

OCC EXHIBIT NO. _____

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of Ohio)
Edison Company, The Cleveland Electric)
Illuminating Company and The Toledo)
Edison Company for Authority to Provide) Case No. 14-1297-EL-SSO
for a Standard Service Offer Pursuant to)
R.C. 4928.143 in the Form of an Electric)
Security Plan.)

**DIRECT TESTIMONY
OF
J. RANDALL WOOLRIDGE, Ph.D.**

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

December 22, 2014

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1 **I. INTRODUCTION**

2

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

4 **A1.** 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 Goldman,
6 Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business
7 Administration at the University Park Campus of the Pennsylvania State
8 University. I am also the Director of the Smeal College Trading Room and
9 President of the Nittany Lion Fund, LLC. A summary of my educational
10 background, research, and related business experience is provided in Appendix A.

11

12 **II. PURPOSE OF TESTIMONY**

13

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

16 **A2.** I have been asked by the Ohio Office of Consumer's Counsel ("OCC") to evaluate
17 the cost of capital associated with the Electric Security Plan filed by The
18 Cleveland Electric Illuminating Company, The Toledo Edison Company, and
19 Ohio Edison Company (the "Utilities" or the "Companies"). Under the proposed
20 Retail Rate Stability Rider ("Rider RRS"), as part of the filed Electric Security
21 Plan ("ESP IV"), the Companies have agreed to compensate FirstEnergy
22 Solutions Corporation ("FES") for all costs associated with the output from the
23 Davis-Besse Nuclear Power Station ("Davis-Besse") and the W.H. Sammis

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1 Plant ("Sammis") (collectively, the "Plants") as well as FES's portion of the Ohio
2 Valley Electric Corporation ("OVEC"). These costs include a return on the capital
3 investments in the Plants. In determining these capital costs, Companies' witness
4 Mr. Steve Staub has supported a capital structure consisting of 50 percent long-
5 term debt and 50 percent common equity and an 11.15 percent return on equity
6 ("ROE").

7
8 **Q3. DO YOU SUPPORT THE PROPOSED RIDER RRS?**

9 **A3.** My testimony did not address the approval or rejection of the proposed Rider
10 RRS. I am only providing an opinion on the proper cost of capital and return on
11 equity to be used in this proceeding if the proposed Rider RRS is approved as part
12 of the ESP IV. Other OCC witnesses have discussed OCC's position on various
13 components of Rider RRS.

14
15 **Q4. PLEASE SUMMARIZE YOUR FINDINGS WITH RESPECT TO THE**
16 **COMPANIES' PROPOSAL REGARDING THE COST OF CAPITAL AND**
17 **RETURN ON EQUITY IN THIS PROCEEDING.**

18 **A4.** My findings include the following:

19

20 1. The proposed ROE of 11.15 percent is not appropriate in
21 this proceeding. The 11.15 percent figure was a ROE
22 proposed by a utility witness in a previous rate case and is
23 not applicable in this proceeding.

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- 1 2. The Companies do not perform a cost of capital study to
2 justify the 11.15 percent ROE. Instead, Companies'
3 witness Mr. Staub justifies his ROE recommendation, in
4 part, based on previous authorized and stipulated
5 authorized ROEs for electric utilities in Ohio. These
6 authorized ROEs range from 10.0 percent to 10.5 percent.
7 These decisions are approximately five years old, are out of
8 date, and do not reflect capital costs today.
9
- 10 3. With interest rates at near all-time lows and stock prices at
11 all-time highs, capital costs today are at historic lows. The
12 authorized ROE for electric utilities should reflect these
13 current low capital costs. Therefore, I have conducted an
14 equity cost rate analysis as part of my testimony.
15
- 16 4. The Companies claim that the authorized ROE should
17 reflect the risk associated with merchant generation. This
18 is unreasonable given the unique arrangement of the
19 proposed Rider RRS. The Companies have proposed to
20 recover the operating and capital costs of the output from
21 the Plants as part of its regulated revenue requirements.
22 Therefore, the authorized ROE for the proposed Rider RRS
23 should reflect the risk associated with cost-based

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1 generation with a guaranteed rate of return and not the risk
2 associated with merchant generation if the proposed Rider
3 RRS and associated power purchase agreement were
4 approved by the Commission.
5

6 5. The Companies have proposed a hypothetical capital
7 structure consisting of 50 percent long-term debt and 50
8 percent common equity. Because the Plants ultimately
9 belong to FirstEnergy Corp., the parent company of FES, I
10 believe that FirstEnergy Corp.'s capital structure is the
11 appropriate capitalization. FirstEnergy Corp.'s capital
12 structure consists of 55 percent long-term debt and 45
13 percent common equity.
14

15 6. As part of their justification for their proposed ROE of
16 11.15 percent, the Companies have included a term
17 premium because the proposed purchase power contract
18 with the FES associated with Rider RRS is in effect for 15
19 years. The Companies' Witness Mr. Staub develops the
20 term premium based on the difference in yields between
21 one-year and 15-year Treasury bonds. There are several
22 reasons why the yield differences between one and 15 year
23 Treasuries do not necessarily reflect an appropriate term

1 premium in this case. First, the costs of capital and returns
2 on equity could go lower, and therefore a fixed return on
3 capital over a 15-year period could be a benefit to the
4 company. Second, a fixed ROE of 8.7 percent (my
5 recommended ROE) would be especially beneficial for
6 FES given the extremely low ROEs earned by FES in
7 recent years. Third, if the Commission believes a term
8 premium is required, the term period used in justifying the
9 term premium should actually reflect the expected number
10 of years between the filing of rate cases by the Companies
11 because it is through the ratemaking process that a utility
12 can propose to have rates adjusted to reflect higher capital
13 costs. Fourth, the estimated equity cost rate required,
14 which can change over time, is a long-term required ROE
15 and the primary inputs include a long-term Treasury bond
16 yield and a long-term expected earnings growth rate.

- 17
18 7. The assessment of risk associated with the Plants covered
19 under the proposed Rider RRS should include not only the
20 difference between merchant generation (without
21 guaranteed return) versus cost-based generation (with
22 guaranteed return), but also the fact that the return on
23 capital for the Plants is collected through Rider RRS rather

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1 than a base generation rate. Under traditional ratemaking, a
2 utility is provided only the opportunity to earn an authorized
3 ROE. Under the proposed Rider RRS, the return on capital
4 for the Plants is included as a rate rider, and is effectively
5 a guaranteed rate of return. Therefore, the recovery of capital
6 through the rider mechanism is less risky than through
7 traditional ratemaking.

8
9 8. The Companies' proposed power purchase agreement
10 associated with Rider RRS lacks traditional regulatory
11 oversight. The PUCO will not do a prudence review of the
12 legacy costs embedded in past decisions made by the
13 Utilities' unregulated affiliate nor will there be a prudence
14 review of costs incurred going forward. The limited PUCO
15 financial reviews of the Utilities' costs reduce the
16 likelihood and risk of a disallowance. This lowers the risk
17 due to lack of traditional regulatory oversight.

18
19 9. To estimate an ROE in this proceeding, I have applied the
20 Discounted Cash Flow Model ("DCF") and the Capital
21 Asset Pricing Model ("CAPM") to a proxy group of
22 publicly-held electric utility companies ("Electric Proxy
23 Group"). This proxy group has a risk profile that is similar

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1 to that of the Companies. My analysis indicates a return on
2 equity (equity cost) rate of 8.7 percent is appropriate in this
3 proceeding. This figure represents the upper end of my
4 equity cost rate range of 7.8 percent to 8.7 percent. With
5 my proposed capital structure and long-term debt cost rate,
6 I am recommending an overall fair rate of return or cost of
7 capital of 6.41 percent. This is summarized in Exhibit
8 JRW-1.

9
10 **Q5. HOW IS YOUR TESTIMONY ORGANIZED?**

11 **A5.** First, I review the origin of the 11.15 percent ROE proposed by the Companies, and
12 discuss why it is not appropriate in this proceeding. I also critique the analyses used
13 by Companies' Witness Mr. Staub in support of the 50/50 capital structure and the
14 11.15 percent ROE. Second, I provide an assessment of capital costs in today's
15 capital markets. My discussion includes the selection of an Electric Proxy Group for
16 estimating the cost of equity capital for the Companies, and the appropriate capital
17 structure. Then I provide an overview of the concept of the cost of equity capital,
18 and my estimate of the equity cost rate for the Companies.

1 **III. THE DEFICIENCIES OF THE PROPOSED 11.15 PERCENT ROE**

2

3 **Q6. *HOW DO THE COMPANIES JUSTIFY THE PROPOSED ROE OF 11.15***
4 ***PERCENT?***

5 **A6.** Companies' Witness Mr. Staub explains and supports the proposed common
6 equity cost rate of 11.15 percent. His argument is based on the Commission's
7 Order in an AEP Capacity case as follows:

8

9 Recently the Commission considered a similar cost-based pricing
10 mechanism in the AEP Capacity Case.¹ In that proceeding, Ohio
11 Power Company and Columbus Southern Power ("AEP Ohio")
12 sought Commission approval for a cost-based capacity pricing
13 mechanism. This cost-based pricing mechanism bears similarities
14 to the recovery of capital investments here, since the mechanism
15 established in the AEP Capacity Case was primarily intended to
16 compensate AEP Ohio for capital investments in its generation
17 resources. Similar to the proposed transaction in this case, AEP
18 Ohio sought to recover a reasonable ROE.²

¹ In the Matter of the Commission Review of the Capacity Charges of Ohio Power Company and Columbus Southern Power, Case No. 10-2929-EL-UNC ("AEP Capacity Case").

² Direct Testimony of Steve Staub on behalf of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company, p. 3.

1 **Q7. HOW WAS THE 11.15 PERCENT ROE DETERMINED IN THE OHIO**
2 **POWER CAPACITY CASE?**

3 **A7.** In Case No. 10-2929-EL-UNC, Ohio Power argued that it should receive a ROE
4 of 11.15 percent or, at a minimum, a ROE of 10.5 percent, which Ohio Power
5 claimed was consistent with the ROE the Commission has recognized for certain
6 generating assets. The 11.15 percent was recommended by Ohio Power Witness
7 Dr. Kelly Pearce.³ Dr. Pearce also recommended that the ROE remain fixed for
8 the term that the capacity rate was in effect. Dr. Pearce did not perform any
9 studies to justify or support his 11.15 percent ROE recommendation. Instead, he
10 indicated that 11.15 percent was the ROE recommended by Ohio Power Witness
11 Dr. William Avera in the Columbus Southern Power Company (“CSP”) and Ohio
12 Power Company (“OPCo”) (collectively referred to as “Ohio Power”) distribution
13 rate cases (11-0351-EL-AIR and 11-0352-EL-AIR).

14
15 **Q8. PLEASE BRIEFLY DESCRIBE DR. AVERA’S TESTIMONY SUPPORTING**
16 **THE 11.15 PERCENT ROE IN THE OHIO POWER DISTRIBUTION RATE**
17 **CASE.**

18 **A8.** Dr. Avera recommended a ROE of 11.15 percent in his testimony for the
19 distribution service rates for Ohio Power.⁴ The testimony was filed on March 14,
20 2011. The 11.15 percent represented the midpoint of his range of 10.55 percent to

³ Testimony of Kelly D. Pearce on behalf of AEP Ohio, Case No. 10-2929-EL-UNC, March 23, 2012, p. 11.

⁴ Testimony of William E. Avera on behalf of Columbus Southern Power Company and Ohio Power Company, Case No. 11-351-EL-AIR and Case No. 11-352-EL-AIR, March 14, 2011.

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1 11.55 percent. In establishing his equity cost rate recommendation, Dr. Avera
2 used a proxy group of 24 electric utilities, and used DCF, CAPM, and Risk
3 Premium equity cost rate approaches.

4

5 **Q9. DID THE COMMISSION APPROVE AEP OHIO'S PROPOSED ROE IN**
6 **THE AEP CAPACITY CASE?**

7 **A9.** Yes. In its Order, the Commission noted: “[f]urther, upon consideration of the
8 arguments with respect to the appropriate return on equity, we find that AEP-
9 Ohio's recommendation of 11.15 percent is reasonable and should be adopted.”⁵

10

11 **Q10. HAS MR. STAUB PERFORMED ANY ECONOMIC OR FINANCIAL**
12 **STUDIES TO SUPPORT THE 11.15 PERCENT ROE IN THIS**
13 **PROCEEDING?**

14 **A10.** No.

15

16 **Q11. HOW HAS MR. STAUB ATTEMPTED TO SUPPORT THE 11.15 PERCENT**
17 **ROE?**

18 **A11.** He initially argues that the AEP Capacity Case is similar to the proposed power
19 purchase agreement included in the proposed Rider RRS because both cases
20 involve the determination of costs for cost-based generation. He then supports the
21 11.15 percent with two analyses that are based, in part, on previously authorized

⁵ Case No. 10-2929, Opinion and Order, p. 34.

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1 ROEs in Ohio.⁶ In contrast, the most recently approved ROE for the Companies
2 is 10.5 percent.⁷

3

4 He initially compares the authorized ROE (10.0 percent to 10.3 percent) for Ohio
5 Power's (including both the pre-merged CSP and OPCo) distribution case versus
6 the 11.15 percent authorized in the AEP Capacity case. In the Ohio Power
7 Distribution case, the Commission approved a stipulation with ROEs ranging
8 from 10.0 percent to 10.3 percent. He then claims that the differential ((11.15
9 percent minus (10.3 percent to 10.0 percent) yields a range of (0.85 percent to
10 1.15 percent)) is the additional ROE provided for generation investment as
11 opposed to distribution investment.⁸ The sum of the range and the 10.5 percent
12 ROE authorized in the Companies' distribution case yields a ROE of 11.35
13 percent to 11.65 percent (10.5 percent + 0.85 percent to 1.15 percent).

14

15 His second analysis uses the most recent approved ROE for the Companies, and
16 adds a term premium for a fixed ROE for the 15-year term of the power purchase
17 agreement under the proposed Rider RRS. The most recent approved ROEs for
18 the three FirstEnergy EDUs (Ohio Edison, CEI, and Toledo Edison) are 10.5
19 percent.⁹ He then argues that a term premium is required for a fixed ROE
20 contract for 15 years. To estimate the term premium, he computes the yield

⁶ Direct Testimony of Steve Staub, pp. 7-10.

⁷ Case No. 07-551-EL-AIR through 07-554-EL-UNC, Opinion and Order dated January 21, 2009, p. 21.

⁸ Direct Testimony of Steve Staub, p. 8.

⁹ Case No. 07-551-EL-AIR through 07-554-EL-UNC, Opinion and Order dated January 21, 2009, p. 21.

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1 differential for one-year versus 15-year Treasury securities. Over the past 15
2 years, he computes this differential to be 196 basis points.¹⁰ According to Mr.
3 Staub, the sum of the most recent authorized ROE (10.5 percent) and the yield
4 differential (1.96 percent) yields a 12.46 percent ROE.

5

6 **Q12. WHAT ARE THE DEFICIENCIES WITH THE PROPOSED 11.15**
7 **PERCENT ROE AND THE TWO ANALYSES JUSTIFYING THE**
8 **PROPOSED ROE?**

9 **A12.** There are five deficiencies with Mr. Staub's two analyses: (1) the use of the AEP
10 Capacity case ROE of 11.15 percent; (2) the authorized ROE of 10.5 percent
11 employed as the base return for the Companies; (3) the term premium of 1.96
12 percent that is added to the Companies 10.5 percent authorized ROE; (4) the
13 assessment of the risk associated with the Plants owned and operated by FES
14 under cost-based regulation with guaranteed return; and (5) the lack of
15 recognition of the lesser risk of collecting the return on capital through Rider RRS
16 rather than through a base generation rate. As a result of these deficiencies, the
17 11.15 percent ROE proposed by the Companies is unreasonable and should not be
18 adopted by the Commission in this proceeding.

¹⁰ Direct Testimony of Steve Staub, p. 10.

1 **1. The Use of the AEP Capacity Case ROE of 11.15 Percent**

2
3 **Q13. DO YOU BELIEVE THAT THE 11.15 PERCENT ROE FROM THE AEP**
4 **CAPACITY CASE IS APPLICABLE TO THIS PROCEEDING?**

5 **A13.** No. First, the 11.15 percent was the recommended ROE by CSP and OPCo in the
6 distribution cases. On December 14, 2011, there was a settlement reached by all
7 parties in the two distribution Ohio Power distribution rate cases. In the
8 Stipulation, CSP and OPCo agreed to ROEs of 10.0 percent and 10.3 percent,
9 respectively, not the 11.15 percent.¹¹

10
11 Second, as noted above, AEP Ohio Witness Dr. Kelly Pearce, adopted the
12 proposed ROE of CSP and OPCo in the distribution case and provided no study or
13 analysis to support the 11.15 percent in his testimony in the AEP Ohio
14 proceeding.

15
16 Third, financial market conditions, and especially the level of interest rates and
17 costs of capital, are different today than they were in early 2011 when the AEP
18 Capacity and Ohio Power Distribution Rate cases were decided. For example, in
19 the distribution case, Dr. Avera based his 11.15 percent recommendation based on
20 a projected 30-year Treasury yield for 2013 ranging from five percent to 5.5
21 percent. The current 30-year Treasury yield is only about three percent.¹² Dr.

¹¹ Opinion and Order, Cases Nos. 11-0351-EL-AIR and 11-0352-EL-AIR, December 14, 2011, p. 5.

¹² See page 2 of Exhibit JRW-11.

1 Avera also used projected 2013 long-term AA yields ranging from 6.2 percent to
2 6.4 percent. The current yield on long-term AA utility bonds is about 4 percent.¹³
3 As such, the 11.15 percent recommended by Dr. Avera in Case Nos. 11-0351-EL-
4 AIR and 11-0352-EL-AIR was based on interest rate and capital cost assumptions
5 that are not reflective of today's market conditions. Therefore, the 11.15 percent
6 ROE used in the AEP Ohio Capacity case and the Ohio Power Distribution case is
7 not applicable or appropriate in this proceeding.

8

9 **2. The Authorized ROE of 10.5 Percent for the Companies**

10

11 **Q14. IS THE AUTHORIZED ROE OF 10.5 PERCENT APPROPRIATE AS A**
12 **BASE ROE IN THIS PROCEEDING?**

13 **A14.** No. As discussed below, interest rates and costs of capital have declined
14 significantly in the years since that case was filed in 2007 and decided in 2009. In
15 fact, as discussed below, with interest rates at 50-year lows and stock prices at all-
16 time highs, capital costs have not been this low in decades. As a result, the 10.5
17 percent authorized ROE decided in the last distribution rate case of the three
18 FirstEnergy EDUs (the "Companies") is out of date and inappropriate as a base
19 ROE in 2014.

¹³ *Mergent Bond Record*, November 2014.

1 **3. The Term Premium of 1.96 Percent**

2
3 **Q15. PLEASE DISCUSS MR. STAUB'S TERM PREMIUM OF 1.96 PERCENT.**

4 **A15.** Mr. Staub claims that a term premium is required because the Companies have
5 proposed that the power purchase agreement between the Companies and FES
6 under Rider RRS include a fixed ROE for 15 years. He then adds the term
7 premium to the most recent authorized ROE for the Companies to compute a
8 required ROE. To estimate the term premium, Mr. Staub computes the yield
9 differential for one-year versus 15-year Treasury securities. Over the past 15
10 years, he computes this differential to be 196 basis points (4.18 percent - 2.22
11 percent).¹⁴

12
13 There are several reasons why the yield differences between one-year and 15-year
14 Treasury securities do not necessarily represent an appropriate term premium, if
15 any, in this case. First, capital costs could go lower over the next 15 years, and
16 therefore a fixed return on capital could actually be a benefit to the Companies.
17 Second, a fixed ROE of 8.7 percent (my recommended ROE) would be especially
18 beneficial for FES for the Plants covered under Rider RRS. Specifically, FES has
19 earned ROEs of -1.65 percent, 4.97 percent, and 1.13 percent for the years 2011,
20 2012, and 2013, respectively.¹⁵ As such, in comparison, a fixed ROE of 8.7
21 percent for part of FES's generation assets looks very good. No added term

¹⁴ Direct Testimony of Steve Staub, p. 9.

