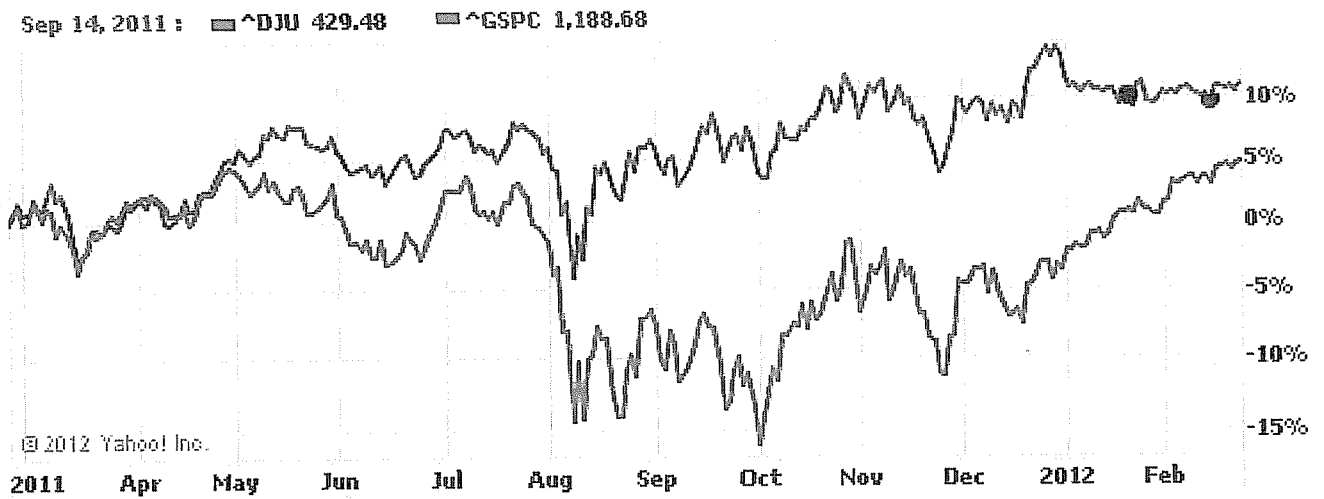


Exhibit JRW-4
Kentucky Power Company
Summary Financial Statistics

Electric Proxy Group

Company	Operating Revenue (\$mil)	Percent Elec Revenue	Percent Gas Revenue	Net Plant (\$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)	927.1	91		1,902.1	A-	Baa1	3.6	MN, WI	54.9	8.7	1.43
Alliant Energy Corporation (NYSE-LNT)	3,618.7	73	14	6,937.9	A-/BBB+	A2/A3	3.4	WS, IA, IL, MN	51.7	9.5	1.51
Ameren Corporation (NYSE-AEE)	7,717.0	86	14	17,873.0	BBB-	Baa2	3.1	IL, MO	52.1	6.9	0.98
American Electric Power Co. (NYSE-AEP)	15,106.0	93		36,417.0	BBB	Baa2	3.3	10 States	45.2	12.8	1.36
Avista Corporation (NYSE-AVA)	1,555.3	64	34	2,801.5	A-	Baa1	3.2	WA, OR, ID	46.3	8.9	1.25
Cleco Corporation (NYSE-CNL)	1,134.8	97		2,864.4	BBB	Baa2	3.5	LA	50.4	13.7	1.59
CMS Energy Corporation (NYSE-CMS)	6,565.0	59	37	10,410.0	BBB+	A3	2.4	MI	29.2	13.6	1.81
Consolidated Edison, Inc. (NYSE-ED)	13,111.0	69	14	24,651.0	A-	A3/Baa1	3.5	NY, PA	51.7	9.7	1.49
DTE Energy Company (NYSE-DTE)	8,897.0	58	19	13,422.0	A	A2	3.3	MI	46.4	10.5	1.30
Edison International (NYSE-EIX)	12,815.0	82		32,069.0	BBB+	A1	2.8	CA	42.9	8.9	1.20
Energy Corporation (NYSE-ETR)	11,273.1	77	2	24,799.0	A-/BBB+	Baa1	4.5	AK, LA, MS, TX	41.5	16.0	1.38
Exelon Corporation (NYSE-EXC)	19,428.0	50	3	31,882.0	A-	A2/A3	6.7		49.6	17.0	1.84
FirstEnergy Corporation (ASE-FE)	15,572.0	75		29,267.0	BBB	Baa1	2.6		42.4	8.5	1.36
Great Plains Energy Incorporated (NYSE-GXP)	2,299.5	100		6,974.7	BBB	Baa2	1.9	MO, KS	43.5	5.6	0.98
Hawaiian Electric Industries, Inc. (NYSE-HE)	3,087.0	91		3,248.7	BBB-	Baa2	3.2	HI	48.0	8.5	1.61
IDACORP, Inc. (NYSE-IDA)	1,028.1	100		3,356.0	A-	A2	3	ID	51.8	11.2	1.25
MGE Energy, Inc. (NYSE-MGEE)	551.4	68	30	985.5	AA-	A1	4.3	WI	60.2	11.7	1.86
Nextera Energy (NYSE-NEE)	14,890.0	72		41,117.0	A	Aa3	3.1	FL	39.8	10.5	1.68
OGE Energy Corp. (NYSE-OGE)	3,859.2	57	10	7,148.8	BBB+	Baa1	4.3	OK, AR	45.6	14.1	2.14
Pepco Holdings, Inc. (NYSE-POM)	6,203.0	73	4	8,020.0	A	A3	2	DC, MD, VA, NJ	47.3	6.3	1.04
PG&E Corporation (NYSE-PCG)	14,762.0	78	22	32,832.0	BBB	A3	3.3	CA	48.0	8.8	1.40
Pinnacle West Capital Corp. (NYSE-PNW)	3,267.8	99		9,625.4	BBB-	Baa2	3	AZ	49.1	8.8	1.34
Portland General Electric (NYSE-POR)	1,789.0	99		4,255.0	A-	A3	2.6	OR	47.9	8.8	1.13
PPL Corporation (NYSE-PPL)	10,382.0	54	3	26,922.0	A-	A3	3.6		36.5	14.6	1.50
SCANA Corporation (NYSE-SCG)	4,519.0	54	19	9,923.0	A-	A3	2.9	SC, NC, GA	42.3	10.3	1.49
Southern Company (NYSE-SO)	17,732.0	99		43,740.0	A	A2/A3	4.3	GA, AL, FL, MS	47.9	11.9	2.13
TECO Energy, Inc. (NYSE-TE)	3,368.2	61	14	5,884.0	BBB+	Baa1	3.2	FL	42.4	12.5	1.78
UIL Holdings Corporation (NYSE-UIL)	1,530.5	54	48	2,498.8	NR	Baa2	2.2		39.1	14.4	1.59
UniSource Energy Corporation (NYSE-UNS)	1,524.4	84	9	3,107.3	BBB+	NR	nA	AZ	32.1	13.6	1.52
Westar Energy, Inc. (NYSE-WR)	2,141.5	100		6,281.6	BBB+	Baa1	2.8	KS	44.8	8.6	1.28
Wisconsin Energy Corporation (NYSE-WEC)	4,463.0	70	28	9,999.1	A-	A1	3.4	WI	43.4	13.9	1.99
Xcel Energy Inc. (NYSE-XEL)	10,653.3	82	17	21,729.5	A	A3	3.1	MN, WI, ND, SD, MI	45.6	10.3	1.54
Mean	7,055.3	77	18	15,092.0	A-/BBB+	A3	3.3		45.6	10.9	1.49
1	4,491.0	76	14	9,774.2	A-/BBB+	A3	3.2		46.0	10.4	1.49

Source: AUS Utility Reports, February, 2012; Pre-Tax Interest Coverage and Primary Service Territory are from Value Line Investment Survey, 2012

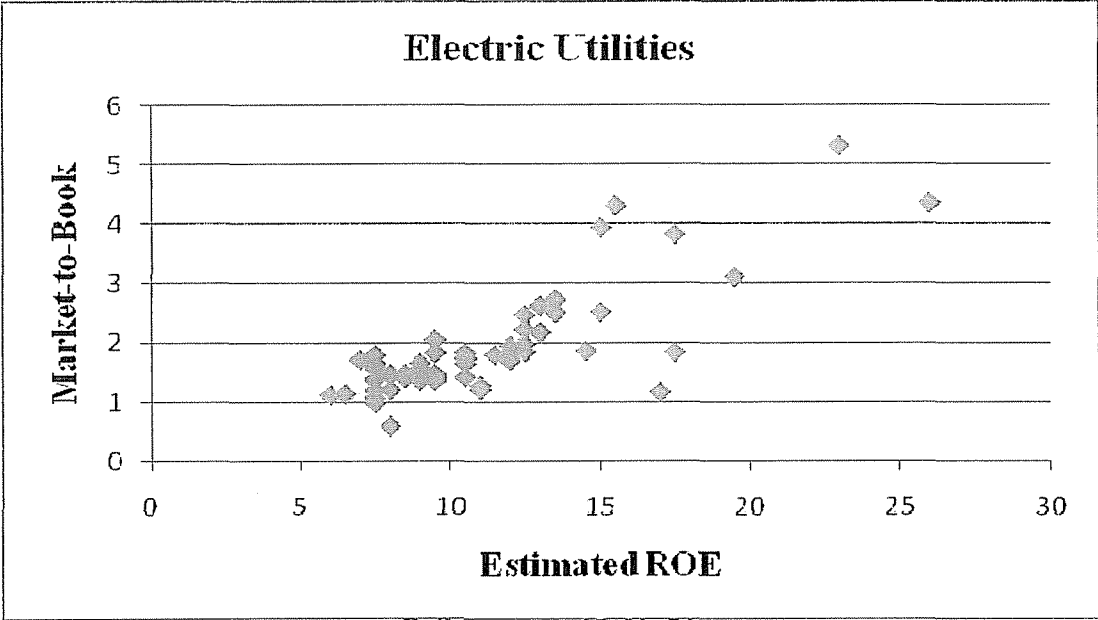
Exhibit JRW-5
Kentucky Power Company
Capital Structure Ratios and Debt Cost Rate

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

Capital Source	Capitalization Ratio	Cost Rate
Short-Term Debt	0.00%	0.83%
A/R Financing	4.12%	1.22%
Long-Term Debt	51.94%	6.48%
Common Equity	49.23%	
Total	100.00%	

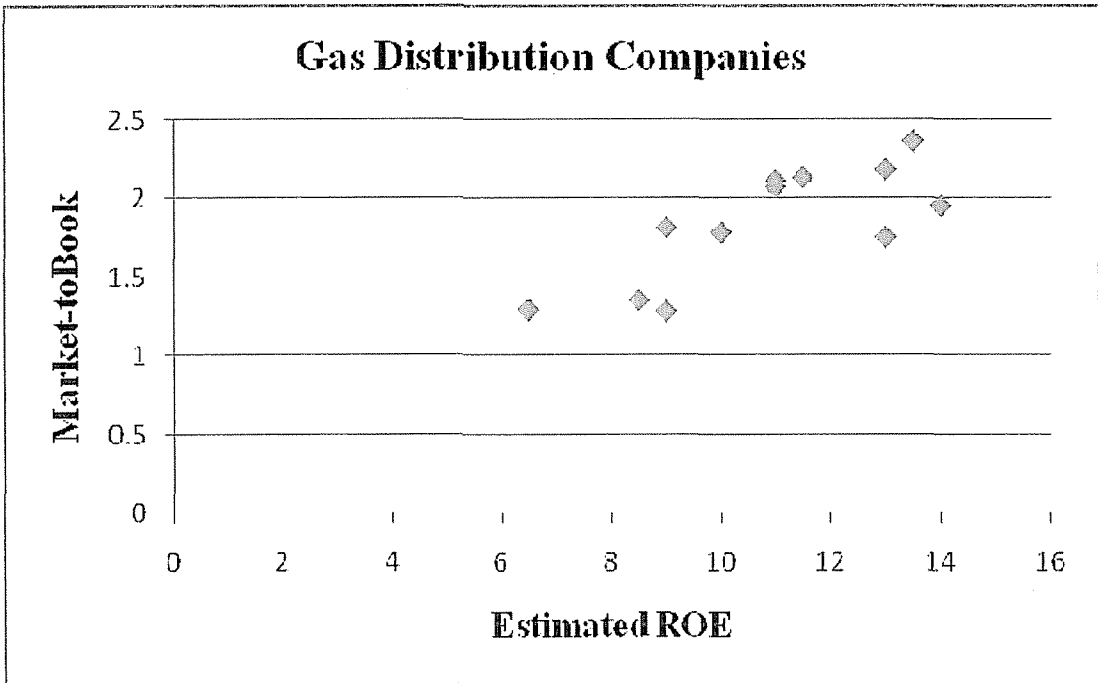
Exhibit JRW-6

Panel A



R-Square = .65, N=56.

