COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION
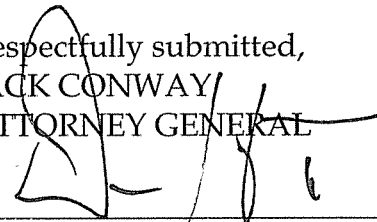
In the Matter of:

LOUISVILLE GAS & ELECTRIC COMPANY'S	)
APPLICATION FOR AN AMENDED	)
ENVIRONMENTAL COMPLIANCE PLAN,	)
A REVISED SURCHARGE TO RECOVER	) Case No. 2011-00162
COSTS, AND CERTIFICATES OF PUBLIC	)
CONVENIENCE AND NECESSITY FOR THE	)
CONSTRUCTION OF NECESSARY	)
ENVIRONMENTAL EQUIPMENT	)

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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Certificate of Service and Filing

Counsel certifies that an original and ten photocopies of the foregoing were served and filed by hand delivery to Jeff Derouen, Executive Director, Public Service Commission, 211 Sower Boulevard, Frankfort, Kentucky 40601; counsel further states that true and accurate copies of the foregoing were mailed via First Class U.S. Mail, postage pre-paid, to:

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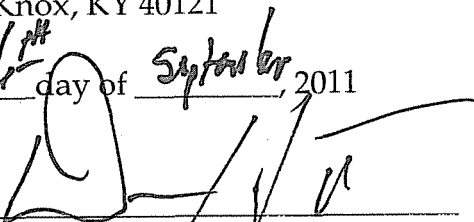400 W. Market St.
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this 11th day of September, 2011

_____
Assistant Attorney General

COMMONWEALTH OF KENTUCKY
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CONVENIENCE AND NECESSITY FOR THE	)	
CONSTRUCTION OF NECESSARY	)	
ENVIRONMENTAL EQUIPMENT	)	

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

September 16, 2011

Louisville Gas & Electric Company
Case No. 2011-00162
Direct Testimony of
Dr. J. Randall Woolridge

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LIST OF EXHIBITS

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   Louisville Gas and Electric Company ("LG&E" or "Company") for its

18   environmental cost recovery ("ECR") investment. The Company has requested

19   to earn a return on equity of 10.63%.

20   .

21   Q.   HOW IS YOUR TESTIMONY ORGANIZED?

22   A.   First I review my cost of capital recommendation for LG&E. Second, I provide

23   an 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 LG&E. 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 LG&E. 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 $1.4B in environmental compliance projects in the
9		coming years. The Company has proposed to earn a return on equity ("ROE")
10		of 10.63% on this investment. This figure was the agreed upon figure by the
11		eight signatories to the Stipulation in Case No. 2009-00549. The OAG's
12		office did not sign on to this stipulation. In response to Staff No. 1-17, LG&E
13		Witness Mr. Bellar indicated that the 10.63% falls within the range in the
14		Stipulation (10.25% to 10.75%) and in the Commission's Order of July 30,
15		2010 (9.75% to 10.75%). LG&E Witness Mr. Bellar also cites KU's request
16		for a ROE of 11.0% in a pending rate case in Virginia (PUE-2011-00013) and
17		the associated testimony of Dr. William Avera in that proceeding. He
18		indicates that this "is reflective of the current economic conditions and
19		provides further evidence that 10.63% ROE remains reasonable." Mr. Bellar
20		provides no other studies or economic analyses to support the 10.63% ROE.
21		

1	Q.	HOW DO THE CAPITAL COST INDICATORS COMPARE TODAY
2		TO THOSE EMPLOYED IN CASE 2009-00549?
3	A.	I filed testimony for the OAG in April of 2010 in Case No. 2009-00549. In
4		Exhibit JRW-2, I provide the yields on ten-year Treasury bonds and thirty-
5		year utility bonds. The yields today are somewhat below those at the time of
6		Case No 2009-00549. Panel A of Exhibit JRW-2 shows the yields on ten-year
7		Treasury bonds for the six month periods - November, 2009 to April, 2010,
8		and April 2011 to September 2011. The average ten-year Treasury yields for
9		these two periods are 3.67% and 2.88%, respectively. These yields suggest a
10		decline in capital costs. Panel B of Exhibit JRW-2 shows the yields on thirty-
11		year public utility bonds for the same six month periods - November, 2009 to
12		April, 2010, and March 2011 to August 2011. The average yields for these
13		two periods are 5.80% and 5.24%, respectively. These yields also indicate a
14		decline in utility capital costs, albeit not as large as the change indicated by
15		the Treasury data.
16		
17	Q.	**PLEASE DISCUSS THE FUNDING FOR ALTERNATIVE**
18		**FINANCING PLAN FOR ECR.**
19	A.	In response to Staff Question No. 1-13, LG&E Witness Mr. Arbough has
20		indicated that the Company plans to finance the proposed environmental
21		compliance projects with a mix of debt and equity. The Company plans to
22		initially draw on short-term lines of credit and commercial paper until
23		outstanding balances are large enough to issue a long-term first mortgage

1		bond. The first mortgage bond issuances would be expected to be in the range
2		of $250 million. Equity contributions would come in the form of retained
3		earnings and equity contributions for LG&E's parent, LG&E and LG&E
4		Energy LLC. These are expected to be of a size to maintain a capital structure
5		similar to the current capital structure.
6		
7	Q.	**PLEASE REVIEW YOUR RECOMMENDATIONS REGARDING THE**
8		**APPROPRIATE RATE OF RETURN FOR LG&E.**
9	A.	I have developed a capital structure for the Company that reflects the
10		Company's current capitalization as well as prospective financing. I have
11		used LG&E's current short-term and long-term debt cost rates. I applied the
12		Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model
13		("CAPM") to a proxy group of publicly-held electric utility companies
14		("Electric Proxy Group"). My analysis indicates that an equity cost rate of
15		9.25% is appropriate for LG&E. Using my capital structure and debt and
16		equity cost rates, I recommend an overall rate of return of 6.50% for LG&E.
17		
18		**II. CAPITAL COSTS IN TODAY'S MARKETS**
19	Q.	**PLEASE DISCUSS CAPITAL COSTS IN U.S. MARKETS.**
20	A.	Long-term capital cost rates for U.S. corporations are a function of the
21		required returns on risk-free securities plus a risk premium. The risk-free rate
22		of interest is the yield on long-term U.S Treasury yields. The yields on ten-

1	year U.S. Treasury bonds from 1953 to the present are provided on page 1 of
2	Exhibit JRW-3. These yields peaked in the early 1980s and have generally
3	declined since that time. In the summer of 2003, these yields hit a 60-year
4	low at 3.33%. They subsequently increased and fluctuated between the 4.0%
5	and 5.0% levels over the next four years in response to ebbs and flows in the
6	economy. Ten-year Treasury yields began to decline in mid-2007 at the
7	beginning of the current financial crisis. In 2008 Treasury yields declined to
8	below 3.0% as a result of the expansion of the mortgage and subprime market
9	credit crisis, the turmoil in the financial sector, the government bailout of
10	financial institutions, and the economic recession. Overall, these economic
11	developments led investors to seek out low risk investments. These yields
12	have declined from 2.5% to just below 2.0% during the past six months.
13	Panel B on page 1 of Exhibit JRW-3 shows the differences in yields
14	between ten-year Treasuries and Moody's Baa rated bonds since the year
15	2000. This differential primarily reflects the additional risk required by bond
16	investors for the risk associated with investing in corporate bonds. The
17	difference also reflects, to some degree, yield curve changes over time. The
18	Baa rating is the lowest of the investment grade bond ratings for corporate
19	bonds. The yield differential hovered in the 2.0% to 3.0% area until 2005,
20	declined to 1.5% until late 2007, and then increased significantly in response
21	to the current financial crisis. This differential peaked at 6.0% at the height of
22	the financial crisis in early 2009, due to tightening in credit markets, which
23	increased corporate bond yields and the "flight to quality," which decreased

1   treasury yields. The differential subsequently declined and has been in the

2   2.5% range over the past six months.

3   As previously noted, the risk premium is the return premium required

4   by investors to purchase riskier securities. The risk premium required by

5   investors to buy corporate bonds is observable based on yield differentials in

6   the markets. The equity risk premium is the return premium required to

7   purchase stocks as opposed to bonds. The equity risk premium is not readily

8   observable in the markets (as are bond risk premiums) since expected stock

9   market returns are not readily observable. As a result, equity risk premiums

10   must be estimated using market data. There are alternative methodologies to

11   estimating the equity risk premium, and the alternative approaches and equity

12   risk premium results are subject to much debate. One way to estimate the

13   equity risk premium is to compare the mean returns on bonds and stocks over

14   long historical periods. Measured in this manner, the equity risk premium has

15   been in the 5% to 7% range. However, studies by leading academics indicate

16   the forward-looking equity risk premium is actually in the 4.0% to 5.0%

17   range. These lower equity risk premium results are in line with the findings of

18   equity risk premium surveys of CFOs, academics, analysts, companies, and

19   financial forecasters.

20

21   Q.   PLEASE   DESCRIBE   HOW   THE   FINANCIAL   CRISIS   HAS

22   IMPACTED THE FINANCIAL MARKETS.

23   A.   United States Treasury Rates have declined to levels not seen since the 1950s.

1	This reflects the "flight to quality" in the credit markets, as investors have
2	sought out low risk investments, and the massive monetary stimulus provided
3	by the Federal Reserve Board. The credit market for corporate and utility debt
4	experienced higher rates during the financial crisis.
5	However, the long-term credit market has improved significantly. The
6	credit crisis was associated with concerns among credit providers – mainly
7	financial institutions – in terms of making loans and investing in bonds due to
8	the overleveraging and perceived weakness of the economy. Panel A of page
9	2 of Exhibit JRW-3 provides the yields on A, BBB+, and BBB rated public
10	utility bonds. These yields peaked in November 2008, declined by about 200
11	to 300 basis points ("BPs") through the summer of 2010, and have since
12	increased about 50 to 75 BPs. For example, the yields on "A" rated utility
13	bonds, which peaked at over 7.50% in November of 2008, declined to 5.0% to
14	6.0% range in 2010. They have recently declined to the 4.75% range. Panel
15	B of page 2 of Exhibit JRW-3 provides the yield spreads on A, BBB+, and
16	BBB rated public utility bonds relative to Treasury bonds. These yield spreads
17	increased dramatically in the third quarter of 2008 during the peak of the
18	financial crisis and have since decreased to pre-crisis levels. For example, the
19	yield spread between 30-year, 'A' rated utility bonds and 30-Year Treasury
20	bonds increased from 1.5% to 3.5% in November of 2008. This yield spread
21	deceased to below 1.5% as of the summer of 2009, and has since declined
22	below this figure.
23	In sum, while the economy continues to face significant problems, the

1		actions of the government and Federal Reserve had a large effect on the credit
2		markets. The capital costs for utilities, as measured by the yields on 30-year
3		utility bonds, have declined to pre-financial crisis levels.
4		

<p align="center">III. PROXY GROUP SELECTION</p>

6	Q.	**PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR**
7		**RATE OF RETURN RECOMMENDATION FOR LG&E.**
8	A.	To develop a fair rate of return recommendation for LG&E, I evaluated the
9		return requirements of investors on the common stock of a proxy group of
10		publicly-held electric utility companies ("Electric Proxy Group").
11		
12	Q.	**PLEASE DESCRIBE YOUR PROXY GROUP OF COMPANIES.**
13	A.	My Electric Proxy Group consists of twenty-eight electric utility companies.
14		The selection criteria include the following:
15		1. Listed as Electric Utility by *Value Line Investment Survey* and listed as a
16		Electric Utility or Combination Electric & Gas company and *AUS Utilities*
17		*Report*;
18		2. At least 50% of revenues from regulated electric operations as reported
19		by *AUS Utilities Report;*
20		3. An investment grade bond rating as reported by *AUS Utilities Report;*
21		4. Pays a cash dividend;
22		5. Not involved in an acquisition of another utility, and/or is the target of an
23		acquisition, in the past year; and

1   6.   Analysts' long-term EPS growth rate forecasts available from Yahoo,

2   Reuters, and Zack's

3

4   The Electric Proxy Group includes twenty-eight companies. Summary

5   financial statistics for the proxy group are listed on page 1 of Exhibit JRW-4.[1]

6   The median operating revenues and net plant for the Electric Proxy Group are

7    $3,982.1M and $8,578.7M, respectively. The group receives 79% of revenues

8   from regulated electric operations, has an A-/BBB+ bond rating from Standard

9   & Poor's, a current common equity ratio of 46.0%, and an earned return on

10   common equity of 10.4%.

11

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

13   Q.   **WHAT IS LG&E'S CURRENT CAPITAL STRUCTURE FOR**

14   **RATEMAKING PURPOSES?**

15   A.   In Case No. 2009-00549, LG&E proposed and the Commission approved a

16   capital structure that included long-term debt and common equity ratios of

17   46.14% and 53.86%. This included a long-term debt cost rate of 4.61%. As

18   provided in response to PSC 1-49, the Company has used a capital structure as

19   of August 31, 2010 that includes 5.10% short-term debt, 38.65% long-term

20   debt, and 56.25% common equity. This capitalization is shown in Panel A of

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[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		Exhibit JRW-5. The Company has used short-term and long-term debt cost
2		rates of 0.28% and 5.17%, and a common equity cost rate of 10.63%.
3		
4	Q.	WHAT ARE THE CAPITALIZATIONS OF LG&E, LG&E'S PARENT
5		LG&E AND LG&E ENERGY LLC, AND PPL?
6	A.	The capitalizations for LG&E, LG&E and LG&E Energy LLC, and PPL are
7		provided in Panels B, C, and D of Exhibit JRW-5 as of June 30, 2011. The
8		capitalization of LG&E includes 44.96% long-term debt and 55.04% common
9		equity. LG&E's parent, LG&E and LG&E Energy LLC, has a capital
10		structure with a common equity ratio of 51.06%. PPL, on the other hand, has
11		a capitalization with a common equity ratio of on 36.58%. As such, PPL has
12		much more debt than LG&E and LG&E and LG&E Energy LLC. This is
13		significant since the bond ratings of LG&E and LG&E Energy LLC
14		ultimately are a function of the capitalization of PPL. In addition, electric
15		utilities in general have more debt in their capitalizations than LG&E and
16		LG&E and LG&E Energy LLC, but not to the degree of PPL. As shown in
17		Exhibit JRW-4, the median common equity ratio for the Electric Proxy Group
18		is 46.0%.
19		
20	Q.	WHAT CAPITAL STRUCTURE ARE YOU EMPLOYING FOR
21		LG&E?
22	A.	My proposed capital structure is provided in Panel E of Exhibit JRW-5. I am
23		using LG&E's amounts of long-term debt and shareholder's equity as of

1	6/30/2011. In addition, I am including $125M of short-term debt in the
2	capital structure. As indicated by LG&E Witness Mr. Arbough, the Company
3	plans to initially draw on short-term lines of credit and commercial paper for
4	financing until outstanding balances are large enough to issue a long-term first
5	mortgage bond. He suggests that the first mortgage bond issuances would be
6	expected to be in the range of $250 million. As such, LG&E would have $0
7	to $250 million in short-term debt outstanding at any point in time between
8	the first mortgage debt issuances. Therefore, the average short-term debt
9	outstanding would be about $125M. Including this amount of short-term debt,
10	my proposed capital structure ratios are 4.84% short-term debt, 42.78% long-
11	term debt, and 52.38% common equity.
12	
13	**Q. WHAT DEBT COST RATE ARE YOU USING IN YOUR COST OF**
14	**CAPITAL CALCULATION FOR LG&E?**
15	A. I am employing the Company's short-term and long-term debt cost rates as of
16	6/30/2011. These rates are 0.16% and 3.88%, respectively. These rates were
17	provided by the Company in LG&E AG Q 2-2 (1) Redacted Attachment-Cost
18	of LTD.
19	
20	
21	
22	

V. THE COST OF COMMON EQUITY CAPITAL

A. OVERVIEW

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

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

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

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

12

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

In the real world, firms can achieve competitive advantage due to product market imperfections. Most notably, companies can gain competitive advantage through product differentiation (adding real or perceived value to products) and by achieving economies of scale (decreasing marginal costs of production). Competitive advantage allows firms to price products above average cost and thereby earn accounting profits greater than those required to cover capital costs. When these profits are in excess of that required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

James M. McTaggart, founder of the international management consulting firm Marakon Associates, described this essential relationship

| 1 | between the return on equity, the cost of equity, and the market-to-book ratio |
| 2 | in the following manner:[2] |

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

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

As such, the relationship between a firm's return on equity, cost of

equity, and market-to-book ratio is relatively straightforward. A firm that

earns a return on equity above its cost of equity will see its common stock sell

at a price above its book value. Conversely, a firm that earns a return on

equity below its cost of equity will see its common stock sell at a price below

its book value.

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

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

4   A.   This relationship is discussed in a classic Harvard Business School case study

5   entitled "A Note on Value Drivers." On page 2 of that case study, the author

6   describes the relationship very succinctly:[3]

> 7   For a given industry, more profitable firms – those able
> 8   to generate higher returns per dollar of equity – should
> 9   have higher market-to-book ratios. Conversely, firms
> 10   which are unable to generate returns in excess of their
> 11   cost of equity should sell for less than book value.

	Profitability	*Value*
12		
13	*If ROE > K*	*then Market/Book > 1*
14	*If ROE = K*	*then Market/Book =1*
15	*If ROE < K*	*then Market/Book < 1*

16   To assess the relationship by industry, as suggested above, I

17   performed a regression study between estimated return on equity ("ROE") and

18   market-to-book ratios using natural gas distribution, electric utility and water

19   utility companies. I used all companies in these three industries that are

20   covered by *Value Line* and have estimated ROE and market-to-book ratio

21   data. The results are presented in Panels A-C of Exhibit JRW-6. The

22   average R-squares for the electric, gas, and water companies are 0.65, 0.60,

23   and 0.92, respectively.[4] This demonstrates the strong positive relationship

24   between ROEs and market-to-book ratios for public utilities.

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

[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

1		
2	Q.	**WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF**
3		**EQUITY CAPITAL FOR PUBLIC UTILITIES?**
4	A.	Exhibit JRW-7 provides indicators of public utility equity cost rates over the
5		past decade. Page 1 shows the yields on long-term 'A' rated public utility
6		bonds. These yields peaked in the early 2000s at over 8.0%, declined to about
7		5.0% in 2005, and rose to 6.0% in 2006 and 2007. They stayed in that 6.0%
8		range until the third quarter of 2008 when they spiked to almost 7.5% during
9		the financial crisis. They have since retreated and are now below 5.0%.
10		Page 2 of Exhibit JRW-7 provides the dividend yields for the proxy
11		group. The dividend yields for the Electric Proxy Group generally declined
12		slightly over the decade until 2007. They increased in 2008 and 2009 in
13		response to the financial crisis, but declined in 2010 to about 4.75%.
14		Average earned returns on common equity and market-to-book ratios
15		for the group are on page 3 of Exhibit JRW-7. The average earned returns on
16		common equity for the Electric Proxy Group were in the 9.0%-12.0% range
17		over the past decade, and ended 2010 at 9.75%. The average market-to-book
18		ratio for the group has been in the 1.20X to 1.80X during the decade. The
19		average declined to about 1.20X in 2009, but increased to 1.30X in 2010.
20		
21	Q.	**WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR**
22		**REQUIRED RATE OF RETURN ON EQUITY?**

higher relationship between two variables.