¹⁵ FirstEnergy Corporation, SEC 10-K Report, 2013, pp. 123-5.

premium is justified. Third, a term premium, if needed, should be estimated by a term period of less than 15 years. If a term premium is required in this proceeding, it should actually reflect the difference in interest rates of debt associated with different maturity. The difference in maturity should be the expected number of years between rate cases, which is not necessarily or likely 15 years. This is because it is through rate cases and the associated ratemaking process that a utility, such as Ohio Edison, CEI or Toledo Edison, can propose to have rates adjusted to reflect higher capital costs.

4. The Assessment of the Risk of FES Generation

Q16. PLEASE EVALUATE MR. STAUB'S DISCUSSION OF THE RISK OF FES GENERATION.

A16. Mr. Staub discusses the risk of FES' generation in the following:

FES provides energy-related products and services to retail and wholesale customers and owns, through subsidiaries, merchant generation, which is by its nature riskier than an EDU. The higher business risk for FES reflects, among other things, the volatility of market prices for electricity, the uncertain nature of its customer base, and an uncertain regulatory environment from the standpoint of both markets and environmental mandates.¹⁶

¹⁶ Direct Testimony of Steve Staub, p. 6.

1 While this may be true regarding the risk of FES' merchant generation, it is not
2 indicative of the risk associated with the electricity generation of the Plants
3 covered under the proposed Rider RRS. The Companies have proposed to
4 recover the operating and capital costs of the output from the Plants as part of its
5 regulated revenue requirements.¹⁷ As such, this approach is asking the
6 Commission to guarantee the Companies to collect the full revenue requirement
7 associated with the Plants (which are part of FES' generation assets) through
8 Rider RRS. Therefore, if the proposed Rider RRS in the ESP IV is approved, the
9 revenues associated with the Plants will not be subject to competitive market
10 pricing and hence these FES's generation assets (the "Plants") face less risk than a
11 merchant power producer.

12
13 **5. The Lower Risk of Collecting Return on Generation Plants through**
14 **Rider RRS**
15

16 **Q17. HOW DOES THE COLLECTION OF RETURN ON GENERATION PLANT**
17 **INVESTMENT THROUGH RIDER RRS IMPACT THE PROPOSED ROE?**

18 **A17.** One risk-related issue that is not discussed by Mr. Staub is the collection
19 mechanism regarding of the return on capital invested in power plants. Under the
20 proposed Rider RRS, the return on capital and ROE associated with the Plants are
21 collected through a rider, not through a base generation rate. In traditional
22 ratemaking, a utility is provided only the opportunity to earn an authorized ROE.

¹⁷ Direct Testimony of Steve Staub, p. 2.

1 Actually earning the authorized ROE by a utility depends on many factors, including
2 the number of customers, the efficiency of management, operating and maintenance
3 costs, fuel costs, demand for service, and other factors.

4
5 In contrast, under the proposed Rider RRS, the return on capital for the Plants is
6 included as a rate rider, and therefore is effectively a guaranteed rate of return. This
7 impacts Mr. Staub's analysis in two ways. First, recovery of capital costs through a
8 rider is less risky than through traditional ratemaking. Second, the authorized ROEs
9 used in Mr. Staub's analyses to support the 11.15 percent ROE are based on
10 traditional ratemaking and not on rate riders. Therefore, Mr. Staub's analysis has
11 ignored the lower risk associated with recovering capital costs through a rate rider as
12 opposed to traditional ratemaking.

13
14 **6. The Companies' Power Purchase Proposal Associated with Rider**
15 **RRS Lacks Traditional Regulatory Oversight**

16
17 ***Q18. DOES THE COMPANIES' POWER PURCHASE PROPOSAL ASSOCIATED***
18 ***WITH RIDER RRS ALLOW TRADITIONAL REGULATORY OVERSIGHT?***

19 ***A18.*** No. The Companies' power purchase agreement proposal, as explained in its
20 testimonies, lacks traditional regulatory oversight. The PUCO will not do a
21 prudence review of the legacy costs embedded in past decisions made by the
22 Utilities' unregulated affiliate nor will there be a prudence review of costs

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1 incurred going forward. This was explained in Witness Mikkelsen's testimony
2 where it was stated:

3
4 Legacy Cost Components are all costs that arise from decisions or
5 commitments made and contracts entered into prior to December
6 31, 2014, including any costs arising from provisions under such
7 historic contracts that may be employed in the future. Approval of
8 this ESP IV shall be deemed as approval to recover all Legacy
9 Cost Components through Rider RRS as not unreasonable costs.
10 Rider RRS will be subject to two separate reviews. In the first
11 review, the Staff will have from April 1 to May 31 to review the
12 annual Rider RRS filing for mathematical errors consistency with
13 the Commission approved rate design, and incorporation of prior
14 audit findings, if applicable. In the second review, the Staff will
15 have the opportunity to audit the reasonableness of the actual costs
16 (excluding Legacy Cost Components which shall not be included
17 in this second review or challenged in any subsequent audit or
18 review) contained in Rider RSS and the actual market revenues
19 contained in Rider RRS. The audit shall include a review to
20 confirm that the actual costs and actual market revenues included
21 in Rider RRS are not unreasonable.¹⁸

¹⁸ Direct Testimony of Eileen Mikkelsen, August 4, 2014, pp.14-15.

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1 These limited PUCO reviews of the Utilities' costs for reasonableness or
2 accepting past decisions (and the costs arising from those past decisions) as not
3 being unreasonable is a less difficult standard. Therefore, the Companies' risk
4 associated with the PUCO's review and the likelihood of a disallowance resulting
5 from such a minimal review is much reduced. But this lack of traditional
6 regulatory oversight and the associated reduction in risk to the Companies are not
7 included in Mr. Staub's analysis.

8

9 **Q19. WHAT ARE YOUR SUMMARY OBSERVATIONS ON THE PROPOSED**

10 **11.15 PERCENT ROE?**

11 **A19.** First, for reasons outlined above, I do not believe that the 11.15 percent ROE, is
12 appropriate in this proceeding for the power purchase agreement between FES
13 and the Companies under the proposed Rider RRS. Second, given the changes in
14 capital market conditions, I believe that the Commission should update its base
15 level electric utility authorized ROE for the Companies in this proceeding to
16 reflect today's historically low costs of capital.

17

18 **Q20. WHAT ISSUES ARE YOU ADDRESSING NEXT?**

19 **A20.** First, I am going to discuss the costs of capital in today's markets. Then I will
20 proceed to estimate an equity cost rate and overall cost of capital for the
21 Companies.

IV. CAPITAL COSTS IN TODAY'S MARKETS

Q21. PLEASE DISCUSS CAPITAL COSTS IN U.S. MARKETS.

A21. Long-term capital cost rates for U.S. corporations are a function of the required returns on risk-free securities plus a risk premium. The risk-free rate of interest is the yield on long-term U.S Treasury bonds. The yields on 10-year U.S. Treasury bonds from 1953 to the present are provided on Panel A of Exhibit JRW-2. These yields peaked in the early 1980s and have generally declined since that time. These yields fell to below three percent in 2008 as a result of the financial crisis. From 2008 until 2011, these rates fluctuated between 2.5 percent and 3.5 percent. In 2012, the yields on 10-year Treasuries declined from 2.5 percent to 1.5 percent as the U.S. Federal Reserve initiated its Quantitative Easing III ("QEIII") program to support a low interest rate environment. These yields increased from mid-2012 to about three percent as of December 2013, on speculation of a tapering to the Federal Reserve's QEIII policy. After the Federal Reserve's December 18th announcement that it was indeed tapering its bond buying program, these yields began to decline and were about 2.25 percent as of December 2014.

Panel B on Exhibit JRW-2 shows the differences in yields between 10-year Treasuries and Moody's Baa-rated bonds since the year 2000. This differential primarily reflects the additional risk required by bond investors for the risk associated with investing in corporate bonds as opposed to obligations of the U.S. Treasury. The difference also reflects, to some degree, yield curve changes over

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1 time. The Baa rating is the lowest of the investment grade bond ratings for
2 corporate bonds. The yield differential hovered in the two percent to 3.5 percent
3 range until 2005, declined to 1.5 percent until late 2007, and then increased
4 significantly in response to the financial crisis. This differential peaked at six
5 percent at the height of the financial crisis in early 2009 due to tightening in credit
6 markets, which increased corporate bond yields, and the “flight to quality,” which
7 decreased Treasury yields. The differential subsequently declined, and has been
8 in the 2.5 percent to 3.5 percent range over the past four years.

9

10 The risk premium is the return premium required by investors to purchase riskier
11 securities. The risk premium required by investors to buy corporate bonds is
12 observable based on yield differentials in the markets. The market risk premium
13 is the return premium required to purchase stocks as opposed to bonds. The
14 market or equity risk premium is not readily observable in the markets (as are
15 bond risk premiums) because expected stock market returns are not readily
16 observable. As a result, equity risk premiums must be estimated using market
17 data. There are alternative methodologies to estimate the equity risk premium,
18 and these alternative approaches and equity risk premium results are subject to
19 much debate. One way to estimate the equity risk premium is to compare the
20 mean returns on bonds and stocks over long historical periods. Measured in this
21 manner, the equity risk premium has been in the five percent to seven percent
22 range. However, studies by leading academics indicate that the forward-looking
23 equity risk premium is actually in the four percent to six percent range. These

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1 lower equity risk premium results are in line with the findings of equity risk
2 premium surveys of CFOs, academics, analysts, companies, and financial
3 forecasters.

4

5 **Q22. PLEASE DISCUSS INTEREST RATES ON LONG-TERM UTILITY BONDS.**

6 **A22.** Panel A of Exhibit JRW-3 provides the yields on A-rated public utility bonds.
7 These yields peaked in November 2008 at 7.75 percent and henceforth declined
8 significantly. These yields declined to below four percent in mid-2013, and then
9 increased with interest rates in general to the 4.85 percent range as of late 2013.
10 They have since declined to about 4.25 percent.

11

12 Panel B of Exhibit JRW-3 provides the yield spreads between long-term A-rated
13 public utility bonds relative to the yields on 20-year Treasury bonds. These yield
14 spreads increased dramatically in the third quarter of 2008 during the peak of the
15 financial crisis and have decreased significantly since that time. For example, the
16 yield spreads between 20-year U.S. Treasury bonds and A-rated utility bonds
17 peaked at 3.4 percent in November 2008, declined to about 1.5 percent in the
18 summer of 2012, and have since remained in that range.

19

20 **Q23. PLEASE PROVIDE MORE DETAILS ABOUT THE FEDERAL RESERVE'S**
21 **QEIII POLICY AND INTEREST RATES.**

22 **A23.** On September 13, 2012, the Federal Reserve released its policy statement relating
23 to QEIII. In the statement, the Federal Reserve announced that it intended to

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1 expand and extend its purchasing of long-term securities to about \$85 billion per
2 month.¹⁹ The Federal Open Market Committee (“FOMC”) also indicated that it
3 intends to keep the target rate for the federal funds rate between 0 to 1/4 percent
4 through at least mid-2015. In subsequent meetings over the next year, the Federal
5 Reserve reiterated its continuation of its bond buying program and tied future
6 monetary policy moves to unemployment rates and the level of interest rates.²⁰

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

18
19 **Q24. PLEASE DISCUSS THE FEDERAL RESERVE’S ACTIONS IN 2014.**

20 **A24.** The January 29, 2014 FOMC meeting was historic as Janet Yellen took over for
21 Ben Bernanke as Federal Reserve Chairman. The FOMC also tapered its bond

¹⁹ Board of Governors of the Federal Reserve System, “Statement Regarding Transactions in Agency Mortgage-Backed Securities and Treasury Securities,” September 13, 2012.

²⁰ Board of Governors of the Federal Reserve System, FOMC Statement,” December 12, 2012.

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1 buying program by another \$5 billion per month beginning in February.²¹ In
2 subsequent monthly meetings in 2014, the FOMC noted that they saw
3 improvement in the economy and the housing and labor markets and continued to
4 taper its bond buying program. In its October 28-29, 2014 meeting, the FOMC
5 put an end to its bond buying program primarily due to improving economic
6 conditions and, in particular, a better employment market. The announcement
7 was expected, and speculation grew as to when the Federal Reserve would change
8 course in its “highly accommodative” monetary policy and move to increase
9 short-term interest rates. This was buoyed by the fact that unemployment fell to
10 5.8 percent in October. But, at the October meeting, the FOMC did appear to
11 change its focus from the employment market to the sluggish pace of inflation as
12 the reason to keep short-term interest rates low.²²

13
14 **Q25. HOW HAVE THE MARKETS REACTED TO THE FEDERAL RESERVE’S**
15 **SCALE BACK AND END OF QEIII?**

16 **A25.** The yield on the 10-year Treasury note was three percent as of January 2, 2014.
17 This yield trended down in January and was at 2.72 percent after the January
18 FOMC meeting. Since that time, the 10-year Treasury yield has traded in the two
19 percent to 2.8 percent range, and is currently at 2.25 percent.

²¹ Board of Governors of the Federal Reserve System, FOMC Statement, January 29, 2014.

²² Board of Governors of the Federal Reserve System, FOMC Statement,” November 19, 2014.

1 **Q26. PLEASE SUMMARIZE YOUR THOUGHTS ON CAPITAL COSTS TODAY.**

2 **A26.** Capital cost are at historical lows and likely to stay low for some time for several
3 reasons.

4
5 First, the economy has been growing for over four years and the Federal Reserve,
6 “sees sufficient underlying strength in the broader economy.” And the labor
7 market has improved better than expected, with unemployment now down to 5.8
8 percent. Normally, a strengthening economy would lead to higher inflation and
9 interest rates. In fact, economists have been predicting higher interest rates for
10 over a year. However, these forecasts have proven to be wrong. In fact, all the
11 economists in Bloomberg’s interest rate survey forecasted interest rates would
12 increase this year. However, 100 percent of economists were wrong. According
13 to the *Market Watch* article:

14
15 The survey of economists’ yield projections is generally skewed
16 toward rising rates — only a few times since early 2009 have a
17 majority of respondents to the Bloomberg survey thought rates
18 would fall. But the unanimity of the rising rate forecasts in the
19 spring was a stark reminder of how one-sided market views can
20 become. It also teaches us that economists can be universally
21 wrong.²³

²³ Ben Eisen, Yes, 100% of economists were dead wrong about yields, *Market Watch*, October 22, 2014.

Interest rates and capital costs have remained at low levels for two reasons: (1) due to slack in the economy and low commodity prices, inflationary expectations in the U.S. remain very low, and are below the Federal Reserve's target of 2.0 percent; and (2) global economic growth – especially in Europe and Asia – remains stagnant. With the resulting low demand for goods and services, there is even less pressure on prices from outside the U.S. Hence, while the yields on 10-year U.S. Treasury bonds are low by historic standards, these yields are well above the government bond yields in Germany, Japan, and the United Kingdom. Consequently, U.S. Treasuries offer an attractive yield relative to global investors, thereby attracting capital to the U.S. and keeping U.S. interest rates down. Reflective of the economic and earnings growth and low interest rates in the U.S., the stock market is at an all high. Hence, with low interest rates and high stock prices, capital costs are at historically low levels.

V. PROXY GROUP SELECTION

Q27. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF RETURN RECOMMENDATION FOR THE COMPANIES.

A27. To develop a fair rate of return recommendation for the Companies, I have evaluated the return requirements of investors on the common stock of an Electric Proxy Group.

1 Q28. PLEASE DESCRIBE YOUR ELECTRIC PROXY GROUP.

2 **A28.** The selection criteria for the Electric Proxy Group include the following:

3

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

6

7 2. Listed as Electric Utility by *Value Line Investment Survey*
8 and listed as an Electric Utility or Combination Electric &
9 Gas Utility in *AUS Utilities Report*;

10

11 3. A corporate credit rating from Standard & Poor's of BBB+,
12 BBB, or BBB-, which is reflective of FirstEnergy's BBB-
13 corporate credit rating;

14

15 4. Pays a cash dividend, with no cuts or omissions for at least
16 six months;

17

18 5. Not involved in an acquisition of another utility, and not
19 the target of an acquisition, in the past six months; and

20

21 6. Analysts' long-term Earnings Per Share ("EPS") growth
22 rate forecasts available from Yahoo, Reuters, and/or
23 Zack's.

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1 The Electric Proxy Group includes twenty companies. Summary financial
2 statistics for the proxy group are listed in Exhibit JRW-4.²⁴ The median operating
3 revenues and net plant among members of the Electric Proxy Group are \$2,228.7
4 million and \$7,893.4 million, respectively. The group receives 87 percent of
5 revenues from regulated electric operations, and has a BBB credit rating from
6 Standard & Poor's, a current common equity ratio of 46.7 percent, and an earned
7 return on common equity over of 9.5 percent.

8

9 **Q29. HOW DOES THE INVESTMENT RISK OF THE COMPANIES COMPARE**
10 **TO THAT OF YOUR ELECTRIC PROXY GROUP?**

11 **A29.** I believe that bond ratings provide a good assessment of the investment risk of a
12 company. As shown in Exhibit JRW-4, page 1, FirstEnergy Corp, FirstEnergy
13 Solutions, and the Companies have an issuer credit rating of BBB- from Standard
14 & Poor's, which is one notch below the BBB average for the Electric Proxy
15 Group.

16

17 In addition, on page 2 of Exhibit JRW-4, I have assessed the riskiness of the
18 Companies' parent, FirstEnergy Corp. relative to the Electric Proxy Group using
19 five different risk measures published by *Value Line*. These measures include
20 Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price

²⁴ In my testimony, I present financial results using both mean and medians as measures of central tendency. However, due to outliers among means, I have used the median as a measure of central tendency.

1 Stability. The risk measures suggest that FirstEnergy Corp. is at the high end of
2 the risk level of the Electric Proxy Group.

3

4 **Q30. PLEASE ADDRESS THE RISK ISSUES ASSOCIATED WITH THIS**
5 **ANALYSIS RELATIVE TO THE COMPANIES' PROPOSAL TO RECOVER**
6 **OPERATING AND CAPITAL COSTS THROUGH RIDER RRS.**

7 **A30.** The credit ratings of the companies are driven by the risk profile of the parent
8 company, FirstEnergy Corporation. As shown on page 1 of Exhibit JRW-4,
9 unlike the other utilities in the proxy group, FirstEnergy Corp. receives a low
10 percent of revenues (64 percent) from regulated operations. The other companies
11 receive about 85 percent from regulated electric and gas operations.
12 FirstEnergy's exposure to the unregulated commercial generation markets is
13 demonstrated by the poor financial performance of FirstEnergy Solutions, which
14 was discussed earlier. This higher risk exposure associated with the unregulated
15 commercial generation markets provides for a slightly lower credit risk profile
16 and lower *Value Line* risk metrics.