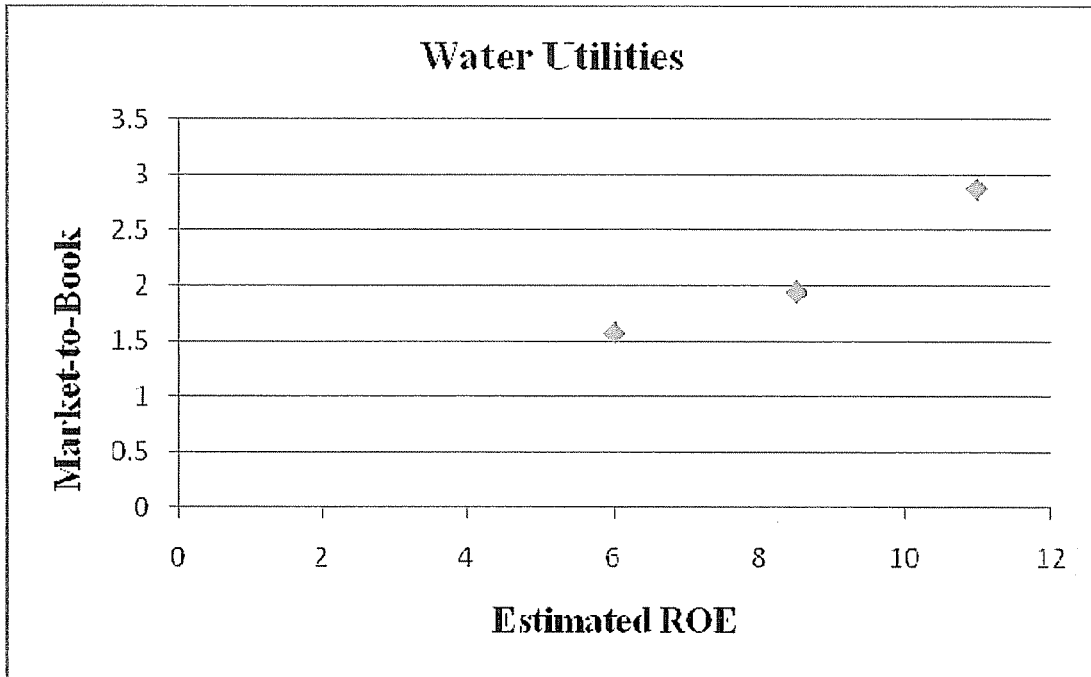
Panel B



R-Square = .60, N=12.

Exhibit JRW-6

Panel C



R-Square = .92, N=4.

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

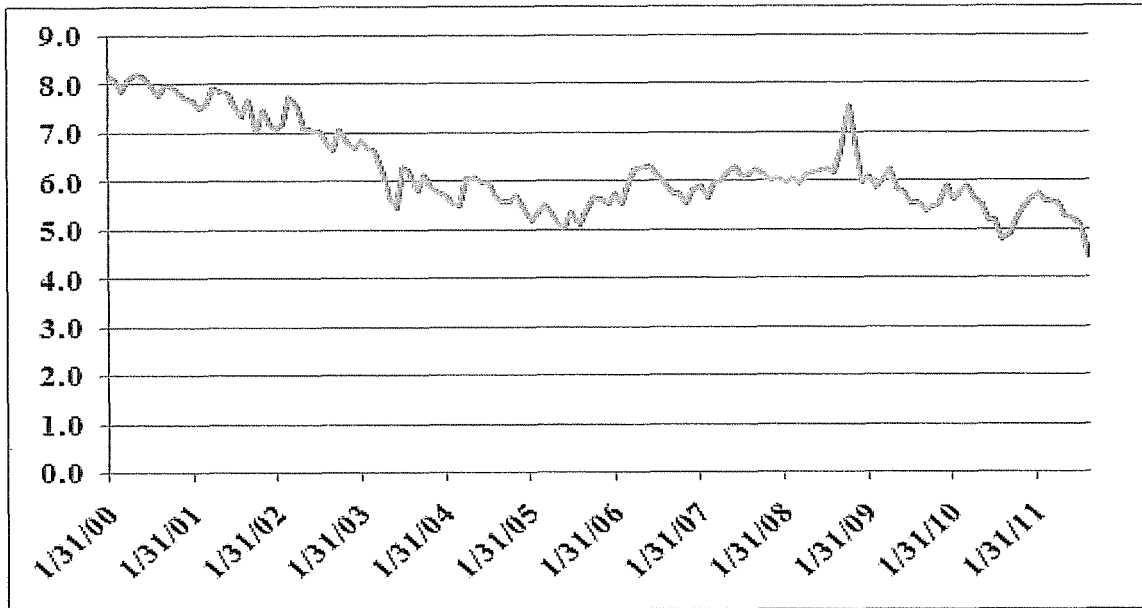
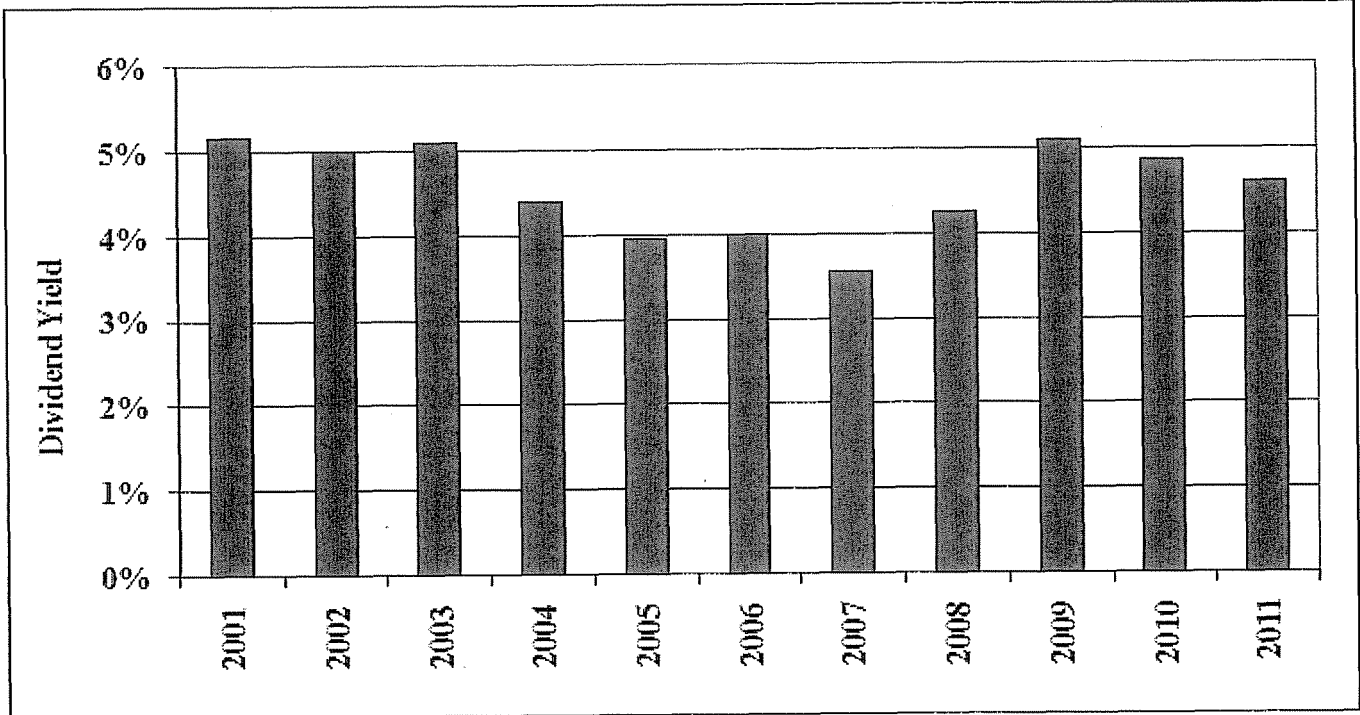


Exhibit JRW-7

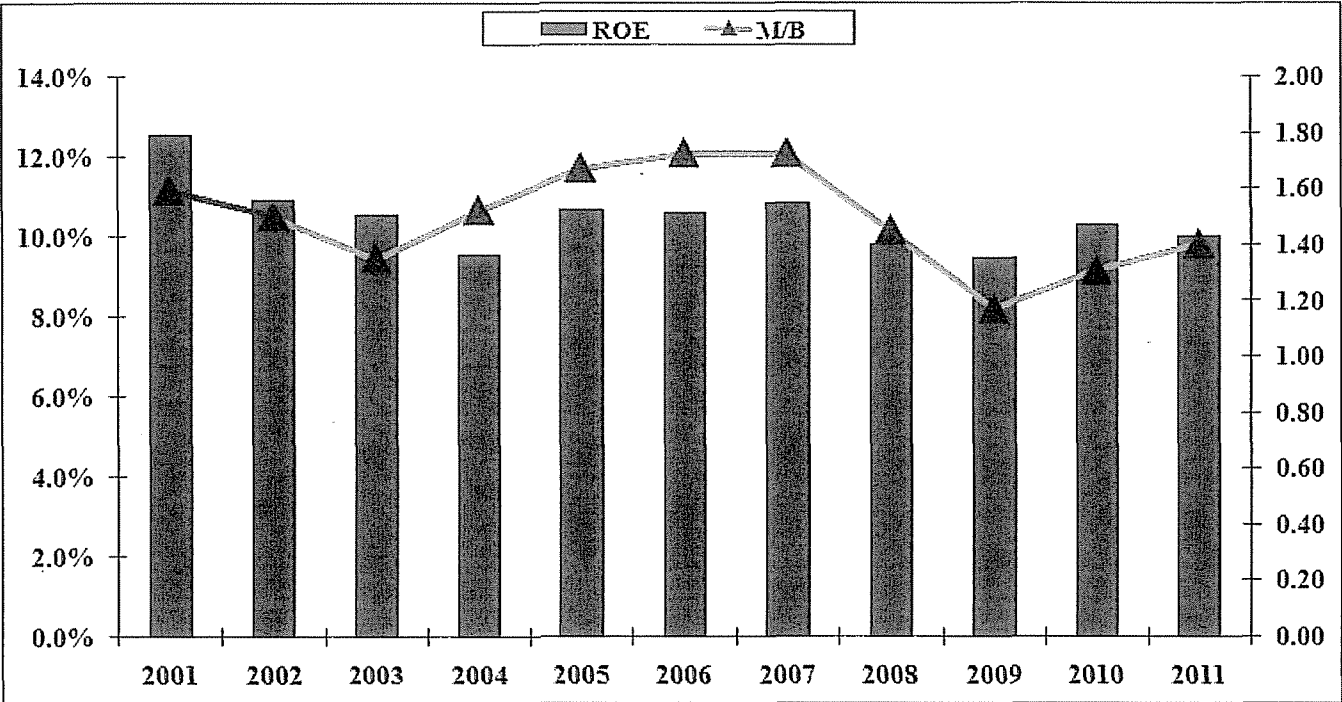
Electric Proxy Group Average Dividend Yield



Data Source: *Value Line Investment Survey.*

Exhibit JRW-7

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



Data Source: Value Line Investment Survey.

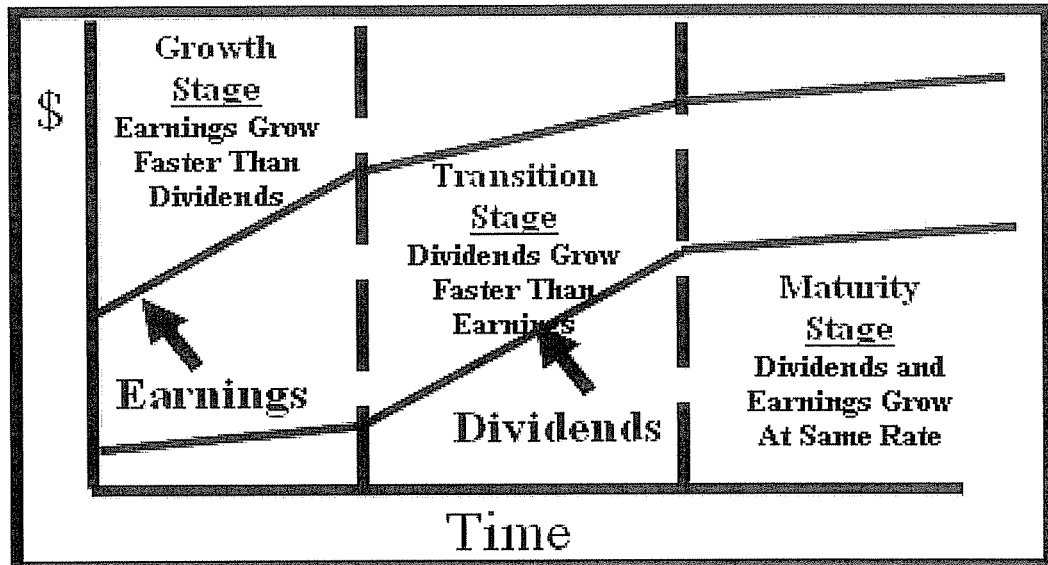
Exhibit JRW-8

Industry Average Betas

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

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

Exhibit JRW-9
Three-Stage DCF Model



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

Exhibit JRW-10

**Kentucky Power Company
Discounted Cash Flow Analysis**

Electric Proxy Group

Dividend Yield*	4.45%
Adjustment Factor	<u>1.0205</u>
Adjusted Dividend Yield	4.5%
Growth Rate**	<u>4.10%</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