1	A.	The expected or required rate of return on common stock is a function of
2		market-wide as well as company-specific factors. The most important market
3		factor is the time value of money as indicated by the level of interest rates in
4		the economy. Common stock investor requirements generally increase and
5		decrease with like changes in interest rates. The perceived risk of a firm is the
6		predominant factor that influences investor return requirements on a
7		company-specific basis. A firm's investment risk is often separated into
8		business and financial risk. Business risk encompasses all factors that affect a
9		firm's operating revenues and expenses. Financial risk results from incurring
10		fixed obligations in the form of debt in financing its assets.
11		
12	Q.	**HOW DOES THE INVESTMENT RISK OF UTILITIES COMPARE**
13		**WITH THAT OF OTHER INDUSTRIES?**
14	A.	Due to the essential nature of their service as well as their regulated status,
15		public utilities are exposed to a lesser degree of business risk than other, non-
16		regulated businesses. The relatively low level of business risk allows public
17		utilities to meet much of their capital requirements through borrowing in the
18		financial markets, thereby incurring greater than average financial risk.
19		Nonetheless, the overall investment risk of public utilities is below most other
20		industries.
21		Exhibit JRW-8 provides an assessment of investment risk for 100
22		industries as measured by beta, which according to modern capital market
23		theory, is the only relevant measure of investment risk. These betas come

1		from the *Value Line Investment Survey* and are compiled annually by Aswath
2		Damodoran of New York University.[5] The study shows that the investment
3		risk of utilities is very low. The average beta for electric, water, and gas
4		utility companies are 0.75, 0.70, and 0.65, respectively. These are well below
5		the *Value Line* average of 1.15. As such, the cost of equity for utilities is
6		among the lowest of all industries in the U.S.
7		
8	Q.	HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON
9		COMMON EQUITY CAPITAL BE DETERMINED?
10	A.	The costs of debt and preferred stock are normally based on historical or book
11		values and can be determined with a great degree of accuracy. The cost of
12		common equity capital, however, cannot be determined precisely and must
13		instead be estimated from market data and informed judgment. This return to
14		the stockholder should be commensurate with returns on investments in other
15		enterprises having comparable risks.
16		According to valuation principles, the present value of an asset equals
17		the discounted value of its expected future cash flows. Investors discount
18		these expected cash flows at their required rate of return that, as noted above,
19		reflects the time value of money and the perceived riskiness of the expected
20		future cash flows. As such, the cost of common equity is the rate at which
21		investors discount expected cash flows associated with common stock
22		ownership.

---

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

1		Models have been developed to ascertain the cost of common equity
2		capital for a firm. Each model, however, has been developed using restrictive
3		economic assumptions. Consequently, judgment is required in selecting
4		appropriate financial valuation models to estimate a firm's cost of common
5		equity capital, in determining the data inputs for these models, and in
6		interpreting the models' results. All of these decisions must take into
7		consideration the firm involved as well as current conditions in the economy
8		and the financial markets.
9		
10	Q.	**HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY**
11		**CAPITAL FOR THE COMPANY?**
12	A.	I rely primarily on the discounted cash flow ("DCF") model to estimate the
13		cost of equity capital. Given the investment valuation process and the relative
14		stability of the utility business, I believe that the DCF model provides the best
15		measure of equity cost rates for public utilities. It is my experience that this
16		Commission has traditionally relied on the DCF method. I have also
17		performed a capital asset pricing model ("CAPM") study, but I give these
18		results less weight because I believe that risk premium studies, of which the
19		CAPM is one form, provide a less reliable indication of equity cost rates for
20		public utilities.

1

2   **B.   DCF ANALYSIS**

3   **Q.**   **DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF**

4   **MODEL.**

5   **A.**   According to the DCF model, the current stock price is equal to the discounted

6   value of all future dividends that investors expect to receive from investment

7   in the firm. As such, stockholders' returns ultimately result from current as

8   well as future dividends. As owners of a corporation, common stockholders

9   are entitled to a *pro rata* share of the firm's earnings. The DCF model

10   presumes that earnings that are not paid out in the form of dividends are

11   reinvested in the firm so as to provide for future growth in earnings and

12   dividends. The rate at which investors discount future dividends, which

13   reflects the timing and riskiness of the expected cash flows, is interpreted as

14   the market's expected or required return on the common stock. Therefore, this

15   discount rate represents the cost of common equity. Algebraically, the DCF

16   model can be expressed as:

17
18
19

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

20

21   where P is the current stock price, D_n is the dividend in year n, and k is the

22   cost of common equity.

23

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

3   A.   Yes. Virtually all investment firms use some form of the DCF model as a

4   valuation technique. One common application for investment firms is called

5   the three-stage DCF or dividend discount model ("DDM"). The stages in a

6   three-stage DCF model are presented in Exhibit JRW-9. This model presumes

7   that a company's dividend payout progresses initially through a growth stage,

8   then proceeds through a transition stage, and finally assumes a steady-state

9   stage. The dividend-payment stage of a firm depends on the profitability of its

10   internal investments, which, in turn, is largely a function of the life cycle of

11   the product or service.

12   1.   Growth stage: Characterized by rapidly expanding sales, high profit

13   margins, and abnormally high growth in earnings per share. Because of

14   highly profitable expected investment opportunities, the payout ratio is low.

15   Competitors are attracted by the unusually high earnings, leading to a decline

16   in the growth rate.

17   2.   Transition stage: In later years increased competition reduces profit

18   margins and earnings growth slows. With fewer new investment

19   opportunities, the company begins to pay out a larger percentage of earnings.

20   3.   Maturity (steady-state) stage: Eventually the company reaches a

21   position where its new investment opportunities offer, on average, only

22   slightly attractive ROEs. At that time its earnings growth rate, payout ratio,

1	and ROE stabilize for the remainder of its life. The constant-growth DCF
2	model is appropriate when a firm is in the maturity stage of the life cycle.
3	In using this model to estimate a firm's cost of equity capital,
4	dividends are projected into the future using the different growth rates in the
5	alternative stages, and then the equity cost rate is the discount rate that equates
6	the present value of the future dividends to the current stock price.
7	
8	**Q.** **HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR**
9	**REQUIRED RATE OF RETURN USING THE DCF MODEL?**
10	**A.** Under certain assumptions, including a constant and infinite expected growth
11	rate, and constant dividend/earnings and price/earnings ratios, the DCF model
12	can be simplified to the following:

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

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

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

22

| 1 | Q. | IN YOUR OPINION, IS THE CONSTANT-GROWTH DCF MODEL |
| 2 | | APPROPRIATE FOR PUBLIC UTILITIES? |

| 3 | 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.

| 15 | Q. | WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING |
| 16 | | THE DCF METHODOLOGY? |

| 17 | 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

1		current economic developments and other information available to investors,
2		to accurately estimate investors' expectations.
3		
4	Q.	**PLEASE DISCUSS EXHIBIT JRW-10.**
5	A.	My DCF analysis is provided in Exhibit JRW-10. The DCF summary is on
6		page 1 of this Exhibit, and the supporting data and analysis for the dividend
7		yield and expected growth rate are provided on the following pages of the
8		Exhibit.
9		
10	Q.	**WHAT DIVIDEND YIELDS ARE YOU EMPLOYING IN YOUR DCF**
11		**ANALYSIS FOR THE PROXY GROUP?**
12	A.	The dividend yields on the common stock for the companies in the proxy
13		group are provided on page 2 of Exhibit JRW-10 for the six-month period
14		ending September 2011. For the DCF dividend yields for the Group, I use the
15		average of the six month and September 2011 dividend yields. The table
16		below shows these dividend yields.
17		

Proxy Group	September 2011 Dividend Yield	6-Month Average Dividend Yield	DCF Dividend Yield
Electric Proxy Group	4.7%	4.6%	4.65%

18		
19	Q.	**PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE**
20		**SPOT DIVIDEND YIELD.**

1	A.	According to the traditional DCF model, the dividend yield term relates to the
2		dividend yield over the coming period. As indicated by Professor Myron
3		Gordon, who is commonly associated with the development of the DCF model
4		for popular use, this is obtained by: (1) multiplying the expected dividend
5		over the coming quarter by 4 and (2) dividing this dividend by the current
6		stock price to determine the appropriate dividend yield for a firm, that pays
7		dividends on a quarterly basis.[6]
8		In applying the DCF model, some analysts adjust the current dividend
9		for growth over the coming year as opposed to the coming quarter. This can
10		be complicated because firms tend to announce changes in dividends at
11		different times during the year. As such, the dividend yield computed based
12		on presumed growth over the coming quarter as opposed to the coming year
13		can be quite different. Consequently, it is common for analysts to adjust the
14		dividend yield by some fraction of the long-term expected growth rate.
15		
16	Q.	**GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR WILL**
17		**YOU USE FOR YOUR DIVIDEND YIELD?**
18	A.	I will adjust the dividend yield by one-half (1/2) the expected growth so as to
19		reflect growth over the coming year.
20		

---

[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	Q.	PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE
2		DCF MODEL.
3	A.	There is much debate as to the proper methodology to employ in estimating
4		the growth component of the DCF model. By definition, this component is
5		investors' expectation of the long-term dividend growth rate. Presumably,
6		investors use some combination of historical and/or projected growth rates for
7		earnings and dividends per share and for internal or book value growth to
8		assess long-term potential.
9	Q.	WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY
10		GROUP?
11	A.	I have analyzed a number of measures of growth for companies in the Electric
12		Proxy Group. I reviewed *Value Line's* historical and projected growth rate
13		estimates for earnings per share ("EPS"), dividends per share ("DPS"), and
14		book value per share ("BVPS"). In addition, I utilized the average EPS
15		growth rate forecasts of Wall Street analysts as provided by Yahoo, Reuters
16		and Zacks. These services solicit five-year earnings growth rate projections
17		from securities analysts and compile and publish the means and medians of
18		these forecasts. Finally, I also assessed prospective growth as measured by
19		prospective earnings retention rates and earned returns on common equity.
20		
21	Q.	PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND
22		DIVIDENDS AS WELL AS INTERNAL GROWTH.

1	A.	Historical growth rates for EPS, DPS, and BVPS are readily available to
2		virtually all investors and are presumably an important ingredient in forming
3		expectations concerning future growth. However, one must use historical
4		growth numbers as measures of investors' expectations with caution. In some
5		cases, past growth may not reflect future growth potential. Also, employing a
6		single growth rate number (for example, for five or ten years), is unlikely to
7		accurately measure investors' expectations due to the sensitivity of a single
8		growth rate figure to fluctuations in individual firm performance as well as
9		overall economic fluctuations (i.e., business cycles). However, one must
10		appraise the context in which the growth rate is being employed. According
11		to the conventional DCF model, the expected return on a security is equal to
12		the sum of the dividend yield and the expected long-term growth in dividends.
13		Therefore, to best estimate the cost of common equity capital using the
14		conventional DCF model, one must look to long-term growth rate
15		expectations.
16		Internally generated growth is a function of the percentage of earnings
17		retained within the firm (the earnings retention rate) and the rate of return
18		earned on those earnings (the return on equity). The internal growth rate is
19		computed as the retention rate times the return on equity. Internal growth is
20		significant in determining long-run earnings and therefore, dividends.
21		Investors recognize the importance of internally generated growth and pay
22		premiums for stocks of companies that retain earnings and earn high returns
23		on internal investments.

1		
2	Q.	PLEASE DISCUSS ANALYSTS' EPS FORECASTS.
3	A.	EPS forecasts are collected and published by a number of different services,
4		including by Zack's, First Call, and Reuters. These services retrieve and
5		compile EPS forecasts from Wall Street analysts. These analysts come from both
6		sell side financial firms, such as Merrill Lynch and Morgan Stanley, and buy
7		side financial firms, such as Prudential Insurance and Fidelity Investments.
8		These services collect and publish: (1) EPS estimates for future quarterly
9		and annual time periods and (2) long-term EPS growth rate forecasts. The EPS
10		estimates are in dollars and cents per share, and the services report the high, low
11		and mean of the estimates collected for analysts. The long-term projected EPS
12		growth rate is expressed in percentage terms. As shown in the figure below, the
13		projected EPS near-term estimates are usually provided for the next quarter, the
14		current fiscal year, and the next fiscal year. The long-term projected EPS growth
15		rate is for a three-to-five year time period.

Projected EPS Estimates in $			Projected EPS Long-Term Growth in %
Next Quarter	Current Year	Next Year	Three-to-Five Years
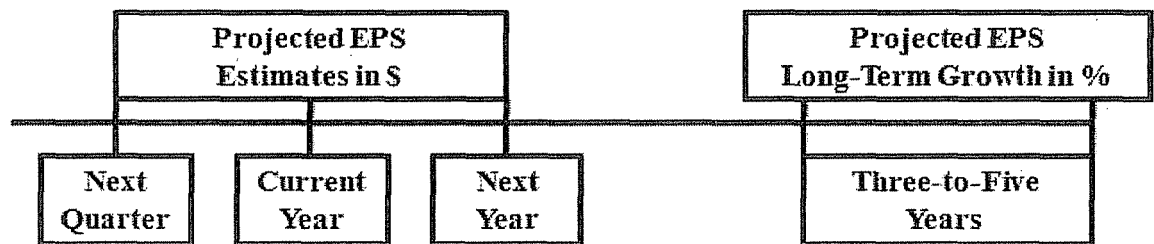
16		
17		
18	Q.	PLEASE PROVIDE AN EXAMPLE OF THESE EPS FORECASTS.
19	A.	The following example provides the EPS forecasts compiled by Reuters for
20		AEP.

1
2
3
4

	# of Estimates	Mean	High	Low
Earnings (per share)				
Quarter Ending Sep-11	8	1.11	1.17	1.07
Quarter Ending Dec-11	8	0.45	0.51	0.39
Year Ending Dec-11	22	3.13	3.26	3.06
Year Ending Dec-12	22	3.23	3.35	3.15
LT Growth Rate (%)	8	4.23	6.00	2.30

5
6
7

8   These figures can be interpreted as follows. The top line shows that eight

9   analysts have provided EPS estimates for the quarter ending September 2011.

10   The mean, high and low estimates are $1.11, $1.17, and $1.07, respectively.

11   The second line shows the quarterly EPS estimates for the quarter ending

12   December 2011. Lines three and four show the annual EPS estimates for the

13   fiscal years ending December 2011 and 2012. The quarterly and annual EPS

14   forecasts in lines 1-4 are expressed in dollars and cents. As in the AEP case

15   shown here, it is common for more analysts to provide estimates of annual

16   EPS as opposed to quarterly EPS. The long-term growth rate is expressed as a

17   percent, and there are usually fewer analysts providing this figure. For AEP,

18   eight analysts have provided long-term EPS growth rate forecasts, with mean,

19   high and low growth rates of 4.23%, 6.00%, and 2.30%.

20

21   Q.   WHICH OF THESE EPS FORECASTS IS USED IN DEVELOPING A

29

1		DCF GROWTH RATE?
2	A.	The DCF growth rate is the long-term projected growth rate in EPS, DPS, and
3		BVPS. Therefore, in developing an equity cost rate using the DCF model, the
4		projected long-term growth rate is the projection used in the DCF model.
5		
6	Q.	**WHY ARE YOU NOT RELYING EXCLUSIVELY ON THE EPS**
7		**FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A**
8		**DCF GROWTH RATE FOR THE PROXY GROUP?**
9	A.	There are several issues with using the EPS growth rate forecasts of Wall
10		Street analysts as DCF growth rates. First, the appropriate growth rate in the
11		DCF model is the dividend growth rate, not the earnings growth rate.
12		Nonetheless, over the very long-term, dividend and earnings will have to grow
13		at a similar growth rate. Therefore, consideration must be given to other
14		indicators of growth, including prospective dividend growth, internal growth,
15		as well as projected earnings growth. Second, and most significantly, it is
16		well-known that the long-term EPS growth rate forecasts of Wall Street
17		securities analysts are overly optimistic and upwardly biased. This has been
18		demonstrated in a number of academic studies over the years. Hence, using
19		these growth rates as a DCF growth rate will provide an overstated equity cost
20		rate. This issue is addressed in Appendix B – The Research on Analysts'
21		Long-Term EPS Growth Rate Forecasts.
22		
23	Q.	**IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE**

1		UPWARD BIAS IN THE EPS GROWTH RATE FORECASTS?
2	A.	Yes, I do believe that investors are well aware of the bias in analysts' EPS
3		growth rate forecasts, and therefore, stock prices reflect the upward bias.
4		
5	Q.	HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A
6		DCF EQUITY COST RATE STUDY?
7	A.	According to the DCF model, the equity cost rate is a function of the dividend
8		yield and expected growth rate. Since stock prices reflect the bias, it would
9		affect the dividend yield. In addition, the DCF growth rate needs to be adjusted
10		downward from the projected EPS growth rate to reflect the upward bias.
11		
12	Q.	PLEASE DISCUSS THE HISTORICAL GROWTH OF THE
13		COMPANIES IN THE GROUP AS PROVIDED IN THE *VALUE LINE*
14		*INVESTMENT SURVEY.*
15	A.	Historic growth rates for the companies in the Electric Proxy Group, as
16		published in the *Value Line Investment Survey*, are provided on page 3 of
17		Exhibit JRW-10. Due to the presence of outliers, I once again use the
18		medians in the analysis. The historical growth measures in EPS, DPS, and
19		BVPS for the Electric Proxy Group, as measured by the medians, range from -
20		0.5% to 7.0%, with an average of 3.4%.
21		
22	Q.	PLEASE SUMMARIZE *VALUE LINE'S* PROJECTED GROWTH
23		RATES FOR THE COMPANIES IN THE PROXY GROUP.

1	A.	*Value Line's* projections of EPS, DPS and BVPS growth for the companies in
2		the Electric Proxy Group are shown on page 4 of Exhibit JRW-10. As above,
3		due to the presence of outliers, both the mean and medians are used in the
4		analysis. For the Electric Proxy Group, the central tendency measure ranges
5		from 3.5% to 5.5%, with an average of 4.4%.

6   Also provided on page 4 of Exhibit JRW-10 are the sustainable or

7   prospective internal growth rates for the proxy group as measured by *Value*

8   *Line*'s average projected retention rate and return on shareholders' equity. As

9   noted above, sustainable or internal growth is significant and a primary driver

10   of long-run earnings growth. For the Electric Proxy Group, the average

11   prospective sustainable growth rate is 4.2%.

12

13   Q.   **PLEASE ASSESS GROWTH FOR THE PROXY GROUP AS**

14   **MEASURED BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR**

15   **EPS GROWTH.**

16   A.   Yahoo, First Call, Zack's, and Reuters collect, summarize, and publish Wall

17   Street analysts' five-year EPS growth rate forecasts for the companies in the

18   proxy group. These forecasts are provided for the companies in the Electric

19   Proxy Group on page 5 of Exhibit JRW-10. The medians of the analysts'

20   projected EPS growth rates for the Electric Group is 4.9%.[7]

21

---

[7] 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	Q.	PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL		

1   Q.   PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL

2   AND PROSPECTIVE GROWTH OF THE PROXY GROUP.

3   A.   The summary DCF growth rate indicators for the Electric Proxy Group are

4   shown on page 6 of Exhibit JRW-10. The average of the growth rate

5   indicators for the Electric Proxy Group is 4.2%. The average *Value Line*'s

6   projected growth rates in EPS, DPS, and BVPS is 4.4% and *Value Line*'s

7   sustainable growth rate is 4.2 %. The average of analysts' projected EPS

8   growth rates is 4.9%. The average of the projected and prospective growth

9   rate indicators for the Group is 4.5%. Given these results, and giving more

10   weight to the projections, an expected DCF growth rate in the 4.5% to 5.0% is

11   reasonable. I will use the midpoint of this range, 4.75%, as my DCF growth

12   rate for the Electric Proxy Group.

13   Q.   BASED ON THE ABOVE ANALYSIS, WHAT IS YOUR INDICATED

14   COMMON EQUITY COST RATE FOR THE DCF MODEL?

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

16
17
18
19        $$\text{DCF Equity Cost Rate (k)} \quad = \quad \frac{D}{P} \quad + \quad g$$
20
21

DCF Equity Cost Rates

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	4.65%	1.02375	4.75%	9.5%

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

1

2   C.   **CAPM RESULTS**

3   **Q.   PLEASE DISCUSS THE CAPM.**

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

5   capital. According to the risk premium approach, the cost of equity is the sum

6   of the interest rate on a risk-free bond (R_f) and a risk premium (RP), and is

7   illustrated as follows:

8   k   = R_f +   RP
9

10   The yield on long-term U.S. Treasury securities is normally used as R_f.

11   Risk premiums are measured in different ways. The CAPM is a theory of the

12   risk and expected returns of common stocks. In the CAPM, two types of risk

13   are associated with a stock: (1) firm-specific risk or unsystematic risk and (2)

14   market or systematic risk, which is measured by a firm's beta. The only risk

15   that investors receive a return for bearing is systematic risk.