17

18 However, under the arrangement proposed for Rider RRS, the Companies have
19 proposed to recover the operating and capital costs of the output from the Plants
20 as part of its regulated revenue requirements. Therefore, the authorized ROE
21 should reflect the risk associated with cost-based generation and not the risk
22 associated with merchant generation. In addition, the methods and recovery
23 procedures under Rider RRS subject the Companies to less risk. In particular,

1 because the return on capital is collected through Rider RRS rather than a base
2 generation rate, the return is a guaranteed rate of return. This contrasts with
3 traditional ratemaking where a utility is provided the opportunity to earn an
4 authorized ROE. In addition, because the Companies' power purchase agreement
5 associated with Rider RRS provides for limited PUCO financial reviews of the
6 Utilities' costs, the likelihood and risk of disallowance are lessened. This likewise
7 reduces the risk.

8

9 ***Q31. BASED ON THIS DISCUSSION, WHAT DO YOU CONCLUDE ABOUT THE***
10 ***USE OF THE ELECTRIC PROXY GROUP TO ESTIMATE AN EQUITY***
11 ***COST RATE FOR THE COMPANIES?***

12 ***A31.*** On balance, I believe that the Electric Proxy Group, with an average Standard and
13 Poor's ("S&P") credit rating of BBB, provides a reasonable group to estimate an
14 equity cost rate for the Companies. The lower credit ratings of FirstEnergy Corp.
15 and the Companies are associated with the parent company's exposure to the
16 unregulated commercial generation market. Based on the nature of the proposed
17 Rider RRS, the risk is really that if regulated generation. In addition, the recovery
18 elements of Rider RRS, and the lack of regulatory oversight, reduce the risk of the
19 arrangement. Therefore, I believe that a group of electric utilities with a BBB
20 S&P credit rating is appropriate in this proceeding.

1 **VI. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES**

2

3 **Q32. WHAT IS THE COMPANIES' RECOMMENDED CAPITAL STRUCTURE?**

4 **A32.** The Company has recommended a capital structure of 50 percent long-term debt
5 and 50 percent common equity. This is provided in Panel A of Exhibit JRW-5.

6

7 **Q33. ARE YOU EMPLOYING THE COMPANIES' PROPOSED CAPITAL**
8 **STRUCTURE?**

9 **A33.** No. Because the plants ultimately belong to FirstEnergy Corp., the parent
10 company of FES, I believe that FirstEnergy Corp's capital structure is the
11 appropriate capitalization. According to the *Value Line Investment Survey* reports
12 that FirstEnergy Corp.'s current capital structure consists of 55.5 percent long-
13 term debt and 44.5 percent common equity. *Value Line* projects a capital
14 structure for FirstEnergy Corp. that includes 55 percent long-term debt and 45
15 percent common equity. Given these figures, I will use a capital structure of 55
16 percent long-term debt and 45 percent common equity.

17

18 **Q34. ARE YOU USING THE COMPANIES' RECOMMENDED LONG-TERM DEBT**
19 **COST RATE?**

20 **A34.** Yes, I am using the Companies' proposed long-term debt cost rate of 4.54
21 percent.

1 **VII. THE COST OF COMMON EQUITY CAPITAL**

2

3 **A. OVERVIEW**

4

5 **Q35. WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF**
6 **RETURN BE ESTABLISHED FOR A PUBLIC UTILITY?**

7 **A35.** In a competitive industry, the return on a firm's common equity capital is
8 determined through the competitive market for its goods and services. Due to the
9 capital requirements needed to provide utility services and to the economic
10 benefit to society from avoiding duplication of these services, some public
11 utilities are monopolies. Because of the lack of competition and the essential
12 nature of their services, it is not appropriate to permit monopoly utilities to set
13 their own prices. Thus, regulation seeks to establish prices that are fair to
14 consumers and, at the same time, sufficient to meet the operating and capital costs
15 of the utility (i.e., provide an adequate return on capital to attract investors).

16

17 **Q36. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE**
18 **CONTEXT OF THE THEORY OF THE FIRM.**

19 **A36.** The total cost of operating a business includes the cost of capital. The cost of
20 common equity capital is the expected return on a firm's common stock that the
21 marginal investor would deem sufficient to compensate for risk and the time value
22 of money. In equilibrium, the expected and required rates of return on a
23 company's common stock are equal.

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

12
13 In the real world, firms can achieve competitive advantage due to product market
14 imperfections. Most notably, companies can gain competitive advantage through
15 product differentiation (adding real or perceived value to products) and by
16 achieving economies of scale (decreasing marginal costs of production).

17 Competitive advantage allows firms to price products above average cost and
18 thereby earn accounting profits greater than those required to cover capital costs.
19 When these profits are in excess of that required by investors, or when a firm
20 earns a return on equity in excess of its cost of equity, investors respond by
21 valuing the firm's equity in excess of its book value.

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1 James M. McTaggart, founder of the international management consulting firm
2 Marakon Associates, described this essential relationship between the return on
3 equity, the cost of equity, and the market-to-book ratio in the following manner:
4

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

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

1 than its cost of equity, it is economically unprofitable and its
2 market value will be less than book value.²⁵

3
4 As such, the relationship among a firm's return on equity, cost of equity, and
5 market-to-book ratio is relatively straightforward. A firm that earns a ROE above
6 its cost of equity will see its common stock sell at a price above its book value.
7 Conversely, a firm that earns a ROE below its cost of equity will see its common
8 stock sell at a price below its book value.

9
10 **Q37. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE RELATIONSHIP**
11 **BETWEEN ROE AND MARKET-TO-BOOK RATIOS.**

12 **A37.** This relationship is discussed in a classic Harvard Business School case study
13 entitled "A Note on Value Drivers." On page 2 of that case study, the author
14 describes the relationship very succinctly:

15
16 For a given industry, more profitable firms – those able to generate
17 higher returns per dollar of equity ("ROE") – should have higher
18 market-to-book ratios. Conversely, firms which are unable to
19 generate returns in excess of their cost of equity ("K") should sell
20 for less than book value.

²⁵ James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1988), p. 2.

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1	<u>Profitability</u>	<u>Value</u>
2	<i>If ROE > K</i>	<i>then Market/Book > 1</i>
3	<i>If ROE = K</i>	<i>then Market/Book = 1</i>
4	<i>If ROE < K</i>	<i>then Market/Book < 1</i> ²⁶

5

6 To assess the relationship by industry, as suggested above, I performed a
7 regression study between estimated ROE and market-to-book ratios using natural
8 gas distribution, electric utility, and water utility companies. I used all companies
9 in these three industries that are covered by *Value Line* and have estimated ROE
10 and market-to-book ratio data. The results are presented in Panels A-C of Exhibit
11 JRW-6. The average R-squares for the electric, gas, and water Companies are
12 0.52, 0.71, and 0.77, respectively.²⁷ This demonstrates the strong positive
13 relationship between ROEs and market-to-book ratios for public utilities.

14

15 **Q38. WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF EQUITY**
16 **CAPITAL FOR PUBLIC UTILITIES?**

17 **A38.** Exhibit JRW-7 provides indicators of public utility equity cost rates over the past
18 decade. Page 1 shows the yields on long-term 'A' rated public utility bonds.
19 These yields peaked in the early 2000s at over eight percent, declined to about
20 5.5% in 2005, and rose to six percent in 2006 and 2007. They stayed in that six

²⁶ Benjamin Esty, "A Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997.

²⁷ R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected ROE). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

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1 percent range until the third quarter of 2008 when they spiked to almost 7.5
2 percent during the financial crisis. They declined to the four percent range in
3 2012, and increased to the 4.85 percent range in 2013, and have since declined to
4 about 4.25 percent.

5
6 Page 2 of Exhibit JRW-7 provides the dividend yields for the Electric Proxy
7 Group over the past decade. The dividend yields for the Electric Proxy Group
8 declined, on average, slightly over the decade until 2007. They increased in 2008
9 and 2009 in response to the financial crisis, but declined in the last four years and
10 now are about 4.2 percent.

11
12 Average earned returns on common equity and market-to-book ratios for the
13 Electric Proxy Group are on page 3 of Exhibit JRW-7. The average earned
14 returns on common equity for the Electric Proxy Group were in the nine percent
15 to 12.0 percent range over the past decade, and have hovered in the 10.0 percent
16 range for the past four years. The average market-to-book ratio for the group was
17 in the 1.10X to 1.80X during the decade. The average declined to about 1.10X in
18 2009, but has since increased to 1.40X as of 2013.

19
20 **Q39. WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED**
21 **RATE OF RETURN ON EQUITY?**

22 **A39.** The expected or required rate of return on common stock is a function of market-
23 wide as well as company-specific factors. The most important market factor is

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1 the time value of money as indicated by the level of interest rates in the economy.
2 Common stock investor requirements generally increase and decrease with like
3 changes in interest rates. The perceived risk of a firm is the predominant factor
4 that influences investor return requirements on a company-specific basis. A
5 firm's investment risk is often separated into business and financial risk.
6 Business risk encompasses all factors that affect a firm's operating revenues and
7 expenses. Financial risk results from incurring fixed obligations in the form of
8 debt in financing its assets.

9

10 **Q40. HOW DOES THE INVESTMENT RISK OF UTILITIES COMPARE WITH**
11 **THAT OF OTHER INDUSTRIES?**

12 **A40.** Due to the essential nature of their service as well as their regulated status, public
13 utilities are exposed to a lesser degree of business risk than other, non-regulated
14 businesses. The relatively low level of business risk allows public utilities to
15 meet much of their capital requirements through borrowing in the financial
16 markets, thereby incurring greater than average financial risk. Nonetheless, the
17 overall investment risk of public utilities is below most other industries.

18

19 Exhibit JRW-8 provides an assessment of investment risk for 97 industries as
20 measured by beta, which according to modern capital market theory, is the only
21 relevant measure of investment risk. These betas come from the *Value Line*
22 *Investment Survey*. The study shows that the investment risk of utilities is very
23 low. The average betas for electric (average of east, central, and west), water, and

1 gas utility companies are 0.72, 0.71, and 0.73, respectively. As such, the cost of
2 equity for utilities is among the lowest of all industries in the U.S.

3

4 **Q41. HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON**
5 **COMMON EQUITY CAPITAL BE DETERMINED?**

6 **A41.** The costs of debt and preferred stock are normally based on historical or book
7 values and can be determined with a great degree of accuracy. The cost of
8 common equity capital, however, cannot be determined precisely and must
9 instead be estimated from market data and informed judgment. This return to the
10 stockholder should be commensurate with returns on investments in other
11 enterprises having comparable risks.

12

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

19

20 Models have been developed to ascertain the cost of common equity capital for a
21 firm. Each model, however, has been developed using restrictive economic
22 assumptions. Consequently, judgment is required in selecting appropriate
23 financial valuation models to estimate a firm's cost of common equity capital, in

1 determining the data inputs for these models, and in interpreting the models'
2 results. All of these decisions must take into consideration the firm involved as
3 well as current conditions in the economy and the financial markets.

4

5 ***Q42. HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY CAPITAL***
6 ***FOR THE COMPANIES?***

7 ***A42.*** I rely primarily on the DCF model to estimate the cost of equity capital. Given
8 the investment valuation process and the relative stability of the utility business, I
9 believe that the DCF model provides the best measure of equity cost rates for
10 public utilities. It is my experience that most commissions have traditionally
11 relied on the DCF model. I have also performed a CAPM study; however, I give
12 these results less weight because I believe that risk premium studies, of which the
13 CAPM is one form, provide a less reliable indication of equity cost rates for
14 public utilities.

15

16 **B. DCF ANALYSIS**

17

18 ***Q43. PLEASE DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF***
19 ***MODEL.***

20 ***A43.*** According to the DCF model, the current stock price is equal to the discounted
21 value of all future dividends that investors expect to receive from investment in
22 the firm. As such, stockholders' returns ultimately result from current as well as
23 future dividends. As owners of a corporation, common stockholders are entitled

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

$$\begin{array}{rccccccc}
 8 & & & D1 & & D2 & & Dn \\
 9 & P & = & \frac{\text{-----}}{(1+k)^1} & + & \frac{\text{-----}}{(1+k)^2} & + & \dots \frac{\text{-----}}{(1+k)^n} \\
 10 & & & & & & &
 \end{array}$$

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

13

14 **Q44. IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES**
15 **EMPLOYED BY INVESTMENT FIRMS?**

16 **A44.** Yes. Virtually all investment firms use some form of the DCF model as a
17 valuation technique. One common application for investment firms is
18 called the three-stage DCF or dividend discount model ("DDM"). The
19 stages in a three-stage DCF model are presented in Exhibit JRW-9, page 1
20 of 2. This model presumes that a company's dividend payout progresses
21 initially through a growth stage, then proceeds through a transition stage,
22 and finally assumes a maturity (or steady-state) stage. The dividend-
23 payment stage of a firm depends on the profitability of its internal

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1 investments which, in turn, is largely a function of the life cycle of the
2 product or service.

3

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

10

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

15

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

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

5

6 **Q45. HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED**
7 **RATE OF RETURN USING THE DCF MODEL?**

8 **A45.** Under certain assumptions, including a constant and infinite expected growth rate,
9 and constant dividend/earnings and price/earnings ratios, the DCF model can be
10 simplified to the following:

$$\begin{array}{rcl} 11 & & D_1 \\ 12 & P & = \frac{\quad}{\quad} \\ 13 & & k - g \end{array}$$

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

$$\begin{array}{rcl} 18 & & D_1 \\ 19 & k & = \frac{\quad}{\quad} + g \\ 20 & & P \end{array}$$

1 **Q46. IN YOUR OPINION, IS THE CONSTANT-GROWTH DCF MODEL**
2 **APPROPRIATE FOR PUBLIC UTILITIES?**

3 **A46.** Yes. The economics of the public utility business indicate that the industry is in
4 the steady-state or constant-growth stage of a three-stage DCF. The economics
5 include the relative stability of the utility business, the maturity of the demand for
6 public utility services, and the regulated status of public utilities (especially the
7 fact that their returns on investment are effectively set through the ratemaking
8 process). The DCF valuation procedure for the Companies in this stage is the
9 constant-growth DCF. In the constant-growth version of the DCF model, the
10 current dividend payment and stock price are directly observable. However, the
11 primary problem and controversy in applying the DCF model to estimate equity
12 cost rates entails estimating investors' expected dividend growth rate.

13
14 **Q47. WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF**
15 **METHODOLOGY?**

16 **A47.** One should be sensitive to several factors when using the DCF model to estimate
17 a firm's cost of equity capital. In general, one must recognize the assumptions
18 under which the DCF model was developed in estimating its components (the
19 dividend yield and the expected growth rate). The dividend yield can be
20 measured precisely at any point in time, but tends to vary somewhat over time.
21 Estimation of expected growth is considerably more difficult. One must consider
22 recent firm performance, in conjunction with current economic developments and

other information available to investors, to accurately estimate investors' expectations.

Q48. WHAT DIVIDEND YIELDS HAVE YOU REVIEWED?

A48. I have calculated the dividend yields for the companies in the two proxy groups using the current annual dividend and the 30-day, 90-day, and 180-day average stock prices. These dividend yields are provided on page 2 of exhibit JRW-10. For the Electric Proxy Group, the mean and median dividend yields using 30-day, 90-day, and 180-day average stock prices range from 3.4 percent to 3.7 percent. I will use the average of this range, 3.6 percent, as the dividend yield for the Electric Proxy Group.

Q49. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT DIVIDEND YIELD.

A49. According to the traditional DCF model, the dividend yield term relates to the dividend yield over the coming period. As indicated by Professor Myron Gordon, who is commonly associated with the development of the DCF model for popular use, this is obtained by: (1) multiplying the expected dividend over the coming quarter by four, and (2) dividing this dividend by the current stock price to determine the appropriate dividend yield for a firm that pays dividends on a quarterly basis.²⁸

²⁸ *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).

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

8

9 **Q50. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR WILL YOU**
10 **USE FOR YOUR DIVIDEND YIELD?**

11 **A50.** I will adjust the dividend yield by one-half (1/2) the expected growth so as to
12 reflect growth over the coming year. This is the approach employed by the
13 Federal Energy Regulatory Commission ("FERC").²⁹ The DCF equity cost rate
14 ("K") is computed as:

15
$$K = [(D/P) * (1 + 0.5g)] + g$$

16

17 **Q51. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF**
18 **MODEL.**

19 **A51.** There is much debate as to the proper methodology to employ in estimating the
20 growth component of the DCF model. By definition, this component is investors'
21 expectation of the long-term dividend growth rate. Presumably, investors use
22 some combination of historical and/or projected growth rates for earnings and

²⁹ Opinion No. 414-A, *Transcontinental Gas Pipe Line Corp.*, 84 FERC ¶ 61,084 (1998).

1 dividends per share and for internal or book value growth to assess long-term
2 potential.

3

4 **Q52. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY**
5 **GROUPS?**

6 **A52.** I have analyzed a number of measures of growth for companies in the proxy
7 groups. I reviewed *Value Line*'s historical and projected growth rate estimates for
8 EPS, dividends per share ("DPS"), and book value per share ("BVPS"). In
9 addition, I utilized the average EPS growth rate forecasts of Wall Street analysts
10 as provided by Yahoo, Reuters, and Zacks. These services solicit five-year
11 earnings growth rate projections from securities analysts and compile and publish
12 the means and medians of these forecasts. Finally, I also assessed prospective
13 growth as measured by prospective earnings retention rates and earned returns on
14 common equity.

15

16 **Q53. PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND**
17 **DIVIDENDS AS WELL AS INTERNAL GROWTH.**

18 **A53.** Historical growth rates for EPS, DPS, and BVPS are readily available to investors
19 and are presumably an important ingredient in forming expectations concerning
20 future growth. However, one must use historical growth numbers as measures of
21 investors' expectations with caution. In some cases, past growth may not reflect
22 future growth potential. Also, employing a single growth rate number (for
23 example, for five or 10 years) is unlikely to accurately measure investors'

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1 expectations, due to the sensitivity of a single growth rate figure to fluctuations in
2 individual firm performance as well as overall economic fluctuations (i.e.,
3 business cycles). However, one must appraise the context in which the growth
4 rate is being employed. According to the conventional DCF model, the expected
5 return on a security is equal to the sum of the dividend yield and the expected
6 long-term growth in dividends. Therefore, to best estimate the cost of common
7 equity capital using the conventional DCF model, one must look to long-term
8 growth rate expectations.

9

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

17

18 **Q54. PLEASE DISCUSS THE SERVICES THAT PROVIDE ANALYSTS' EPS**
19 **FORECASTS.**

20 **A54.** Analysts' EPS forecasts for Companies are collected and published by a number of
21 different investment information services, including Institutional Brokers Estimate
22 System ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call, and Reuters, among
23 others. Thompson Reuters publishes analysts' EPS forecasts under different product

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

Q55. PLEASE PROVIDE AN EXAMPLE OF THESE EPS FORECASTS.

A55. The following example provides the EPS forecasts compiled by Reuters for Alliant Energy Corp. (stock symbol "LNT"). The figures are provided on page 2 of Exhibit JRW-9. The top line shows that four analysts have provided EPS estimates for the quarter ending December 31, 2014. The mean, high, and low estimates are \$0.56, \$0.60, and \$0.52, respectively. The second line shows the quarterly EPS estimates for the quarter ending March 31, 2015 of \$0.76 (mean), \$0.76 (high), and \$0.76 (low). Lines three and four show the annual EPS estimates for the fiscal years ending December 2014 (\$3.47 [mean], \$3.55 [high],

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1 and \$3.40 [low]) and December 2015 (\$3.63 [mean], \$3.69 [high], and \$3.60
2 [low]). The quarterly and annual EPS forecasts in lines 1-4 are expressed in
3 dollars and cents. As in the LNT case shown here, it is common for more analysts
4 to provide estimates of annual EPS as opposed to quarterly EPS. The bottom line
5 shows the projected long-term EPS growth rate, which is expressed as a
6 percentage. For LNT, two analysts have provided long-term EPS growth rate
7 forecasts, with mean, high and low growth rates of 4.90 percent, 5.00 percent, and
8 4.8 percent, respectively.