Kentucky Power Company
Monthly Dividend Yields

Electric Proxy Group

Company	Sep	Oct	Nov	Dec	Jan	Feb	Mean
ALLETE, Inc. (NYSE-ALE)	4.9%	4.6%	4.7%	4.6%	4.5%	4.3%	4.6%
Alliant Energy Corporation (NYSE-LNT)	4.5%	4.2%	4.2%	4.1%	4.0%	4.0%	4.2%
Ameren Corporation (NYSE-AEE)	5.4%	5.0%	5.0%	4.8%	5.0%	4.9%	5.0%
American Electric Power Co. (NYSE-AEP)	5.0%	4.8%	4.8%	4.9%	4.7%	4.5%	4.8%
Avista Corporation (NYSE-AVA)	4.7%	4.5%	4.4%	4.5%	4.3%	4.4%	4.5%
Cleco Corporation (NYSE-CNL)	3.4%	3.2%	3.2%	3.5%	3.4%	3.4%	3.4%
CMS Energy Corporation (NYSE-CMS)	4.4%	4.1%	4.1%	4.1%	4.0%	3.8%	4.1%
Consolidated Edison, Inc. (NYSE-ED)	4.4%	4.1%	4.1%	4.1%	4.0%	4.1%	4.1%
DTE Energy Company (NYSE-DTE)	5.0%	4.6%	4.6%	4.6%	4.6%	4.4%	4.6%
Edison International (NYSE-EIX)	3.6%	3.4%	3.3%	3.2%	3.3%	3.2%	3.3%
Entergy Corporation (NYSE-ETR)	5.4%	4.9%	5.0%	4.8%	4.6%	4.7%	4.9%
Exelon Corporation (NYSE-EXC)	5.0%	4.8%	4.9%	4.8%	5.0%	5.3%	5.0%
FirstEnergy Corporation (ASE-FE)	5.3%	4.8%	4.9%	4.9%	4.9%	5.2%	5.0%
Great Plains Energy Incorporated (NYSE-GXP)	4.6%	4.2%	4.1%	4.0%	4.1%	4.0%	4.2%
Hawaiian Electric Industries, Inc. (NYSE-HE)	5.5%	5.0%	5.0%	4.7%	4.8%	4.8%	5.0%
IDACORP, Inc. (NYSE-IDA)	3.3%	3.1%	3.0%	3.0%	2.9%	2.9%	3.0%
MGE Energy, Inc. (NYSE-MGEE)	3.7%	3.7%	3.6%	3.6%	3.4%	3.5%	3.6%
Nextra Energy (NYSE-NEE)	4.1%	4.0%	4.0%	4.0%	3.8%	3.7%	3.9%
OGE Energy Corp. (NYSE-OGE)	3.3%	3.1%	3.0%	2.9%	2.8%	2.8%	3.0%
Pepco Holdings, Inc. (NYSE-POM)	5.8%	5.6%	5.6%	5.6%	5.5%	5.4%	5.6%
PG&E Corporation (NYSE-PCG)	4.4%	4.2%	4.3%	4.7%	4.6%	4.4%	4.4%
Pinnacle West Capital Corp. (NYSE-PNW)	5.0%	4.7%	4.6%	4.6%	4.5%	4.4%	4.6%
Portland General Electric (NYSE-POR)	4.7%	4.4%	4.4%	4.4%	4.3%	4.3%	4.4%
PPL Corporation (NYSE-PPL)	5.1%	4.8%	4.9%	4.8%	4.8%	5.0%	4.9%
SCANA Corporation (NYSE-SCG)	5.0%	4.7%	4.7%	4.6%	4.5%	4.4%	4.7%
Southern Company (NYSE-SO)	4.7%	4.4%	4.4%	4.4%	4.2%	4.2%	4.4%
TECO Energy, Inc. (NYSE-TE)	5.0%	4.7%	4.9%	4.7%	4.7%	4.6%	4.8%
UIL Holdings Corporation (NYSE-UIL)	5.4%	5.2%	5.2%	5.2%	5.1%	5.0%	5.2%
UniSource Energy Corporation (NYSE-UNS)	4.7%	4.5%	4.5%	4.6%	4.6%	4.6%	4.6%
Westar Energy, Inc. (NYSE-WR)	5.1%	4.8%	4.7%	4.7%	4.7%	4.5%	4.8%
Wisconsin Energy Corporation (NYSE-WEC)	3.4%	3.3%	3.2%	3.2%	3.1%	3.0%	3.2%
Xcel Energy Inc. (NYSE-XEL)	4.5%	4.1%	4.1%	4.0%	3.9%	3.9%	4.1%
Mean	4.6%	4.4%	4.4%	4.3%	4.3%	4.2%	4.4%
Median	4.7%	4.5%	4.5%	4.6%	4.5%	4.4%	4.5%

Data Source: AUS Utility Reports , monthly issues.

Exhibit JRW-10

Kentucky Power Company
DCF Equity Cost Growth Rate Measures
Value Line Historic Growth Rates

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)				3.5%	17.5%	6.0%
Alliant Energy Corporation (NYSE-LNT)	3.0%	-3.5%	1.0%	9.0%	0.5%	3.5%
Ameren Corporation (NYSE-AEE)	-0.5%	-3.0%	3.5%	-1.5%	-6.0%	2.5%
American Electric Power Co. (NYSE-AEP)	2.5%	-3.5%	1.0%	2.0%	2.0%	5.0%
Avista Corporation (NYSE-AVA)	4.0%	2.0%	4.0%	11.5%	10.0%	4.0%
Cleco Corporation (NYSE-CNL)	4.5%	1.0%	7.5%	7.5%	0.5%	11.0%
CMS Energy Corporation (NYSE-CMS)	-7.5%	-9.5%	-6.0%	17.5%		1.5%
Consolidated Edison, Inc. (NYSE-ED)	1.0%	1.0%	3.5%	4.0%	1.0%	4.5%
DTE Energy Company (NYSE-DTE)		0.5%	3.5%	2.5%	1.0%	3.5%
Edison International (NYSE-EIX)		2.5%	9.5%	10.0%	15.5%	10.5%
Entergy Corporation (NYSE-ETR)	10.0%	9.0%	4.0%	10.0%	10.5%	4.0%
Exelon Corporation (NYSE-EXC)	9.5%		5.0%	8.0%	10.5%	6.5%
FirstEnergy Corporation (ASE-FE)	4.5%	4.0%	3.5%	9.0%	5.0%	1.0%
Great Plains Energy Incorporated (NYSE-GXP)	-3.5%	-4.0%	4.0%	-11.5%	-8.0%	7.0%
Hawaiian Electric Industries, Inc. (NYSE-HE)	-2.5%		2.0%	-6.0%		1.0%
IDACORP, Inc. (NYSE-IDA)	-0.5%	-4.5%	3.5%	11.0%	-2.5%	4.5%
MGE Energy, Inc. (NYSE-MGEE)	4.5%	1.0%	6.5%	7.0%	1.5%	6.5%
Nextera Energy (NYSE-NEE)	8.0%	6.0%	7.5%	12.0%	7.5%	9.0%
OGE Energy Corp. (NYSE-OGE)	3.5%	0.5%	5.0%	9.0%	1.5%	8.5%
Pepco Holdings, Inc. (NYSE-POM)	-0.5%		0.5%	-0.5%	1.5%	1.0%
PG&E Corporation (NYSE-PCG)		3.5%	5.5%	7.0%		10.5%
Pinnacle West Capital Corp. (NYSE-PNW)	-2.5%	4.5%	2.5%	0.5%	3.0%	0.5%
Portland General Electric (NYSE-POR)				7.5%		2.0%
PPL Corporation (NYSE-PPL)	4.5%	9.5%	9.5%	1.0%	10.0%	7.0%
SCANA Corporation (NYSE-SCG)	4.5%	3.5%	4.0%	2.0%	5.0%	4.5%
Southern Company (NYSE-SO)	2.0%	2.5%	2.5%	2.5%	4.0%	5.5%
TECO Energy, Inc. (NYSE-TE)	-5.5%	-4.5%	-1.5%	12.0%	-0.5%	5.0%
UIL Holdings Corporation (NYSE-UIL)	-1.0%			7.5%		-2.0%
UniSource Energy Corporation (NYSE-UNS)	7.0%		8.0%	8.5%	13.0%	4.5%
Westar Energy, Inc. (NYSE-WR)		-4.5%	-3.0%	1.0%	7.0%	6.0%
Wisconsin Energy Corporation (NYSE-WEC)	8.0%	-1.0%	6.0%	8.5%	10.0%	7.5%
Xcel Energy Inc. (NYSE-XEL)	-1.0%	-4.0%		4.0%	4.0%	4.0%
Mean	2.2%	0.4%	3.7%	5.5%	4.6%	4.9%
Median	2.8%	1.0%	3.8%	7.3%	4.0%	4.5%
	Average of Median Figures =			3.9%		

Data Source: Value Line Investment Survey.

Exhibit JRW-10

Kentucky Power Company
DCF Equity Cost Growth Rate Measures
Value Line Projected Growth Rates

Company	Value Line			Value Line		
	Projected Growth Est'd. '08-'10 to '14-'16			Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	6.0%	2.0%	3.5%	9.5%	38.0%	3.6%
Alliant Energy Corporation (NYSE-LNT)	6.5%	6.0%	3.0%	11.5%	36.0%	4.1%
Ameren Corporation (NYSE-AEE)	-2.0%	-1.0%	1.5%	7.0%	30.0%	2.1%
American Electric Power Co. (NYSE-AEP)	4.5%	4.0%	5.0%	10.5%	45.0%	4.7%
Avista Corporation (NYSE-AVA)	4.5%	9.0%	3.0%	9.0%	32.0%	2.9%
Cleco Corporation (NYSE-CNL)	6.0%	9.5%	6.5%	9.5%	41.0%	3.9%
CMS Energy Corporation (NYSE-CMS)	7.0%	14.0%	5.0%	12.5%	41.0%	5.1%
Consolidated Edison, Inc. (NYSE-ED)	3.0%	1.0%	3.0%	9.0%	38.0%	3.4%
DTE Energy Company (NYSE-DTE)	4.5%	4.0%	3.5%	9.0%	37.0%	3.3%
Edison International (NYSE-EIX)	0.5%	2.5%	5.0%	8.5%	54.0%	4.6%
Entergy Corporation (NYSE-ETR)	0.5%	2.0%	5.5%	10.5%	46.0%	4.8%
Exelon Corporation (NYSE-EXC)	-3.0%	0.0%	4.0%	13.5%	37.0%	5.0%
FirstEnergy Corporation (ASE-FE)	0.5%	0.5%	4.5%	10.0%	38.0%	3.8%
Great Plains Energy Incorporated (NYSE-GXP)	6.0%	0.0%	2.0%	8.0%	40.0%	3.2%
Hawaiian Electric Industries, Inc. (NYSE-HE)	11.0%	1.0%	3.5%	10.5%	37.0%	3.9%
IDACORP, Inc. (NYSE-IDA)	4.0%	4.0%	5.0%	8.0%	45.0%	3.6%
MGE Energy, Inc. (NYSE-MGEE)	4.0%	2.0%	4.0%	12.0%	45.0%	5.4%
Nextera Energy (NYSE-NEE)	4.5%	5.0%	6.5%	12.0%	53.0%	6.4%
OGE Energy Corp. (NYSE-OGE)	6.5%	4.0%	7.5%	12.0%	57.0%	6.8%
Pepco Holdings, Inc. (NYSE-POM)	2.5%	1.0%	2.0%	8.0%	31.0%	2.5%
PG&E Corporation (NYSE-PCG)	5.0%	3.0%	5.0%	11.0%	50.0%	5.5%
Pinnacle West Capital Corp. (NYSE-PNW)	6.0%	2.0%	2.5%	9.0%	34.0%	3.1%
Portland General Electric (NYSE-POR)	7.5%	3.0%	3.0%	9.0%	47.0%	4.2%
PPL Corporation (NYSE-PPL)	5.0%	3.0%	7.5%	11.0%	38.0%	4.2%
SCANA Corporation (NYSE-SCG)	3.5%	2.0%	5.0%	9.5%	41.0%	3.9%
Southern Company (NYSE-SO)	5.0%	4.0%	5.5%	12.5%	31.0%	3.9%
TECO Energy, Inc. (NYSE-TE)	9.0%	4.5%	4.5%	13.0%	36.0%	4.7%
UIL Holdings Corporation (NYSE-UIL)	3.0%	0.0%	5.0%	8.5%	38.0%	3.2%
UniSource Energy Corporation (NYSE-UNS)	9.5%	9.0%	5.0%	12.5%	40.0%	5.0%
Westar Energy, Inc. (NYSE-WR)	8.5%	3.0%	2.5%	10.0%	41.0%	4.1%
Wisconsin Energy Corporation (NYSE-WEC)	8.5%	16.0%	4.0%	14.0%	40.0%	5.6%
Xcel Energy Inc. (NYSE-XEL)	5.0%	5.0%	4.5%	10.0%	37.0%	3.7%
Mean	4.8%	3.9%	4.3%	10.3%	40.4%	4.2%
Median	5.0%	3.0%	4.5%	10.0%	39.0%	4.0%
Average of Median Figures =		4.2%				4.0%

Data Source: Value Line Investment Survey.