16   According to the CAPM, the expected return on a company's stock,

17   which is also the equity cost rate (K), is equal to:

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

1   Where:

2   ⊚   *K* represents the estimated rate of return on the stock;

3   ⊚ $E(R_m)$ represents the expected return on the overall stock market.
4   Frequently, the "market" refers to the S&P 500;

5   ⊚ (R_f) represents the risk-free rate of interest;

6   ⊚ $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—
7   the excess return that an investor expects to receive above the risk-free rate for
8   investing in risky stocks; and

9   ⊚   *Beta*—(ß) is a measure of the systematic risk of an asset.
10
11   To estimate the required return or cost of equity using the CAPM

12   requires three inputs: (1) the risk-free rate of interest (R_f), (2) the beta (ß), and

13   (3) the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest

14   of the inputs to measure – it is the yield on long-term U.S. Treasury bonds. ß,

15   the measure of systematic risk, is a little more difficult to measure because

16   there are different opinions about what adjustments, if any, should be made to

17   historical betas due to their tendency to regress to 1.0 over time. And finally,

18   an even more difficult input to measure is the expected equity or market risk

19   premium $(E(R_m) - (R_f))$. I discuss each of these inputs below.

20

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

22   A.   Exhibit JRW-11 provides the summary results for my CAPM study. Page 1

23   shows the summary of the results, and pages 2-11 contain the supporting data.

1		
2	Q.	PLEASE DISCUSS THE RISK-FREE INTEREST RATE.
3	A.	The yield on long-term U.S. Treasury bonds has usually been viewed as the
4		risk-free rate of interest in the CAPM. The yield on long-term U.S. Treasury
5		bonds, in turn, has been considered to be the yield on U.S. Treasury bonds
6		with 30-year maturities.
7		
8	Q.	WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR
9		CAPM?
10	A.	The yield on 30-year Treasury bonds has been in the 3.5% to 4.5% range over
11		the last six months. As of September 6 2011, the rate on 30-year U.S.
12		Treasury Bonds was 3.26%. Given the recent range of yields, I use 4.0%, as
13		the risk-free rate, or R_f, in my CAPM.
14		
15	Q.	WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?
16	A.	Beta (ß) is a measure of the systematic risk of a stock. The market, usually
17		taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same
18		price movement as the market also has a beta of 1.0. A stock whose price
19		movement is greater than that of the market, such as a technology stock, is
20		riskier than the market and has a beta greater than 1.0. A stock with below
21		average price movement, such as that of a regulated public utility, is less risky
22		than the market and has a beta less than 1.0. Estimating a stock's beta involves
23		running a linear regression of a stock's return on the market return.

1		As shown on page 3 of Exhibit JRW-11, the slope of the regression
2		line is the stock's beta. A steeper line indicates the stock is more sensitive to
3		the return on the overall market. This means that the stock has a higher beta
4		and greater than average market risk. A less steep line indicates a lower beta
5		and less market risk.
6		Numerous online investment information services, such as Yahoo and
7		Reuters, provide estimates of stock betas. Usually these services report
8		different betas for the same stock. The differences are usually due to: (1) the
9		time period over which the beta is measured and (2) any adjustments that are
10		made to reflect the fact that betas tend to regress to 1.0 over time. In
11		estimating an equity cost rate for the Electric Proxy Group, I use the betas for
12		the companies as provided in the *Value Line Investment Survey*. As shown on
13		page 3 of Exhibit JRW-11, the median beta for the companies in the Electric
14		Proxy Group is 0.70.
15		
16	Q.	**PLEASE DISCUSS THE ALTERNATIVE VIEWS REGARDING THE**
17		**EQUITY RISK PREMIUM.**
18	A.	The equity or market risk premium - $(E(R_m) - R_f)$ - is equal to the expected
19		return on the stock market (e.g., the expected return on the S&P 500 ($E(R_m)$)
20		minus the risk-free rate of interest (R_f). The equity premium is the difference
21		in the expected total return between investing in equities and investing in
22		"safe" fixed-income assets, such as long-term government bonds. However,

1		while the equity risk premium is easy to define conceptually, it is difficult to
2		measure because it requires an estimate of the expected return on the market.
3		
4	Q.	**PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO**
5		**ESTIMATING THE EQUITY RISK PREMIUM.**
6	A.	Page 4 of Exhibit JRW-11 highlights the primary approaches to, and issues in,
7		estimating the expected equity risk premium. The traditional way to measure
8		the equity risk premium was to use the difference between historical average
9		stock and bond returns. In this case, historical stock and bond returns, also
10		called ex post returns, were used as the measures of the market's expected
11		return (known as the ex ante or forward-looking expected return). This type
12		of historical evaluation of stock and bond returns is often called the "Ibbotson
13		Approach" after Professor Roger Ibbotson who popularized this method of
14		using historical financial market returns as measures of expected returns.
15		Most historical assessments of the equity risk premium suggest an equity risk
16		premium of 5% to 7% above the rate on long-term U.S. Treasury bonds.
17		However, this can be a problem because: (1) *ex post* returns are not the same
18		as *ex ante* expectations, (2) market risk premiums can change over time,
19		increasing when investors become more risk-averse and decreasing when
20		investors become less risk-averse, and (3) market conditions can change such
21		that *ex post* historical returns are poor estimates of *ex ante* expectations.

1	The use of historical returns as market expectations has been
2	criticized in numerous academic studies.[8] The general theme of these studies
3	is that the large equity risk premium discovered in historical stock and bond
4	returns cannot be justified by the fundamental data. These studies, which fall
5	under the category "Ex Ante Models and Market Data," compute *ex ante*
6	expected returns using market data to arrive at an expected equity risk
7	premium. These studies have also been called "Puzzle Research" after the
8	famous study by Mehra and Prescott in which the authors first questioned the
9	magnitude of historical equity risk premiums relative to fundamentals.[9]
10	In addition, there are a number of surveys of financial professionals
11	regarding the equity risk premium. There have been several published surveys
12	of academics on the equity risk premium. *CFO Magazine* conducts a quarterly
13	survey of CFOs which includes questions regarding their views on the current
14	expected returns on stocks and bonds. Usually over 500 CFOs participate in
15	the survey.[10] Questions regarding expected stock and bond returns are also
16	included in the Federal Reserve Bank of Philadelphia's annual survey of
17	financial forecasters which is published as the *Survey of Professional*
18	*Forecasters.*[11] This survey of professional economists has been published for

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

[9] R. Mehra and Edward Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics* (1985).

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

[11] 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

1		almost 50 years. In addition, Pablo Fernandez conducts occasional surveys of
2		financial analysts and companies regarding the equity risk premiums they use
3		in their investment and financial decision-making.
4		
5	Q.	**PLEASE PROVIDE A SUMMARY OF THE EQUITY RISK PREMIUM**
6		**STUDIES.**
7	A.	Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed
8		the most comprehensive reviews to date of the research on the equity risk
9		premium.[12] Derrig and Orr's study evaluated the various approaches to
10		estimating equity risk premiums as well as the issues with the alternative
11		approaches and summarized the findings of the published research on the
12		equity risk premium. Fernandez examined four alternative measures of the
13		equity risk premium – historical, expected, required, and implied. He also
14		reviewed the major studies of the equity risk premium and presented the
15		summary equity risk premium results. Song provides an annotated
16		bibliography and highlights the alternative approaches to estimating the equity
17		risk summary.
18		Page 5 of Exhibit JRW-11 provides a summary of the results of the
19		primary risk premium studies reviewed by Derrig and Orr, Fernandez, and
20		Song, as well as other more recent studies of the equity risk premium. In

with the NBER, assumed responsibility for the survey in June 1990.

[12] *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		developing page 5 of Exhibit JRW-11, I have categorized the studies as
2		discussed on page 4 of Exhibit JRW-11. I have also included the results of the
3		"Building Blocks" approach to estimating the equity risk premium, including
4		a study I performed, which is presented in Appendix C. The Building Blocks
5		approach is a hybrid approach employing elements of both historic and *ex*
6		*ante* models.
7		
8	Q.	**PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-11.**
9	A.	Page 5 of Exhibit JRW-11 provides a summary of the results of the equity risk
10		premium studies that I have reviewed. These include the results of: (1) the
11		various studies of the historical risk premium, (2) *ex ante* equity risk premium
12		studies, (3) equity risk premium surveys of CFOs, Financial Forecasters,
13		analysts, companies and academics, and (4) the Building Block approaches to
14		the equity risk premium. There are results reported for over thirty studies, and
15		the median equity risk premium is 4.61%.
16		
17	Q.	**PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT**
18		**RISK PREMIUM STUDIES AND SURVEYS?**
19	A.	The studies cited on page 5 of Exhibit JRW-11 include all equity risk
20		premium studies and surveys I could identify that were published over the past
21		decade and that provided an equity risk premium estimate. Most of these
22		studies were published prior to the financial crisis of the past two years. In
23		addition, some of these studies were published in the early 2000s at the market

1		peak. It should be noted that many of these studies (as indicated) used data
2		over long periods of time (as long as fifty years of data) and so they were not
3		estimating an equity risk premium as of a point in time (e.g., the year 2001).
4		To assess the effect of the earlier studies on the equity risk premium, on page
5		6 of Exhibit JRW-11 I have reconstructed page 5 of Exhibit JRW-11, but I
6		have eliminated all studies dated before January 2, 2010. The median for this
7		subset of studies is 5.10%.
8		
9	Q.	**GIVEN THESE RESULTS, WHAT EQUITY RISK PREMIUM ARE**
10		**YOU USING IN YOUR CAPM?**
11	A.	I use the median equity risk premium for the 2010-11 studies and surveys,
12		which is 5.10%.
13		
14	Q.	**IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH**
15		**THE EQUITY RISK PREMIUMS USED BY CFOS?**
16	A.	Yes. In the June CFO survey conducted by *CFO Magazine* and Duke
17		University, the expected 10-year equity risk premium was 3.4%.
18		
19	Q.	**IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH**
20		**THE EQUITY RISK PREMIUMS OF PROFESSIONAL**
21		**FORECASTERS?**
22	A.	Yes. The financial forecasters in the previously referenced Federal Reserve
23		Bank of Philadelphia survey project both stock and bond returns. As shown

1		on Panels D and E of page 8 of Exhibit JRW-11, the mean long-term expected
2		stock and bond returns were 7.37% and 4.50%, respectively. This provides an
3		*ex ante* equity risk premium of 2.87%.
4		
5	**Q.**	**IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH**
6		**THE EQUITY RISK PREMIUMS OF FINANCIAL ANALYSTS AND**
7		**COMPANIES?**
8	**A.**	Yes. Pablo Fernandez recently published the results of a 2011 survey of
9		financial analysts and companies. This survey included over 6,000 responses.
10		The median equity risk premium employed by both U.S. analysts and
11		companies was 5.0% and 5.2%.
12		
13	**Q.**	**IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH**
14		**THE EQUITY RISK PREMIUMS USED BY THE LEADING**
15		**CONSULTING FIRMS?**
16	**A.**	Yes. McKinsey & Co. is widely recognized as the leading management
17		consulting firm in the world. It published a study entitled "The Real Cost of
18		Equity" in which the McKinsey authors developed an *ex ante* equity risk
19		premium for the U.S. In reference to the decline in the equity risk premium,
20		as well as what is the appropriate equity risk premium to employ for corporate
21		valuation purposes, the McKinsey authors concluded the following:

22		We attribute this decline not to equities becoming less
23		risky (the inflation-adjusted cost of equity has not
24		changed) but to investors demanding higher returns in

43

1		real terms on government bonds after the inflation
2		shocks of the late 1970s and early 1980s. We believe
3		that using an equity risk premium of 3.5 to 4 percent in
4		the current environment better reflects the true long-
5		term opportunity cost of equity capital and hence will
6		yield more accurate valuations for companies.[13]

7

8 Q.   HAS MCKINSEY REAFFIRMED ITS OPINION ON THE EQUITY

9   RISK PREMIUM IN LIGHT OF THE FINANCIAL CRISIS?

10 A.   Yes. As previously discussed, McKinsey has published a study in which they

11   reaffirm their estimate of the equity risk premium in light of the financial

12   turmoil of the past two years.[14]

13

14 Q.   WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM

15   ANALYSIS?

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

17

18

19
$$K = (R_f) + ß * [E(R_m) - (R_f)]$$

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Electric Proxy Group	4.0%	0.70	5.10%	7.6%

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

21

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[13] Marc H. Goedhart, *et al.*, "The Real Cost of Equity," *McKinsey on Finance* (Autumn 2002), p. 15.

[14] Richard Dobbs, Bin Jang, and Timothy Koeller, "Why the Crisis Hasn't Shaken the Cost of Capital," *McKinsey Quarterly* (December 2008), pp. 1-6.

1

2

3   VI.   EQUITY COST RATE SUMMARY

4   Q.   PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.

5   A.   The results for my DCF and CAPM analyses for the proxy group of electric

6   utility companies re indicated below:

	DCF	CAPM
Electric Proxy Group	9.5%	7.6%

7   Q.   GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY

8   COST RATE FOR THE GROUP?

9   A.   These results indicate that the appropriate equity cost rate for LG&E is in the

10   7.6% to 9.5% range. However, since I give greater weight to the results of the

11   DCF model, I believe that the appropriate equity cost rate is in the 9.0% to

12   9.50% range. I use the midpoint of this range, 9.25%, as the equity cost rate

13   for LG&E.

14

15   Q.   PLEASE INDICATE WHY A 9.25% RETURN IS APPROPRIATE FOR

16   LG&E AT THIS TIME.

17   A.   There are several reasons why a 9.25% ROE is an appropriate for the

18   Company in this case. First, as shown in Exhibit JRW-8, the electric utility

19   industry is among the lowest risk industries as measured by *Value Line*'s beta.

20   As such, the cost of equity capital for the industry is among the lowest in the

45

1		U.S. according to the CAPM. Second, as shown in Exhibit JRW-3, capital
2		costs for utilities, as indicated by long-term bond yields, have declined to their
3		pre-financial crisis levels. Third, while the financial markets have recovered
4		significantly in the past year, the economy has not. The economic times are
5		still viewed as being difficult, with nearly nine percent unemployment. As a
6		result, interest rates and inflation are at relatively low levels, and hence the
7		expected returns on financial assets – from savings accounts to Treasury bills
8		to common stocks – are low. Therefore, in my opinion, a 9.25% return is
9		appropriate for LG&E.
10		
11	Q.	**WHAT IS YOU CONCLUSION CONCERNING THE COST OF**
12		**CAPITAL?**
13	A.	From a ratepayer perspective, the effect of the magnitude of the escalating
14		costs could be quite formidable. I have provided evidence that the cost of
15		capital for the Company is lower today than a year ago. This includes the cost
16		of debt and equity capital. In response to Staff Question No. 13, LG&E
17		Witness Mr. Arbough has indicated that the Company was able to raise $535B
18		in debt capital at a cost of under 4.0% in November of 2010. Hence, the
19		Company's marginal cost of raising debt finance has declined. In addition,
20		with lower interest rates, the cost of equity capital has declined. As such,
21		using the 10.63% ROE from the last rate case is not appropriate. This is
22		especially relevant in this proceeding, given the fact that the risks associated

1   with ECR operations would appear to be lower than with the regular

2   operations of the utility.

3

4   Q. ARE THERE ALTERNATIVE FINANCING PLANS THAT COULD

5   OFFSET THE LARGE RATE INCREASES ASSOCIATED WITH THE

6   COMPANY'S ECR?

7   A. Yes. It would appear that securitization is a financing plan to consider in this

8   case. While I am not an expert in the matter, I am generally familiar with the

9   concept. It is my understanding that a number of states have adopted laws

10   that allow for securitization. The ultimate effect is to lower the company's

11   financial risk while also helping to reduce financing costs for specific utility

12   projects and thereby reduce end-users' bills.

13

14 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

15 A. Yes, it does.

16

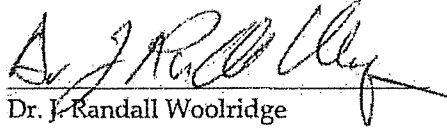COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

LOUISVILLE GAS & ELECTRIC COMPANY'S)	
APPLICATION FOR AN AMENDED)	
ENVIRONMENTAL COMPLIANCE PLAN,)	
A REVISED SURCHARGE TO RECOVER)	Case No. 2011-00162
COSTS, AND CERTIFICATES OF PUBLIC)	
CONVENIENCE AND NECESSITY FOR THE)	
CONSTRUCTION OF NECESSARY)	
ENVIRONMENTAL EQUIPMENT)	

AFFIDAVIT OF DR. J. RANDALL WOOLRIDGE
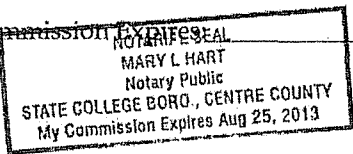
Commonwealth of   )
Pennsylvania   )
)
)

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 _14_ day of _September_ 2011.

NOTARY PUBLIC

My Commission Expires

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. At Iowa he received a Graduate Fellowship and was awarded membership in Beta Gamma Sigma, a national business honorary society. He has taught Finance courses at the University of Iowa, Cornell College, and the University of Pittsburgh, as well as the Pennsylvania State University. These courses include corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on the theoretical and empirical foundations of corporation finance and financial markets and institutions. 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, Financial World, Barron's, Wall Street Journal, Business Week, Washington Post, Investors' Business Daily, Worth Magazine, 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 popular 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 and prepared research reports for major corporations, financial institutions, and investment banking firms, and government agencies. In addition, he has directed and participated in over 500 university- and company- sponsored professional development programs for executives in 25 countries in North and South America, Europe, Asia, and Africa.

Dr. Woolridge has prepared testimony and/or provided consultation services in the following cases:

Pennsylvania: Dr. Woolridge has prepared testimony on behalf of the Pennsylvania Office of Consumer Advocate in the following cases before the Pennsylvania Public Utility Commission; Bell Telephone Company (R-811819), Peoples Natural Gas Company (R-832315), Pennsylvania Power Company (R-832409), Western Pennsylvania Water Company (R-832381), Pennsylvania Power Company (R-842740), Pennsylvania Gas and Water Company (R-850178), Metropolitan Edison Company (R-860384), Pennsylvania Electric Company (R-860413), North Penn Gas Company (R-860535), Philadelphia Electric Company (R-870629), Western Pennsylvania Water Company (R-870825), York Water Company (R-870749), Pennsylvania-American Water Company (R-880916), Equitable Gas Company (R-880971), the Bloomsburg Water Co. (R-891494), Columbia Gas of Pennsylvania, Inc. (R-891468), Pennsylvania-American Water Company (R-90562), Breezewood Telephone Company (R-901666), York Water Company (R-901813), Columbia Gas of Pennsylvania, Inc. (R-901873), National Fuel Gas Corporation (R-911912), Pennsylvania-American Water Company (R-911909), Borough of Media Water Fund (R-912150), UGI Utilities, Inc. - Electric Utility Division (R-922195), Dauphin Consolidated Water Supply Company - General Waterworks of Pennsylvania, Inc, (R-932604), National Fuel Gas Corporation (R-932548), Commonwealth Telephone Company (I-

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

920020), Conestoga Telephone and Telegraph Company (I-920015), Peoples Natural Gas Company (R-932866), Blue Mountain Consolidated Water Company (R-932873), National Fuel Gas Corporation (R-942991), UGI - Gas Division (R-953297), UGI - Electric Division (R-953534), Pennsylvania-American Water Company (R-973944), Pennsylvania-American Water Company (R-994638), Philadelphia Suburban Water Company (R-994868;R-994877;R-994878; R-9948790), Philadelphia Suburban Water Company (R-994868), Wellsboro Electric Company (R-0001635.6), Philadelphia Suburban Water Company (R-00016750), National Fuel Gas Corporation (R-00038168), Pennsylvania-American Water Company (R-00038304), York Water Company (R-00049165), Valley Energy Company (R-00049345), Wellsboro Electric Company (R-00049313), National Fuel Gas Corporation (R-00049656), T.W. Phillips Gas and Oil Co. (R-00051178), PG Energy (R-00061365), City of Dubois Water Company (Docket No. R-00050671), R-00049165), York Water Company (R-00061322), Emporium Water Company (R-00061297), Pennsylvania-American Water Company (R-00072229), UGI Central Penn Gas (Docket No. R-2008-2079675), Columbia Gas of Pennsylvania, Inc. (R-2009-2149262), Pennsylvania-American Water Company – Claysville, Clarion, Northeast, and Coatesville (R-2010-2166210, R-2010-2166208, R-2010-2166212, and R-2010-2166214), Peoples Natural Gas Company (Docket No. R-2010-2201702), City of Lancaster Water Fund (Docket No. 2010-2179103).