9

10 **Q56. WHICH OF THESE EPS FORECASTS IS USED IN DEVELOPING A DCF**
11 **GROWTH RATE?**

12 **A56.** The DCF growth rate is the long-term projected growth rate in EPS, DPS, and
13 BVPS. Therefore, in developing an equity cost rate using the DCF model, the
14 projected long-term growth rate is the projection used in the DCF model.

15

16 **Q57. WHY DO YOU NOT RELY EXCLUSIVELY ON THE EPS FORECASTS OF**
17 **WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE FOR**
18 **THE ELECTRIC PROXY GROUP?**

19 **A57.** There are several issues with using the EPS growth rate forecasts of Wall Street
20 analysts as DCF growth rates. First, the appropriate growth rate in the DCF
21 model is the dividend growth rate, not the earnings growth rate. Nonetheless,
22 over the very long term, dividend and earnings will have to grow at a similar
23 growth rate. Therefore, consideration must be given to other indicators of growth,

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1 including prospective dividend growth, internal growth, as well as projected
2 earnings growth. Second, a recent study by Lacina, Lee, and Xu (2011) has
3 shown that analysts' long-term earnings growth rate forecasts are not more
4 accurate at forecasting future earnings than naïve random walk forecasts of future
5 earnings.³⁰ Employing data over a 20-year period, these authors demonstrate that
6 using the most recent year's EPS figure to forecast EPS in the next three to five
7 years proved to be just as accurate as using the EPS estimates from analysts' long-
8 term earnings growth rate forecasts. In the authors' opinion, these results indicate
9 that analysts' long-term earnings growth rate forecasts should be used with
10 caution as inputs for valuation and cost of capital purposes. Finally, and most
11 significantly, it is well known that the long-term EPS growth rate forecasts of
12 Wall Street securities analysts are overly optimistic and upwardly biased. This
13 has been demonstrated in a number of academic studies over the years. This issue
14 is discussed at length in Appendix B of this testimony. Hence, using these growth
15 rates as a DCF growth rate will provide an overstated equity cost rate. On this
16 issue, a study by Easton and Sommers (2007) found that optimism in analysts'
17 growth rate forecasts leads to an upward bias in estimates of the cost of equity
18 capital of almost 3.0 percentage points.³¹

³⁰ M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting* (Vol. 8), Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

³¹ Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. ACCT. RES. 983-1015 (2007).

1 **Q58. IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE UPWARD**
2 **BIAS IN THE EPS GROWTH RATE FORECASTS?**

3 **A58.** Yes, I do believe that investors are well aware of the bias in analysts' EPS growth
4 rate forecasts, and therefore, stock prices reflect the upward bias.

5
6 **Q59. HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A DCF**
7 **EQUITY COST RATE STUDY?**

8 **A59.** According to the DCF model, the equity cost rate is a function of the dividend yield
9 and expected growth rate. Because stock prices reflect the bias, it would affect the
10 dividend yield. In addition, the DCF growth rate needs to be adjusted downward
11 from the projected EPS growth rate to reflect the upward bias.

12
13 **Q60. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN**
14 **THE ELECTRIC PROXY GROUP, AS PROVIDED BY VALUE LINE.**

15 **A60.** Page 3 of Exhibit JRW-10 provides the five- and 10-year historical growth rates
16 for EPS, DPS, and BVPS for the companies in the proxy group, as published in
17 the *Value Line Investment Survey*. The median historical growth measures for
18 EPS, DPS, and BVPS for the Electric Proxy Group range from 0.8 percent to 3.5
19 percent, with an average of 2.8 percent.

1 **Q61. PLEASE SUMMARIZE VALUE LINE'S PROJECTED GROWTH RATES**
2 **FOR THE COMPANIES IN THE ELECTRIC PROXY GROUP.**

3 **A61.** *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the
4 proxy group are shown on page 4 of Exhibit JRW-10. As stated above, due to the
5 presence of outliers, the medians are used in the analysis. For the Electric Proxy
6 Group, the medians range from four percent to 4.8 percent, with an average of 4.3
7 percent.

8
9 Also provided on page 4 of Exhibit JRW-10 are the prospective sustainable
10 growth rates for the companies in the two proxy groups as measured by *Value*
11 *Line's* average projected retention rate and return on shareholders' equity. As
12 noted above, sustainable growth is a significant and primary driver of long-run
13 earnings growth. For the Electric Proxy Group, the median prospective
14 sustainable growth rate is 3.8 percent.

15

16 **Q62. PLEASE ASSESS GROWTH FOR THE ELECTRIC PROXY GROUP AS**
17 **MEASURED BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EPS**
18 **GROWTH.**

19 **A62.** Yahoo, Zacks, and Reuters collect, summarize, and publish Wall Street analysts'
20 long-term EPS growth rate forecasts for the companies in the proxy group. These
21 forecasts are provided for the companies in the proxy groups on page 5 of Exhibit
22 JRW-10. I have reported both the mean and median growth rates for the group.
23 The mean and median of analysts' projected EPS growth rates for the Electric

1 Proxy Group are 5.1 percent and five percent, respectively.³² Because there is
2 considerable overlap in analyst coverage between the three services, and not all of
3 the companies have forecasts from the different services, I have averaged the
4 expected five-year EPS growth rates from the three services for each company to
5 arrive at an expected EPS growth rate by company.
6

7 **Q63. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND**
8 **PROSPECTIVE GROWTH OF THE ELECTRIC PROXY GROUP.**

9 **A63.** Page 6 of Exhibit JRW-10 shows the summary DCF growth rate indicators for the
10 proxy group.

11 The historical growth rate indicators for my Electric Proxy Group imply a
12 baseline growth rate of 2.8 percent. The average of the projected EPS, DPS, and
13 BVPS growth rates from *Value Line* is 4.3 percent, and *Value Line*'s projected
14 sustainable growth rate is 3.8 percent. The high end of the range for the Electric
15 Proxy Group are the projected EPS growth rate of Wall Street analysts, which are
16 5.1 percent and five percent as measured by the mean and median growth rates.
17 The overall range for the projected growth rate indicators is 2.8 percent to 5.1
18 percent. Giving primary weight to the projected EPS growth rate of Wall Street
19 analysts, I will use five percent as the DCF growth rate for the Electric Proxy
20 Group. This growth rate figure is clearly in the upper end of the range of historic
21 and projected growth rates for the group.

³² Given the much higher mean of analysts' projected EPS growth rates for the Avera Proxy Group, I have also considered the mean figures in the growth rate analysis.

1 **Q64. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED**
2 **COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE**
3 **GROUP?**

4 **A64.** My DCF-derived equity cost rates for the groups are summarized on page 1 of
5 Exhibit JRW-10 and in the table below.

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	3.60%	1.02500	5.00%	8.7%

7

8 The results for my Electric Proxy Group is the 3.60 percent dividend yield, times

9 the one and one-half growth adjustment of 1.02500, plus the DCF growth rate of

10 five percent, which results in an equity cost rate of 8.7 percent.

C. CAPITAL ASSET PRICING MODEL

14 **Q65. PLEASE DISCUSS THE CAPITAL ASSET PRICING MODEL (“CAPM”).**

A65. The CAPM is a risk premium approach to gauging a firm's cost of equity capital. According to the risk premium approach, the cost of equity is the sum of the interest rate on a risk-free bond (R_f) and a risk premium (RP), as in the following:

$$k = R_f + RP$$

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

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

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

11 Where:

- K represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected return on the overall stock market.

Frequently, the ‘market’ refers to the S&P 500;

- (R_f) represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- $Beta$ — (β) is a measure of the systematic risk of an asset.

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest (R_f), the beta (β), and the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it

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1 is represented by the yield on long-term Treasury bonds. Beta, the measure of
2 systematic risk, is a little more difficult to measure because there are different
3 opinions about what adjustments, if any, should be made to historical betas due to
4 their tendency to regress to 1.0 over time. And finally, an even more difficult
5 input to measure is the expected equity or market risk premium ($E(R_m) - (R_f)$). I
6 will discuss each of these inputs below.

7
8 **Q66. PLEASE DISCUSS EXHIBIT JRW-11.**

9 **A66.** Exhibit JRW-11 provides the summary results for my CAPM study. Page 1
10 shows the results, and the following pages contain the supporting data.

11
12 **Q67. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.**

13 **A67.** The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-
14 free rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in
15 turn, has been considered to be the yield on U.S. Treasury bonds with 30-year
16 maturities.

17
18 **Q68. WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPM?**

19 **A68.** As shown on page 2 of Exhibit JRW-11, the yield on 30-year Treasury bonds has
20 been in the three percent to four percent range over the 2013-2014 time period.
21 These rates are currently at the lower end of this range. Given the recent range of
22 yields and the possibility of higher interest rates, I will use four percent as the
23 risk-free rate, or R_f , in my CAPM.

1 **Q69. WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?**

2 **A69.** Beta is a measure of the systematic risk of a stock. The market, usually taken to
3 be the S&P 500, has a beta of 1.0. The beta of a stock with the same price
4 movement as the market also has a beta of 1.0. A stock whose price movement is
5 greater than that of the market, such as a technology stock, is riskier than the
6 market and has a beta greater than 1.0. A stock with below average price
7 movement, such as that of a regulated public utility, is less risky than the market
8 and has a beta less than 1.0. Estimating a stock's beta involves running a linear
9 regression of a stock's return on the market return.

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

14
15 Several online investment information services, such as Yahoo and Reuters,
16 provide estimates of stock betas. Usually these services report different betas for
17 the same stock. The differences are usually due to: (1) the time period over
18 which the β is measured, and (2) any adjustments that are made to reflect the fact
19 that betas tend to regress to 1.0 over time. In estimating an equity cost rate for the
20 Electric Proxy Group, I am using the betas for the companies as provided in the
21 *Value Line Investment Survey*. As shown on page 3 of Exhibit JRW-11, the
22 median beta for the companies in the Electric Proxy Group is 0.75.

1 **Q70. PLEASE DISCUSS THE ALTERNATIVE VIEWS REGARDING THE**
2 **EQUITY RISK PREMIUM.**

3 **A70.** The equity or market risk premium - $(E(R_m) - R_f)$ - is equal to the expected return
4 on the stock market (e.g., the expected return on the S&P 500, $E(R_m)$) minus the
5 risk-free rate of interest (R_f). The equity premium is the difference in the
6 expected total return between investing in equities and investing in “safe” fixed-
7 income assets, such as long-term government bonds. However, while the equity
8 risk premium is easy to define conceptually, it is difficult to measure because it
9 requires an estimate of the expected return on the market.

10

11 **Q71. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING**
12 **THE EQUITY RISK PREMIUM.**

13 **A71.** Page 4 of Exhibit JRW-11 highlights the primary approaches to, and issues in,
14 estimating the expected equity risk premium. The traditional way to measure the
15 equity risk premium was to use the difference between historical average stock
16 and bond returns. In this case, historical stock and bond returns, also called ex
17 post returns, were used as the measures of the market’s expected return (known as
18 the *ex ante* or forward-looking expected return). This type of historical evaluation
19 of stock and bond returns is often called the “Ibbotson approach” after Professor
20 Roger Ibbotson, who popularized this method of using historical financial market
21 returns as measures of expected returns. Most historical assessments of the equity
22 risk premium suggest an equity risk premium range of five percent to seven
23 percent above the rate on long-term U.S. Treasury bonds. However, this can be a

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1 problem because: (1) ex post returns are not the same as ex ante expectations; (2)
2 market risk premiums can change over time, increasing when investors become
3 more risk-averse and decreasing when investors become less risk-averse; and (3)
4 market conditions can change such that ex post historical returns are poor
5 estimates of ex ante expectations.

6

7 The use of historical returns as market expectations has been criticized in
8 numerous academic studies as discussed later in my testimony. The general
9 theme of these studies is that the large equity risk premium discovered in
10 historical stock and bond returns cannot be justified by the fundamental data.
11 These studies, which fall under the category “Ex Ante Models and Market Data,”
12 compute ex ante expected returns using market data to arrive at an expected
13 equity risk premium. These studies have also been called “Puzzle Research” after
14 the famous study by Mehra and Prescott in which the authors first questioned the
15 magnitude of historical equity risk premiums relative to fundamentals.³³

16

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

³³ Rajnish Mehra & Edward C. Prescott, “The Equity Premium: A Puzzle,” *Journal of Monetary Economics*, 145 (1985).

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1 stocks and bonds. Usually, over 350 CFOs normally participate in the survey.³⁴
2 Questions regarding expected stock and bond returns are also included in the
3 Federal Reserve Bank of Philadelphia's annual survey of financial forecasters,
4 which is published as the *Survey of Professional Forecasters*.³⁵ This survey of
5 professional economists has been published for almost 50 years. In addition,
6 Pablo Fernandez conducts occasional surveys of financial analysts and companies
7 regarding the equity risk premiums they use in their investment and financial
8 decision-making.³⁶

9

10 **Q72. PLEASE PROVIDE A SUMMARY OF THE EQUITY RISK PREMIUM**
11 **STUDIES.**

12 **A72.** Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed the
13 most comprehensive reviews to date of the research on the equity risk premium.³⁷
14 Derrig and Orr's study evaluated the various approaches to estimating equity risk
15 premiums, as well as the issues with the alternative approaches and summarized
16 the findings of the published research on the equity risk premium. Fernandez
17 examined four alternative measures of the equity risk premium – historical,

³⁴ See, www.cfosurvey.org.

³⁵ Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, (February 15, 2014). The *Survey of Professional Forecasters* was formerly conducted by the American Statistical Association ("ASA") and the National Bureau of Economic Research ("NBER") and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

³⁶ Pablo Fernandez, Pablo Linares and Isabel Fernandez Acín, "Market Risk Premium used for 88 countries in 2014: a survey with 8,228 answers," June 20, 2014.

³⁷ See Richard Derrig & Elisha Orr, "Equity Risk Premium: Expectations Great and Small," Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, (August 28, 2003); Pablo Fernandez, "Equity Premium: Historical, Expected, Required, and Implied," IESE Business School Working Paper, (2007); Zhiyi Song, "The Equity Risk Premium: An Annotated Bibliography," CFA Institute, (2007).

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1 expected, required, and implied. He also reviewed the major studies of the equity
2 risk premium and presented the summary equity risk premium results. Song
3 provides an annotated bibliography and highlights the alternative approaches to
4 estimating the equity risk summary.

5
6 Page 5 of Exhibit JRW-11 provides a summary of the results of the primary risk
7 premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as
8 other more recent studies of the equity risk premium. In developing page 5 of
9 Exhibit JRW-11, I have categorized the studies as discussed on page 4 of Exhibit
10 JRW-11. I have also included the results of the “Building Blocks” approach to
11 estimating the equity risk premium, including a study I performed, which is
12 presented in Appendix C1 of this testimony. The Building Blocks approach is a
13 hybrid approach employing elements of both historical and *ex ante* models.

14
15 **Q73. PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-11.**

16 **A73.** Page 5 of JRW-11 provides a summary of the results of the equity risk premium
17 studies that I have reviewed. These include the results of: (1) the various studies
18 of the historical risk premium; (2) *ex ante* equity risk premium studies; (3) equity
19 risk premium surveys of CFOs, Financial Forecasters, analysts, companies and
20 academics; and (4) the Building Block approaches to the equity risk premium.
21 There are results reported for over 30 studies and the median equity risk premium
22 is 4.56 percent.

1 **Q74. PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT RISK**
2 **PREMIUM STUDIES AND SURVEYS.**

3 **A74.** The studies cited on page 5 of Exhibit JRW-11 include all equity risk premium
4 studies and surveys I could identify that were published over the past decade and
5 that provided an equity risk premium estimate. Most of these studies were
6 published prior to the financial crisis of the past two years. In addition, some of
7 these studies were published in the early 2000s at the market peak. It should be
8 noted that many of these studies (as indicated) used data over long periods of time
9 (as long as 50 years of data) and so were not estimating an equity risk premium as
10 of a specific point in time (e.g., the year 2001). To assess the effect of the earlier
11 studies on the equity risk premium, I have reconstructed page 5 of Exhibit JRW-
12 11 on page 6 of Exhibit JRW-11; however, I have eliminated all studies dated
13 before January 2, 2010. The median for this subset of studies is 4.93 percent.

14
15 **Q75. GIVEN THESE RESULTS, WHAT MARKET OR EQUITY RISK PREMIUM**
16 **ARE YOU USING IN YOUR CAPM?**

17 **A75.** Much of the data indicates that the market risk premium is in the four percent to
18 six percent range. I use the midpoint of this range, five percent, as the market or
19 equity risk premium.

20
21 **Q76. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE**
22 **EQUITY RISK PREMIUMS USED BY CFOs?**

23 **A76.** Yes. In the September 2014 CFO survey conducted by *CFO Magazine* and Duke

1 University, the expected 10-year equity risk premium was 4.24 percent.

2

3 **Q77. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE**
4 **EQUITY RISK PREMIUMS OF PROFESSIONAL FORECASTERS?**

5 **A77.** The financial forecasters in the previously referenced Federal Reserve Bank of
6 Philadelphia survey project both stock and bond returns. In the February 2014
7 survey, the median long-term expected stock and bond returns were 6.43 percent
8 and 4.25 percent, respectively. This provides an *ex ante* equity risk premium of
9 2.18 percent (6.43 percent-4.25 percent).

10

11 **Q78. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE**
12 **EQUITY RISK PREMIUMS OF FINANCIAL ANALYSTS AND**
13 **COMPANIES?**

14 **A78.** Yes. Pablo Fernandez recently published the results of a 2014 survey of
15 academics, financial analysts, and companies.³⁸ This survey included over 8,000
16 responses. The median equity risk premium employed by U.S. analysts and
17 companies was five percent.

18

19 **Q79. WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM ANALYSIS?**

20 **A79.** The results of my CAPM study for the proxy groups are summarized on page 1 of
21 Exhibit JRW-11 and in the table below.

³⁸ Pablo Fernandez, Pablo Linares and Isabel Fernandez Acín, "Market Risk Premium used for 88 countries in 2014: a survey with 8,228 answers," June 20, 2014.

1
$$K = (R_f) + \beta * [E(R_m) - (R_f)]$$

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Electric Proxy Group	4.0%	0.75	5.0%	7.8%

2

3 For the Electric Proxy Group, the risk-free rate of four percent plus the product of
4 the beta of 0.75 times the equity risk premium of five percent results in a 7.8
5 percent equity cost rate.

6

7 **D. EQUITY COST RATE SUMMARY**

8

9 **Q80. PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.**

10 **A80.** My DCF analysis indicates an equity cost rate of 8.7 percent and my CAPM
11 analysis indicates equity cost rates of 7.8 percent.

	DCF	CAPM
Electric Proxy Group	8.7%	7.8%

12

13 **Q81. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST**
14 **RATE FOR the GROUP?**

15 **A81.** Given these results, I conclude that the appropriate equity cost rate for companies
16 in my Electric Proxy Group is in the 7.8 percent to 8.7 percent range. However,
17 because I rely primarily on the DCF model and because FirstEnergy Corp. is at
18 the high end of the risk level of the proxy group, I am using the upper end of the
19 range as the equity cost rate. Therefore, I conclude that the appropriate equity

1 cost rate for the Companies (Ohio Edison, CEI, and Toledo Edison) of 8.7
2 percent.