Exhibit JRW-10

Kentucky Power Company
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates

Electric Proxy Group				
Company	Yahoo	Zack's	Reuters	Average
ALLETE, Inc. (NYSE-ALE)	5.0%	5.0%	6.5%	5.5%
Alliant Energy Corporation (NYSE-LNT)	4.8%	6.0%	5.3%	5.4%
Ameren Corporation (NYSE-AEE)	-1.0%	4.0%	-1.9%	0.4%
American Electric Power Co. (NYSE-AEP)	3.8%	4.3%	4.2%	4.1%
Avista Corporation (NYSE-AVA)	4.0%	4.7%	4.5%	4.4%
Cleco Corporation (NYSE-CNL)	3.0%	N/A	3.0%	3.0%
CMS Energy Corporation (NYSE-CMS)	6.1%	5.5%	6.1%	5.9%
Consolidated Edison, Inc. (NYSE-ED)	3.6%	3.7%	3.7%	3.7%
DTE Energy Company (NYSE-DTE)	4.1%	4.2%	3.8%	4.0%
Edison International (NYSE-EIX)	3.0%	5.0%	3.0%	3.7%
Entergy Corporation (NYSE-ETR)	-3.9%	2.0%	-0.1%	-0.7%
Exelon Corporation (NYSE-EXC)	-7.2%	0.0%	-2.0%	-3.1%
FirstEnergy Corporation (ASE-FE)	1.4%	1.0%	3.0%	1.8%
Great Plains Energy Incorporated (NYSE-GXP)	4.1%	7.0%	4.4%	5.2%
Hawaiian Electric Industries, Inc. (NYSE-HE)	11.4%	6.5%	8.4%	8.8%
IDACORP, Inc. (NYSE-IDA)	4.0%	5.0%	4.7%	4.6%
MGE Energy, Inc. (NYSE-MGEE)	4.0%	4.0%	4.0%	4.0%
Nextera Energy (NYSE-NEE)	5.2%	6.4%	5.7%	5.8%
OGE Energy Corp. (NYSE-OGE)	7.7%	5.9%	6.8%	6.8%
Pepco Holdings, Inc. (NYSE-POM)	2.2%	4.0%	4.9%	3.7%
PG&E Corporation (NYSE-PCG)	2.3%	4.3%	3.5%	3.4%
Pinnacle West Capital Corp. (NYSE-PNW)	4.8%	5.3%	5.5%	5.2%
Portland General Electric (NYSE-POR)	5.9%	5.0%	5.7%	5.5%
PPL Corporation (NYSE-PPL)	4.6%	N/A	2.9%	3.8%
SCANA Corporation (NYSE-SCG)	4.2%	4.0%	4.3%	4.2%
Southern Company (NYSE-SO)	5.9%	5.0%	5.8%	5.6%
TECO Energy, Inc. (NYSE-TE)	4.2%	3.7%	4.6%	4.2%
UIL Holdings Corporation (NYSE-UIL)	4.1%	4.0%	4.0%	4.0%
UniSource Energy Corporation (NYSE-UNS)	3.0%	2.6%	3.0%	2.9%
Westar Energy, Inc. (NYSE-WR)	4.2%	6.1%	5.0%	5.1%
Wisconsin Energy Corporation (NYSE-WEC)	6.0%	6.3%	7.3%	6.5%
Xcel Energy Inc. (NYSE-XEL)	4.9%	5.1%	5.1%	5.0%
Mean	3.7%	4.5%	4.2%	4.1%
Median	4.1%	4.9%	4.5%	4.2%

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, February 24, 2011.

Exhibit JRW-10

Kentucky Power Company
DCF Growth Rate Indicators

Electric Proxy Group
Summary Growth Rates

Growth Rate Indicator	Proxy Group
Historic <i>Value Line</i> Growth in EPS, DPS, and BVPS	3.9%
Projected <i>Value Line</i> Growth in EPS, DPS, and BVPS	4.2%
Sustainable Growth ROE * Retention Rate	4.0%
Projected EPS Growth from First Call, Zacks, and Reuters	4.2%
Average of Historic and Projected Growth Rates	4.1%
Average of Sustainable and Projected Growth Rates	4.1%

Exhibit JRW-11

**Kentucky Power Company
Capital Asset Pricing Model**

Electric Proxy Group

Risk-Free Interest Rate	4.00%
Beta*	0.70
<u>Ex Ante Equity Risk Premium**</u>	<u>4.95%</u>
CAPM Cost of Equity	7.5%

* See page 3 of Exhibit JRW-11

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

Exhibit JRW-11

Ten-Year U.S. Treasury Yields
January 2000-Present

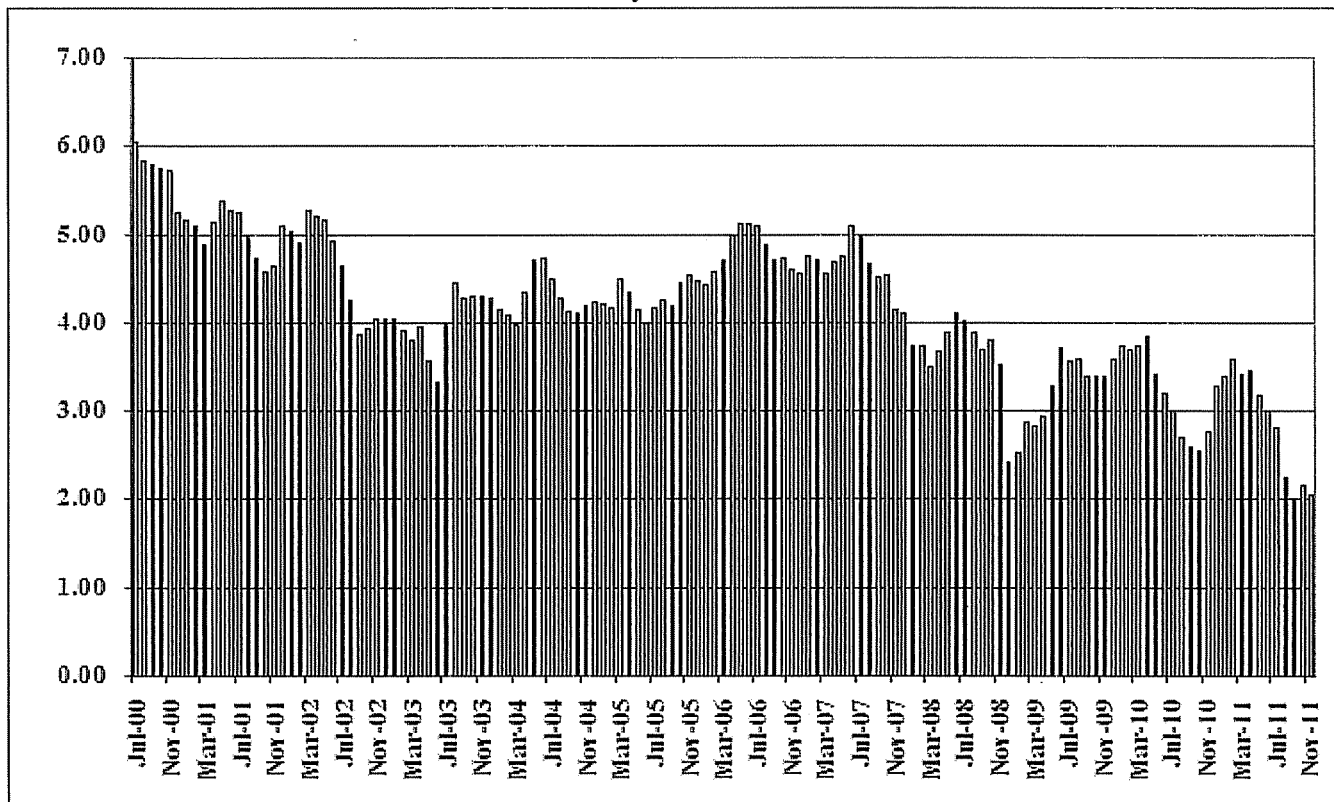
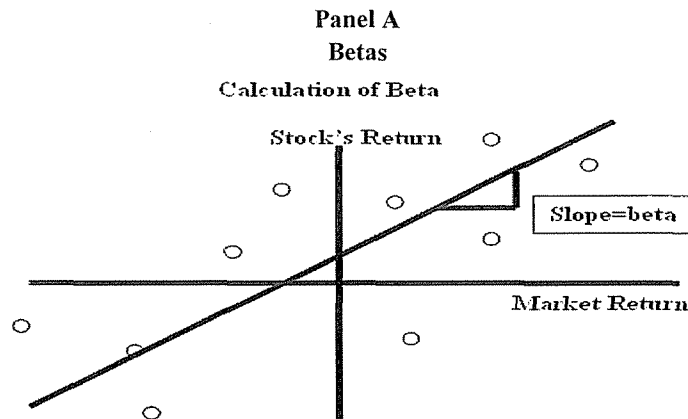


Exhibit JRW-11



Electric Proxy Group

Company Name	Beta
ALLETE, Inc. (NYSE-ALE)	0.70
Alliant Energy Corporation (NYSE-LNT)	0.75
Ameren Corporation (NYSE-AEE)	0.80
American Electric Power Co. (NYSE-AEP)	0.70
Avista Corporation (NYSE-AVA)	0.70
Cleco Corporation (NYSE-CNL)	0.70
CMS Energy Corporation (NYSE-CMS)	0.75
Consolidated Edison, Inc. (NYSE-ED)	0.60
DTE Energy Company (NYSE-DTE)	0.75
Edison International (NYSE-EIX)	0.80
Entergy Corporation (NYSE-ETR)	0.70
Exelon Corporation (NYSE-EXC)	0.80
FirstEnergy Corporation (ASE-FE)	0.80
Great Plains Energy Incorporated (NYSE-GXP)	0.75
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.70
IDACORP, Inc. (NYSE-IDA)	0.70
MGE Energy, Inc. (NASDAQ-MGEE)	0.60
NextEra Energy (NYSE-NEE)	0.75
OGE Energy Corp. (NYSE-OGE)	0.80
Pepco Holdings, Inc. (NYSE-POM)	0.80
PG&E Corporation (NYSE-PCG)	0.55
Pinnacle West Capital Corp. (NYSE-PNW)	0.70
Portland General Electric (NYSE-POR)	0.75
PPL Corporation (NYSE-PPL)	0.65
SCANA Corporation (NYSE-SCG)	0.70
Southern Company (NYSE-SO)	0.55
TECO Energy, Inc. (NYSE-TE)	0.85
UIL Holdings Corporation (NYSE-UIL)	0.70
UniSource Energy Corporation (NYSE-UNS)	0.75
Westar Energy, Inc. (NYSE-WR)	0.75
Wisconsin Energy Corporation (NYSE-WEC)	0.65
Xcel Energy Inc. (NYSE-XEL)	0.65
Mean	0.72
Median	0.70

Data Source: Value Line Investment Survey, 2012.

Exhibit JRW-11

Risk Premium Approaches

	Historical Ex Post Excess Returns	Surveys	Ex Ante Models and Market Data
Means of Assessing the Equity-Bond Risk Premium	Historical average is a popular proxy for the ex ante premium – but likely to be misleading	Investor and expert surveys can provide direct estimates of prevailing expected returns/premiums	Current financial market prices (simple valuation ratios or DCF-based measures) can give most objective estimates of feasible ex ante equity-bond risk premium
Problems/Debated Issues	Time variation in required returns and systematic selection and other biases have boosted valuations over time, and have exaggerated realized excess equity returns compared with ex ante expected premiums	Limited survey histories and questions of survey representativeness. Surveys may tell more about hoped-for expected returns than about objective required premiums due to irrational biases such as extrapolation.	Assumptions needed for DCF inputs, notably the trend earnings growth rate, make even these models' outputs subjective. The range of views on the growth rate, as well as the debate on the relevant stock and bond yields, leads to a range of premium estimates.