New Jersey: Dr. Woolridge prepared testimony for the New Jersey Department of the Public Advocate, Division of Rate Counsel: New Jersey-American Water Company (R-91081399J), New Jersey-American Water Company (R-92090908J), and Environmental Disposal Corp. (R-94070319).

Alaska: Dr. Woolridge prepared testimony for Attorney General's Office of Alaska: Golden Heart Utilities, Inc. and College Utilities Corp. (Water Public Utility Service TA-29-118 and Sewer Public Utility Service TA-82-97), Anchorage Water and Wastewater Utility (TA-106-122), Anchorage Water and Wastewater Utility (TA-08-157 and TA-08-158), Municipal Light & Power (TA304-121).

Arizona: Dr. Woolridge prepared testimony for Utility Division staff of the Arizona Corporation Commission, Arizona Public Service Company (Docket No. E-01345A-06-0009).

Hawaii: Dr. Woolridge prepared testimony for the Hawaii Office of the Consumer Advocate: East Honolulu Community Services, Inc. (Docket No. 7718).

Delaware: Dr. Woolridge prepared testimony for the Delaware Division of Public Advocate: Artesian Water Company (R-00-649). Dr. Woolridge prepared testimony for the staff of the Public Service Commission: Artesian Water Company (R-06-158).

Ohio: Dr. Woolridge prepared testimony for the Ohio Office of Consumers' Council: SBC Ohio (Case No. 02-1280-TP-UNC R-00-649), Cincinnati Gas & Electric Company (Case No. 05-0059-EL-AIR), Dominion East Ohio Company (Case No. 07-829-GA-AIR), Cleveland Electric Illuminating Company and Toledo Edison Company (Case No. 08-935-EL-SSO), Columbia Gas of Ohio, Inc. (Case No. 08-0072-GA-AIR), and Columbus Southern Power Company (Case No. 08-917-EL-SSO).

Texas: Dr. Woolridge prepared testimony for the Atmos Cities Steering Committee: Mid-Texas Division of Atmos Energy Corp. (Docket No. 9670), Atmos Pipeline LLC (GUD No. 10000).

New York: Dr. Woolridge prepared testimony for the County of Nassau in New York State: Long Island Lighting Company (PSC Case No. 942354).

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

Florida: Dr. Woolridge prepared testimony for the Office of Public Counsel in Florida: Florida Power & Light Co. (Docket No. 050045-EL), Tampa Electric Company (Docket No 080317-EI), Peoples Gas Company (Docket No 080318-GU), Florida Power & Light Co. (Docket Nos. 080677-EI & 090130-EI), and Progress Energy Florida, (Docket No. 090079-EI).

Nebraska: Dr. Woolridge prepared testimony for the Office of Public Advocate: Source Gas Distribution Co. (Docket No. NG-0060), Black Hills (Docket No. NG-0061), SourceGas Distribution Company (Docket No. NG-0060).

Indiana: Dr. Woolridge prepared testimony for the Indiana Office of Utility Consumer Counsel (OUCC) in the following cases: Southern Indiana Gas and Electric Company (IURC Cause No. 43111 and IURC Cause No. 43112), and Northern Indiana Public Service Company (IURC Cause No. 43526).

Oklahoma: Dr. Woolridge prepared testimony for the Oklahoma Industrial Energy Companies (OIEC) in the following cases: Public Service Company of Oklahoma (Cause No. PUD 200600285), Oklahoma Gas & Electric Company (Cause No. PUD 200700012).

Connecticut: Dr. Woolridge prepared testimony for the Office of Consumer Counsel in Connecticut: United Illuminating (Docket No. 96-03-29), Yankee Gas Company (Docket No. 04-06-01), Southern Connecticut Gas Company (Docket No. 03-03-17), the United Illuminating Company (Docket No. 05-06-04), Connecticut Light and Power Company (Docket No. 05-07-18), Birmingham Utilities, Inc. (Docket No. 06-05-10), Connecticut Water Company (Docket No. 06-07-08), Connecticut Natural Gas Corp. (Docket No. 06-03-04), Aquarion Water Company (Docket No. 07-05-09), Yankee Gas Company (Docket No. 06-12-02), Connecticut Light and Power Company (Docket No. 07-07-01), the United Illuminating Company (Docket No. 08-07-03), Connecticut Natural Gas Corp. (Docket No. 08-12-06), Southern Connecticut Gas Company (Docket No. 08-12-06), Connecticut Water Company (Docket No. 09-12-11), Connecticut Light and Power Company (Docket No. 09-12-05), Yankee Gas Company (Docket No. 10-12-02).

California: Dr. Woolridge prepared testimony for the Office of Ratepayer Advocate in California: San Gabriel Valley Water Company (Docket No. 05-08-021), Pacific Gas & Electric (Docket No. 07-05-008), San Diego Gas & Electric (Docket No. 07-05-007), Southern California Edison (Docket No. 07-05-003), California-American Water Company (Docket No. 08-05-003), Golden State Water Company (Docket No. 08-05-004), and California Water Service Company (Docket No. 08-05-002), California Water Utilities (Valencia, San Jose, San Gabriel, Park Valley, and Suburban (Docket No. 09-06-005).

Colorado: Dr. Woolridge prepared testimony for the Office of Consumer Counsel in Colorado: Public Service Company of Colorado (Docket No. 09AL-299E), and Public Service Company of Colorado (Docket No. 08S-520E).

South Carolina: Dr. Woolridge prepared testimony for the Office of Regulatory Staff in South Carolina: South Carolina Electric and Gas Company (Docket No. 2005-113-G), Carolina Water Service Co. (Docket No. 2006-87-WS), Tega Cay Water Company (Docket No. 2006-97-WS), United Utilities Companies, Inc. (Docket No. 2006-107-WS).

Missouri: Dr. Woolridge prepared testimony for the Department of Energy in Missouri: Kansas City Power & Light Company (Case No. ER-2006-0314). Dr. Woolridge prepared testimony for the Office of Attorney General of Missouri: Union Electric Company (CASE NO. ER-2007-0002).

Kentucky: Dr. Woolridge prepared testimony for the Office of Attorney General in Kentucky: Kentucky-American Water Company (Case No. 2004-00103), Union Heat, Light, and Power Company (Case No. 2004-00042), Kentucky Power Company (Case No. 2005-00341), Union Heat, Light, and Power Company (Case No. 2006-00172), Atmos Energy Corp. (Case No. 2006-00464), Columbia Gas Company (Case No. 2007-00008), Delta Natural Gas Company

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

(Case No. 2007-00089), Kentucky-American Water Company (Case No. 2007-00143), Columbia Gas Company (Case No. 2009-00141), Kentucky-American Water Company (Case No. 2010-00136), Kentucky Utilities and Louisville Gas & Electric (Case No. 2009-00549 and Case No. 2009-00548).

Massachusetts: Dr. Woolridge prepared testimony for the Office of Attorney General: National Grid (Docket No. D.P.U. 09-39), National Grid (Docket No. D.P.U. 10-55), New England Gas Company (D.P.U. 10-114), Western Massachusetts Electric Company (D.P.U 10-70), Fitchburg Gas and Electric Light Company (D.P.U. 11-01).

Washington, D.C.: Dr. Woolridge prepared testimony for the Office of the People's Counsel in the District of Columbia: Potomac Electric Power Company (Formal Case No. 939), Potomac Electric Power Company (Formal Case No. 1036), Washington Gas Light Company (Formal Case No. 1054).

Washington: Dr. Woolridge consulted with trial staff of the Washington Utilities and Transportation Commission on the following cases: Puget Energy Corp. (Docket Nos. UE-011570 and UG-011571); and Avista Corporation (Docket No. UE-011514).

Kansas: Dr. Woolridge prepared testimony on behalf of the Kansas Citizens' Utility Ratepayer Board in the following cases: Western Resources Inc. (Docket No. 01-WSRE-949-GIE), UtiliCorp (Docket No. 02-UTCG701-CIG), and Westar Energy, Inc. (Docket No. 05-WSEE-981-RTS).

Utah: Dr. Woolridge prepared testimony on behalf of the Utah Committee on Consumer Services (CCS) in the following case: Questar Gas Company (Docket No. No. 07-057-13).

FERC: Dr. Woolridge has prepared testimony on behalf of the Pennsylvania Office of Consumer Advocate in the following cases before the Federal Energy Regulatory Commission: National Fuel Gas Supply Corporation (RP-92-73-000) and Columbia Gulf Transmission Company (RP97-52-000).

Vermont: Dr. Woolridge prepared testimony for the Department of Public Service in the Central Vermont Public Service (Docket No. 6988) and Vermont Gas Systems, Inc. (Docket No. 7160).

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

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[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).

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.

17   .

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[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).

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

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

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

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]

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[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

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

1   introduced to prevent <u>investment bankers</u> from pressuring <u>analysts</u> 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.

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[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.

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

1   Whereas Hovakimian and Saenyasiri evaluated the impact of regulations

2   on analysts' short-term EPS estimates, there is little research on the impact of Reg

3   FD and GARS on the long-term EPS forecasts of Wall Street analysts. My study

4   with Patrick Cusatis did find that the long-term EPS growth rate forecasts of

5   analysts did not decline significantly and have continued to be overly-optimistic

6   in the post Reg FD and GARS period.[11] Analysts' long-term EPS growth rate

7   forecasts before and after GARS are about two times the level of historic GDP

8   growth. These observations are supported by a *Wall Street Journal* article entitled

9   "Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant –

10   and the Estimates Help to Buoy the Market's Valuation." The following quote

11   provides insight into the continuing bias in analysts' forecasts:

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

17   These overly optimistic growth estimates also show that,
18   even with all the regulatory focus on too-bullish analysts
19   allegedly influenced by their firms' investment-banking
20   relationships, a lot of things haven't changed. Research
21   remains rosy and many believe it always will.[12]

22
23 Q.   ARE THESE OBSERVATIONS CONSISTENT WITH THE FINDINGS OF

24   A RECENT MCKINSEY STUDY ON THE IMPACT OF THESE

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[11] P. Cusatis and J. R. Woolridge, "The Accuracy of Analysts' Long-Term EPS Growth Rate Forecasts," Working Paper, (July 2008).
[12] Ken Brown, "Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant – and the Estimates Help to Buoy the Market's Valuation," *Wall Street Journal*, p. C1, (January 27, 2003).

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.

28
29
30

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

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.

1   Q.   **PLEASE DISCUSS YOUR DEVELOPMENT OF AN EQUITY RISK**

2   **PREMIUM COMPUTED USING THE BUILDING BLOCKS**

3   **METHODOLOGY.**

4   A.   Ibbotson and Chen (2003) evaluate the ex post historical mean stock and bond

5   returns in what is called the Building Blocks approach.[1] They use 75 years of

6   data and relate the compounded historical returns to the different fundamental

7   variables employed by different researchers in building ex ante expected equity

8   risk premiums. Among the variables included were inflation, real EPS and DPS

9   growth, ROE and book value growth, and price-earnings ("P/E") ratios. By

10   relating the fundamental factors to the ex post historical returns, the methodology

11   bridges the gap between the ex post and ex ante equity risk premiums. Ilmanen

12   (2003) illustrates this approach using the geometric returns and five fundamental

13   variables – inflation ("CPI"), dividend yield ("D/P"), real earnings growth

14   ("RG"), repricing gains ("PEGAIN") and return interaction/reinvestment

15   ("INT").[2] This is shown on page 7 of Exhibit JRW-11. The first column breaks

16   the 1926-2000 geometric mean stock return of 10.7% into the different return

17   components demanded by investors: the historical U.S. Treasury bond return

18   (5.2%), the excess equity return (5.2%), and a small interaction term (0.3%). This

19   10.7% annual stock return over the 1926-2000 period can then be broken down

20   into the following fundamental elements: inflation (3.1%), dividend yield (4.3%),

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[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.

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 11, 2011, the average 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 3.0%.

20   As a measure of expected inflation, I will use the average of the long-term

21   (2.3%) and short-term (3.0%) inflation rate measures, or 2.65%.

22

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%. Currently, the S&P 500 dividend yield is 1.9%. I will use this figure in my

5   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 2.6%.

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   a relatively consistent 5.50% of U.S. GDP.[3] Expected GDP growth, according to

15   the Federal Reserve Bank of Philadelphia's *Survey of Professional Forecasters,* is

16   2.9% (see Panel B of page 8 of Exhibit JRW-11).

17   Given these results, I will use 2.75%, 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

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

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. The current average P/E for the S&P 500 is

6   approximately 15.0, which is in line with the historic average. Since the current

7   figure is near the historic average, a PEGAIN would not be appropriate in

8   estimating an ex ante 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 7.30% is composed of 2.65% expected inflation, 1.90% dividend

17   yield, and 2.75% real earnings growth rate.

18   Q.   IS AN EXPECTED MARKET RETURN OF 7.30% CONSISTENT WITH

19   THE FORECASTS OF MARKET PROFESSIONALS?

20   A.   Yes. In the first quarter 2011 *Survey of Financial Forecasters*, published on

21   February 11, 2011 by the Federal Reserve Bank of Philadelphia, the mean long-

22   term expected return on the S&P 500 was 7.37% (see Panel D of page 8 of

23   Exhibit JRW-11).

Appendix C
Building Blocks Equity Risk Premium

1

2   Q.   IS AN EXPECTED MARKET RETURN OF 7.30% CONSISTENT WITH

3   THE EXPECTED MARKET RETURNS OF CORPORATE CHIEF

4   FINANCIAL OFFICERS (CFOs)?

5   A.   Yes. John Graham and Campbell Harvey of Duke University conduct a quarterly

6   survey of corporate CFOs. The survey is a joint project of Duke University and

7   *CFO Magazine.* In the June 2011 survey, the mean expected return on the S&P

8   500 over the next ten years was 6.5%.[4]

9   Q.   GIVEN THIS EXPECTED MARKET RETURN, WHAT IS THE EX ANTE

10   EQUITY   RISK   PREMIUM   USING   THE   BUILDING   BLOCKS

11   METHODOLOGY?

12   A.   The current 30-year U.S. Treasury yield is approximately 4.0%. This ex ante

13   equity risk premium is simply the expected market return from the Building

14   Blocks methodology minus this risk-free rate:

15

16   Ex Ante Equity Risk Premium   =   7.30%   -   4.0%   = 3.30%

17

18   Q.   HOW ARE YOU USING THIS EQUITY RISK PREMIUM ESTIMATE IN

19   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.

Exhibit JRW-1
Louisville Gas and Electric Company
Cost of Capital

Louisville Gas and Electric Company
Weighted Average Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Short-Term Debt	4.84%	0.16%	0.01%
Long-Term Debt	42.78%	3.88%	1.66%
Common Equity	52.38%	9.25%	4.85%
Total Capital	100.0%		6.50%

Panel A
Ten-Year Treasury Yields
2009, 2010, and 2011

2009-11-01	3.40	4/1/2011	3.46
2009-12-01	3.59	5/1/2011	3.17
2010-01-01	3.73	6/1/2011	3.00
2010-02-01	3.69	7/1/2011	3.00
2010-03-01	3.73	8/1/2011	2.52
2010-04-01	3.85	9/1/2011	2.12
	3.67		2.88

Panel B
Thirty-Year, A-Rated Public Utility Bonds
2009, 2010, and 2011

11/6/2009	5.62	3/31/2011	5.58
12/4/2009	5.75	4/30/2011	5.54
1/1/2010	5.87	5/31/2011	5.24
2/5/2010	5.70	6/30/2011	5.35
3/5/2010	5.85	7/29/2011	5.11
4/2/2010	5.99	8/29/2011	4.66
	5.80		5.24