3

4 **Q82. PLEASE EXPLAIN WHY AN 8.7 PERCENT RETURN IS APPROPRIATE**
5 **FOR THE COMPANIES AT THIS TIME.**

6 **A82.** There are a number of reasons why an 8.7 percent return on equity is appropriate
7 and fair for the Companies in this case:

8

9 1. As shown in Exhibit JRW-8, the electric utility industry is
10 one of the lowest risk industries in the U.S. as measured by
11 beta. As such, the cost of equity capital for this industry is
12 amongst the lowest in the U.S., according to the CAPM.

13

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

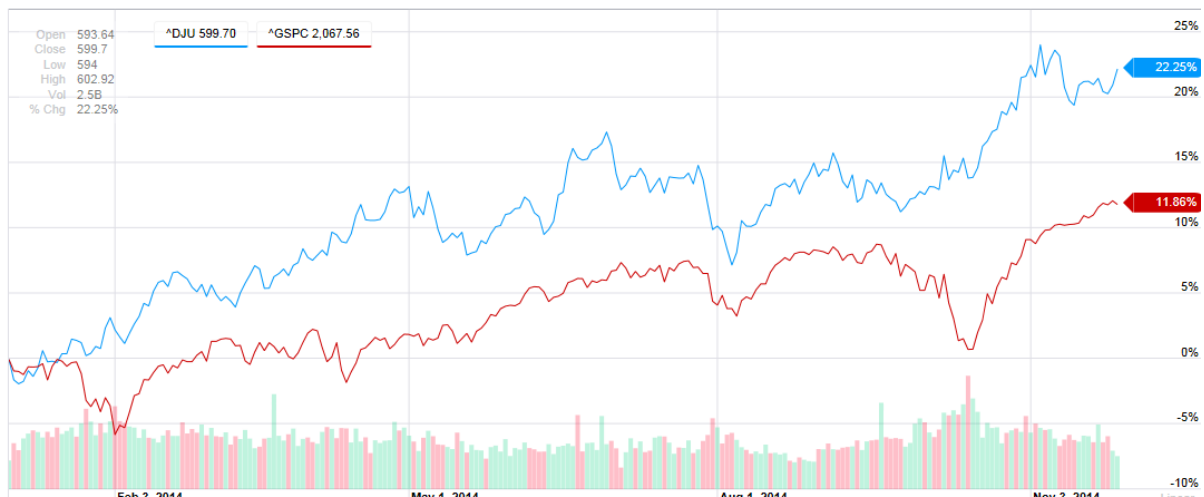
20

21 3. The economic recovery, combined with low interest rates,
22 has produced very good stock market returns. Figure 1
23 compares the performance of the Dow Jones Utilities

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(“DJU”) Index (blue line) relative to the S&P 500 (red line). Year-to-date, the DJU has doubled the performance of the S&P 500. While the S&P 500 is up 11.86 percent, the DJU is up 22.25 percent.

Figure 1
Dow Jones Utilities vs. S&P 500
1/1/2014 – 11-30-14



Q83. DO YOU SUPPORT THE USE OF AN ROE OF 8.7PERCENT, INSTEAD OF 11.15 PERCENT, TO BE USED IN CALCULATING THE PAYMENT MADE BY THE COMPANIES TO FES UNDER THE PROPOSED RIDER RRS?

A83. Yes.

1 **Q84. DO YOU SUPPORT THE USE OF AN ROE OF 8.7 PERCENT, FOR OTHER**
2 **RIDERS OR RATES PROPOSED IN THE ESP, SUCH AS RIDER DCR,**
3 **THAT WILL INVOLVE THE CALCULATION OF RETURN ON CAPITAL**
4 **INVESTMENT?**

5 **A84.** Yes.

6

7 **VIII. CONCLUSION**

8

9 **Q85. DOES THIS CONCLUDE YOUR TESTIMONY?**

10 **A85.** Yes. However, I reserve the right to incorporate new information that may
11 subsequently become available. I also reserve the right to supplement my
12 testimony in the event that the Utilities, the PUCO Staff or other parties submit
13 new or corrected information in connection with this proceeding.

CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing *Direct Testimony of J. Randall Woolridge, Ph.D., on Behalf of the Office of the Ohio Consumers' Counsel's*, was served via electronic transmission to the persons listed below on this 22th day of December 2014.

/s/ Larry S. Sauer
Larry S. Sauer
Deputy Consumers' Counsel

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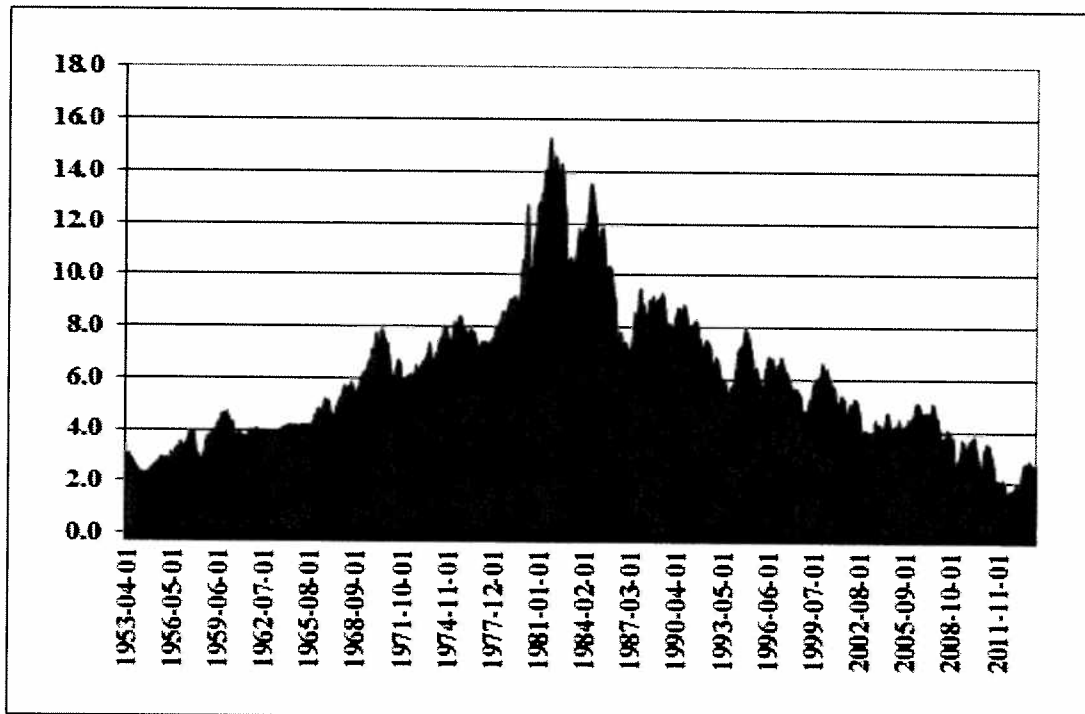
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sfisk@earthjustice.org

Exhibit JRW-1
First Energy Companies
Recommended Cost of Capital

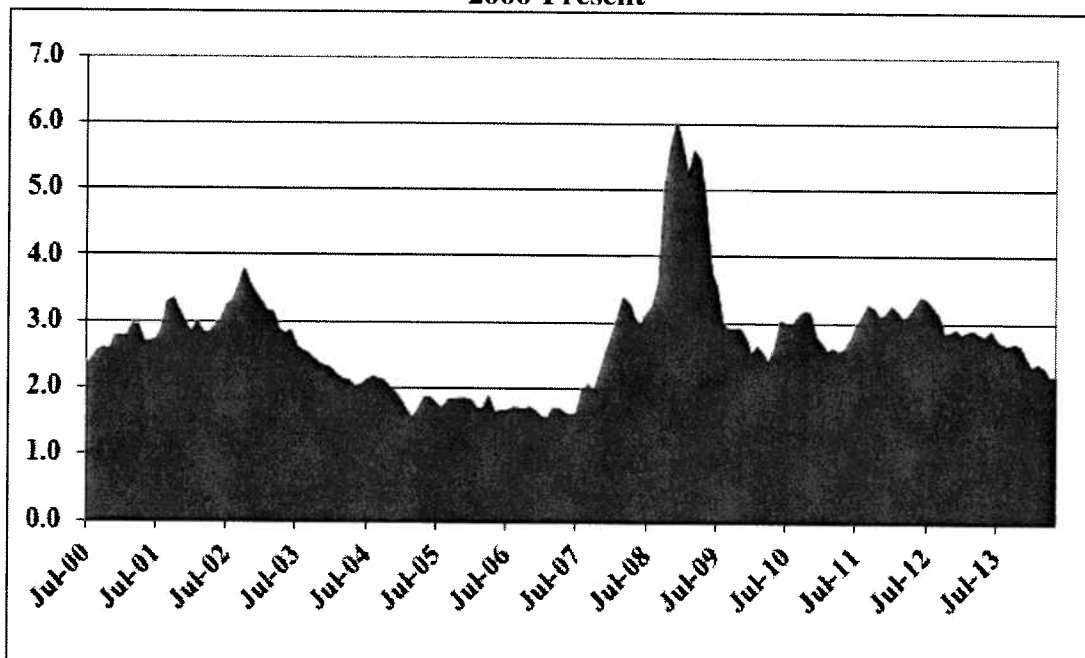
Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	55.00%	4.54%	2.50%
Common Equity	45.00%	8.70%	3.92%
Total	100.00%		6.41%

Exhibit JRW-2

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

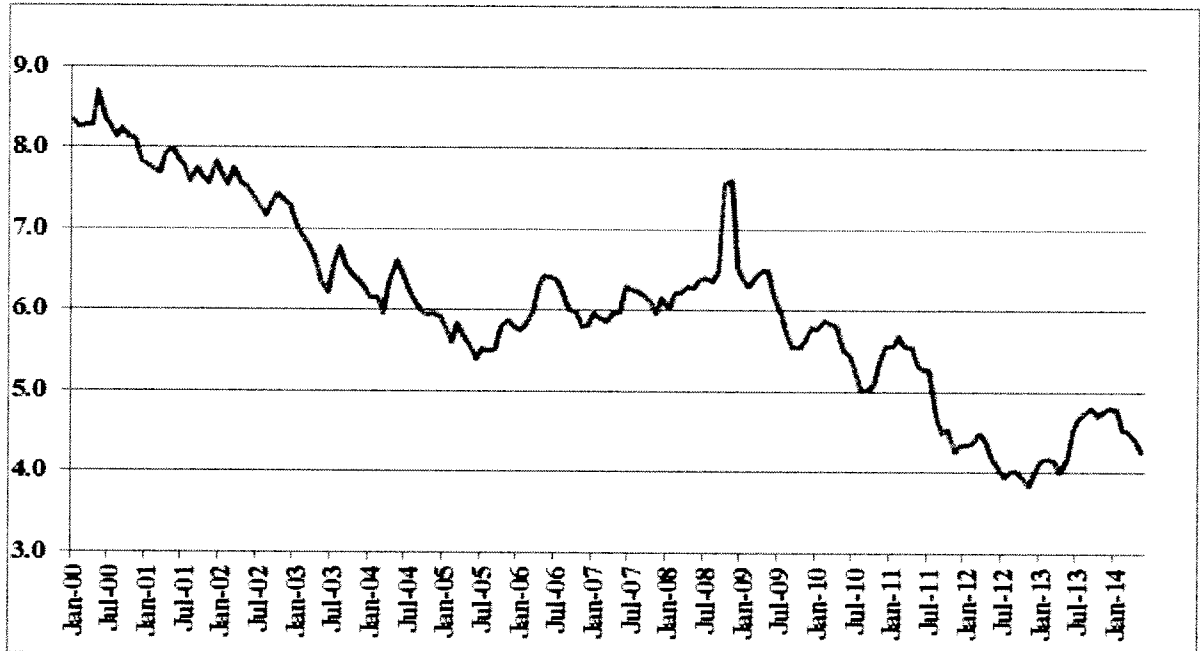


**Panel B
Long-Term Moody's Baa Yields Minus Ten-Year Treasury Yields
2000-Present**

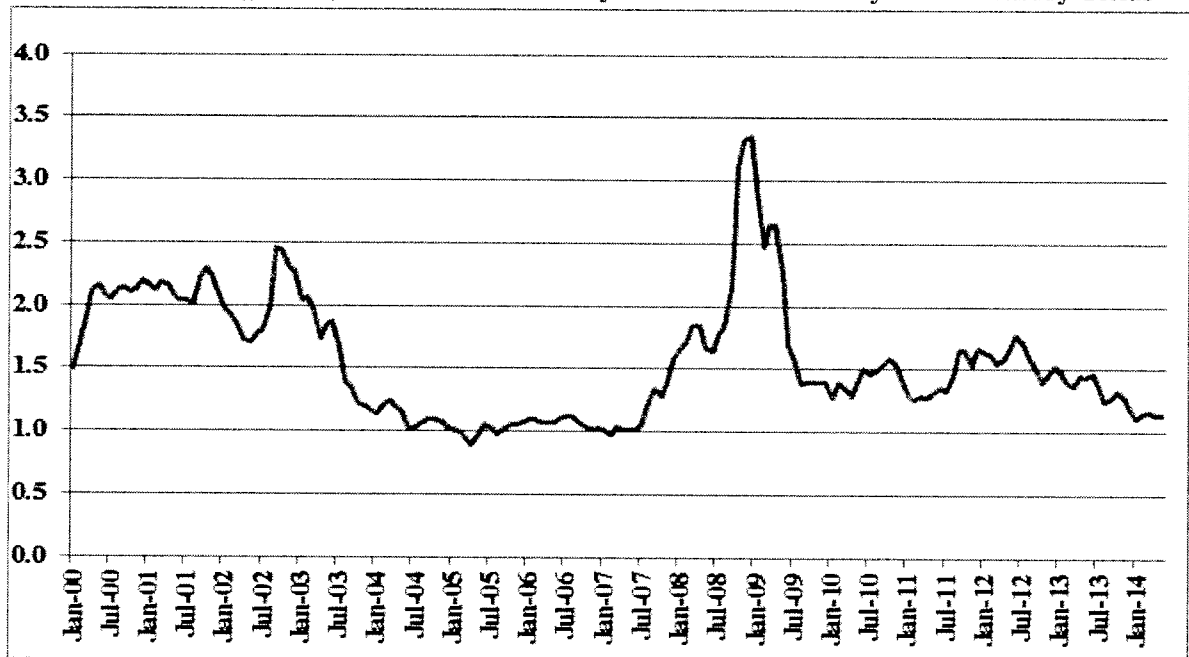


Source: Federal Reserve Bank of St. Louis, FRED Database.

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



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



Source: Mergent Bond Record

Exhibit JRW-4
First Energy Companies
Summary Financial Statistics

Electric Proxy Group												
Company	Operating Revenue (\$mil)	Percent Elec Revenue	Percent Gas Revenue	Net Plant (\$mil)	Market Cap (\$mil)	S&P Bond Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio	
ALLETE, Inc. (NYSE-ALE)	1,076.2	89	0	3,020.4	2.1	BBB+	3.6	MN, WI	51.6	8.1	1.5	
Ameren Corporation (NYSE-AEE)	5,973.0	81	19	16,726.0	9.6	BBB+	3.6	IL, MO	48.9	9.1	1.5	
American Electric Power Co. (NYSE-AEP)	16,641.0	83	0	42,273.0	26.7	BBB	3.8	10 States	45.8	10.8	1.6	
Black Hills Corporation (NYSE-BKH)	1,358.8	50	44	3,082.6	2.2	BBB	3.8	CO, SD, WY, MT	46.7	8.3	1.6	
CMS Energy Corporation (NYSE-CMS)	7,172.0	62	33	12,680.0	8.4	BBB	3.1	MI	30.9	14.8	2.3	
Duke Energy Corporation (NYSE-DUK)	25,394.0	85	2	66,908.0	55.5	BBB+	3.6	NC, SC, FL, OH, KY	49.0	5.4	1.4	
Edison International (NYSE-EIX)	12,845.0	100	0	31,287.0	19.1	BBB+	4.8	CA	42.4	14.7	1.8	
El Paso Electric Company (NYSE-EE)	910.3	100	0	2,338.0	1.4	BBB	2.8	TX, NM	47.0	9.5	1.5	
Empire District Electric Co. (NYSE-EDE)	636.0	90	8	1,816.2	1.1	BBB	3.6	KS, MO, OK, AR	49.0	9.5	1.5	
Entergy Corporation (NYSE-ETR)	12,249.4	77	1	28,109.2	14.2	BBB	3.5	LA, AR, MS, TX	42.1	10.0	1.4	
FirstEnergy Corporation (ASE-FE)	15,368.0	64	0	34,516.0	14.6	BBB-	3.5	OH, PA, NY, NJ, WV, MD	36.8	5.0	1.2	
Great Plains Energy Incorporated (NYSE-GXP)	2,537.3	100	0	7,970.6	3.9	BBB+	2.8	MO, KS	47.1	6.8	1.1	
Hawaiian Electric Industries, Inc. (NYSE-HE)	3,240.1	92	0	3,980.1	2.7	BBB-	4.4	HI	47.1	10.3	1.6	
IDACORP, Inc. (NYSE-IDA)	1,287.8	100	0	3,740.1	2.9	BBB	3.5	ID	53.2	9.5	1.5	
NorthWestern Corporation (NYSE-NWE)	1,221.3	73	27	2,747.9	2.1	BBB	2.5	SD, MT, NE	44.0	9.2	2.0	
PG&E Corporation (NYSE-PCG)	15,993.0	80	20	42,483.0	21.0	BBB	2.2	CA	49.0	5.1	1.4	
PNM Resources, Inc. (NYSE-PNM)	1,397.7	100	0	4,023.5	2.1	BBB	2.4	NM, TX	45.1	6.2	1.3	
Portland General Electric Company (NYSE-POR)	1,850.0	100	0	5,324.0	2.6	BBB	2.6	OR	46.6	9.4	1.4	
SCANA Corporation (NYSE-SCG)	4,784.0	53	21	12,007.0	7.3	BBB+	3.5	SC, NC, GA	44.2	11.2	1.5	
Westar Energy, Inc. (NYSE-WR)	2,496.1	100	0	7,816.1	4.6	BBB+	3.4	KS	45.3	9.8	1.5	
Mean	6,721.6	84	9	16,642.4	10.2	BBB	3.4		45.6	9.1	1.52	
Median	2,888.7	87	0	7,893.4	4.3	BBB	3.5		46.7	9.5	1.47	

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

FirstEnergy Corporation (ASE-FE)	15,368.0	64		34,516.0	14.6	BBB-	3.5	OH, PA, NY, NJ, WV, MD	36.8	5.0	1.2
----------------------------------	----------	----	--	----------	------	------	-----	------------------------	------	-----	-----

Exhibit JRW-4
First Energy Companies
Value Line Risk Metrics

Electric Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
ALLETE, Inc. (NYSE-ALE)	0.80	A	2	80	95
Ameren Corporation (NYSE-AEE)	0.70	A	2	90	100
American Electric Power Co. (NYSE-AEP)	0.75	B++	2	90	100
Black Hills Corporation (NYSE-BKH)	0.90	B+	3	40	85
CMS Energy Corporation (NYSE-CMS)	0.75	B++	2	70	100
Duke Energy Corporation (NYSE-DUK)	0.60	A	2	75	100
Edison International (NYSE-EIX)	0.75	A	2	70	95
El Paso Electric Company (NYSE-EE)	0.70	B++	2	85	95
Empire District Electric Co. (NYSE-EDE)	0.65	B++	2	85	100
Entergy Corporation (NYSE-ETR)	0.70	B++	3	85	100
FirstEnergy Corporation (ASE-FE)	0.70	B+	3	65	90
Great Plains Energy Incorporated (NYSE-GXP)	0.85	B+	3	65	95
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.80	A	2	75	90
IDACORP, Inc. (NYSE-IDA)	0.80	B++	2	90	100
NorthWestern Corporation (NYSE-NWE)	0.70	B+	3	95	100
PG&E Corporation (NYSE-PCG)	0.65	B+	3	80	100
PNM Resources, Inc. (NYSE-PNM)	0.85	B	3	20	80
Portland General Electric Company (NYSE-POI)	0.80	B++	2	65	100
SCANA Corporation (NYSE-SCG)	0.75	B++	2	100	100
Westar Energy, Inc. (NYSE-WR)	0.75	B++	2	80	100
Mean	0.75	B++	2.4	75	96
Median	0.75	B++	2.0	80	100