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

Exhibit JRW-11

Kentucky Power Company
 Capital Asset Pricing Model
 Equity Risk Premium

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Median
Historical Risk Premium	Ibbotson	2012	1926-2011	Historical Stock Returns - Bond Returns	Arithmetic				5.70%	
					Geometric				4.10%	
	Bate	2008	1900-2007	Historical Stock Returns - Bond Returns	Geometric				4.50%	
	Shiller	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				7.00%	
					Geometric				5.50%	
	Damodoran	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				6.70%	
					Geometric				5.10%	
	Siegel	2005	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				6.10%	
				Geometric				4.60%		
Dimson, Marsh, and Staunton	2006	1900-2005	Historical Stock Returns - Bond Returns	Arithmetic				5.50%		
Goyal & Welch	2006	1872-2004	Historical Stock Returns - Bond Returns					4.77%		
Median										5.50%
Ex Ante Models (Puzzle Research)	Claus Thomas	2001	1985-1998	Abnormal Earnings Model					3.00%	
	Arnott and Bernstein	2002	1810-2001	Fundamentals - Div Yld + Growth					2.40%	
	Constantinides	2002	1872-2000	Historical Returns & Fundamentals - P/D & P/E					6.90%	
	Cornell	1999	1926-1997	Historical Returns & Fundamental GDP/Earnings		3.50%	5.50%	4.50%	4.50%	
	Easton, Taylor, et al	2002	1981-1998	Residual Income Model					5.30%	
	Fama French	2002	1951-2000	Fundamental DCF with EPS and DPS Growth		2.55%	4.32%		3.44%	
	Harris & Marston	2001	1982-1998	Fundamental DCF with Analysts' EPS Growth					7.14%	
	Best & Byrne	2001								
	McKinsey	2002	1962-2002	Fundamental (P/E, D/P, & Earnings Growth)		3.50%	4.00%		3.75%	
	Siegel	2005	1802-2001	Historical Earnings Yield	Geometric				2.50%	
	Grabowski	2006	1926-2005	Historical and Projected		3.50%	6.00%	4.75%	4.75%	
	Maheu & McCurdy	2006	1885-2003	Historical Excess Returns, Structural Breaks,		4.02%	5.10%	4.56%	4.56%	
	Bostock	2004	1960-2002	Bond Yields, Credit Risk, and Income Volatility		3.90%	1.30%	2.60%	2.60%	
	Bakshi & Chen	2005	1982-1998	Fundamentals - Interest Rates					7.31%	
	Donaldson, Kamstra, & Kramer	2006	1952-2004	Fundamental, Dividend yld., Returns, & Volatility		3.00%	4.00%	3.50%	3.50%	
	Campbell	2008	1982-2007	Historical & Projections (D/P & Earnings Growth)		4.10%	5.40%		4.75%	
	Best & Byrne	2001	Projection	Fundamentals - Div Yld + Growth					2.00%	
	Fernandez	2007	Projection	Required Equity Risk Premium					4.00%	
	DeLong & Magin	2008	Projection	Earnings Yield - TIPS					3.22%	
	Damodoran	2012	Projection	Fundamentals - Implied from FCF to Equity Model					6.02%	
Social Security Office of Chief Actuary		1900-1995								
John Campbell	2001	1860-2000	Historical & Projections (D/P & Earnings Growth)	Arithmetic	3.00%	4.00%	3.50%	3.50%		
		Projected for 75 Years		Geometric	1.50%	2.50%	2.00%	2.00%		
Peter Diamond	2001	Projected for 75 Years	Fundamentals (D/P, GDP Growth)		3.00%	4.80%	3.90%	3.90%		
John Shoven	2001	Projected for 75 Years	Fundamentals (D/P, P/E, GDP Growth)		3.00%	3.50%	3.25%	3.25%		
Median										3.75%
Surveys	Survey of Financial Forecasters	2012	10-Year Projection	About 50 Financial Forecasters					2.80%	
	Duke - CFO Magazine Survey	2011	10-Year Projection	Approximately 500 CFOs					4.30%	
	Welch - Academics	2008	30-Year Projection	Random Academics		5.00%	5.74%	5.37%	5.37%	
	Fernandez - Academics	2011	Long-Term	Survey of Academics					5.50%	
	Fernandez - Analysts	2011	Long-Term	Survey of Analysts					5.00%	
	Fernandez - Companies	2011	Long-Term	Survey of Companies					5.20%	
Median										5.10%
Building Block	Ibbotson and Chen	2011	1926-2010	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			5.99%	4.95%	
					Geometric			3.91%		
	Woolridge		2012	Current Supply Model (D/P & Earnings Growth)					4.50%	
Median										4.73%
Mean										4.77%
Median										4.91%

Exhibit JRW-11

Kentucky Power Company
 Decomposing Equity Market Returns
 The Building Blocks Methodology

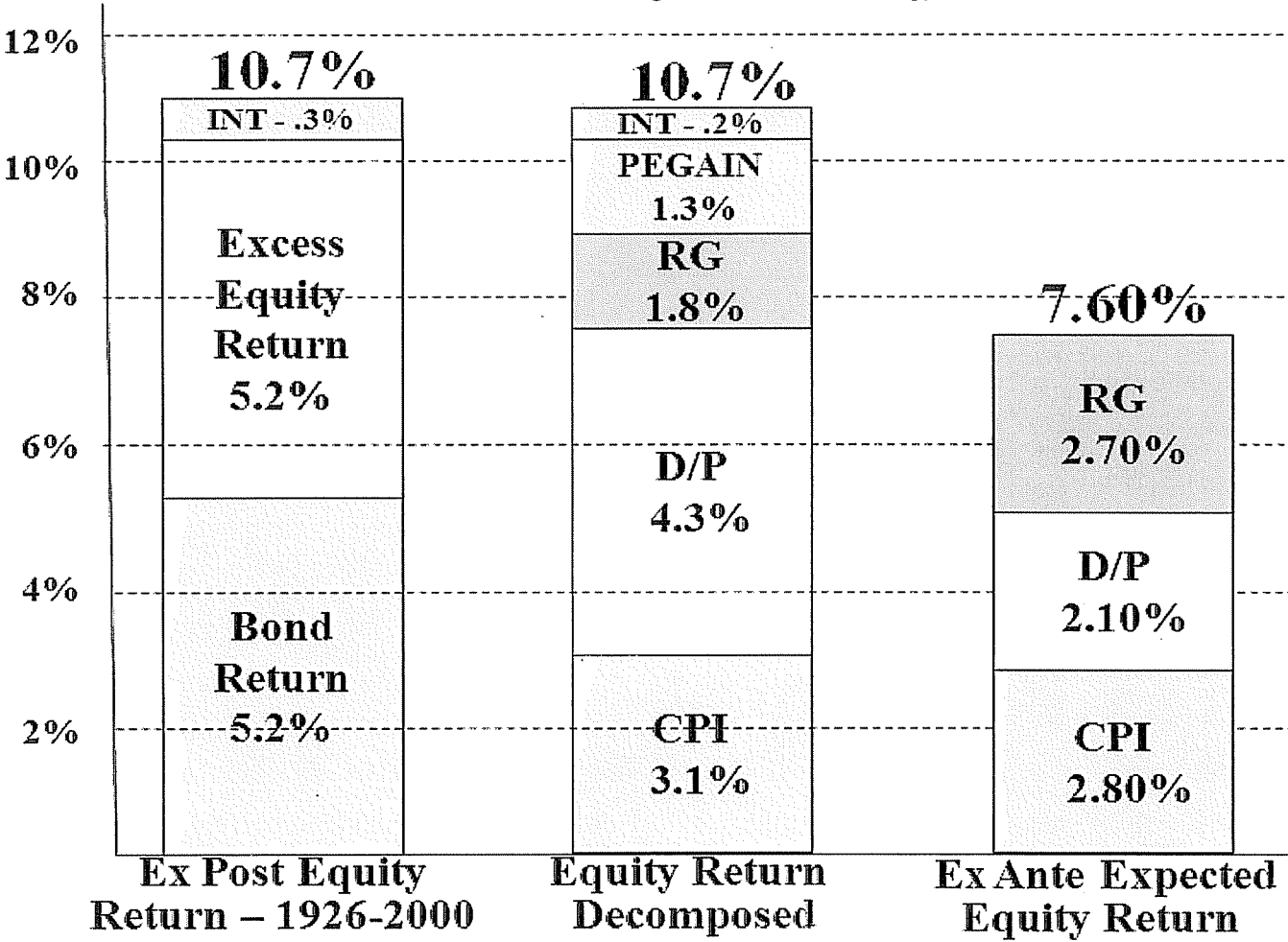


Exhibit JRW-11

Kentucky Power Company

2012 Survey of Professional Forecasters
 Philadelphia Federal Reserve Bank
 Long-Term Forecasts

Table Seven
 LONG-TERM (10 YEAR) FORECASTS

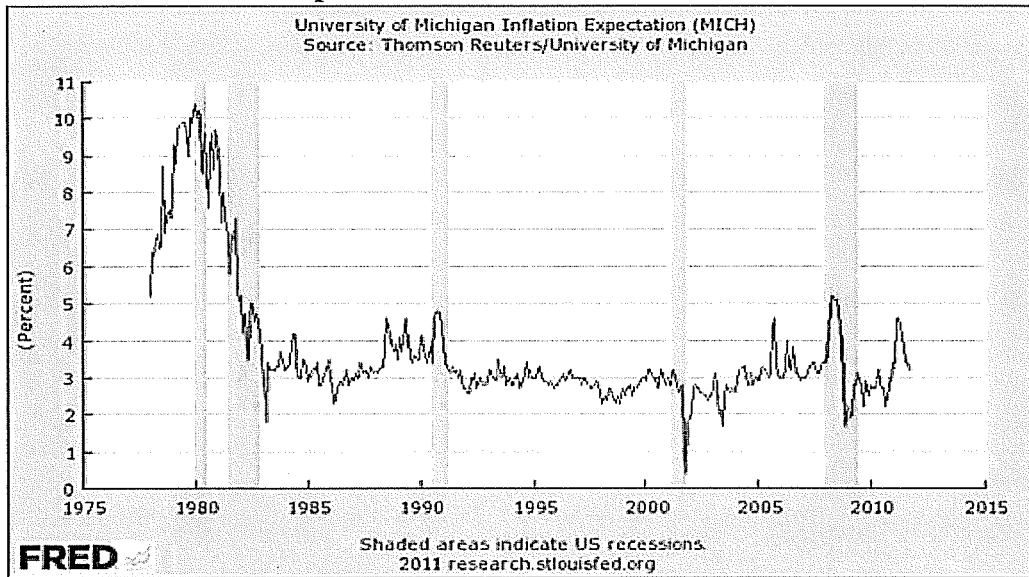
Panel A		Panel B	
<u>SERIES: CPI INFLATION RATE</u>		<u>SERIES: REAL GDP GROWTH RATE</u>	
STATISTIC		STATISTIC	
MINIMUM	0.99	MINIMUM	1.90
LOWER QUARTILE	2.10	LOWER QUARTILE	2.50
MEDIAN	2.30	MEDIAN	2.64
UPPER QUARTILE	2.70	UPPER QUARTILE	2.90
MAXIMUM	6.40	MAXIMUM	3.75
MEAN	2.49	MEAN	2.67
STD. DEV.	0.84	STD. DEV.	0.41
N	37	N	37
MISSING	8	MISSING	8
Panel C		Panel D	
<u>SERIES: PRODUCTIVITY GROWTH</u>		<u>SERIES: STOCK RETURNS (S&P 500)</u>	
STATISTIC		STATISTIC	
MINIMUM	1.20	MINIMUM	4.00
LOWER QUARTILE	1.60	LOWER QUARTILE	5.00
MEDIAN	1.85	MEDIAN	6.80
UPPER QUARTILE	2.10	UPPER QUARTILE	7.60
MAXIMUM	3.10	MAXIMUM	9.20
MEAN	1.93	MEAN	6.30
STD. DEV.	0.45	STD. DEV.	1.54
N	26	N	19
MISSING	19	MISSING	26
Panel E		Panel F	
<u>SERIES: BOND RETURNS (10-YEAR)</u>		<u>SERIES: BILL RETURNS (3-MONTH)</u>	
STATISTIC		STATISTIC	
MINIMUM	-2.00	MINIMUM	-2.00
LOWER QUARTILE	3.40	LOWER QUARTILE	2.75
MEDIAN	4.00	MEDIAN	3.00
UPPER QUARTILE	4.50	UPPER QUARTILE	3.31
MAXIMUM	8.40	MAXIMUM	4.75
MEAN	3.83	MEAN	2.93
STD. DEV.	1.72	STD. DEV.	1.13
N	26	N	30
MISSING	19	MISSING	13

Source: Philadelphia Federal Reserve Bank, Survey of Professional Forecasters, February 10, 2012.