Exhibit JRW-2

Panel A
Ten-Year Treasury Yields
1953-Present
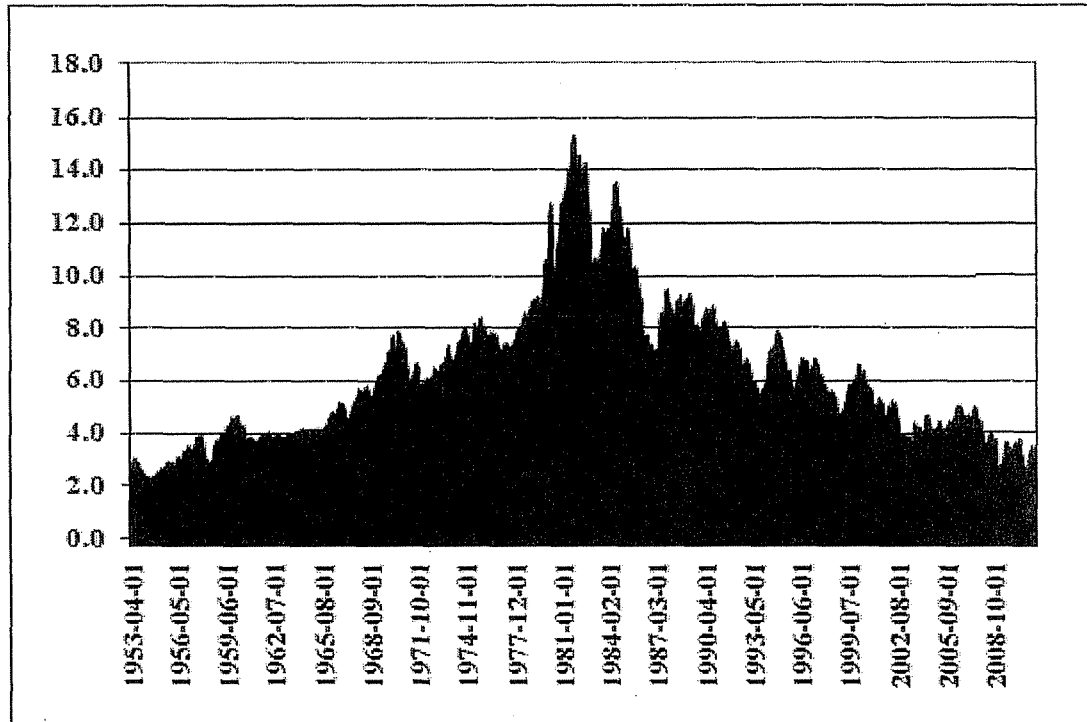
Panel B
Long-Term Moody's Baa Yields Minus Ten-Year Treasury Yields
2000-Present
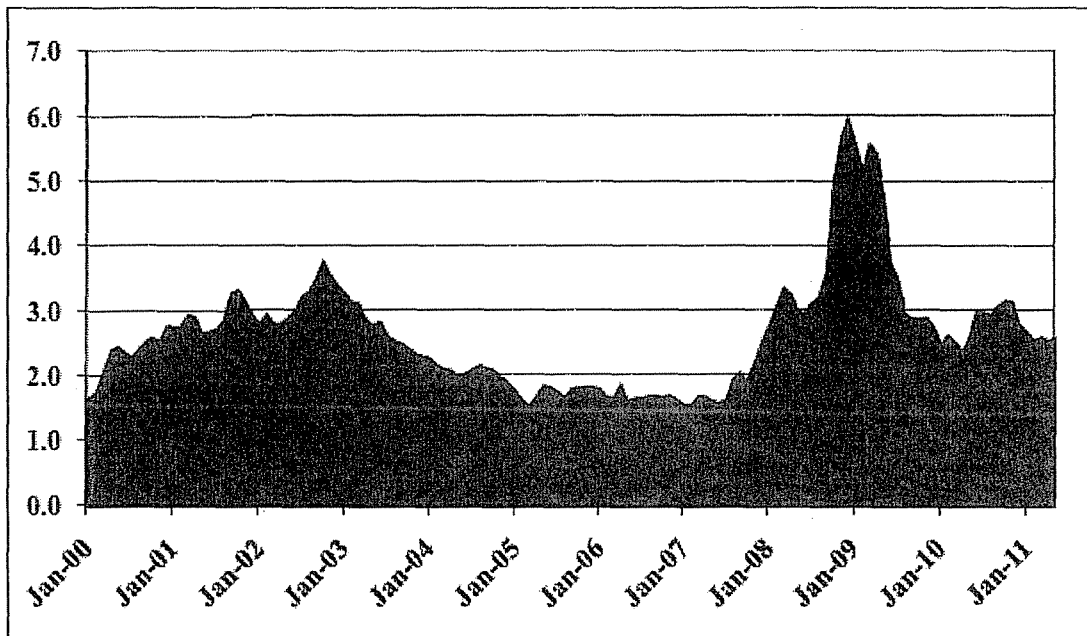
Exhibit JRW-3
Panel A
Thirty-Year Public Utility Yields
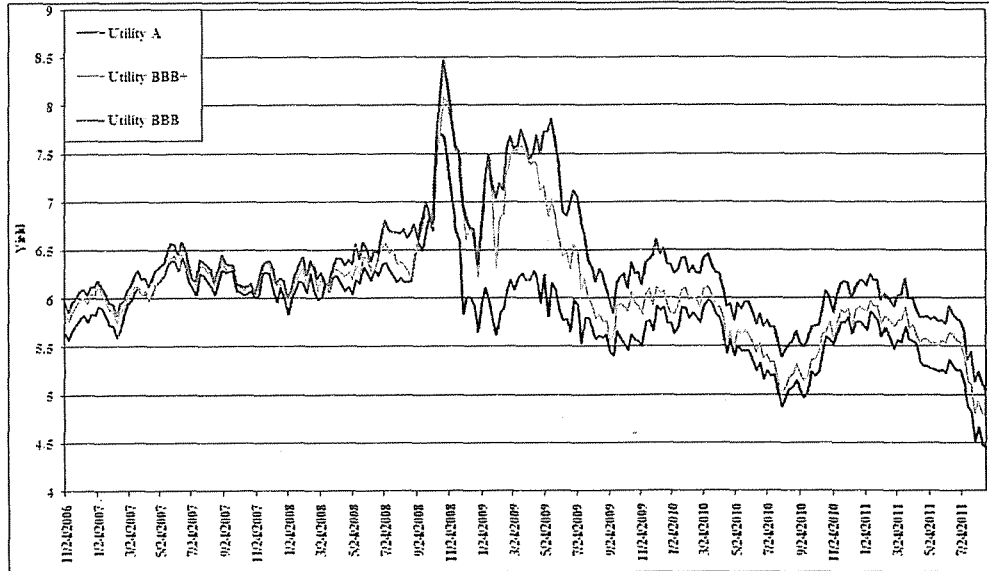
Panel B
Thirty-Year Public Utility Yield Spread Over Treasuries
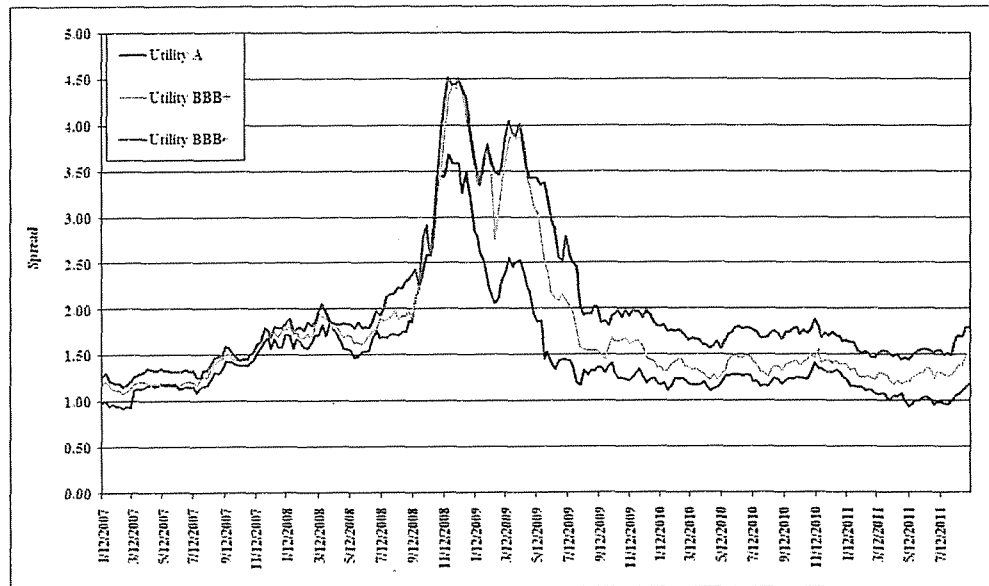
Exhibit JRW-4

Louisville Gas and Electric Company

Summary Financial Statistics

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)	915.6	93		1,841.3	A-	Baa1	3.8	MN, WI	55.8	9.2	1.49
Alliant Energy Corporation (NYSE-LNT)	3,470.9	77	14	6,823.4	A-/BBB+	A2/A3	3.9	WS,IA,IL,MN	51.0	10.8	1.46
Ameren Corporation (NYSE-AEE)	7,626.0	86	14	17,888.0	BBB-	Baa2	3.1	IL,MO	49.9	1.4	0.90
American Electric Power Co. (NYSE-AEP)	14,588.0	94		35,766.0	BBB	Baa2	3.1	10 States	42.6	9.0	1.32
Avista Corporation (NYSE-AVA)	1,578.9	63	33	2,731.1	BBB+	Baa1	3.2	WA,OR,ID	47.6	9.5	1.30
Cleco Corporation (NYSE-CNL)	1,130.1	98		2,800.5	BBB	Baa2	3.9	LA	46.4	10.4	1.61
CMS Energy Corporation (NYSE-CMS)	6,520.0	59	37	10,138.0	BBB+	A3	2.5	MI	28.0	13.5	1.72
Consolidated Edison, Inc. (NYSE-ED)	13,213.0	68	13	24,018.0	A-	A3/Baa1	3.5	NY,PA	50.2	9.8	1.36
DTE Energy Company (NYSE-DTE)	8,535.0	59	20	13,053.0	A	A2	2.9	MI	46.1	8.6	1.26
Edison International (NYSE-EIX)	12,380.0	81		30,713.0	BBB+	A1	3.0	CA	43.4	11.8	1.17
Entergy Corporation (NYSE-ETR)	11,269.4	76	2	24,195.7	A-/BBB+	Baa1	4.2	AK,LA,MS,TX	41.2	14.7	1.39
Great Plains Energy Incorporated (NYSE-GXP)	2,241.5	100		6,885.6	BBB	Baa2	2.2	MO,KS	42.2	6.8	0.99
Hawaiian Electric Industries, Inc. (NYSE-HE)	2,756.0	90		3,175.4	BBB-	Baa2	3.3	HI	50.4	7.8	1.56
IDACORP, Inc. (NYSE-IDA)	1,034.6	100		3,232.6	A-	A2	3.0	ID	49.7	10.6	1.29
MGE Energy, Inc. (NYSE-MGEE)	537.6	68	30	969.6	AA-	A1	4.3	WI	59.4	11.6	1.79
Nextera Energy (NYSE-NEE)	14,829.0	70		39,937.0	A	Aa3	3.2	FL	40.7	11.9	1.65
OGE Energy Corp. (NYSE-OGE)	3,681.6	57	11	6,599.6	BBB+	Baa1	4.2	OK,AR	45.8	13.6	2.16
Pepco Holdings, Inc. (NYSE-POM)	6,854.0	71	4	7,760.0	A	A3	2.0	DC,MD,VA,NJ	47.6	1.4	1.02
PG&E Corporation (NYSE-PCG)	13,963.0	77	23	31,872.0	BBB+	A3	3.3	CA	47.2	9.5	1.48
Pinnacle West Capital Corp. (NYSE-PNW)	3,302.9	97		9,397.4	BBB-	Baa2	3.0	AZ	49.6	10.0	1.32
Portland General Electric (NYSE-POR)	1,818.0	99		4,179.0	A-	A3	2.8	OR	47.7	10.5	1.18
SCANA Corporation (NYSE-SCG)	4,454.0	54	20	9,567.0	A-	A3	2.9	SC,NC,GA	42.8	10.4	1.36
Southern Company (NYSE-SO)	17,310.3	95		42,634.0	A	A2/A3	4.1	GA,AL,FL,MS	42.4	11.5	2.00
TECO Energy, Inc. (NYSE-TE)	3,371.7	61	15	5,842.4	BBB+	Baa1	3.0	FL	40.9	11.0	1.88
UniSource Energy Corporation (NYSE-UNS)	1,480.4	82	10	3,006.7	BBB+	NR		AZ	30.4	13.7	1.69
Westar Energy, Inc. (NYSE-WR)	2,078.1	99		6,038.9	BBB+	Baa1	2.9	KS	43.5	8.7	1.25
Wisconsin Energy Corporation (NYSE-WEC)	4,282.6	70	28	9,639.0	A-	A1	3.4	WI	43.4	13.1	1.87
Xcel Energy Inc. (NYSE-XEL)	10,320.0	82	17	20,908.3	A	A3	3.1	MN,WI,ND,SD,MI	45.1	10.1	1.43
Mean	6,269.4	80	18	13,629.0	BBB+	A3/Baa1	3.3		45.4	10.0	1.46
Median	3,982.1	79	16	8,578.7	BBB+	A3/Baa1	3.1		46.0	10.4	1.41

Data Source: AUS Utility Reports, August, 2011; Pre-Tax Interest Coverage and Primary Service Territory are from Value Line Investment Survey, 2011.

Exhibit JRW-5
Louisville Gas and Electric Company
<u>Capital Structure Ratios and Debt Cost Rate</u>

Panel A - LG&E's Capitalization Ratios and Debt Cost Rate

Capital Source	Capitalization Ratio	Cost Rate	Cost Rate
Short-Term Debt	5.10%	0.28%	0.01%
Long-Term Debt	38.65%	5.17%	2.00%
Common Equity	56.25%	10.63%	5.98%
Total	100.00%		

Source: As of August 30, 2010 - Attachment to PSC-1 Q-49.xls

Panel B - LG&E's Capitalization Ratios as of June 30, 2011

Capital Source	Capitalization Amount*	Capitalization Ratio
Short-Term Debt	0	0.00%
Long-Term Debt	1,105	44.96%
Common Equity	1,353	55.04%
Total	2,458	100.00%

* Long-Term Debt and Common Equity as of 6/30/2011 - Response at AG No. 2-12

Panel C - LG&E and KU Energy LLC as of June 30, 2011

Capital Source	Capitalization Amount*	Capitalization Ratio
Short-Term Debt	0	0.00%
Long-Term Debt	3,825	48.94%
Common Equity	3,991	51.06%
Total	7,816	100.00%

* Long-Term Debt and Common Equity as of 6/30/2011 - Response at AG No. 2-12

Panel D - PPL Capitalization Ratios

Capital Source	Capitalization Amount*	Capitalization Ratio
Short-Term Debt	431	0.16%
Long-Term Debt	18,034	61.94%
Common Equity	10,651	36.58%
Total	29,116	100.00%

* Long-Term Debt and Common Equity as of 6/30/2011 - Response at AG No. 2-12

Panel E - AG Recommended Capitalization Ratios

Capital Source	Capitalization Amount*	Capitalization Ratio	Cost Rate**
Short-Term Debt	125	4.84%	0.16%
Long-Term Debt	1,105	42.78%	3.88%
Common Equity	1,353	52.38%	
Total	2,583	100.00%	

* Long-Term Debt and Common Equity as of 6/30/2011 - Response at AG No. 2-12

** Short-Term and Long-Term Debt Cost Rates as of 6/30/2011 - Response at AG No. 2-2

Exhibit JRW-6

Panel A

Electric Utilities

R-Square = .65, N=56.

Panel B

Gas Distribution Companies
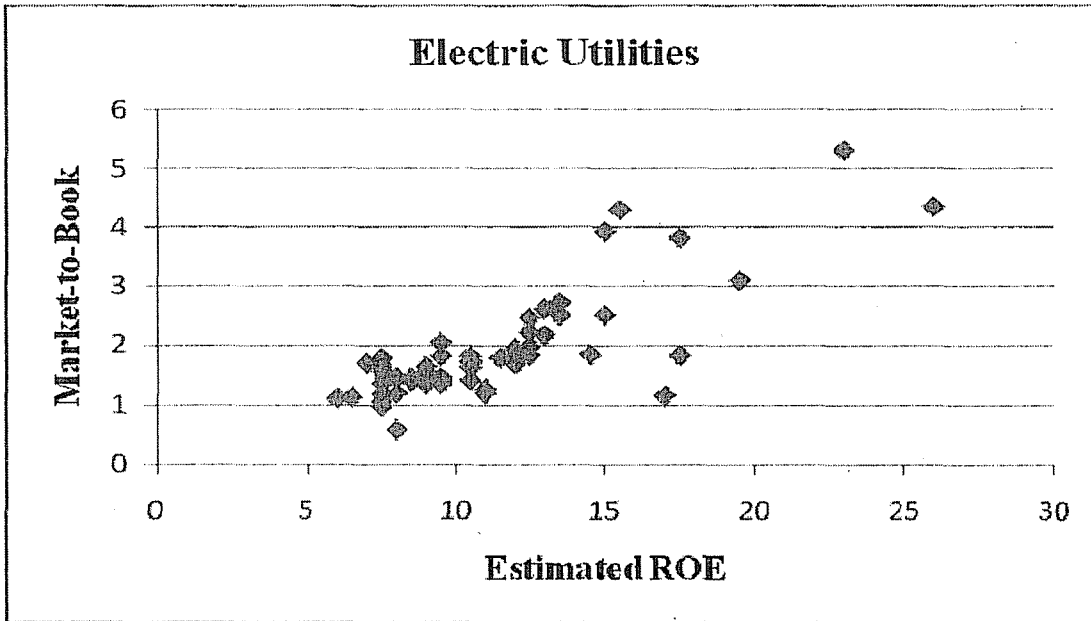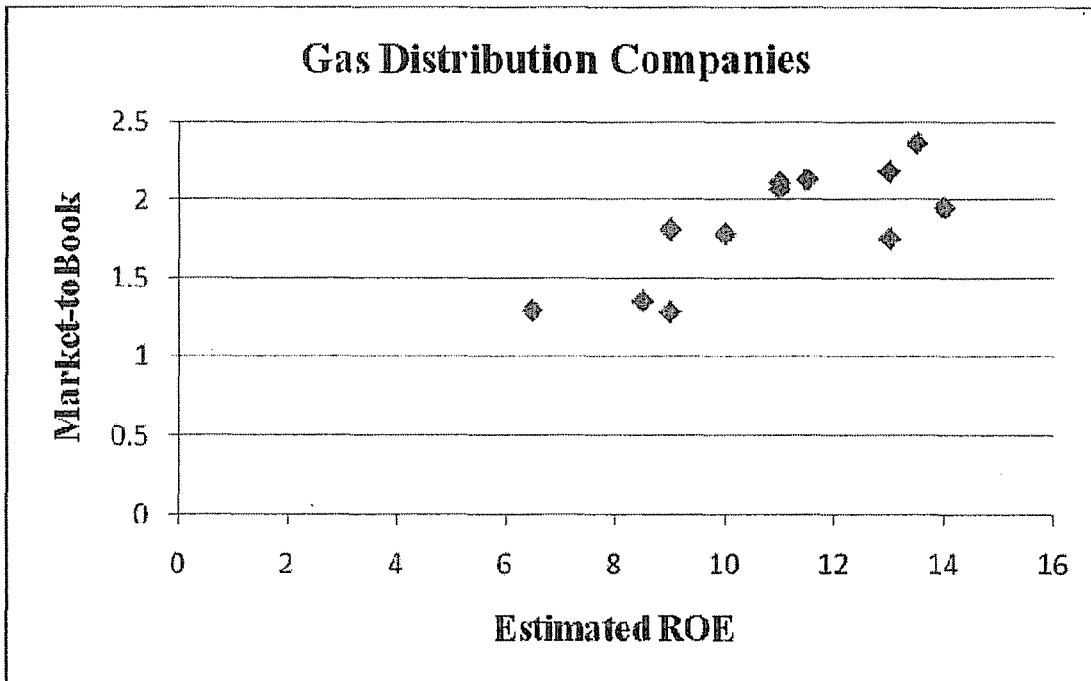
R-Square = .60, N=12.

Exhibit JRW-6

Panel C

Water Utilities
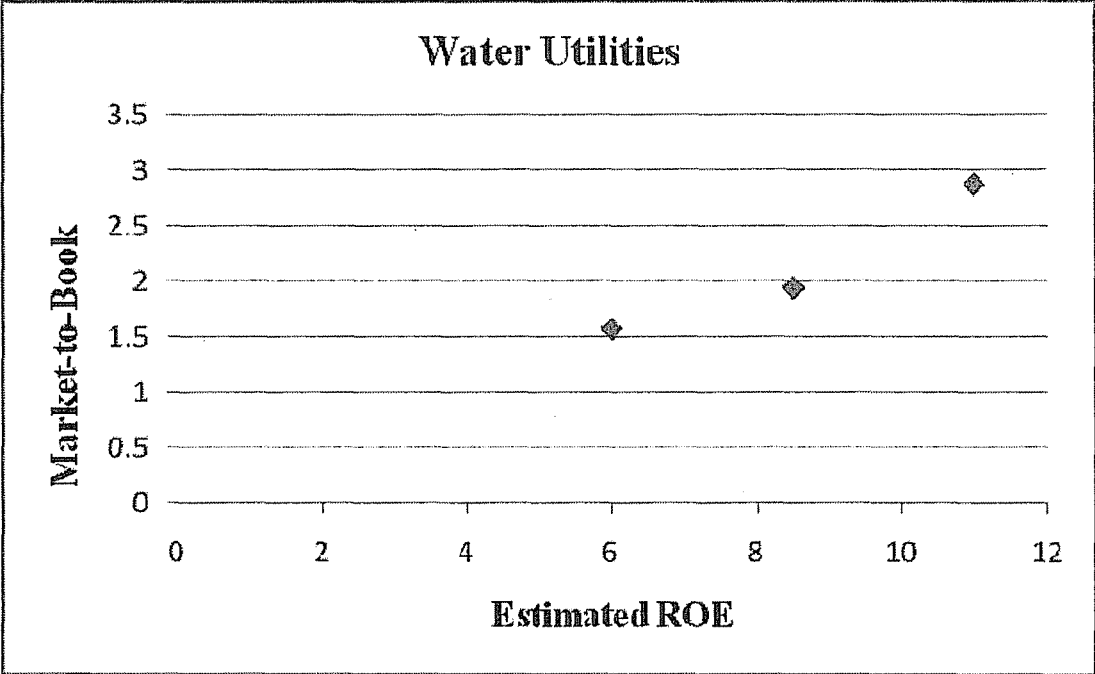
R-Square = .92, N=4.