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

FirstEnergy Corporation (ASE-FE)	0.70	B+	3	65	90
----------------------------------	------	----	---	----	----

Exhibit JRW-5

First Energy Companies

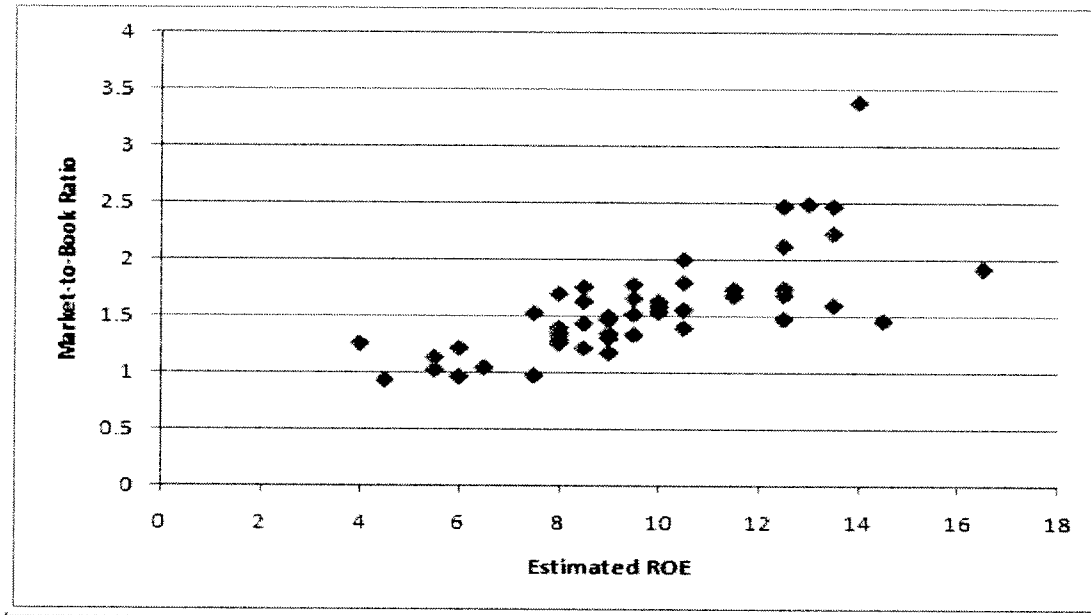
Capital Structure Ratios and Debt Cost Rates**Panel A -Companies' Proposed Capitalization Ratios and Senior Capital Cost Rates**

Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	50.00 %	4.54 %
Common Equity	50.00 %	
Total	100.00 %	

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

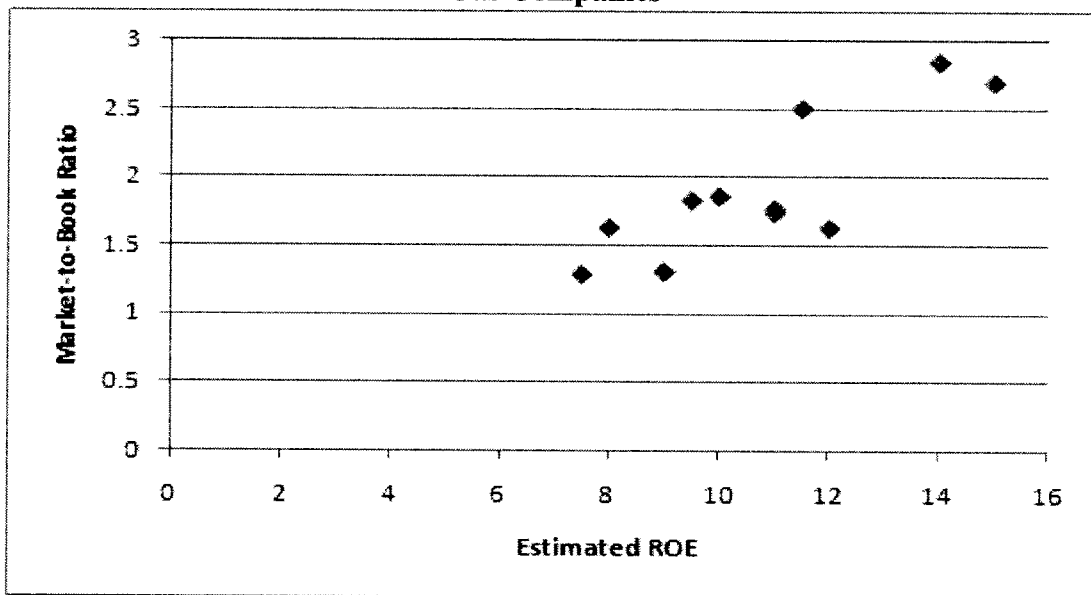
Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	55.00 %	4.54 %
Common Equity	45.00 %	
Total	100.00 %	

Exhibit JRW-6
Electric Utilities
Panel A



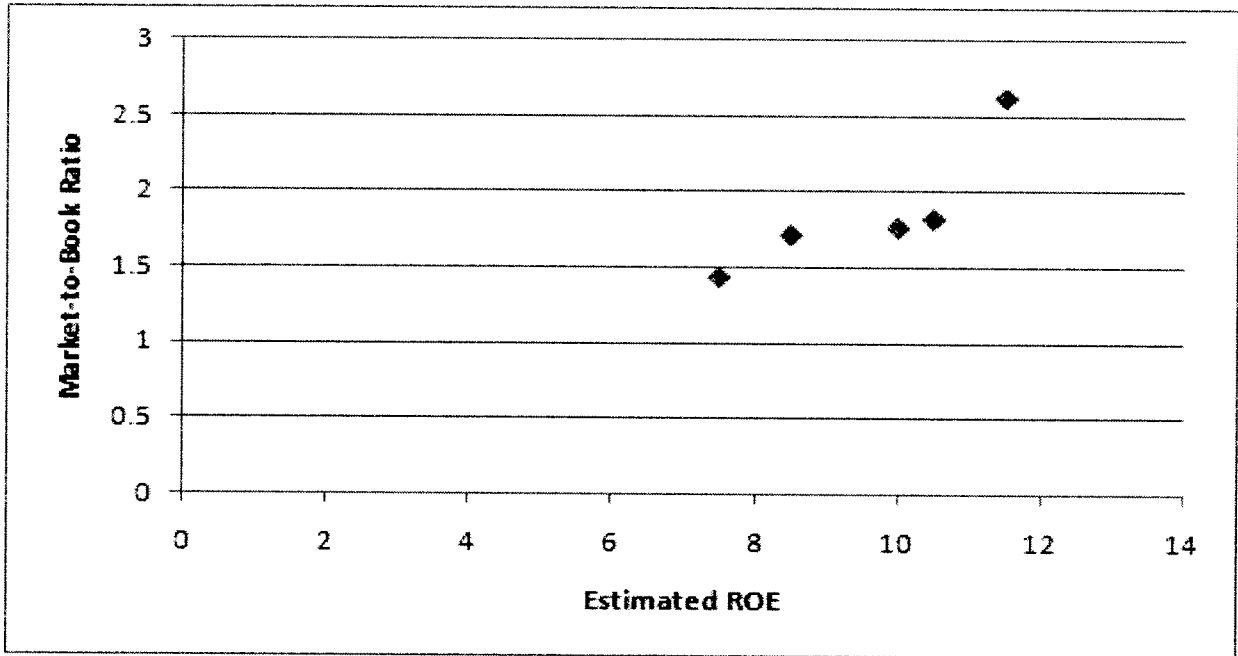
R-Square = .52, N=51.

Panel B
Gas Companies



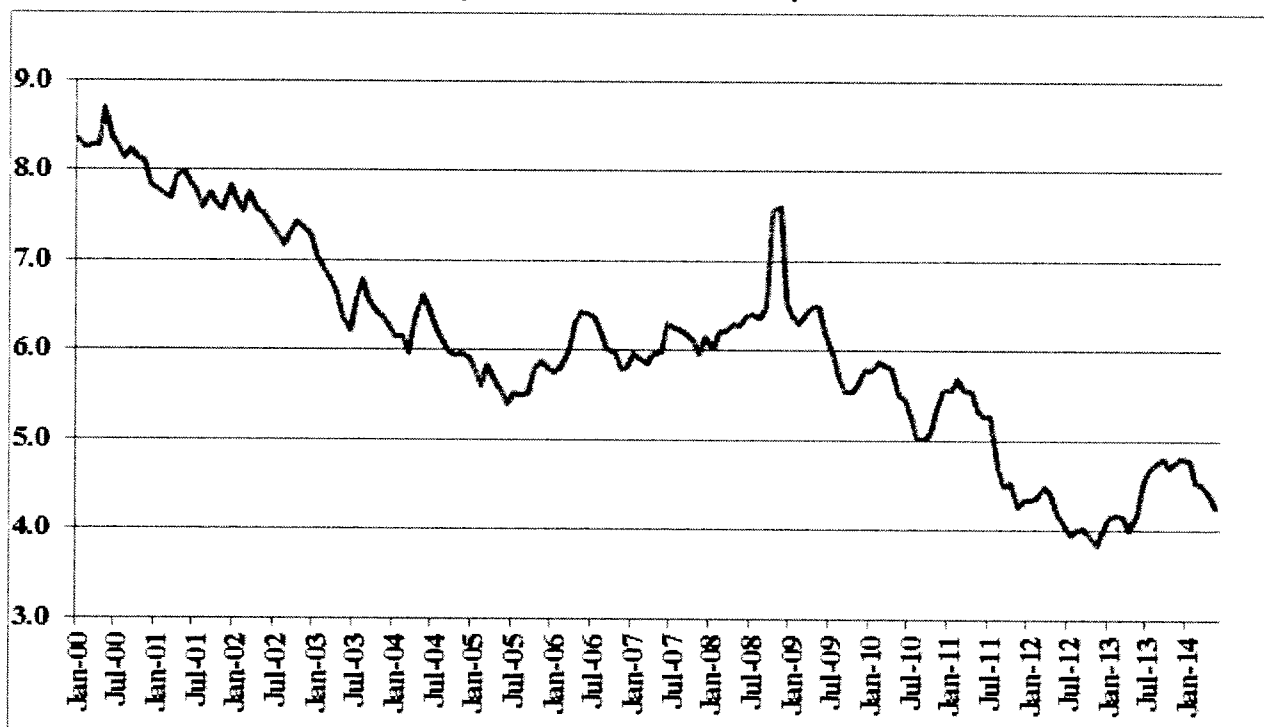
R-Square = .71, N=11.

Exhibit JRW-6
Water Companies
Panel C



R-Square = .77, N=5.

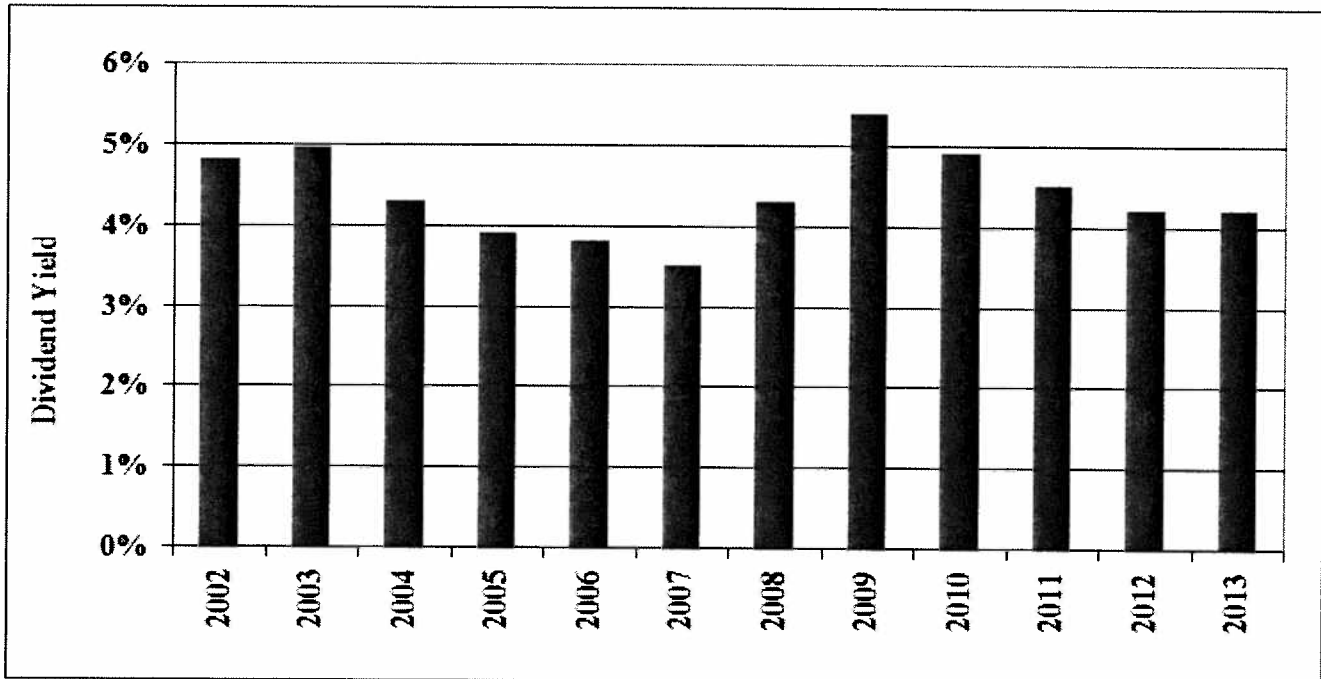
Exhibit JRW-7
Long-Term 'A' Rated Public Utility Bonds



Data Source: Mergent Bond Record

Exhibit JRW-7

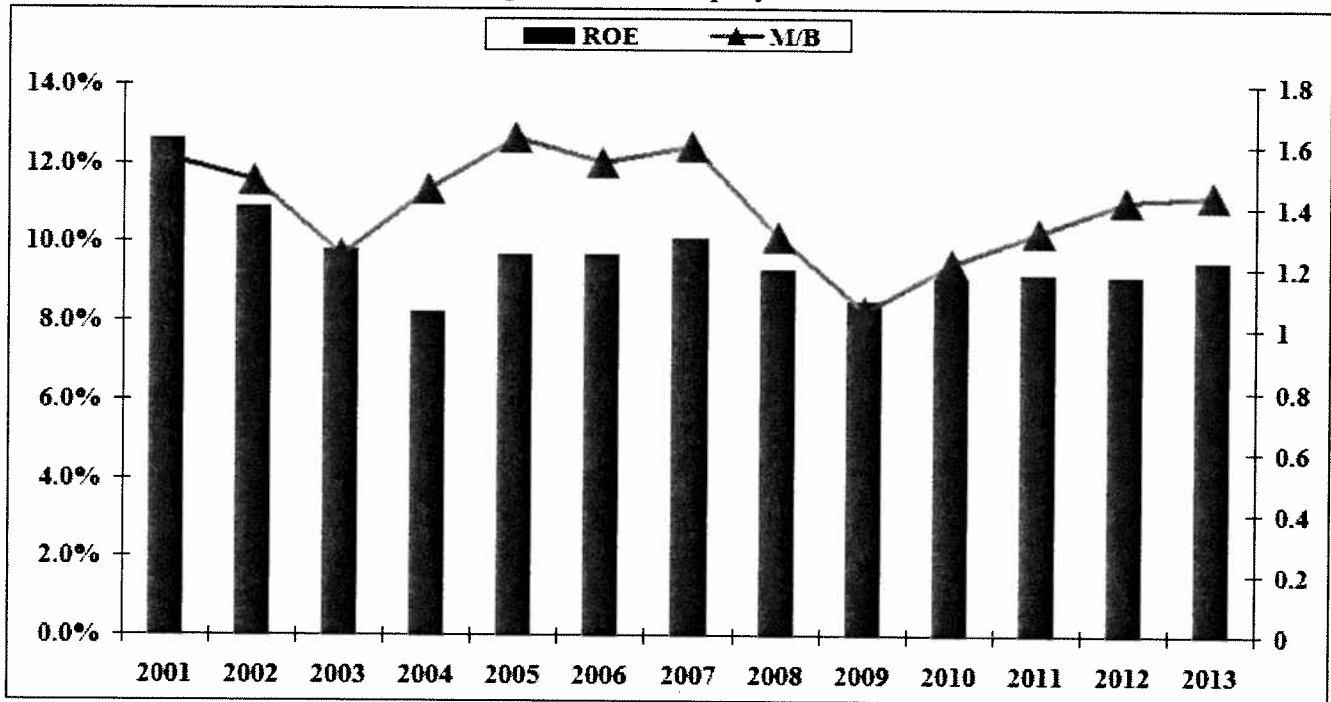
Electric Utility Average Dividend Yield



Data Source: Value Line Investment Survey.

Exhibit JRW-7

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



Data Source: *Value Line Investment Survey*.