Exhibit JRW-11

Kentucky Power Company

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

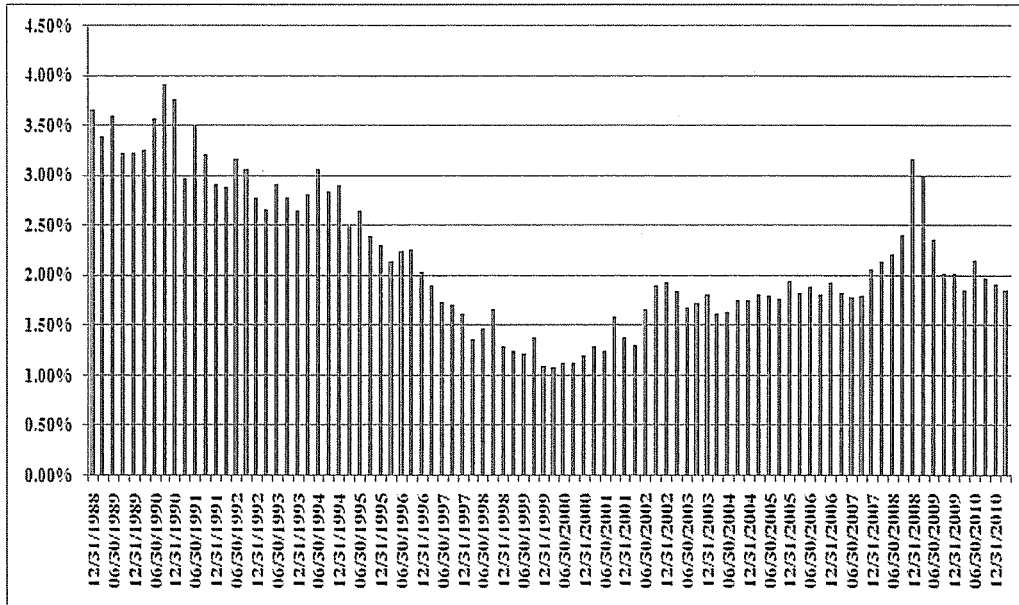


Data Source: <http://research.stlouisfed.org/fred2/series/MICH?cid=98>

Exhibit JRW-11

Decomposing Equity Market Returns
The Building Blocks Methodology

S&P 500 Dividend Yield



S&P 500 P/E Ratio

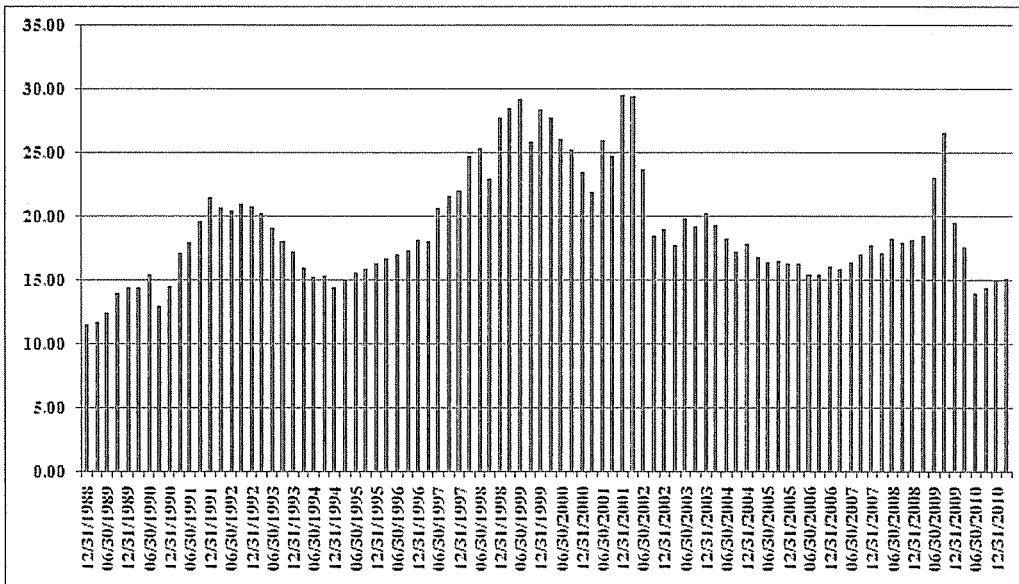


Exhibit JRW-11

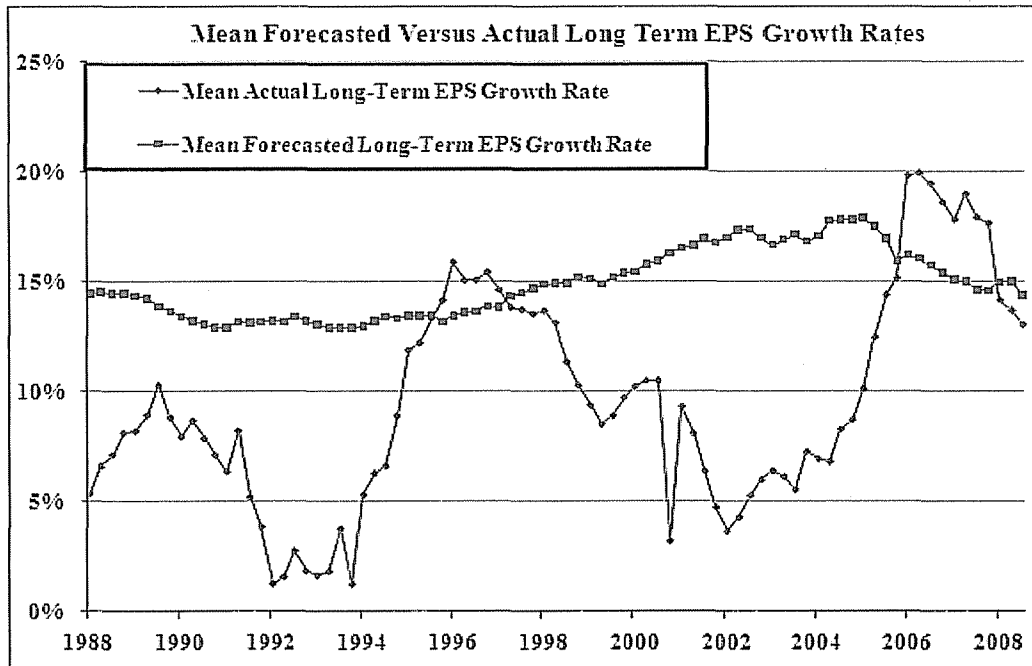
Kentucky Power Company

CAPM

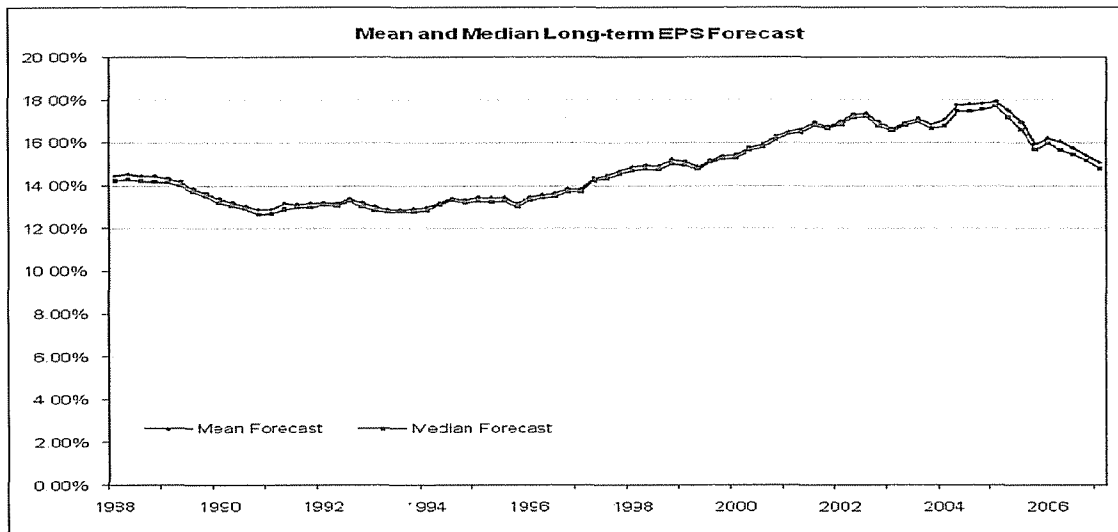
Real S&P 500 EPS Growth Rate

Year	S&P 500 EPS	Annual Inflation CPI	Inflation Adjustment Factor	Real S&P 500 EPS	
1960	3.10	1.48		3.10	
1961	3.37	0.07	1.01	3.35	
1962	3.67	1.22	1.02	3.59	
1963	4.13	1.65	1.04	3.99	
1964	4.76	1.19	1.05	4.55	
1965	5.30	1.92	1.07	4.97	
1966	5.41	3.35	1.10	4.90	
1967	5.46	3.04	1.14	4.80	
1968	5.72	4.72	1.19	4.81	
1969	6.10	6.11	1.26	4.83	10-Year
1970	5.51	5.49	1.34	4.13	2.89%
1971	5.57	3.36	1.38	4.04	
1972	6.17	3.41	1.43	4.33	
1973	7.96	8.80	1.55	5.13	
1974	9.35	12.20	1.74	5.37	
1975	7.71	7.01	1.86	4.14	
1976	9.75	4.81	1.95	4.99	
1977	10.87	6.77	2.08	5.22	
1978	11.64	9.03	2.27	5.13	
1979	14.55	13.31	2.57	5.66	10-Year
1980	14.99	12.40	2.89	5.18	2.30%
1981	15.18	8.94	3.15	4.82	
1982	13.82	3.87	3.27	4.23	
1983	13.29	3.80	3.40	3.91	
1984	16.84	3.95	3.53	4.77	
1985	15.68	3.77	3.66	4.28	
1986	14.43	1.13	3.70	3.90	
1987	16.04	4.41	3.87	4.15	
1988	22.77	4.42	4.04	5.64	
1989	24.03	4.65	4.22	5.69	10-Year
1990	21.73	6.11	4.48	4.85	-0.65%
1991	19.10	3.06	4.62	4.14	
1992	18.13	2.90	4.75	3.81	
1993	19.82	2.75	4.88	4.06	
1994	27.05	2.67	5.01	5.40	
1995	35.35	2.54	5.14	6.88	
1996	35.78	3.32	5.31	6.74	
1997	39.56	1.70	5.40	7.33	
1998	38.23	1.61	5.48	6.97	
1999	45.17	2.68	5.63	8.02	10-Year
2000	52.00	3.39	5.82	8.93	6.29%
2001	44.23	1.55	5.92	7.48	
2002	47.24	2.38	6.06	7.80	
2003	54.15	1.88	6.17	8.77	
2004	67.01	3.26	6.37	10.51	
2005	68.32	3.42	6.60	10.35	
2006	81.96	2.54	6.77	12.11	
2007	87.51	4.08	7.04	12.43	
2008	65.39	0.09	7.05	9.28	
2009	59.65	2.72	7.24	8.24	10-Year
2010	83.66	1.50	7.35	11.39	2.46%
2011	97.05	2.96	7.57	12.83	
Data Source: http://pages.stern.nyu.edu/~adamodar/				Real EPS Growth	2.8%

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



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



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

THE WALL STREET JOURNAL.

Study Suggests Bias in Analysts' Rosy Forecasts

By **ANDREW EDWARDS**

March 21, 2008; Page C6

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

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

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

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

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

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

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

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

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

Markets & Finance June 10, 2010, 5:06PM EST

**Bloomberg
Businessweek**

For Analysts, Things Are Always Looking Up

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

By Roben Farzad

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

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

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

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

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

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

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

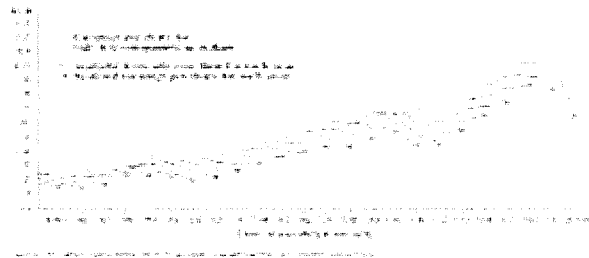
As realities hit home, "It's only natural that analysts will have to revise down their views," says Todd Salamone, senior vice-president at Schaeffer's Investment Research. The market may be making its own downward adjustment, as the S&P 500 has already fallen 14 percent from its high in April. If precedent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

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

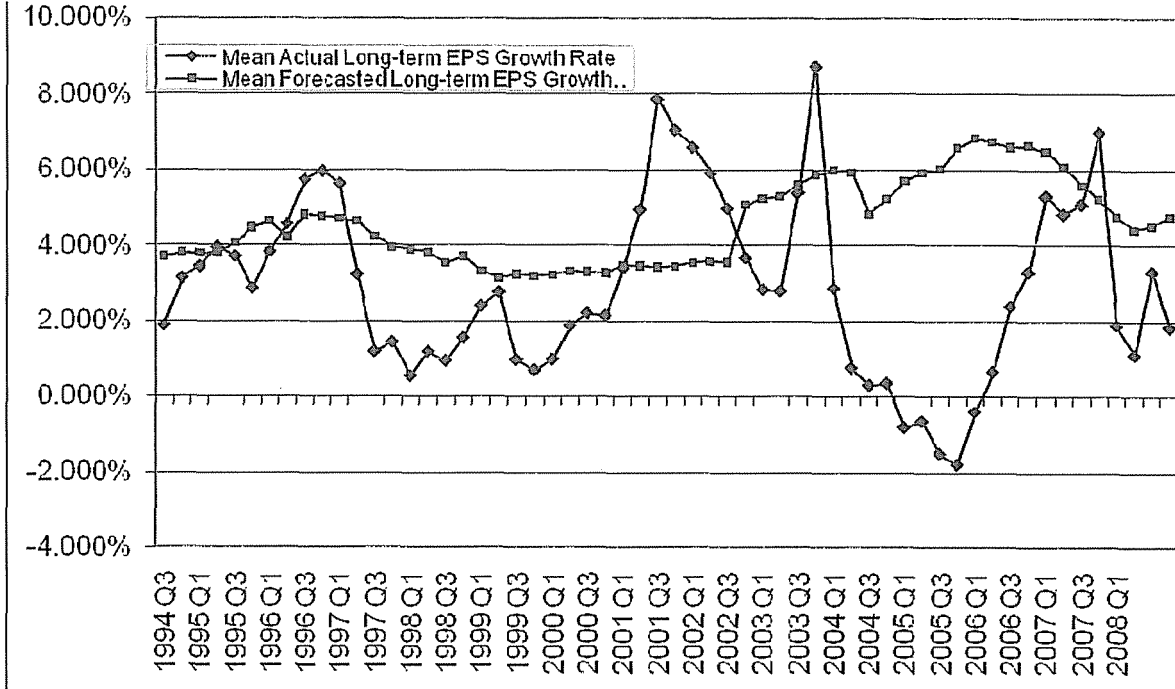
Bloomberg Businessweek Senior Writer Farzad covers Wall Street and international finance.

The Earnings Roller Coaster

Analysts have a long history of overestimating future profits. As this chart from Bloomberg shows, analysts on average tend to set high and inflated their numbers (shown as the blue line) get closer to releasing their results. Initial estimates proved to be too low in only a few cases.