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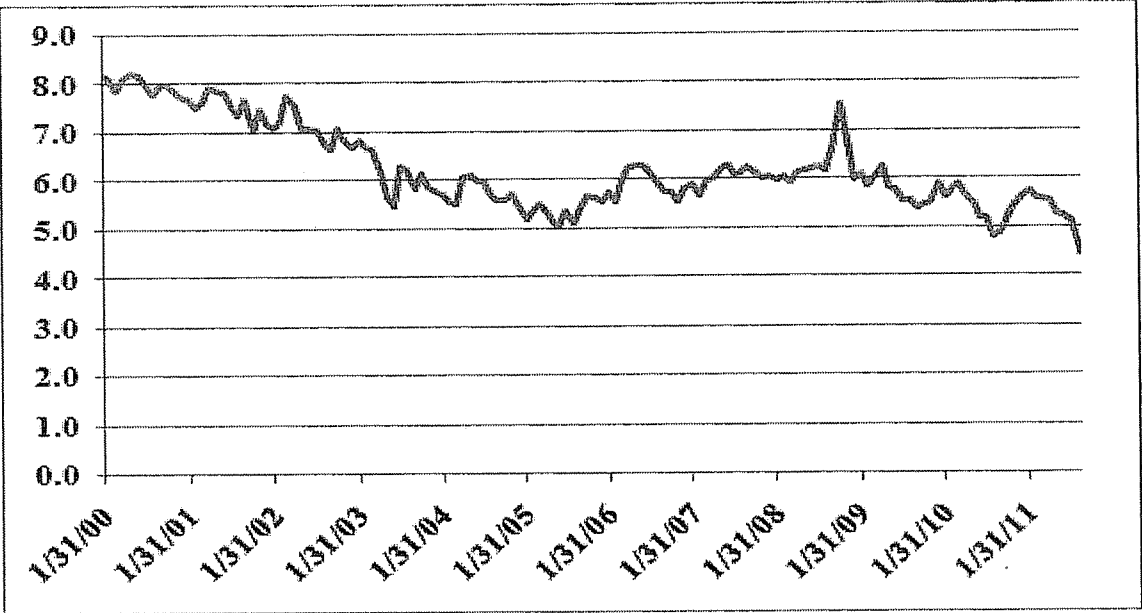
Exhibit JRW-7

Electric Proxy Group Average Dividend Yield
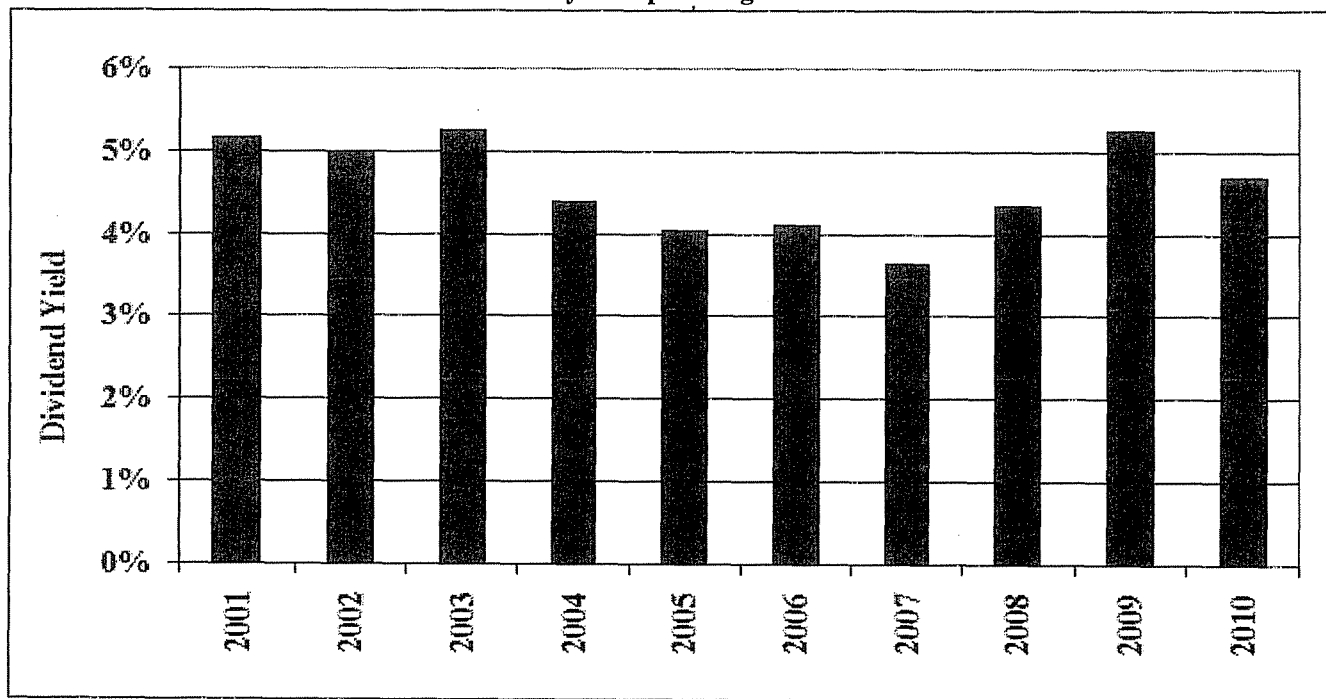
Data Source: *Value Line Investment Survey.*

Exhibit JRW-7

Electric Proxy Group Average Return on Equity and Market-to-Book Ratios
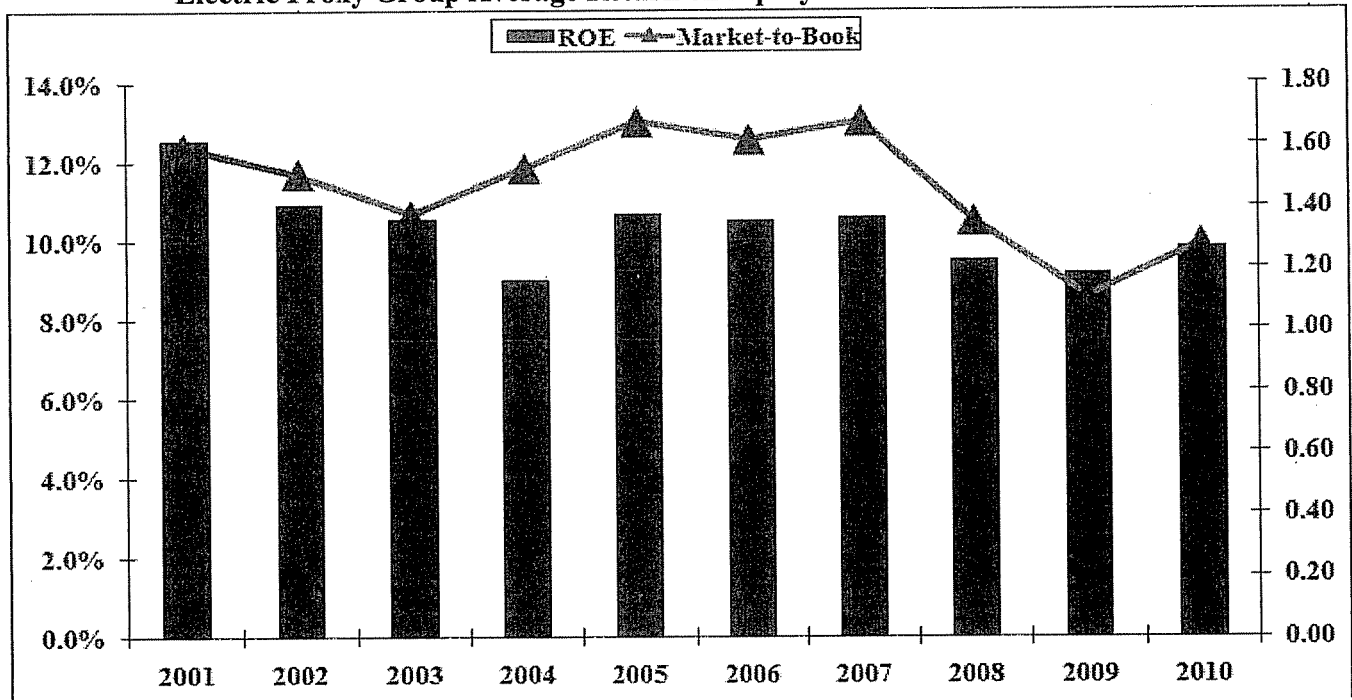
Data Source: *Value Line Investment Survey.*

Exhibit JRW-8

Industry Average Betas

Industry Name	No.	Beta	Industry Name	No.	Beta	Industry Name	No.	Beta
Public/Private Equity	8	2.18	Retail Store	38	1.33	Packaging & Container	27	1.06
Heavy Truck/Equip Make	8	1.94	Building Materials	47	1.33	Computer Software/Svcs	247	1.06
Advertising	28	1.79	Metals & Mining (Div.)	69	1.33	Telecom. Equipment	104	1.04
Semiconductor Equip	14	1.79	Restaurant	60	1.33	Telecom. Utility	28	1.03
Auto Parts	47	1.78	Electrical Equipment	79	1.32	Medical Supplies	231	1.02
Hotel/Gaming	52	1.76	Shoe	18	1.31	Telecom. Services	85	1.01
Steel (Integrated)	13	1.72	Publishing	23	1.30	Utility (Foreign)	5	0.99
Entertainment	75	1.72	R.E.I.T.	6	1.29	Reinsurance	8	0.98
Newspaper	13	1.71	Chemical (Basic)	17	1.28	Oil/Gas Distribution	12	0.97
Furn/Home Furnishings	30	1.67	Railroad	14	1.28	Pharmacy Services	19	0.96
Engineering & Const	17	1.65	Computers/Peripherals	101	1.27	Bank (Midwest)	40	0.96
Steel (General)	19	1.59	Precision Instrument	83	1.27	Industrial Services	137	0.96
Coal	25	1.59	Toiletries/Cosmetics	15	1.27	Healthcare Information	26	0.94
Semiconductor	115	1.56	Wireless Networking	48	1.25	Insurance (Prop/Cas.)	67	0.92
Retail (Special Lines)	143	1.54	Natural Gas (Div.)	32	1.25	Retail Building Supply	8	0.92
Paper/Forest Products	37	1.52	Securities Brokerage	25	1.25	Beverage	34	0.92
Chemical (Diversified)	31	1.51	Funeral Services	5	1.22	Medical Services	139	0.88
Recreation	52	1.50	Diversified Co.	111	1.22	Food Processing	109	0.87
Automotive	19	1.50	Machinery	114	1.22	Bank (Canadian)	7	0.86
Oilfield Svcs/Equip.	95	1.48	Petroleum (Integrated)	23	1.21	Pipeline MLPs	11	0.85
Office Equip/Supplies	24	1.45	Air Transport	40	1.21	Environmental	69	0.85
Human Resources	24	1.44	Property Management	27	1.20	Educational Services	37	0.79
Metal Fabricating	30	1.44	Trucking	33	1.20	Electric Util. (Central)	23	0.78
Retail Automotive	15	1.44	Precious Metals	74	1.18	Electric Utility (West)	14	0.75
Cable TV	24	1.43	Household Products	22	1.17	Bank	418	0.75
Homebuilding	24	1.39	Aerospace/Defense	63	1.15	Retail/Wholesale Food	29	0.74
Entertainment Tech	31	1.39	Canadian Energy	10	1.14	Tobacco	13	0.73
Insurance (Life)	31	1.39	E-Commerce	52	1.14	Electric Utility (East)	25	0.73
Financial Svcs. (Div.)	230	1.37	Foreign Electronics	9	1.14	Water Utility	12	0.70
Maritime	53	1.37	Biotechnology	120	1.13	Thrift	181	0.70
Chemical (Specialty)	83	1.37	Electronics	158	1.13	Natural Gas Utility	27	0.65
Petroleum (Producing)	163	1.36	Drug	301	1.11	**Total Market**	**5928**	**1.15**
Apparel	48	1.35	Internet	180	1.11			
Power	68	1.34	Information Services	26	1.10			

Source: Damodaran Online 2011 - http://pages.stern.nyu.edu/~adamodar/

Exhibit JRW-9
Three-Stage DCF Model
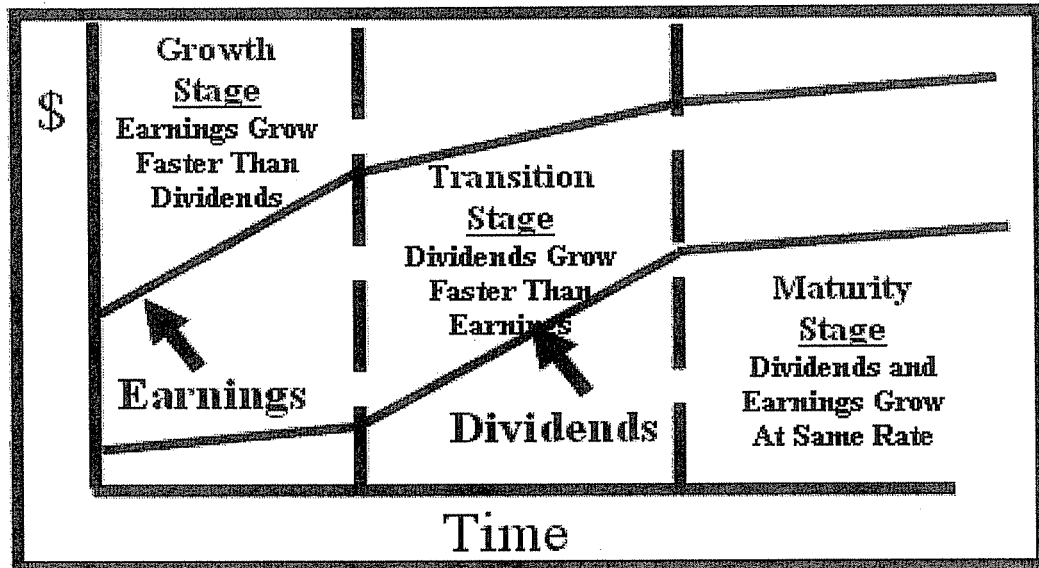
Source: William F. Sharpe, Gordon J. Alexander, and Jeffrey V. Bailey, Investments (Prentice-Hall, 1995), pp. 590-91.

Exhibit JRW-10

Louisville Gas and Electric Company
Discounted Cash Flow Analysis

Proxy Group

Dividend Yield*	4.65%
Adjustment Factor	1.02375
Adjusted Dividend Yield	4.8%
Growth Rate**	4.75%
Equity Cost Rate	9.5%

* Page 2 of Exhibit JRW-10

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

Exhibit JRW-10

Louisville Gas and Electric Company
Monthly Dividend Yields

Electric Proxy Group

Company	Apr	May	Jun	Jul	Aug	Sep	Mean
ALLETE, Inc. (NYSE-ALE)	4.7%	4.5%	4.5%	4.5%	4.3%	4.9%	4.6%
Alliant Energy Corporation (NYSE-LNT)	4.4%	4.4%	4.2%	4.2%	4.2%	4.5%	4.3%
Ameren Corporation (NYSE-AEE)	5.6%	5.4%	5.2%	5.3%	5.4%	5.4%	5.4%
American Electric Power Co. (NYSE-AEP)	5.4%	5.2%	4.7%	4.9%	4.9%	5.0%	5.0%
Avista Corporation (NYSE-AVA)	4.8%	4.7%	4.4%	4.4%	4.2%	4.7%	4.5%
Cleco Corporation (NYSE-CNL)	3.0%	2.9%	3.2%	3.2%	3.2%	3.4%	3.2%
CMS Energy Corporation (NYSE-CMS)	4.4%	4.3%	4.2%	4.3%	4.2%	4.4%	4.3%
Consolidated Edison, Inc. (NYSE-ED)	4.8%	4.7%	4.5%	4.5%	4.5%	4.4%	4.6%
DTE Energy Company (NYSE-DTE)	4.7%	4.5%	4.3%	4.8%	4.7%	5.0%	4.7%
Edison International (NYSE-EIX)	3.3%	3.3%	3.3%	3.3%	3.3%	3.6%	3.4%
Entergy Corporation (NYSE-ETR)	5.1%	4.9%	4.8%	4.8%	4.9%	5.4%	5.0%
Great Plains Energy Incorporated (NYSE-GXP)	4.3%	4.2%	4.0%	4.0%	4.0%	4.6%	4.2%
Hawaiian Electric Industries, Inc. (NYSE-HE)	5.1%	5.1%	4.9%	5.2%	5.0%	5.5%	5.1%
IDACORP, Inc. (NYSE-IDA)	3.2%	3.1%	3.0%	3.1%	3.0%	3.3%	3.1%
MGE Energy, Inc. (NYSE-MGEE)	3.8%	3.7%	3.6%	3.7%	3.6%	3.7%	3.7%
Nextra Energy (NYSE-NEE)	4.1%	4.0%	3.8%	3.9%	3.9%	4.1%	4.0%
OGE Energy Corp. (NYSE-OGE)	3.1%	2.9%	2.9%	3.1%	2.9%	3.3%	3.0%
Pepco Holdings, Inc. (NYSE-POM)	5.9%	5.9%	5.4%	5.5%	5.6%	5.8%	5.7%
PG&E Corporation (NYSE-PCG)	4.2%	4.0%	4.0%	4.3%	4.3%	4.4%	4.2%
Pinnacle West Capital Corp. (NYSE-PNW)	5.0%	4.9%	4.6%	4.8%	4.8%	5.0%	4.9%
Portland General Electric (NYSE-POR)	4.4%	4.3%	4.0%	4.0%	4.1%	4.7%	4.3%
SCANA Corporation (NYSE-SCG)	5.0%	4.9%	4.6%	5.0%	4.8%	5.0%	4.9%
Southern Company (NYSE-SO)	4.9%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%
TECO Energy, Inc. (NYSE-TE)	4.5%	4.4%	4.5%	4.6%	4.5%	5.0%	4.6%
UniSource Energy Corporation (NYSE-UNS)	4.7%	4.7%	4.5%	4.5%	4.4%	4.7%	4.6%
Westar Energy, Inc. (NYSE-WR)	4.9%	4.9%	4.7%	4.8%	4.8%	5.1%	4.9%
Wisconsin Energy Corporation (NYSE-WEC)	3.5%	3.5%	3.3%	3.3%	4.3%	3.4%	3.6%
Xcel Energy Inc. (NYSE-XEL)	4.3%	4.2%	4.0%	4.1%	4.3%	4.5%	4.2%
Mean	4.5%	4.4%	4.2%	4.3%	4.3%	4.6%	4.4%
Median	4.6%	4.5%	4.4%	4.5%	4.3%	4.7%	4.6%

Data Source: AUS *Utility Reports*, monthly issues.