Exhibit JRW-8

Industry Average Betas

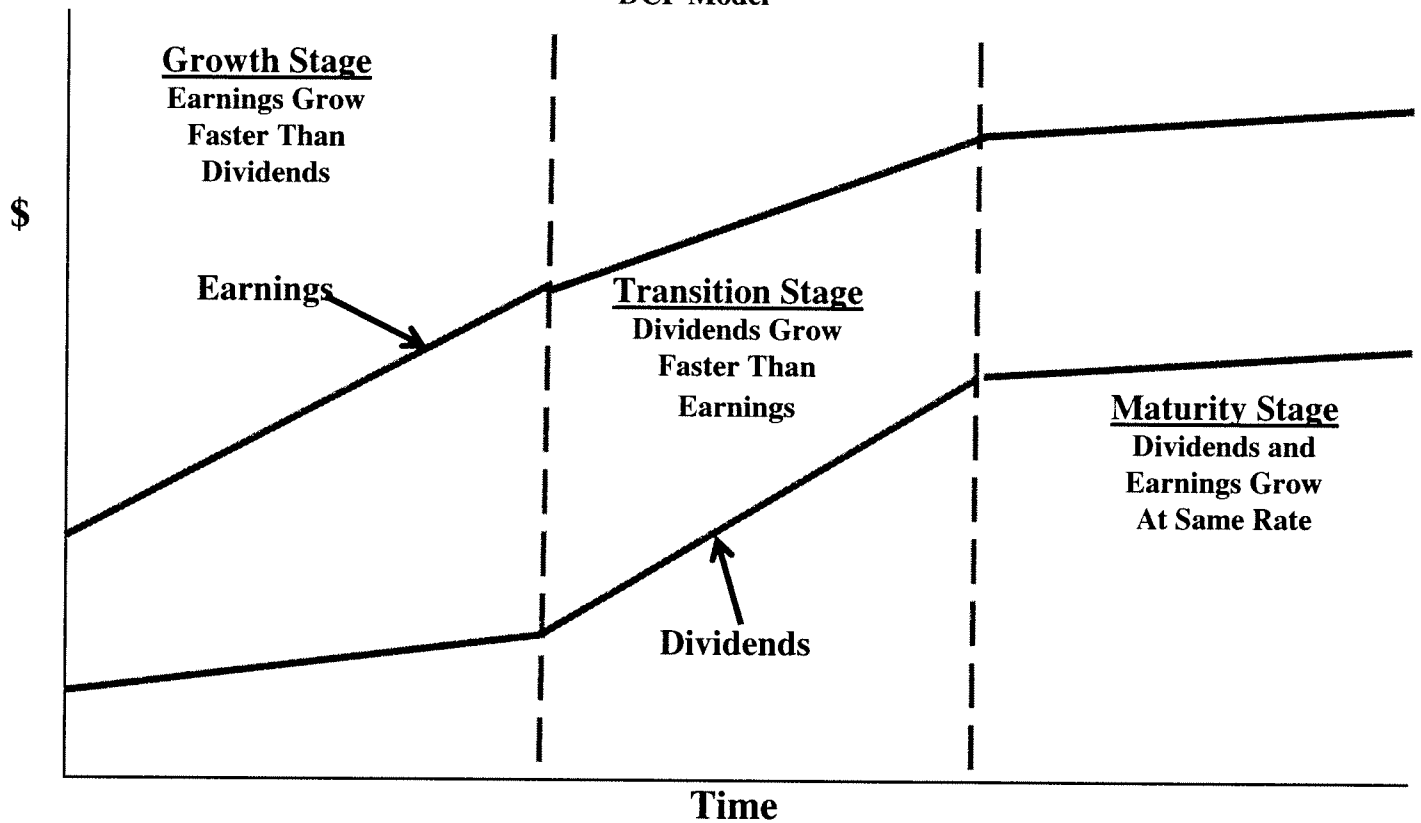
Exhibit JRW-8

Industry Average Betas

Industry Name	Beta	Industry Name	Beta	Industry Name	Beta
COAL	1.36	HOTELGAM	1.01	SOFTWARE	0.89
MINING	1.34	WIRELESS	1.01	FUNL SVC	0.89
HEAVYTRK	1.31	METALFAB	1.01	ELECTRNX	0.88
SEMI-EQP	1.30	ENTRTAIN	1.00	RESTRNT	0.88
HOMEILD	1.30	RETAILHL	1.00	OILGAS	0.88
GASDIVRS	1.27	RECREATE	0.99	MEDICNON	0.88
STEEL	1.25	INSTRMNT	0.99	ITSERV	0.87
NWSPAPER	1.25	BIOTECH	0.99	CABLETV	0.87
OILFIELD	1.25	B2B	0.99	SHOE	0.86
OILINTEG	1.24	REIT	0.99	HOUSEPRD	0.85
MARITIME	1.22	MACHINE	0.98	MEDICINV	0.85
AUTOPRTS	1.20	PACKAGE	0.98	MEDSERV	0.84
OILPROD	1.16	CHEMSPEC	0.98	INTERNET	0.84
ENGCON	1.16	INFOSER	0.97	REINSUR	0.84
CHEMDIV	1.15	EDUC	0.97	TELESERV	0.83
CHEMICAL	1.15	PUBLISH	0.97	PIPEMLP	0.82
BUILDING	1.15	TELUTIL	0.96	ENVIRONM	0.82
PPEQ	1.15	ELECFGN	0.96	DRUGSTOR	0.82
SEMICOND	1.14	AIRTRANS	0.95	GROCERY	0.82
RAILROAD	1.14	RETAUTO	0.95	FOODPROC	0.81
TRUCKING	1.12	TELEQUIP	0.95	INSPRPTY	0.80
POWER	1.11	FINSERV	0.95	TOBACCO	0.76
PAPER	1.10	INDUSRV	0.94	BANKMID	0.75
HUMAN	1.08	APPAREL	0.94	UTILWEST	0.74
GOLDSILV	1.08	DIVERSIF	0.94	UTILCENT	0.74
BROKERS	1.06	ADVERT	0.94	BEVERAGE	0.73
INSLIFE	1.06	COMPUTER	0.94	GASDISTR	0.73
AUTO	1.06	ENTTECH	0.93	WATER	0.71
RETAILSL	1.04	RETAIL	0.92	UTILEAST	0.69
OFFICE	1.04	COSMETIC	0.91	BANK	0.68
ELECEQ	1.03	HLTHSYS	0.90	THRIFT	0.60
BUILDSUP	1.02	DEFENSE	0.90		
FURNITUR	1.02	DRUG	0.89		

Source: ValueLine Investment Survey, July, 2014.

Exhibit JRW-9
DCF Model



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

Exhibit JRW-9
DCF Model
Consensus Earnings Estimates
Alliant Energy Corp ("LNT")
www.reuters.com
11/30/2014

	# of Estimates	Mean	High	Low
Earnings (per share)				
Quarter Ending Dec-14	4	0.56	0.60	0.52
Quarter Ending Mar-15	1	0.76	0.76	0.76
Year Ending Dec-14	10	3.47	3.55	3.40
Year Ending Dec-15	10	3.63	3.69	3.60
LT Growth Rate (%)	2	4.90	5.00	4.80

Data Source: www.reuters.com

Exhibit JRW-10

**First Energy Companies
Discounted Cash Flow Analysis**

Electric Proxy Group

Dividend Yield*	3.60%
Adjustment Factor	<u>1.025</u>
Adjusted Dividend Yield	3.7%
Growth Rate**	<u>5.00%</u>
Equity Cost Rate	8.7%

* Page 2 of Exhibit JRW-10

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

Exhibit JRW-10
First Energy Companies
Monthly Dividend Yields

Electric Proxy Group

Company	SMBL	Annual Dividend	Dividend Yield 30 Day	Dividend Yield 90 Day	Dividend Yield 180 Day
ALLETE, Inc. (NYSE-ALE)	ALE	\$ 1.96	3.9%	4.0%	4.0%
Ameren Corporation (NYSE-AEE)	AEE	\$ 1.60	3.8%	4.0%	4.0%
American Electric Power Co. (NYSE-AEP)	AEP	\$ 2.00	3.5%	3.7%	3.8%
Black Hills Corporation (NYSE-BKH)	BKH	\$ 1.56	2.9%	3.0%	2.8%
CMS Energy Corporation (NYSE-CMS)	CMS	\$ 1.08	3.3%	3.5%	3.6%
Duke Energy Corporation (NYSE-DUK)	DUK	\$ 3.18	3.9%	4.2%	4.3%
Edison International (NYSE-EIX)	EIX	\$ 1.42	2.3%	2.4%	2.5%
El Paso Electric Company (NYSE-EE)	EE	\$ 1.12	3.0%	3.0%	3.0%
Empire District Electric Co. (NYSE-EDE)	EDE	\$ 1.02	2.7%	2.7%	2.7%
Entergy Corporation (NYSE-ETR)	ETR	\$ 3.32	4.0%	4.3%	4.4%
FirstEnergy Corporation (ASE-FE)	FE	\$ 1.44	4.0%	4.2%	4.2%
Great Plains Energy Incorporated (NYSE-GXP)	GXP	\$ 0.92	3.5%	3.6%	3.6%
Hawaiian Electric Industries, Inc. (NYSE-HE)	HE	\$ 1.24	4.5%	4.8%	4.9%
IDACORP, Inc. (NYSE-IDA)	IDA	\$ 1.72	2.8%	3.0%	3.1%
NorthWestern Corporation (NYSE-NWE)	NEW	\$ 1.60	3.1%	3.3%	3.3%
PG&E Corporation (NYSE-PCG)	PCG	\$ 1.82	3.7%	3.9%	4.0%
PNM Resources, Inc. (NYSE-PNM)	PNM	\$ 0.74	2.6%	2.8%	2.7%
Portland General Electric Company (NYSE-POR)	POR	\$ 1.12	3.1%	3.3%	3.3%
SCANA Corporation (NYSE-SCG)	SCG	\$ 2.10	3.8%	4.0%	4.0%
Westar Energy, Inc. (NYSE-WR)	WR	\$ 1.40	3.7%	3.8%	3.9%
Mean			3.4%	3.6%	3.6%
Median			3.5%	3.7%	3.7%

Data Sources: <http://quote.yahoo.com>, November 30, 2014.

Exhibit JRW-10

First Energy Companies
DCF Equity Cost Growth Rate Measures
Value Line Historic Growth Rates

Electric Proxy Group

Company	<i>Value Line</i> Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
ALLETE, Inc. (NYSE-ALE)				-2.0	3.0	5.0
Ameren Corporation (NYSE-AEE)	-2.5	-4.5	1.5	-4.0	-9.0	-2.0
American Electric Power Co. (NYSE-AEP)	0.5	-1.5	3.5	1.5	4.0	4.5
Black Hills Corporation (NYSE-BKH)	-3.0	2.5	3.5	2.0	1.5	2.0
CMS Energy Corporation (NYSE-CMS)		1.0	1.5	13.0	nmf	4.0
Duke Energy Corporation (NYSE-DUK)				4.5	11.5	0.5
Edison International (NYSE-EIX)	7.5		8.5	2.5	2.5	3.0
El Paso Electric Company (NYSE-EE)	11.0		8.0	8.5		8.0
Empire District Electric Co. (NYSE-EDE)	3.0	-3.5	1.5	2.5	-7.0	1.5
Entergy Corporation (NYSE-ETR)	6.0	9.0	4.0	1.5	5.0	5.0
FirstEnergy Corporation (ASE-FE)		3.0	2.5	-11.0		2.0
Great Plains Energy Incorporated (NYSE-GXP)	-3.5	-6.5	5.0	-2.0	-12.5	3.5
Hawaiian Electric Industries, Inc. (NYSE-HE)			1.5	6.0		2.5
IDACORP, Inc. (NYSE-IDA)	5.5	-2.5	4.5	10.0	3.0	5.5
NorthWestern Corporation (NYSE-NWE)				10.0	3.0	3.5
PG&E Corporation (NYSE-PCG)	9.5		11.0	-5.5	5.0	4.5
PNM Resources, Inc. (NYSE-PNM)	-2.5	0.5	1.5	8.0	-6.0	-1.0
Portland General Electric Company (NYSE-POR)				3.0	4.5	2.0
SCANA Corporation (NYSE-SCG)	3.0	4.5	4.5	3.0	2.5	4.5
Westar Energy, Inc. (NYSE-WR)	12.5	2.0	2.5	4.5	4.0	4.0
Mean	3.6	0.3	4.1	2.8	0.9	3.1
Median	3.0	0.8	3.5	2.8	3.0	3.5
Average of Median Figures =				2.8		

Data Source: *Value Line Investment Survey*.

Exhibit JRW-10

First Energy Companies
DCF Equity Cost Growth Rate Measures
Value Line Projected Growth Rates

Company	Electric Proxy Group			Value Line		
	Value Line			Value Line		
	Projected Growth Est'd. '11-'13 to '17-'19			Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	6.0	4.0	4.5	9.5%	38.0%	3.6%
Ameren Corporation (NYSE-AEE)	4.5	2.0	1.5	9.5%	41.0%	3.9%
American Electric Power Co. (NYSE-AEP)	4.5	4.5	4.0	10.0%	37.0%	3.7%
Black Hills Corporation (NYSE-BKH)	9.5	4.0	4.0	9.0%	42.0%	3.8%
CMS Energy Corporation (NYSE-CMS)	6.5	6.0	6.0	13.5%	42.0%	5.7%
Duke Energy Corporation (NYSE-DUK)	5.0	2.0	2.5	8.0%	34.0%	2.7%
Edison International (NYSE-EIX)	2.5	7.5	6.0	11.0%	52.0%	5.7%
El Paso Electric Company (NYSE-EE)	3.0	7.0	5.5	10.0%	51.0%	5.1%
Empire District Electric Co. (NYSE-EDE)	4.0	4.5	3.0	9.0%	37.0%	3.3%
Entergy Corporation (NYSE-ETR)	1.0	2.5	4.0	10.0%	41.0%	4.1%
FirstEnergy Corporation (ASE-FE)	4.5	-4.0	2.5	8.5%	47.0%	4.0%
Great Plains Energy Incorporated (NYSE-GXP)	6.0	6.0	3.0	7.5%	38.0%	2.9%
Hawaiian Electric Industries, Inc. (NYSE-HE)	4.0	1.0	4.0	10.0%	35.0%	3.5%
IDACORP, Inc. (NYSE-IDA)	1.5	8.0	4.0	8.5%	42.0%	3.6%
NorthWestern Corporation (NYSE-NWE)	3.5	4.5	4.0	9.5%	37.0%	3.5%
PG&E Corporation (NYSE-PCG)	5.0	2.5	3.0	8.5%	31.0%	2.6%
PNM Resources, Inc. (NYSE-PNM)	11.0	12.0	3.5	9.5%	51.0%	4.8%
Portland General Electric Company (NYSE-POR)	5.0	4.5	4.0	9.0%	46.0%	4.1%
SCANA Corporation (NYSE-SCG)	5.0	3.0	5.5	10.0%	46.0%	4.6%
Westar Energy, Inc. (NYSE-WR)	6.0	3.0	5.0	9.5%	45.0%	4.3%
Mean	4.9	4.2	4.0	9.5%	41.7%	4.0%
Median	4.8	4.3	4.0	9.5%	41.5%	3.8%
Average of Median Figures =		4.3				3.8%

Data Source: *Value Line Investment Survey*.

Exhibit JRW-10

**First Energy Companies
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates**

Electric Proxy Group

Company	Yahoo!	Zacks	Reuters	Mean
ALLETE, Inc. (NYSE-ALE)	6.0%	N/A	N/A	6.0%
Ameren Corporation (NYSE-AEE)	8.9%	8.3%	8.9%	8.7%
American Electric Power Co. (NYSE-AEP)	5.0%	4.9%	5.0%	5.0%
Black Hills Corporation (NYSE-BKH)	7.0%	N/A	N/A	7.0%
CMS Energy Corporation (NYSE-CMS)	6.6%	6.1%	6.6%	6.4%
Duke Energy Corporation (NYSE-DUK)	4.7%	4.7%	4.7%	4.7%
Edison International (NYSE-EIX)	3.4%	8.1%	3.4%	5.0%
El Paso Electric Company (NYSE-EE)	7.0%	6.7%	N/A	6.9%
Empire District Electric Co. (NYSE-EDE)	3.0%	3.0%	N/A	3.0%
Entergy Corporation (NYSE-ETR)	0.4%	-1.1%	0.4%	-0.1%
FirstEnergy Corporation (ASE-FE)	-2.9%	-3.5%	-2.9%	-3.1%
Great Plains Energy Incorporated (NYSE-GXP)	5.0%	5.0%	5.0%	5.0%
Hawaiian Electric Industries, Inc. (NYSE-HE)	4.0%	4.0%	4.0%	4.0%
IDACORP, Inc. (NYSE-IDA)	4.0%	4.0%	4.0%	4.0%
NorthWestern Corporation (NYSE-NWE)	7.1%	7.1%	7.1%	7.1%
PG&E Corporation (NYSE-PCG)	8.5%	7.3%	8.5%	8.1%
PNM Resources, Inc. (NYSE-PNM)	9.0%	8.5%	9.0%	8.8%
Portland General Electric Company (NYSE-POR)	7.83%	7.8%	7.8%	7.8%
SCANA Corporation (NYSE-SCG)	4.7%	4.4%	4.7%	4.6%
Westar Energy, Inc. (NYSE-WR)	3.2%	3.8%	3.2%	3.4%
Mean	5.1%	5.0%	5.0%	5.1%
Median	5.0%	4.9%	4.8%	5.0%

Data Sources: www.reuters.com, www.zacks.com, <http://quote.yahoo.com>, November 30, 2014.

Exhibit JRW-10

First Energy Companies
DCF Growth Rate Indicators

Electric Proxy Group
Summary Growth Rates

Growth Rate Indicator	Electric Proxy Group
Historic <i>Value Line</i> Growth in EPS, DPS, and BVPS	2.8%
Projected <i>Value Line</i> Growth in EPS, DPS, and BVPS	4.3%
Sustainable Growth ROE * Retention Rate	3.8%
Projected EPS Growth from Yahoo, Zacks, and Reuters - Mean/Median	5.1%/5.0%

Exhibit JRW-11

**First Energy Companies
Capital Asset Pricing Model**

Electric Proxy Group

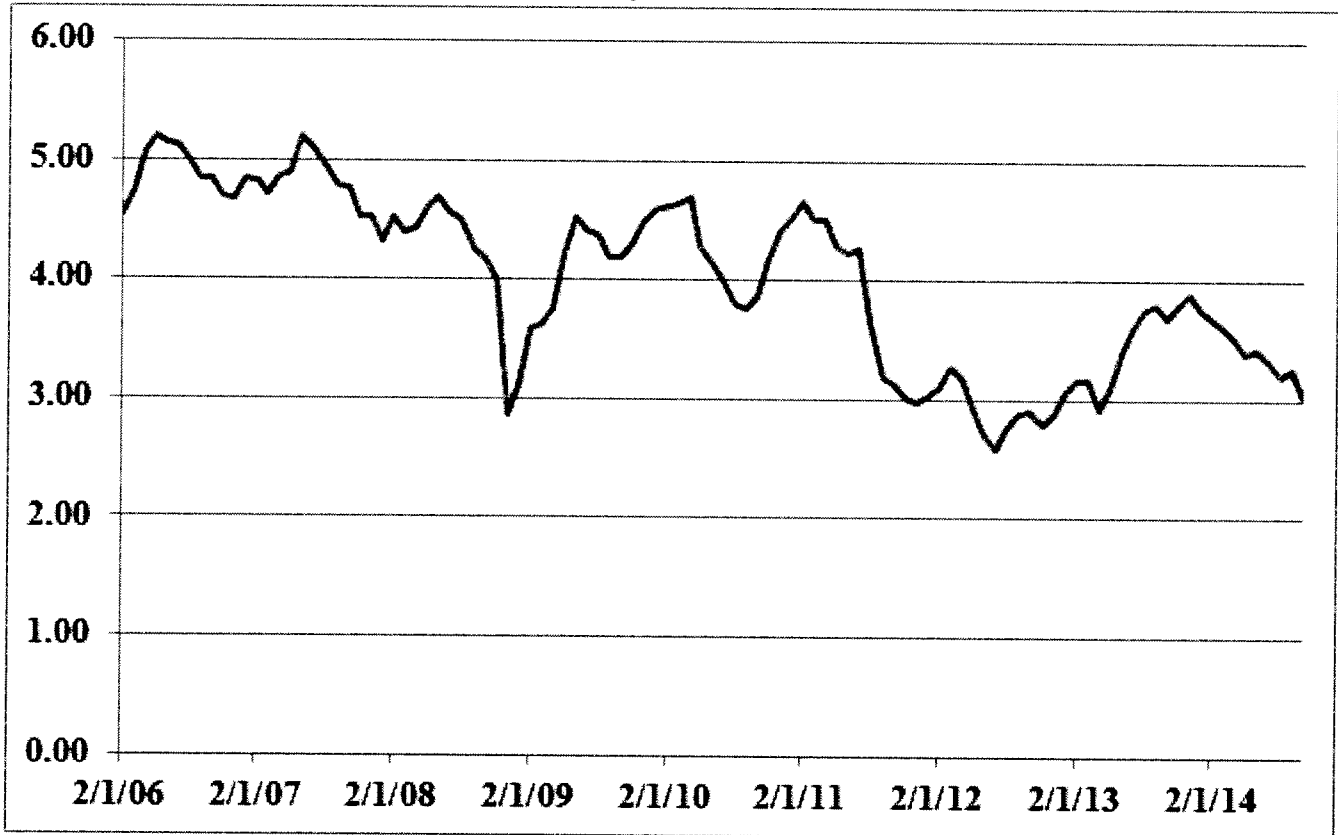
Risk-Free Interest Rate	4.00 %
Beta*	0.75
<u>Ex Ante Equity Risk Premium**</u>	<u>5.00 %</u>
CAPM Cost of Equity	7.8 %

* See page 3 of Exhibit JRW-11

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

Exhibit JRW-11

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



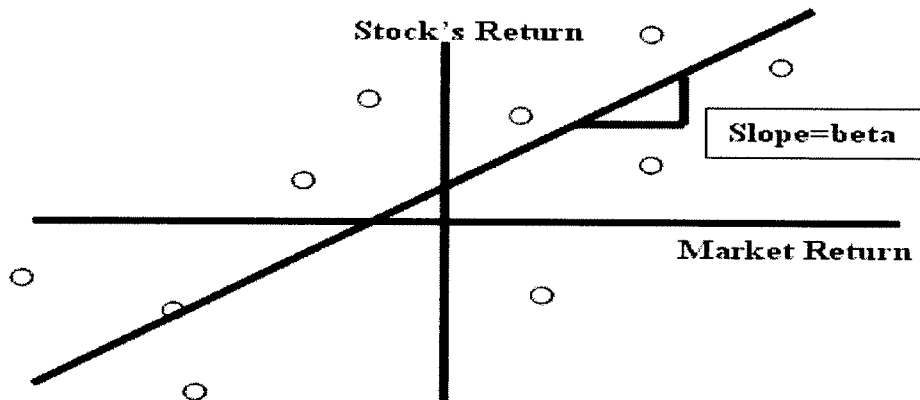
Source: Federal Reserve Bank of St. Louis, FRED Database.