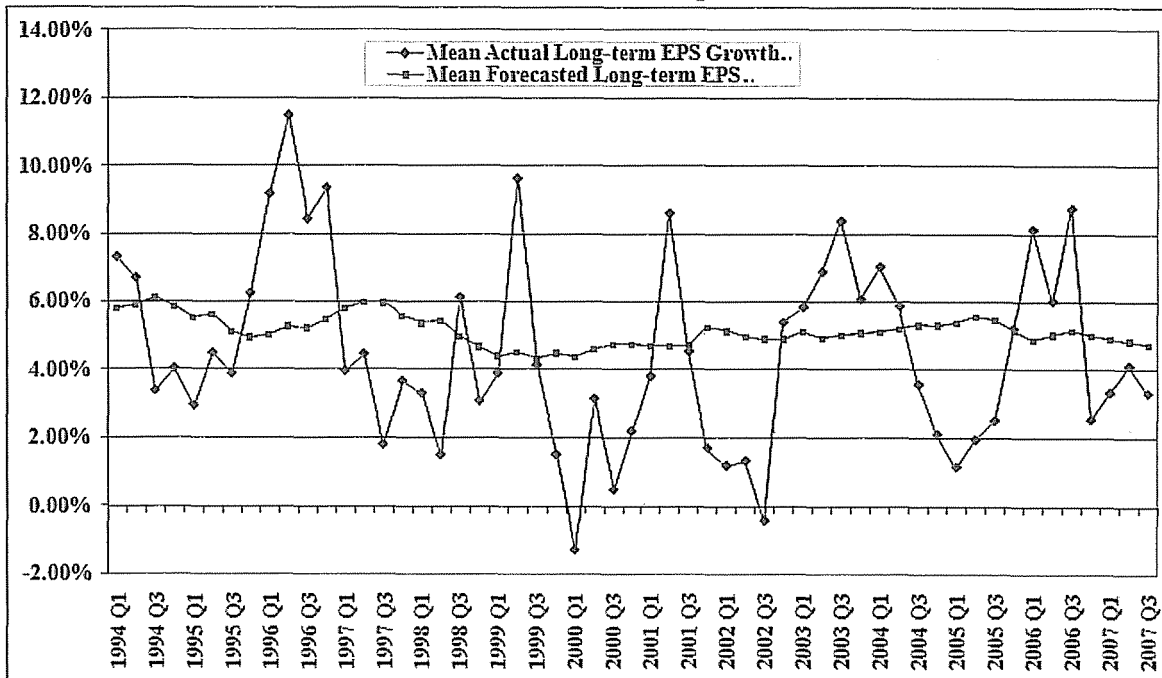


Panel A
Long-Term Forecasted Versus Actual EPS Growth Rates
Electric Utility Companies
1988-2008



Data Source: IBES

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



Panel A

Value Line 3-5 year EPS Growth Rate Forecasts

	Average Projected EPS Growth rate	Number of Negative EPS Growth Projections	Percent of Negative EPS Growth Projections
1,996 Companies	14.45%	56	2.81%

Panel B

Historical Five-Year EPS Growth Rates for Value Line Companies

	Average Historical EPS Growth rate	Number with Negative Historical EPS Growth	Percent with Negative Historical EPS Growth
2,147 Companies	8.38%	654	30.40%

Source: *Value Line Investment Analyzer*, April 2011.

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

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

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

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

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

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

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

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

1 **Q. PLEASE REVIEW THE ACADEMIC RESEARCH ON THE ACCURACY**
2 **OF ANALYSTS' NEAR-TERM EPS ESTIMATES AND LONG-TERM EPS**
3 **GROWTH RATE FORECASTS.**

4 A. There is a long history of studies that evaluate how well analysts forecast near-term
5 EPS estimates and long-term EPS growth rates. Most of the early studies evaluated
6 the accuracy of earnings forecasts for the next quarter or the next year. These
7 studies document that analysts make overly optimistic EPS earnings forecasts
8 (Stickel (1990); Brown (1997); Chopra (1998)).¹ Harris (1999) published the first
9 study examining the accuracy of long-term EPS growth rate forecasts.² He
10 evaluated the accuracy of analysts' long-term EPS forecasts over the 1982-1997
11 time-period. He concluded the following: (1) the accuracy of analysts' long-term
12 EPS forecasts is very low; (2) a superior long-run method to forecast long-term
13 EPS growth is to assume that all companies will have an earnings growth rate
14 equal to historic GDP growth; and (3) analysts' long-term EPS forecasts are
15 significantly upwardly biased, with forecasted earnings growth exceeding actual
16 earnings growth by seven percent per annum. Subsequent studies by DeChow, P.,
17 A. Hutton, and R. Sloan (2000), and Chan, Karceski, and Lakonishok (2003) also

¹ S. Stickel, "Predicting Individual Analyst Earnings Forecasts," *Journal of Accounting Research*, Vol. 28, 409-417, 1990. Brown, L.D., "Analyst Forecasting Errors: Additional Evidence," *Financial Analysts Journal*, Vol. 53, 81-88, 1997, and Chopra, V.K., "Why So Much Error in Analysts' Earnings Forecasts?" *Financial Analysts Journal*, Vol. 54, 30-37 (1998).

² R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55 (June/July 1999).

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

1 conclude that analysts' long-term EPS growth rate forecasts are overly optimistic
2 and upwardly biased.³

3 More recent studies have shown that the optimistic bias tends to be larger
4 for longer-term forecasts and smaller for forecasts made nearer to the EPS
5 announcement date. Richardson, Teoh, and Wysocki (2004) report that the
6 upward bias in earnings growth rates declines in the quarters leading up to the
7 earnings announcement date.⁴ They call this result the "walk-down to beatable
8 analyst forecasts." They hypothesize that the walk-down might be driven by the
9 "earning-guidance game," in which analysts give optimistic forecasts at the start
10 of a fiscal year, then revise their estimates downwards until the firm can beat the
11 forecasts at the earnings announcement date.

12 In sum, there have been many studies of analysts' earnings forecasts. The
13 studies conclude (almost unanimously) that analysts' earnings forecasts of short-
14 term earnings estimates and long-term earnings growth rates are overly optimistic.
15 In terms of analysts' projections of long-term earnings growth, all previous
16 studies have come to this conclusion.

³ P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research* (2000) and K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance* pp. 643–684, (2003).

⁴ S. Richardson, S. Teoh, and P. Wysocki, "The Walk-Down to Beatable Analyst Forecasts: The Role of Equity Issuance and Insider Trading Incentives," *Contemporary Accounting Research*, pp. 885–924, (2004).

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

1 **Q. PLEASE DISCUSS YOUR STUDY OF THE ACCURACY OF ANALYSTS'**
2 **LONG-TERM EARNINGS GROWTH RATES.**

3 A. To evaluate the accuracy of analysts' EPS forecasts, I have compared actual 3-5
4 year EPS growth rates with forecasted EPS growth rates on a quarterly basis over
5 the past 20 years for all companies covered by the I/B/E/S data base. In Panel A
6 of page 1 of Exhibit JRW-12, I show the average analysts' forecasted 3-5 year
7 EPS growth rate with the average actual 3-5 year EPS growth rate for the past
8 twenty years.

9 The following example shows how the results can be interpreted. For the
10 3-5 year period prior to the first quarter of 1999, analysts had projected an EPS
11 growth rate of 15.13%, but companies only generated an average annual EPS
12 growth rate over the 3-5 years of 9.37%. This projected EPS growth rate figure
13 represented the average projected growth rate for over 1,510 companies, with an
14 average of 4.88 analysts' forecasts per company. For the entire twenty-year
15 period of the study, for each quarter there were on average 5.6 analysts' EPS
16 projections for 1,281 companies. Overall, my findings indicate that forecast errors
17 for long-term estimates are predominantly positive, which indicates an upward
18 bias in growth rate estimates. The mean and median forecast errors over the
19 observation period are 143.06% and 75.08%, respectively. The forecasting errors
20 are negative for only eleven of the eighty quarterly time periods: five consecutive
21 quarters starting at the end of 1995 and six consecutive quarters starting in 2006.
22 As shown in Panel A of page 1 of Exhibit JRW-12, the quarters with negative
23 forecast errors were for the 3-5 year periods following earnings declines

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

1 associated with the 1991 and 2001 economic recessions in the U.S. Thus, there is
2 evidence of a persistent upward bias in long-term EPS growth forecasts.

3 The average 3-5 year EPS growth rate projections for all companies
4 provided in the I/B/E/S database on a quarterly basis from 1988 to 2008 are
5 shown in Panel B of page 1 of Exhibit JRW-12. In this graph, no comparison to
6 actual EPS growth rates is made, and hence, there is no follow-up period.
7 Therefore, since companies are not lost from the sample due to a lack of follow-
8 up EPS data, these results are for a larger sample of firms. Analysts' forecasts for
9 EPS growth were higher for this larger sample of firms, with a more pronounced
10 run-up and then decline around the stock market peak in 2000. The average
11 projected growth rate hovered in the 14.5%-17.5% range until 1995 and then
12 increased dramatically over the next five years to 23.3% in the fourth quarter of
13 the year 2000. Forecasted EPS growth has since declined to the 15.0% range.

14 **Q. IS THE UPWARD BIAS IN ANALYSTS' GROWTH RATE FORECASTS**
15 **GENERALLY KNOWN IN THE MARKETS?**

16 A. Yes. Page 2 of Exhibit JRW-12 provides an article published in the *Wall Street*
17 *Journal*, dated March 21, 2008, that discusses the upward bias in analysts' EPS
18 growth rate forecasts.⁵ In addition, a recent *Bloomberg Businessweek* article also
19 highlighted the upward bias in analysts' EPS forecasts, citing a study by McKinsey

⁵ Andrew Edwards, "Study Suggests Bias in Analysts' Rosy Forecasts," *Wall Street Journal* (March 21, 2008), p. C6.

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

1 Associates. This article is provided on pages 3 and 4 of Exhibit JRW-12. The
2 article concludes with the following:⁶

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

5
6
7 **Q. PLEASE ADDRESS THE ISSUE REGARDING THE SUPERIORITY OF**
8 **ANALYSTS' EPS FORECASTS OVER HISTORIC AND TIME-SERIES**
9 **ESTIMATES OF EPS GROWTH?**

10 A. As highlighted by the classic study by Brown and Rozeff (1976) and the other
11 studies that followed, analysts' forecasts of quarterly earnings estimates are superior
12 to the estimates derived from historic and time-series analyses.⁷ This is often
13 attributed to the information and timing advantage that analysts have over historic
14 and time-series analyses. However, more recently Bradshaw, Drake, Myers, and
15 Myers (2009) discovered that time-series estimates of annual earnings are more
16 accurate over longer horizons than analysts' forecasts of earnings. As the authors
17 state, "These findings suggest an incomplete and misleading generalization about
18 the superiority of analysts' forecasts over even simple time-series-based earnings
19 forecasts."⁸

⁶ Roben Farzad, 'For Analysts, Things are Always Looking Up,' *Bloomberg Businessweek* (June 14, 2010), pp. 39-40.

⁷ L. Brown and M. Rozeff, "The Superiority of Analyst Forecasts as Measures of Expectations: Evidence from Earnings," *The Journal of Finance* 33 (1): pp. 1-16 (1976).

⁸ M. Bradshaw, M. Drake, J. Myers, and L. Myers, "A Re-examination of Analysts' Superiority Over Time-Series

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

1 With respect to long-term earnings growth, analysts' forecasts of long-term
2 growth have not been found to be superior to other historic growth rate measures.
3 Harris (1999) concluded that historic GDP growth was superior to analysts'
4 forecasts for long run earnings growth. These results are supported by empirical
5 results of Chan, Karceski, and Lakonishok (2003).

6 **Q. WHAT IMPACT HAVE NEW STOCK MARKET AND REGULATORY**
7 **DEVELOPMENTS HAD ON ANALYSTS' EPS GROWTH RATE**
8 **FORECASTS?**

9 A. Analysts' EPS growth rate forecasts have subsided somewhat since the stock
10 market peak of 2000. Two regulatory developments over the past decade have
11 potentially impacted analysts' EPS growth rate estimates. First, Regulation Fair
12 Disclosure ("Reg FD") was introduced by the Securities and Exchange
13 Commission ("SEC") in October of 2000. Reg FD prohibits private
14 communication between analysts and management so as to level the information
15 playing field in the markets. With Reg FD, analysts are less dependent on gaining
16 access to management to obtain information and therefore, are not as likely to
17 make optimistic forecasts to gain access to management. Second, the conflict of
18 interest within investment firms with investment banking and analyst operations
19 was addressed in the Global Analysts Research Settlements ("GARS"). GARS,
20 as agreed upon on April 23, 2003, between the SEC, NASD, NYSE and ten of the
21 largest U.S. investment firms, includes a number of regulations that were

Forecasts," Workings paper, (1999), <http://ssrn.com/abstract=1528987>.

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

1 introduced to prevent investment bankers from pressuring analysts to provide
2 favorable projections.

3 The impact of these regulatory developments on the accuracy of short-
4 term EPS estimates was addressed in a recent study by Hovakimian and
5 Saenyasiri (2009).⁹ They investigate analysts' forecasts of annual earnings for the
6 following time periods: (1) the time prior to Reg FD (1984-2000); (2) the time
7 period after Reg FD but prior to GARS (2000-2002);¹⁰ and (3) the time period
8 after GARS (2002-2006). For the pre-Reg FD period, Hovakimian and Saenyasiri
9 find that analysts generally make overly optimistic forecasts of annual earnings.
10 The forecast bias is higher for early forecasts and steadily declines in the months
11 leading up to the earnings announcement. The results are similar for the time
12 period after Reg FD but prior to GARS. However, the bias is lower in the later
13 forecasts (the forecasts made just prior to the announcement). For the time period
14 after GARS, the average forecasts declined significantly, but a positive bias
15 remains. In sum, Hovakimian and Saenyasiri find that: (1) analysts make overly
16 optimistic short-term forecasts of annual earnings; (2) Reg FD had no effect on
17 this bias; and (3) GARS did result in a significant reduction in the bias, but
18 analysts' short-term forecasts of annual earnings still have a small positive bias.