Exhibit JRW-10

Louisville Gas and Electric 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%	3.0%	1.0%	2.5%
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%
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%
Nextra 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%
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%
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	1.8%	-0.2%	3.4%	5.3%	4.1%	5.1%
Median	2.3%	0.5%	3.5%	7.0%	2.5%	4.5%

Data Source: *Value Line Investment Survey.*

Average of Median Figures =	3.4%

Exhibit JRW-10

Louisville Gas and Electric Company
DCF Equity Cost Growth Rate Measures
Value Line Projected Growth Rates

Proxy Group

Company	Value Line Projected Growth Est'd. '08-'10 to '14-'16			Value Line Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	4.5%	2.0%	3.0%	9.5%	33.0%	3.1%
Alliant Energy Corporation (NYSE-LNT)	7.0%	6.0%	3.0%	12.0%	38.0%	4.6%
Ameren Corporation (NYSE-AEE)	-2.0%	-3.0%	1.5%	7.0%	38.0%	2.7%
American Electric Power Co. (NYSE-AEP)	4.5%	4.0%	4.5%	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%	42.0%	5.3%
Consolidated Edison, Inc. (NYSE-ED)	3.0%	1.0%	2.5%	9.5%	37.0%	3.5%
DTE Energy Company (NYSE-DTE)	3.5%	4.0%	3.5%	9.0%	36.0%	3.2%
Edison International (NYSE-EIX)	-1.0%	2.0%	5.0%	8.0%	54.0%	4.3%
Entergy Corporation (NYSE-ETR)	1.5%	3.0%	6.0%	11.5%	49.0%	5.6%
Great Plains Energy Incorporated (NYSE-GXP)	6.0%	1.5%	1.5%	7.5%	33.0%	2.5%
Hawaiian Electric Industries, Inc. (NYSE-HE)	11.0%	1.0%	3.0%	10.5%	35.0%	3.7%
IDACORP, Inc. (NYSE-IDA)	4.0%	4.0%	5.0%	8.5%	55.0%	4.7%
MGE Energy, Inc. (NYSE-MGEE)	4.0%	2.0%	4.0%	12.0%	45.0%	5.4%
Nextra Energy (NYSE-NEE)	3.5%	5.5%	7.0%	11.0%	51.0%	5.6%
OGE Energy Corp. (NYSE-OGE)	6.5%	4.0%	7.5%	12.0%	58.0%	7.0%
Pepco Holdings, Inc. (NYSE-POM)	2.5%	1.0%	2.0%	7.5%	29.0%	2.2%
PG&E Corporation (NYSE-PCG)	6.0%	4.5%	5.5%	11.5%	48.0%	5.5%
Pinnacle West Capital Corp. (NYSE-PNW)	6.0%	1.5%	2.5%	9.0%	35.0%	3.2%
Portland General Electric (NYSE-POR)	7.5%	3.0%	3.5%	9.0%	48.0%	4.3%
SCANA Corporation (NYSE-SCG)	3.0%	2.0%	5.0%	9.5%	41.0%	3.9%
Southern Company (NYSE-SO)	6.0%	4.0%	5.5%	13.0%	32.0%	4.2%
TECO Energy, Inc. (NYSE-TE)	10.5%	4.5%	5.0%	13.0%	40.0%	5.2%
UniSource Energy Corporation (NYSE-UNS)	9.5%	9.0%	5.0%	12.5%	39.0%	4.9%
Westar Energy, Inc. (NYSE-WR)	8.5%	3.0%	2.5%	10.0%	41.0%	4.1%
Wisconsin Energy Corporation (NYSE-WEC)	8.5%	15.5%	4.0%	14.0%	43.0%	6.0%
Xcel Energy Inc. (NYSE-XEL)	5.0%	3.0%	5.0%	0.0%	45.0%	0.0%
Mean	5.2%	4.3%	4.2%	9.9%	41.5%	4.1%
Median	5.5%	3.5%	4.3%	9.8%	41.0%	4.2%
Average of Median Figures =		4.4%				4.2%

Data Source: *Value Line Investment Survey.*

Exhibit JRW-10

Louisville Gas and Electric Company
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates

Electric Proxy Group

Company	Yahoo First Call	Zack's	Reuters	Average
ALLETE, Inc. (NYSE-ALE)	5.8%	5.0%	6.0%	5.6%
Alliant Energy Corporation (NYSE-LNT)	5.9%	6.0%	5.7%	5.9%
Ameren Corporation (NYSE-AEE)	1.0%	4.0%	3.0%	2.7%
American Electric Power Co. (NYSE-AEP)	4.0%	4.0%	4.2%	4.1%
Avista Corporation (NYSE-AVA)	4.7%	4.7%	4.7%	4.7%
Cleco Corporation (NYSE-CNL)	3.0%	7.0%	3.0%	4.3%
CMS Energy Corporation (NYSE-CMS)	6.0%	5.5%	5.7%	5.8%
Consolidated Edison, Inc. (NYSE-ED)	3.4%	3.0%	3.9%	3.4%
DTE Energy Company (NYSE-DTE)	3.5%	5.0%	3.5%	4.0%
Edison International (NYSE-EIX)	2.9%	5.0%	3.5%	3.8%
Entergy Corporation (NYSE-ETR)	-1.1%	-0.2%	3.3%	0.7%
Great Plains Energy Incorporated (NYSE-GXP)	6.0%	9.0%	5.9%	6.9%
Hawaiian Electric Industries, Inc. (NYSE-HE)	8.6%	8.6%	7.0%	8.1%
IDACORP, Inc. (NYSE-IDA)	4.7%	4.7%	4.7%	4.7%
MGE Energy, Inc. (NASDAQ-MGEE)	4.0%	4.0%	4.0%	4.0%
NextEra Energy (NYSE-NEE)	5.8%	6.7%	5.8%	6.1%
OGE Energy Corp. (NYSE-OGE)	7.2%	6.0%	6.6%	6.6%
Pepco Holdings, Inc. (NYSE-POM)	5.0%	4.3%	3.3%	4.2%
PG&E Corporation (NYSE-PCG)	3.8%	5.0%	5.2%	4.7%
Pinnacle West Capital Corp. (NYSE-PNW)	6.8%	5.3%	6.5%	6.2%
Portland General Electric (NYSE-POR)	4.7%	5.0%	5.5%	5.1%
SCANA Corporation (NYSE-SCG)	4.8%	4.3%	4.5%	4.6%
Southern Company (NYSE-SO)	6.0%	5.0%	5.9%	5.6%
TECO Energy, Inc. (NYSE-TE)	6.3%	4.7%	6.1%	5.7%
UniSource Energy Corporation (NYSE-UNS)	3.0%	3.0%	7.5%	4.5%
Westar Energy, Inc. (NYSE-WR)	6.4%	6.1%	6.2%	6.2%
Wisconsin Energy Corporation (NYSE-WEC)	7.1%	8.0%	8.2%	7.8%
Xcel Energy Inc. (NYSE-XEL)	5.6%	4.9%	5.6%	5.4%
Mean	4.8%	5.1%	5.2%	5.0%
Median	4.9%	5.0%	5.6%	4.9%

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, August 30, 2011.

Exhibit JRW-10

Louisville Gas and Electric Company
DCF Growth Rate Indicators

Summary Growth Rates

Growth Rate Indicator	Proxy Group
Historic *Value Line* Growth in EPS, DPS, and BVPS	3.4%
Projected *Value Line* Growth in EPS, DPS, and BVPS	4.4%
Sustainable Growth ROE * Retention Rate	4.2%
Projected EPS Growth from First Call, Zacks, and Reuters	4.9%
Average of Historic and Projected Growth Rates	4.2%
Average of Sustainable and Projected Growth Rates	4.5%

Exhibit JRW-11

Louisville Gas and Electric Company
Capital Asset Pricing Model

Electric Proxy Group

Risk-Free Interest Rate	4.00%
Beta*	0.70
Ex Ante Equity Risk Premium**	5.10%
CAPM Cost of Equity	7.6%

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

Exhibit JRW-11

Panel A
Ten-Year U.S. Treasury Yields
January 2000-Present
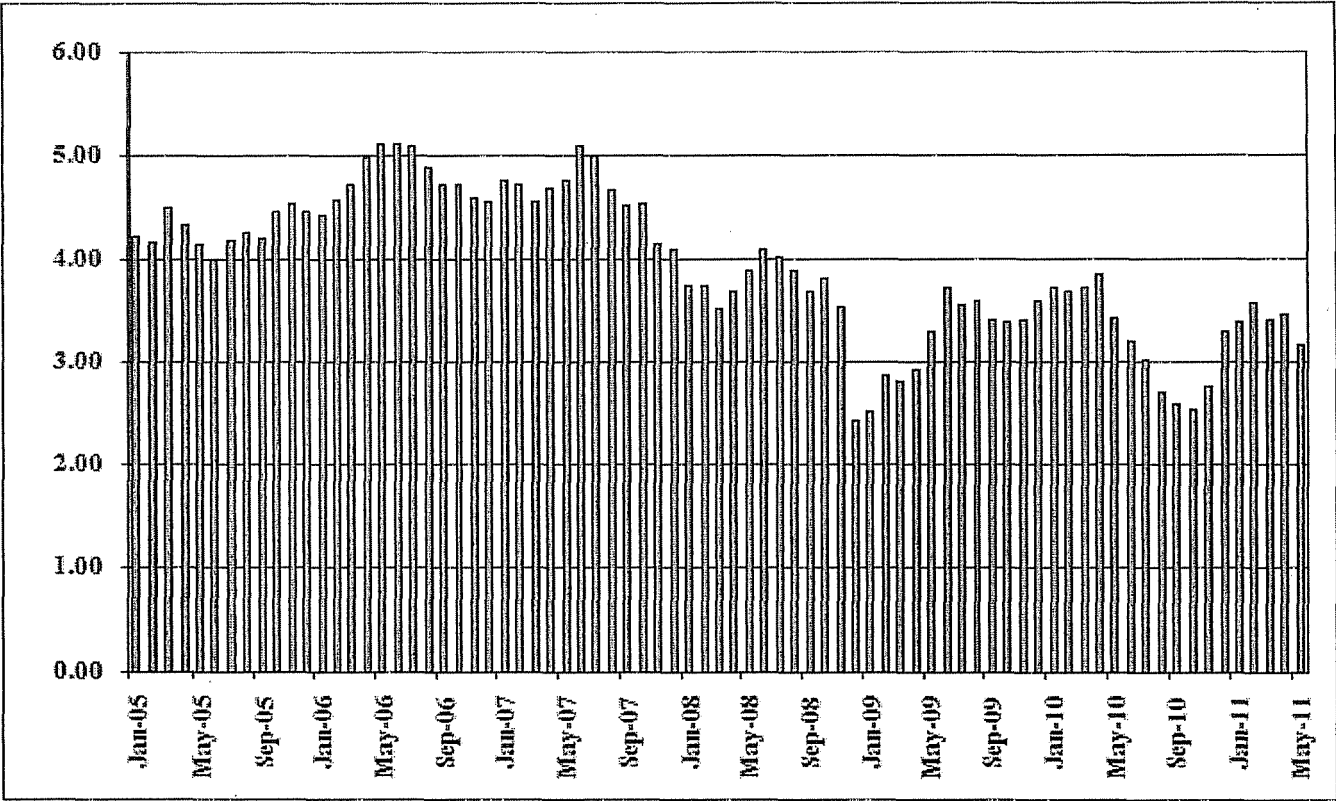
Panel B
Current Rates

U.S. Treasures	COUPON	MATURITY	PRICE/YIELD
3-Month	0.000	12/01/2011	0.03 / 0.03
6-Month	0.000	03/01/2012	0.05 / 0.06
12-Month	0.000	08/23/2012	0.11 / 0.11
2-Year	0.125	08/31/2013	99-27¾ / 0.20
3-Year	0.500	08/15/2014	100-16+ / 0.32
5-Year	1.000	08/31/2016	100-19¾ / 0.88
7-Year	1.500	08/31/2018	100-23 / 1.39
10-Year	2.125	08/15/2021	101-13½ / 1.97
30-Year	3.750	08/15/2041	108-15+ / 3.25

Exhibit JRW-11

Panel A

Calculation of Beta
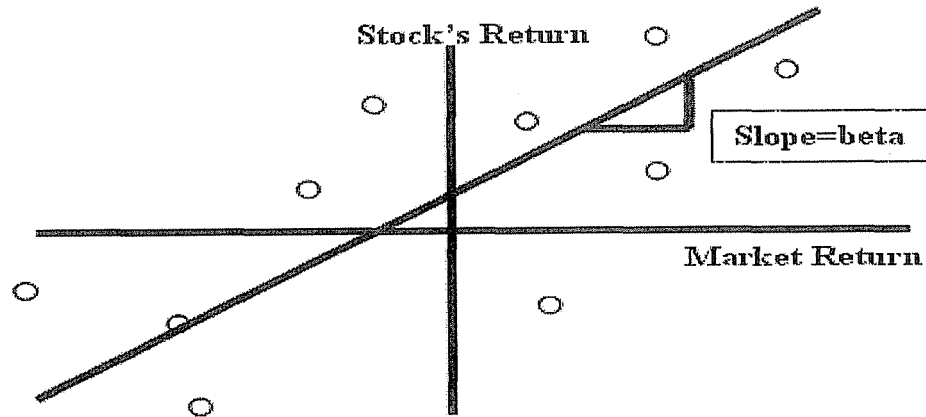
Electric Proxy Group

	Company Name	Beta
1	ALLETE, Inc. (NYSE-ALE)	0.70
2	Alliant Energy Corporation (NYSE-LNT)	0.70
3	Ameren Corporation (NYSE-AEE)	0.80
4	American Electric Power Co. (NYSE-AEP)	0.70
5	Avista Corporation (NYSE-AVA)	0.70
6	Cleco Corporation (NYSE-CNL)	0.65
7	CMS Energy Corporation (NYSE-CMS)	0.75
8	Consolidated Edison, Inc. (NYSE-ED)	0.65
9	DTE Energy Company (NYSE-DTE)	0.75
10	Edison International (NYSE-EIX)	0.80
11	Entergy Corporation (NYSE-ETR)	0.70
12	Great Plains Energy Incorporated (NYSE-GXP)	0.75
13	Hawaiian Electric Industries, Inc. (NYSE-HE)	0.70
14	IDACORP, Inc. (NYSE-IDA)	0.70
15	MGE Energy, Inc. (NASDAQ-MGEE)	0.60
16	NextEra Energy (NYSE-NEE)	0.75
17	OGE Energy Corp. (NYSE-OGE)	0.75
18	Pepco Holdings, Inc. (NYSE-POM)	0.80
19	PG&E Corporation (NYSE-PCG)	0.55
20	Pinnacle West Capital Corp. (NYSE-PNW)	0.70
21	Portland General Electric (NYSE-POR)	0.75
22	SCANA Corporation (NYSE-SCG)	0.65
23	Southern Company (NYSE-SO)	0.55
24	TECO Energy, Inc. (NYSE-TE)	0.85
25	UniSource Energy Corporation (NYSE-UNS)	0.75
26	Westar Energy, Inc. (NYSE-WR)	0.75
27	Wisconsin Energy Corporation (NYSE-WEC)	0.65
28	Xcel Energy Inc. (NYSE-XEL)	0.65
	Mean	0.71
	Median	0.70

Data Source: *Value Line Investment Survey, 2011.*

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

Louisville Gas and Electric 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	2011	1926-2010	Historical Stock Returns - Bond Returns	Arithmetic				6.00%	
					Geometric				4.40%	
	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	2011	Projection	Fundamentals - Implied from FCF to Equity Model					6.39%	
	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	2011	10-Year Projection	About 50 Financial Forecastsers					2.87%	
	Duke - CFO Magazine Survey	2011	10-Year Projection	Approximately 500 CFOs					3.40%	
	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		2011	Current Supply Model (D/P & Earnings Growth)					3.30%	
	Median									4.13%
Mean										4.62%
Median										4.61%

Exhibit JRW-11

Louisville Gas and Electric Company
Capital Asset Pricing Model
Equity Risk Premium
Summary of 2010-11 Equity Risk Premium Studies

Study Author	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	High	Midpoint of Range	Mean	Average
Ibbotson	2011	1926-2010	Historical Stock Returns - Bond Returns	Arithmetic				6.00%	
				Geometric				4.40%	
Median									5.20%
arch)									
Damodoran	2011	Projection	Fundamentals - Implied from FCF to Equity Model					6.39%	
Median									6.39%
Survey of Fina	2011	10-Year Projection	About 50 Financial Forecastsers					2.87%	
Duke - CFO N	2011	10-Year Projection	Approximately 500 CFOs					3.40%	
Fernandez - A	2011	Long-Term	Survey of Academics					5.50%	
Fernandez - A	2011	Long-Term	Survey of Analysts					5.00%	
Fernandez - C	2011	Long-Term	Survey of Companies					5.20%	
Median									5.00%
Ibbotson and ‹	2011	1926-2010	Historical Supply Model (D/P & Earnings Growth)	Arithmetic		5.99%		4.95%	
				Geometric		3.91%			
Woolridge		2011	Current Supply Model (D/P & Earnings Growth)					3.30%	
Median									4.13%
									5.18%
									5.10%

Exhibit JRW-11

Louisville Gas and Electric Company
Decomposing Equity Market Returns
The Building Blocks Methodology

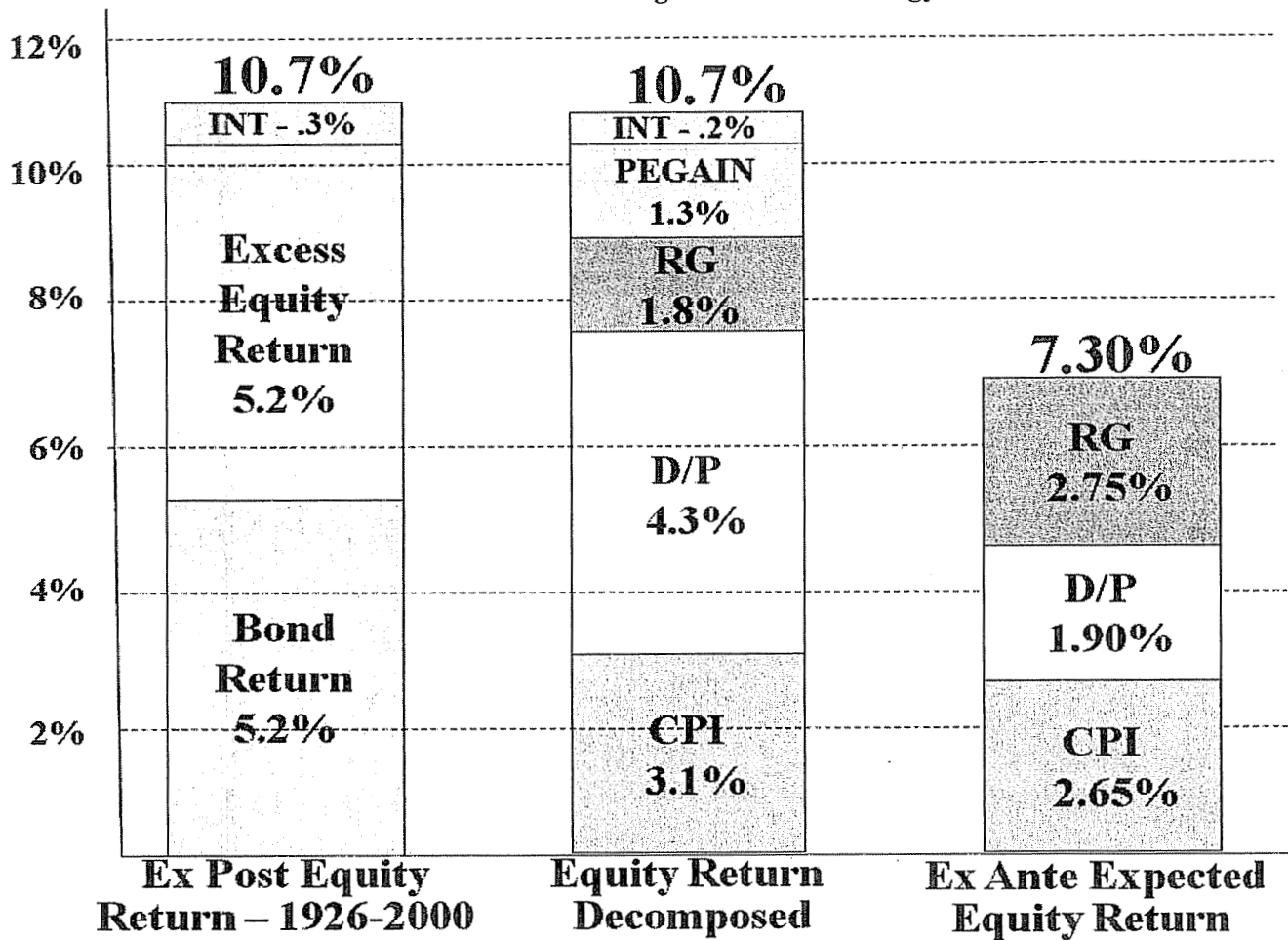**Ex Post Equity Return – 1926-2000: 10.7%**
- INT - .3%
- Excess Equity Return 5.2%
- Bond Return 5.2%

Equity Return Decomposed: 10.7%
- INT - .2%
- PEGAIN 1.3%
- RG 1.8%
- D/P 4.3%
- CPI 3.1%

Ex Ante Expected Equity Return: 7.30%
- RG 2.75%
- D/P 1.90%
- CPI 2.65%

Exhibit JRW-11

Louisville Gas and Electric Company

2011 Survey of Professional Forecasters
Philadelphia Federal Reserve Bank
Long-Term Forecasts

Table Seven
LONG-TERM (10 YEAR) FORECASTS

Panel A		Panel B	
SERIES: CPI INFLATION RATE		SERIES: REAL GDP GROWTH RATE	
STATISTIC		STATISTIC	
MINIMUM	0.70	MINIMUM	1.70
LOWER QUARTILE	2.00	LOWER QUARTILE	2.70
MEDIAN	2.30	MEDIAN	2.84
UPPER QUARTILE	2.50	UPPER QUARTILE	3.20
MAXIMUM	3.50	MAXIMUM	4.00
MEAN	2.30	MEAN	2.93
STD. DEV.	0.55	STD. DEV.	0.48
N	36	N	34
MISSING	7	MISSING	9
Panel C		Panel D	
SERIES: PRODUCTIVITY GROWTH		SERIES: STOCK RETURNS (S&P 500)	
STATISTIC		STATISTIC	
MINIMUM	1.50	MINIMUM	4.20
LOWER QUARTILE	1.80	LOWER QUARTILE	6.30
MEDIAN	2.00	MEDIAN	7.25
UPPER QUARTILE	2.20	UPPER QUARTILE	8.25
MAXIMUM	3.00	MAXIMUM	12.00
MEAN	2.04	MEAN	7.37
STD. DEV.	0.35	STD. DEV.	1.80
N	26	N	20
MISSING	17	MISSING	23
Panel E		Panel F	
SERIES: BOND RETURNS (10-YEAR)		SERIES: BILL RETURNS (3-MONTH)	
STATISTIC		STATISTIC	
MINIMUM	-4.00	MINIMUM	-2.00
LOWER QUARTILE	4.25	LOWER QUARTILE	2.75
MEDIAN	4.88	MEDIAN	3.00
UPPER QUARTILE	5.00	UPPER QUARTILE	3.31
MAXIMUM	6.50	MAXIMUM	4.75
MEAN	4.50	MEAN	2.93
STD. DEV.	1.80	STD. DEV.	1.13
N	30	N	30
MISSING	13	MISSING	13

Source: Philadelphia Federal Researve Bank, Survey of Professional Forecasters, February 11, 2011.