⁹ A. Hovakimian and E. Saenyasiri, "Conflicts of Interest and Analysts Behavior: Evidence from Recent Changes in Regulation," *Financial Analysts Journal* (July-August, 2010), pp. 96-107.

¹⁰ Whereas the GARS settlement was signed in 2003, rules addressing analysts' conflict of interest by separating the research and investment banking activities of analysts went into effect with the passage of NYSE and NASD rules in July of 2002.

1 **REGULATIONS ON THE ACCURACY OF ANALYSTS' EPS GROWTH**
2 **RATE FORECASTS?**

3 A. Yes. McKinsey recently published a study entitled “Equity Analysts: Still too
4 Bullish” in which they reported on a study of the accuracy on analysts long-term
5 EPS growth rate forecasts. They concluded that after a decade of stricter
6 regulation, analysts’ long-term earnings forecasts continue to be excessively
7 optimistic.

8 They made the following observation (emphasis added):¹³

9 Alas, a recently completed update of our work only reinforces this view—
10 despite a series of rules and regulations, dating to the last decade, that
11 were intended to improve the quality of the analysts’ long-term earnings
12 forecasts, restore investor confidence in them, and prevent conflicts of
13 interest. For executives, many of whom go to great lengths to satisfy Wall
14 Street’s expectations in their financial reporting and long-term strategic
15 moves, this is a cautionary tale worth remembering. This pattern confirms
16 our earlier findings that analysts typically lag behind events in revising
17 their forecasts to reflect new economic conditions. When economic
18 growth accelerates, the size of the forecast error declines; when economic
19 growth slows, it increases. So as economic growth cycles up and down,
20 the actual earnings S&P 500 companies report occasionally coincide with
21 the analysts’ forecasts, as they did, for example, in 1988, from 1994 to
22 1997, and from 2003 to 2006. Moreover, analysts have been persistently
23 overoptimistic for the past 25 years, with estimates ranging from 10 to 12
24 percent a year, compared with actual earnings growth of 6 percent. Over
25 this time frame, actual earnings growth surpassed forecasts in only two
26 instances, both during the earnings recovery following a recession. On
27 average, analysts’ forecasts have been almost 100 percent too high.

¹³ Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, “Equity Analysts, Still Too Bullish,” *McKinsey on Finance*, pp. 14-17, (Spring 2010).

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

1 **Q. ARE ANALYSTS' EPS GROWTH RATE FORECASTS LIKEWISE**
2 **UPWARDLY BIASED FOR UTILITY COMPANIES?**

3 A. Yes. To evaluate whether analysts' EPS growth rate forecasts are upwardly biased
4 for utility companies, I conducted a study similar to the one described above using
5 a group of electric utility and gas distribution companies. The results are shown
6 on Panels A and B of page 5 of Exhibit JRW-12. The projected EPS growth rates
7 for electric utilities have been in the 4% to 6% range over the last twenty years,
8 with the recent figures approximately 5%. As shown, the achieved EPS growth
9 rates have been volatile and on average, below the projected growth rates. Over
10 the entire period, the average quarterly 3-5 year projected and actual EPS growth
11 rates are 4.59% and 2.90%, respectively.

12 For gas distribution companies, the projected EPS growth rates have
13 declined from about 6% in the 1990s to about 5% in the 2000s. The achieved
14 EPS growth rates have been volatile. Over the entire period, the average quarterly
15 3-5 year projected and actual EPS growth rates are 5.15% and 4.53%;
16 respectively.

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

22

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

1 **Q. ARE VALUE LINE'S GROWTH RATE FORECASTS OVERLY**
2 **OPTIMISTIC?**

3 A. Yes. *Value Line* has a decidedly positive bias to its earnings growth rate forecasts
4 as well. To assess *Value Line*'s earnings growth rate forecasts, I used the *Value*
5 *Line Investment Analyzer*. The results are summarized in Panel A of Page 6 of
6 Exhibit JRW-12. I initially filtered the database and found that *Value Line* has 3-
7 5 year EPS growth rate forecasts for 1,996 firms. The average projected EPS
8 growth rate was 14.45%. This is high given that the average historical EPS
9 growth rate in the U.S. is about 7%. A major factor seems to be that *Value Line*
10 only predicts negative EPS growth for 56 companies. This is less than three
11 percent of the companies covered by *Value Line*. Given the ups and downs of
12 corporate earnings, this is unreasonable.

13 To put this figure in perspective, I screened the *Value Line* companies to
14 see what percent of companies covered by *Value Line* had experienced negative
15 EPS growth rates over the past five years. *Value Line* reported a five-year historic
16 growth rate for 2,147 companies. The results are shown in Panel B of page 6 of
17 Exhibit JRW-12 and indicate that the average 5-year historic growth rate was
18 8.38%, and *Value Line* reported negative historic growth for 654 firms which
19 represents 30.4% of these companies.

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

Appendix C
Building Blocks Equity Risk Premium

Q. PLEASE DISCUSS YOUR DEVELOPMENT OF AN EQUITY RISK PREMIUM COMPUTED USING THE BUILDING BLOCKS METHODOLOGY.

A. Ibbotson and Chen (2003) evaluate the ex post historical mean stock and bond returns in what is called the Building Blocks approach.¹ They use 75 years of data and relate the compounded historical returns to the different fundamental variables employed by different researchers in building ex ante expected equity risk premiums. Among the variables included were inflation, real EPS and DPS growth, ROE and book value growth, and price-earnings (“P/E”) ratios. By relating the fundamental factors to the ex post historical returns, the methodology bridges the gap between the ex post and ex ante equity risk premiums. Ilmanen (2003) illustrates this approach using the geometric returns and five fundamental variables – inflation (“CPI”), dividend yield (“D/P”), real earnings growth (“RG”), repricing gains (“PEGAIN”) and return interaction/reinvestment (“INT”).² This is shown on page 7 of Exhibit JRW-11. The first column breaks the 1926-2000 geometric mean stock return of 10.7% into the different return components demanded by investors: the historical U.S. Treasury bond return (5.2%), the excess equity return (5.2%), and a small interaction term (0.3%). This 10.7% annual stock return over the 1926-2000 period can then be broken down into the following fundamental elements: inflation (3.1%), dividend yield (4.3%),

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

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

Appendix C
Building Blocks Equity Risk Premium

1 real earnings growth (1.8%), repricing gains (1.3%) associated with higher P/E
2 ratios, and a small interaction term (0.2%).

3 **Q. HOW ARE YOU USING THIS METHODOLOGY TO DERIVE AN EX**
4 **ANTE EXPECTED EQUITY RISK PREMIUM?**

5 A. The third column in the graph on page 7 of Exhibit JRW-11 shows current inputs
6 to estimate an ex ante expected market return. These inputs include the
7 following:

8 CPI – To assess expected inflation, I have employed expectations of the short-
9 term and long-term inflation rate. Long term inflation forecasts are available in the
10 Federal Reserve Bank of Philadelphia’s publication entitled *Survey of*
11 *Professional Forecasters*. While this survey is published quarterly, only the first
12 quarter survey includes long-term forecasts of gross domestic product (“GDP”)
13 growth, inflation, and market returns. In the first quarter 2011 survey, published
14 on February 10, 2012, the median long-term (10-year) expected inflation rate as
15 measured by the CPI was 2.30% (see Panel A of page 8 of Exhibit JRW-11).

16 The University of Michigan’s Survey Research Center surveys consumers
17 on their short-term (one-year) inflation expectations on a monthly basis. As
18 shown on page 9 of Exhibit JRW-11, the current short-term expected inflation
19 rate is 3.3% as of January, 2012.

20 As a measure of expected inflation, I will use the average of the long-term
21 (2.3%) and short-term (3.6%) inflation rate measures, or 2.8%.

22

Appendix C
Building Blocks Equity Risk Premium

1 D/P – As shown on page 10 of Exhibit JRW-11, the dividend yield on the S&P
2 500 has fluctuated from 1.0% to almost 3.5% over the past decade. Ibbotson and
3 Chen (2003) report that the long-term average dividend yield of the S&P 500 is
4 4.3%. As of February 22, 2012, the indicated S&P 500 dividend yield is 2.1%. I
5 will use this figure in my ex ante risk premium analysis.

6 RG – To measure expected real growth in earnings, I use the historical real
7 earnings growth rate S&P 500 and the expected real GDP growth rate. The S&P
8 500 was created in 1960 and includes 500 companies which come from ten
9 different sectors of the economy. On page 11 of Exhibit JRW-11, real EPS
10 growth is computed using the CPI as a measure of inflation. The real growth
11 figure over 1960-2010 period for the S&P 500 is 2.8%.

12 The second input for expected real earnings growth is expected real GDP
13 growth. The rationale is that over the long-term, corporate profits have averaged
14 5.50% of U.S. GDP.³ Expected GDP growth, according to the Federal Reserve
15 Bank of Philadelphia's *Survey of Professional Forecasters*, is 2.6% (see Panel B
16 of page 8 of Exhibit JRW-11).

17 Given these results, I will use 2.70%, for real earnings growth.

18 PEGAIN – PEGAIN is the repricing gain associated with an increase in the P/E
19 ratio. It accounted for 1.3% of the 10.7% annual stock return in the 1926-2000
20 period. In estimating an ex ante expected stock market return, one issue is
21 whether investors expect P/E ratios to increase from their current levels. The P/E

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

Appendix C
Building Blocks Equity Risk Premium

1 ratios for the S&P 500 over the past 25 years are shown on page 10 of Exhibit
2 JRW-11. The run-up and eventual peak in P/Es in the year 2000 is very evident
3 in the chart. The average P/E declined until late 2006, and then increased to
4 higher high levels, primarily due to the decline in EPS as a result of the financial
5 crisis and the recession. As of 12/31/11, the average P/E for the S&P 500 was
6 15.46, which is in line with the historic average. Since the current figure is near
7 the historic average, a PEGAIN would not be appropriate in estimating an ex ante
8 expected stock market return.

9
10 **Q. GIVEN THIS DISCUSSION, WHAT IS THE EX ANTE EXPECTED**
11 **MARKET RETURN AND EQUITY RISK PREMIUM USING THE**
12 **“BUILDING BLOCKS METHODOLOGY”?**

13 A. My expected market return is represented by the last column on the right in the
14 graph entitled “Decomposing Equity Market Returns: The Building Blocks
15 Methodology” set forth on page 7 of Exhibit JRW-11. As shown, my expected
16 market return of 7.60% is composed of 2.8% expected inflation, 2.10% dividend
17 yield, and 2.7% real earnings growth rate.

18 **Q. IS AN EXPECTED MARKET RETURN OF 7.60% CONSISTENT WITH**
19 **THE FORECASTS OF MARKET PROFESSIONALS?**

20 A. Yes. In the first quarter 2012 *Survey of Financial Forecasters*, published on
21 February 10, 2012 by the Federal Reserve Bank of Philadelphia, the median long-
22 term expected return on the S&P 500 was 6.8% (see Panel D of page 8 of Exhibit
23 JRW-11).

Appendix C
Building Blocks Equity Risk Premium

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Q. IS AN EXPECTED MARKET RETURN OF 7.60% CONSISTENT WITH THE EXPECTED MARKET RETURNS OF CORPORATE CHIEF FINANCIAL OFFICERS (CFOs)?

A. Yes. John Graham and Campbell Harvey of Duke University conduct a quarterly survey of corporate CFOs. The survey is a joint project of Duke University and *CFO Magazine*. In the December 2011 survey, the mean expected return on the S&P 500 over the next ten years was 6.3%.⁴

Q. GIVEN THIS EXPECTED MARKET RETURN, WHAT IS THE EX ANTE EQUITY RISK PREMIUM USING THE BUILDING BLOCKS METHODOLOGY?

A. The current 30-year U.S. Treasury yield is 3.10%. This ex ante equity risk premium is simply the expected market return from the Building Blocks methodology minus this risk-free rate:

$$\text{Ex Ante Equity Risk Premium} = 7.60\% - 3.10\% = 4.50\%$$

Q. HOW ARE YOU USING THIS EQUITY RISK PREMIUM ESTIMATE IN YOUR CAPM EQUITY COST RATE STUDY?

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

Appendix C
Building Blocks Equity Risk Premium

1 A. This is only one estimate of the equity risk premium. As shown on page 5 of
2 Exhibit JRW-11, I am also using the results of over thirty other studies and
3 surveys to determine an equity risk premium for my CAPM.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION


In the Matter of:

APPLICATION OF KENTUCKY POWER)
COMPANY FOR APPROVAL OF ITS 2011)
ENVIRONMENTAL COMPLIANCE PLAN,)
FOR APPROVAL OF ITS AMENDED)
ENVIRONMENTAL COST RECOVERY) CASE NO. 2011-00401
SURCHARGE TARIFF, AND FOR THE)
GRANT OF A CERTIFICATE OF PUBLIC)
CONVENIENCE AND NECESSITY FOR THE)
CONSTRUCTION AND ACQUISITION OF)
RELATED FACILITIES)

AFFIDAVIT OF DR. J. RANDALL WOOLRIDGE

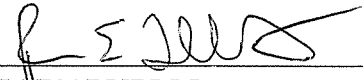
Commonwealth of)
Pennsylvania)
)
)

Dr. J. Randall Woolridge, being first duly sworn, states the following: The prepared Pre-Filed Direct Testimony, Schedules and Appendixes 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 24th day of February, 2012.



NOTARY PUBLIC

My Commission Expires: 11-10-2015