Exhibit JRW-11

Louisville Gas and Electric Company

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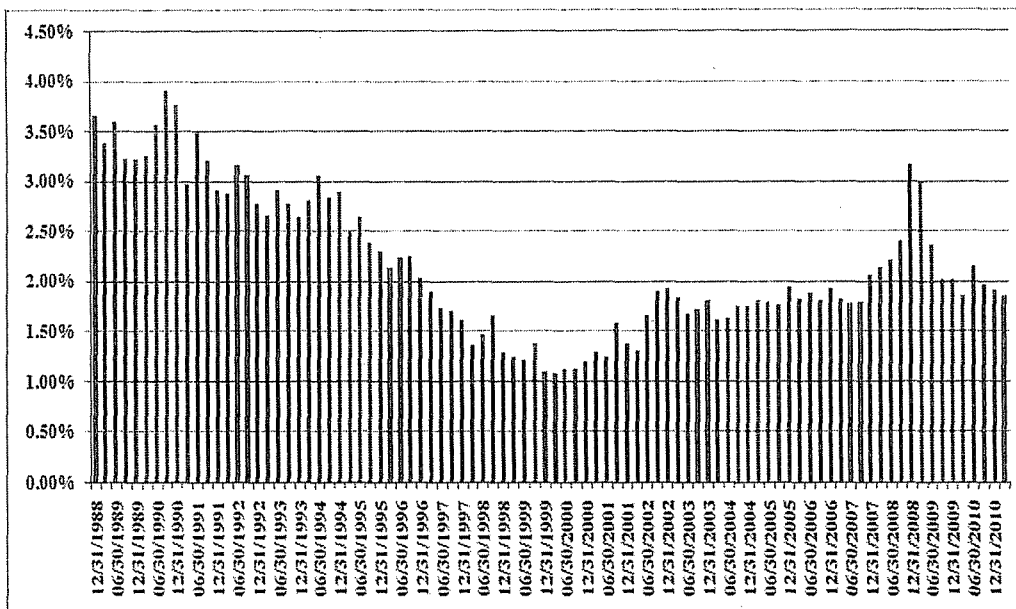Expected Short-Term Inflation Rate

Data Source: http://research.stlouisfed.org/fred2/series/MICH?cid=98
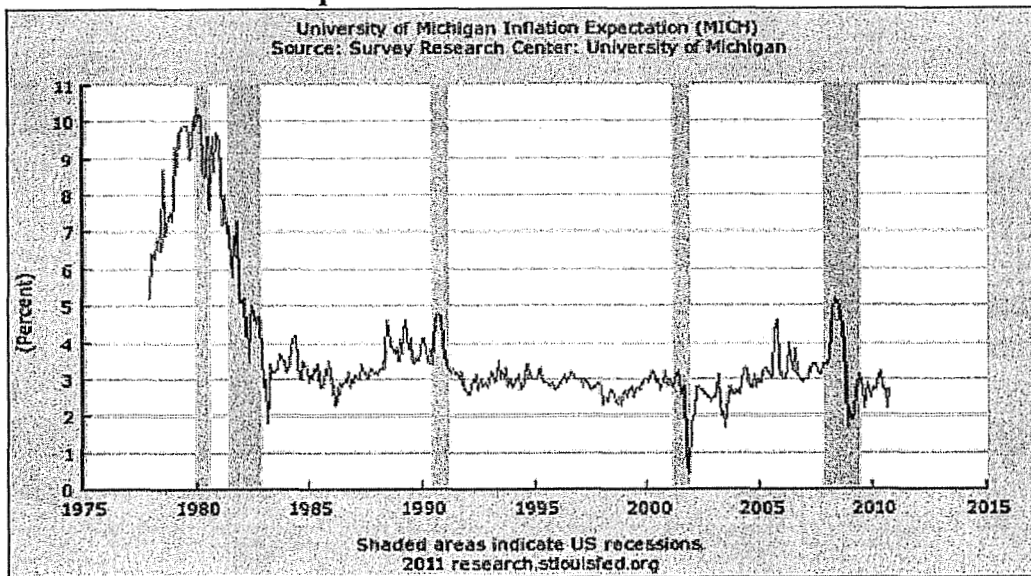
Exhibit JRW-11

Decomposing Equity Market Returns
The Building Blocks Methodology

S&P 500 Dividend Yield

S&P 500 P/E Ratio

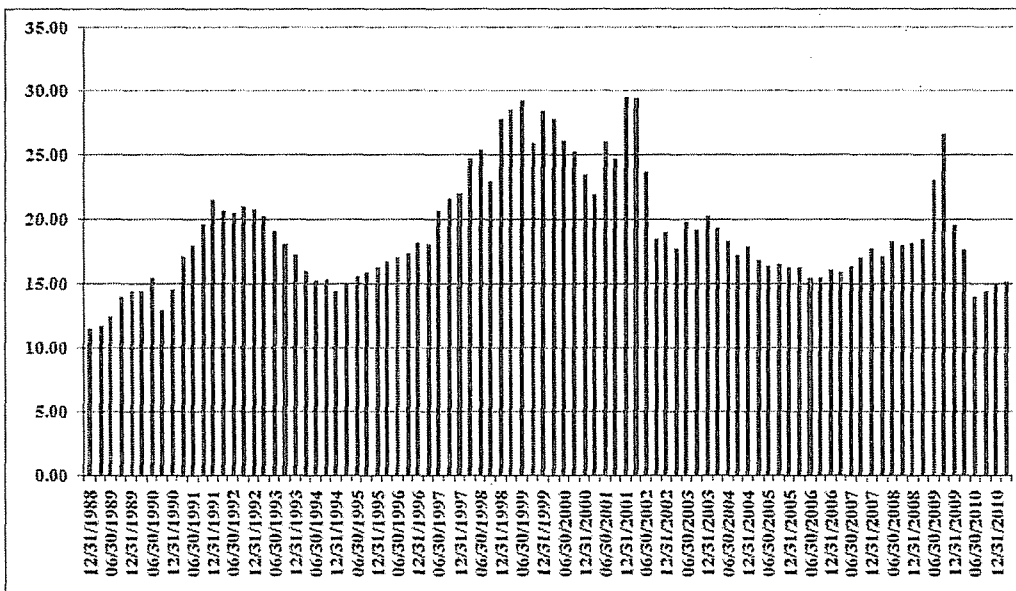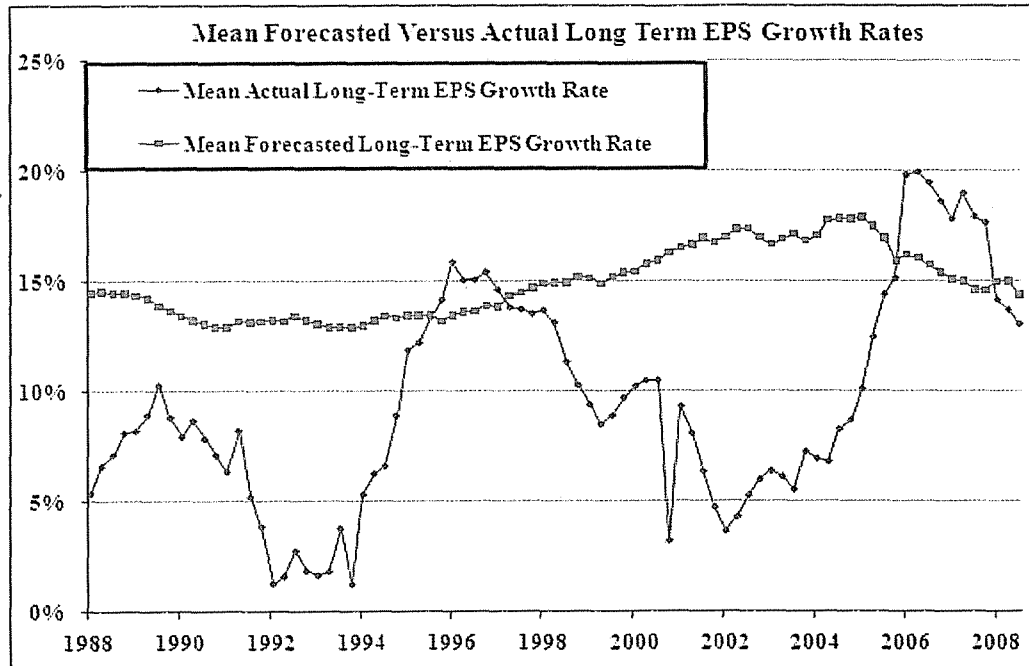**Exhibit JRW-11**
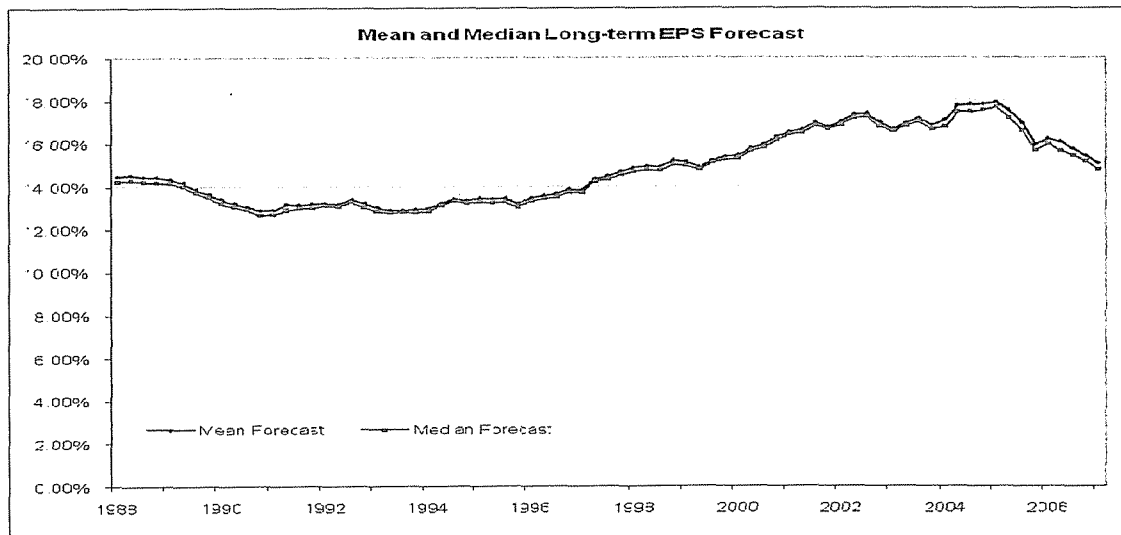
Louisville Gas and Electric Company
CAPM
Real S&P 500 EPS Growth Rate

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	2.89%
1970	5.51	5.49	1.34	4.13		
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	2.30%
1980	14.99	12.40	2.89	5.18		
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	-0.65%
1990	21.73	6.11	4.48	4.85		
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	6.29%
2000	52.00	3.39	5.82	8.93		
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	5-Year	3.00%
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		
2010	83.66	1.50	7.35	11.39		
Data Source: http://pages.stern.nyu.edu/~adamodar/				Real EPS Growth		2.6%

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

Mean Forecasted Versus Actual Long Term EPS Growth Rates

— Mean Actual Long-Term EPS Growth Rate

— Mean Forecasted Long-Term EPS Growth Rate

(Y-axis: 0%, 5%, 10%, 15%, 20%, 25%. X-axis: 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008)

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

Mean and Median Long-term EPS Forecast

— Mean Forecast   — Median Forecast

(Y-axis: 0.00%, 2.00%, 4.00%, 6.00%, 8.00%, 10.00%, 12.00%, 14.00%, 16.00%, 18.00%, 20.00%. X-axis: 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006)

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.

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

Bloomberg
Businessweek

For Analysts, Things Are Always Looking Up

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

By Roben Farzad

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

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

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

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

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

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

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

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

The bottom line: Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects.
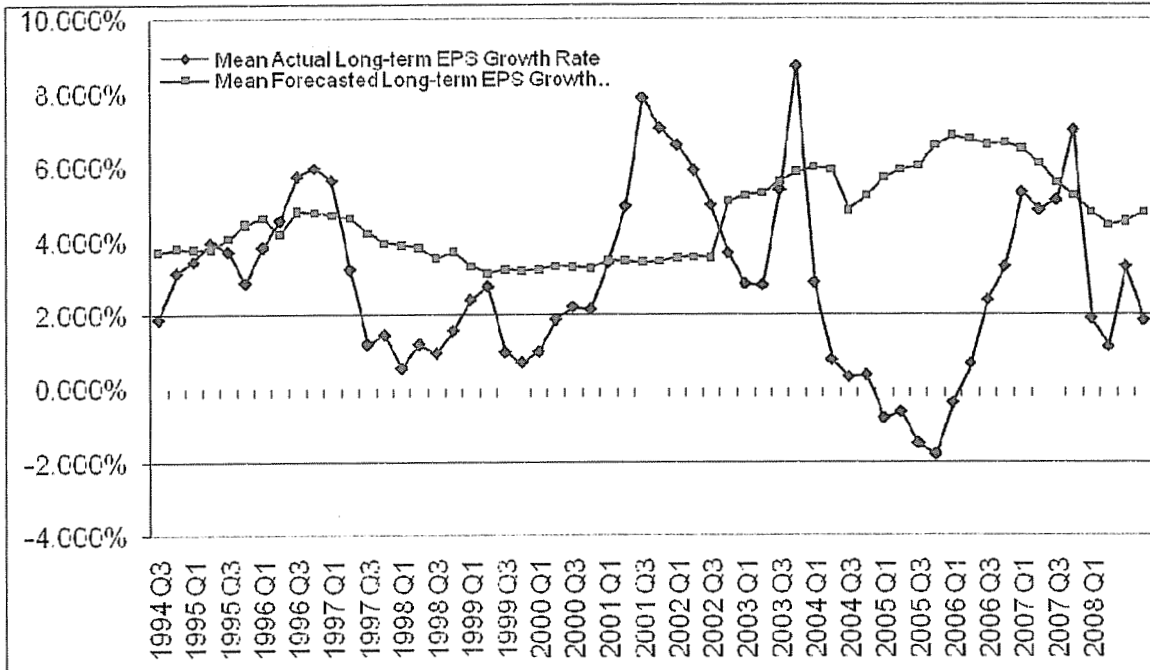
Bloomberg Businessweek Senior Writer Farzad covers Wall Street and international finance.

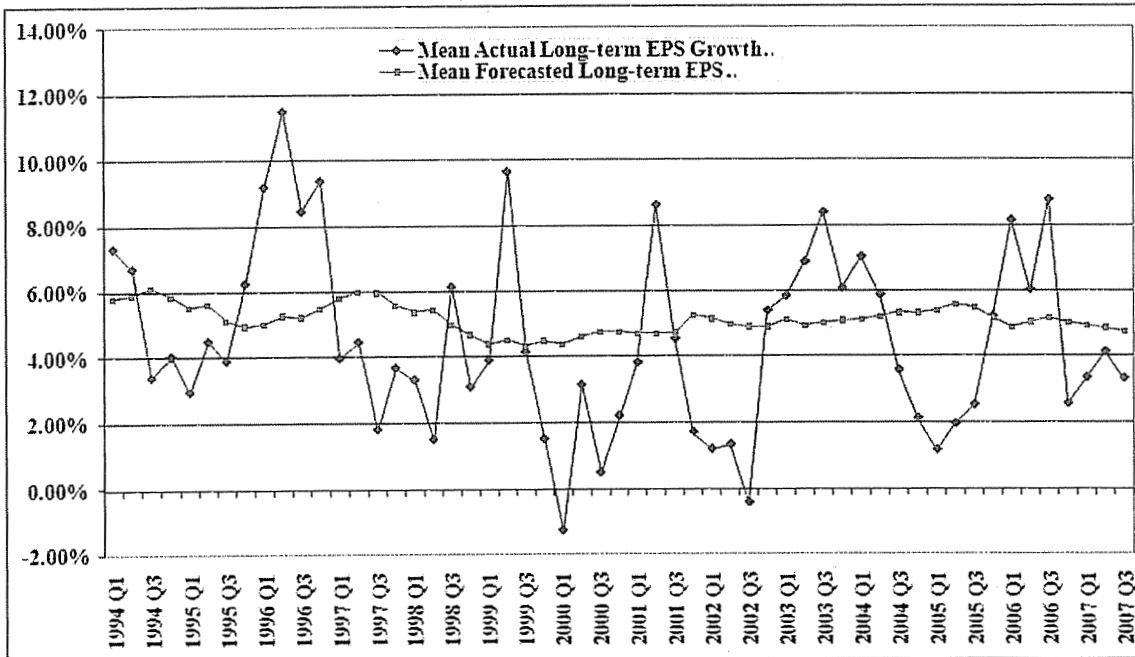**The Earnings Roller Coaster**
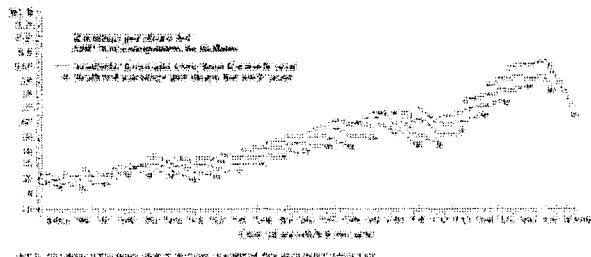
Panel A
Long-Term Forecasted Versus Actual EPS Growth Rates
Electric Utility Companies
1988-2008

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.