Exhibit JRW-11

Panel A

Betas

Calculation of Beta



Electric Proxy Group

Company Name	Beta
ALLETE, Inc. (NYSE-ALE)	0.80
Ameren Corporation (NYSE-AEE)	0.70
American Electric Power Co. (NYSE-AEP)	0.75
Black Hills Corporation (NYSE-BKH)	0.90
CMS Energy Corporation (NYSE-CMS)	0.75
Duke Energy Corporation (NYSE-DUK)	0.60
Edison International (NYSE-EIX)	0.75
El Paso Electric Company (NYSE-EE)	0.70
Empire District Electric Co. (NYSE-EDE)	0.65
Entergy Corporation (NYSE-ETR)	0.70
FirstEnergy Corporation (ASE-FE)	0.70
Great Plains Energy Incorporated (NYSE-GXP)	0.85
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.80
IDACORP, Inc. (NYSE-IDA)	0.80
NorthWestern Corporation (NYSE-NWE)	0.70
PG&E Corporation (NYSE-PCG)	0.65
PNM Resources, Inc. (NYSE-PNM)	0.85
Portland General Electric Company (NYSE-POR)	0.80
SCANA Corporation (NYSE-SCG)	0.75
Westar Energy, Inc. (NYSE-WR)	0.75
Mean	0.75
Median	0.75

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

Exhibit JRW-11
Risk Premium Approaches

**Means of Assessing
The Market Risk
Premium**

**Problems/Debated
Issues**

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

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

Equity Risk Premium										
Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Low	Range High	Midpoint of Range	Mean	Median
Historical Risk Premium	Ibbotson	2014	1926-2012	Historical Stock Returns - Bond Returns	Arithmetic				6.20%	
	Damodaran	2014	1928-2012	Historical Stock Returns - Bond Returns	Geometric				4.60%	
	Dimson, Marsh, Staunton	2014	1900-2013	Historical Stock Returns - Bond Returns	Arithmetic				6.29%	
	Bate	2008	1900-2007	Historical Stock Returns - Bond Returns	Geometric				4.62%	
	Shiller	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				4.50%	
	Siegel	2005	1926-2005	Historical Stock Returns - Bond Returns	Geometric				4.50%	
	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	Geometric				4.60%	
					Arithmetic				5.50%	
	Median								4.77%	
										5.14%
Ex Ante Models (Puzzle Research)										
	Claus Thomas	2001	1985-1998	Abnormal Earnings Model					3.00%	
	Arnott and Bernstein	2002	1810-2001	Fundamentals - Div Yld + Growth					2.40%	
	Constantinides	2002	1872-2000	Historical Returns & Fundamentals - P/D & P/E					6.90%	
	Cornell	1999	1926-1997	Historical Returns & Fundamental GDP/Earnings		3.50%	5.50%	4.50%	4.50%	
	Easton, Taylor, et al	2002	1981-1998	Residual Income Model					5.30%	
	Fama French	2002	1951-2000	Fundamental DCF with EPS and DPS Growth		2.55%	4.32%		3.44%	
	Harris & Marston	2001	1982-1998	Fundamental DCF with Analysts' EPS Growth					7.14%	
	Best & Byrne	2001								
	McKinsey	2002	1962-2002	Fundamental (P/E, D/P, & Earnings Growth)		3.50%	4.00%		3.75%	
	Siegel	2005	1802-2001	Historical Earnings Yield	Geometric				2.50%	
	Grabowski	2006	1926-2005	Historical and Projected		3.50%	6.00%	4.75%	4.75%	
	Maheu & McCurdy	2006	1885-2003	Historical Excess Returns, Structural Breaks,		4.02%	5.10%	4.56%	4.56%	
	Bostock	2004	1960-2002	Bond Yields, Credit Risk, and Income Volatility		3.90%	1.30%	2.60%	2.60%	
	Bakshi & Chen	2005	1982-1998	Fundamentals - Interest Rates					7.31%	
	Donaldson, Kamstra, & Kramer	2006	1952-2004	Fundamental, Dividend yld., Returns, & Volatility		3.00%	4.00%	3.50%	3.50%	
	Campbell	2008	1982-2007	Historical & Projections (D/P & Earnings Growth)		4.10%	5.40%		4.75%	
	Best & Byrne	2001	Projection	Fundamentals - Div Yld + Growth					2.00%	
	Fernandez	2007	Projection	Required Equity Risk Premium					4.00%	
	DeLong & Magin	2008	Projection	Earnings Yield - TIPS					3.22%	
	Siegel - Rethink ERP	2011	Projection	Real Stock Returns and Components					5.50%	
	American Appraisal Quarterly ERP	2014	Projection	Fundamental Economic and Market Factors					6.00%	
	Duarte & Rosa - NY Fed	2013	projection	Projections from 29 Models					5.40%	
	Duff & Phelps	2014	Projection	Normalized with 4.0% Long-Term Treasury Yield					5.00%	
	Mschchowski - VL - 2014	2014	Projection	Fundamentals - Expected Return Minus 10-Year Treasury Rate					5.50%	
	Damodaran	2014	Projection	Fundamentals - Implied from FCF to Equity Model					5.32%	
	Value Line	2014	Projection	Fundamentals - Expected Return Minus 10-Year Treasury Rate					5.50%	
	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%	
	Peter Diamond	2001	Projected for 75 Years	Fundamentals (D/P, GDP Growth)	Geometric	1.50%	2.50%	2.00%	2.00%	
	John Shoven	2001	Projected for 75 Years	Fundamentals (D/P, P/E, GDP Growth)		3.00%	4.80%	3.90%	3.90%	
Surveys	Median					3.00%	3.50%	3.25%	3.25%	
										4.50%
	New York Fed	2013	Five-Year	Survey of Wall Street Firms					5.20%	
	Survey of Financial Forecasters	2014	10-Year Projection	About 50 Financial Forecasters					2.18%	
	Duke - CFO Magazine Survey	2014	10-Year Projection	Approximately 350 CFOs					4.24%	
	Welch - Academics	2008	30-Year Projection	Random Academics		5.00%	5.74%	5.37%	5.37%	
	Fernandez - Academics, Analysts, and Companies	2014	Long-Term	Survey of Academics, Analysts, and Companies					5.00%	
Building Block	Median									
										4.62%
	Ibbotson and Chen	2014	Projection	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			6.12%	5.10%	
					Geometric			4.08%		
	Chen - Rethink ERP	2010	20-Year Projection	Combination Supply Model (Historic and Projection)	Geometric				4.00%	
	Ilmanen - Rethink ERP	2010	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				3.00%	
	Grinold, Kroner, Siegel - Rethink ERP	2011	Projection	Current Supply Model (D/P & Earnings Growth)	Arithmetic			4.63%	4.12%	
					Geometric			3.60%		
	Woolridge		2014	Current Supply Model (D/P & Earnings Growth)					4.30%	
Mean	Median									
										4.12%
										4.59%
										4.56%

Summary of 2010-14 Equity Risk Premium Studies

[illegible]

Exhibit JRW-12

First Energy Companies
Company's Proposed Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Short-Term Debt	1.52%	0.35%	0.01%
Long-Term Debt	51.34%	5.48%	2.81%
Common Equity	47.14%	10.62%	5.01%
Total	100.00%		7.83%

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

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

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

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

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

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

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

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

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

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

Education

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

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

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

Books

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

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

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

Research

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

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

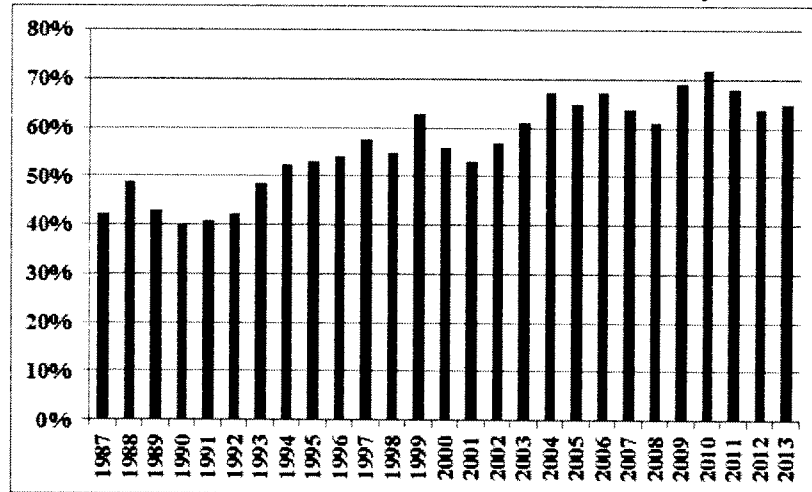
Most of the attention given to the accuracy of analysts' EPS forecasts comes from media coverage of companies' quarterly earnings announcements. When companies' announced earnings beat Wall Street's EPS estimates ("a positive surprise"), their stock prices usually go up. When a company's EPS figure misses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

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

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

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



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

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

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

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1 upward bias in earnings growth rates declines in the quarters leading up to the
2 earnings announcement date.³ They call this result the “walk-down to beatable
3 analyst forecasts.” They hypothesize that the walk-down might be driven by the
4 “earning-guidance game,” in which analysts give optimistic forecasts at the start
5 of a fiscal year, then revise their estimates downwards until the firm can beat the
6 forecasts at the earnings announcement date.

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

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

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

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

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

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

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

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

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

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

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

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1 conclude that analysts' long-term EPS growth rate forecasts are overly optimistic
2 and upwardly biased.⁸ The Chan, Karceski, and Lakonishok (2003) study
3 evaluated the accuracy of analysts' long-term EPS growth rate forecasts over the
4 1982-98 time period. They reported a median IBES growth forecast of 14.5%,
5 versus a median realized five-year growth rate of about 9%. They also found the
6 IBES forecasts of EPS beyond two years are not accurate. They concluded the
7 following: "Over long horizons, however, there is little forecastability in earnings,
8 and analysts' estimates tend to be overly optimistic."

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

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

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

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

6 **C. ISSUES REGARDING THE SUPERIORITY OF**
7 **ANALYSTS' EPS FORECASTS OVER HISTORIC AND**
8 **TIME-SERIES ESTIMATES OF LONG-TERM EPS GROWTH**
9

10 As highlighted by the classic study by Brown and Rozeff (1976) and the
11 other studies that followed, analysts' forecasts of quarterly earnings estimates are
12 superior to the estimates derived from historic and time-series analyses.¹⁰ This is
13 often attributed to the information and timing advantage that analysts have over
14 historic and time-series analyses. These studies relate to analysts' forecasts of
15 quarterly and/or annual forecasts, and not to long-term EPS growth rate forecasts.
16 The previously cited studies by Harris (1999), Chan, Karceski, and Lakonishok
17 (2003), and Lacina, Lee, and Xu (2011) all conclude that analysts' forecasts are
18 no better than time-series models and historic growth rates in forecasting long-
19 term EPS. Harris (1999) and Lacina, Lee, and Xu (2011) concluded that historic
20 GDP growth was superior to analysts' forecasts for long run earnings growth.
21 These overall results are similar to the findings by Bradshaw, Drake, Myers, and
22 Myers (2009) that discovered that time-series estimates of annual earnings are
23 more accurate over longer horizons than analysts' forecasts of earnings. As the

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

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

4 **D. STUDY OF THE ACCURACY OF ANALYSTS'**
5 **LONG-TERM EARNINGS GROWTH RATES**
6

7 To evaluate the accuracy of analysts' EPS forecasts, I have compared
8 actual 3-5 year EPS growth rates with forecasted EPS growth rates on a quarterly
9 basis over the past 20 years for all companies covered by the I/B/E/S data base.
10 In Panel A of page 1 of Exhibit JRW-B1, I show the average analysts' forecasted
11 3-5 year EPS growth rate with the average actual 3-5 year EPS growth rate for the
12 past twenty years.

13 The following example shows how the results can be interpreted. For the
14 3-5 year period prior to the first quarter of 1999, analysts had projected an EPS
15 growth rate of 15.13%, but companies only generated an average annual EPS
16 growth rate over the 3-5 years of 9.37%. This projected EPS growth rate figure
17 represented the average projected growth rate for over 1,510 companies, with an
18 average of 4.88 analysts' forecasts per company. For the entire twenty-year
19 period of the study, for each quarter there were on average 5.6 analysts' EPS
20 projections for 1,281 companies. Overall, my findings indicate that forecast errors
21 for long-term estimates are predominantly positive, which indicates an upward
22 bias in growth rate estimates. The mean and median forecast errors over the
23 observation period are 143.06% and 75.08%, respectively. The forecasting errors

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

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

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

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

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

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McKinsey Associates. This article is provided on pages 3 and 4 of Exhibit JRW-B1.

The article concludes with the following:¹³

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

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

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

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

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

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

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

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

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

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

¹⁵ Ken Brown, “Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant – and the Estimates Help to Buoy the Market’s Valuation,” *Wall Street Journal*, p. C1, (January 27, 2003).

¹⁶ Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, “Equity Analysts, Still Too Bullish,” *McKinsey on Finance*, pp. 14-17, (Spring 2010).

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

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

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

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

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

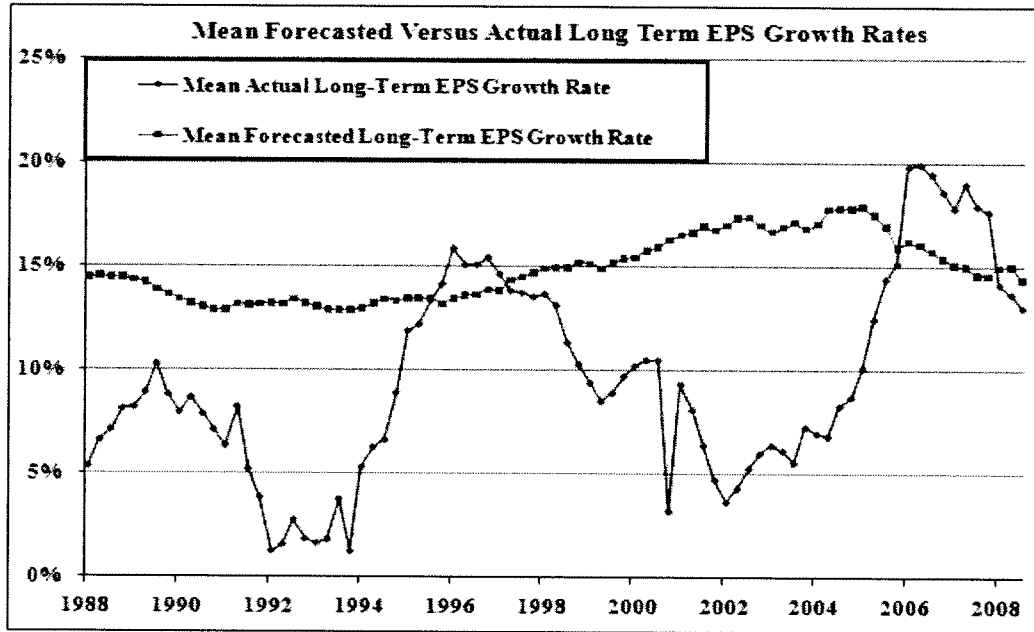
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1 5 year EPS growth rate forecasts for 2,333 firms. The average projected EPS
2 growth rate was 14.70%. This is high given that the average historical EPS
3 growth rate in the U.S. is about 7%. A major factor seems to be that *Value Line*
4 only predicts negative EPS growth for 43 companies. This is less than two
5 percent of the companies covered by *Value Line*. Given the ups and downs of
6 corporate earnings, this is unreasonable.

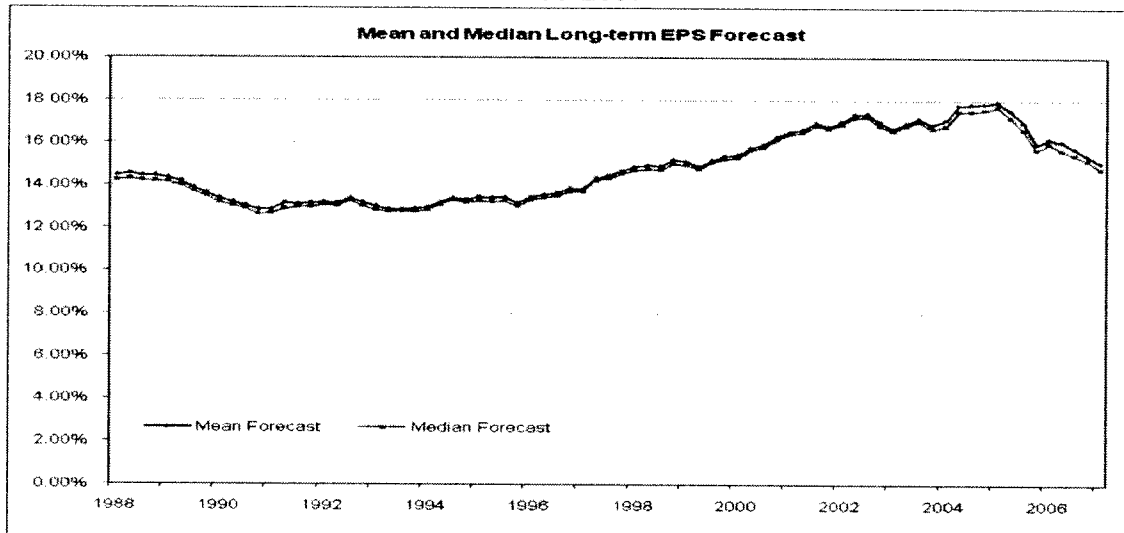
7 To put this figure in perspective, I screened the *Value Line* companies to
8 see what percent of companies covered by *Value Line* had experienced negative
9 EPS growth rates over the past five years. *Value Line* reported a five-year historic
10 growth rate for 2,219 companies. The results are shown in Panel B of page 6 of
11 Exhibit JRW-B1 and indicate that the average 5-year historic growth rate was
12 3.90%, and *Value Line* reported negative historic growth for 844 firms which
13 represents 38.0% of these companies.

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

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



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



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

THE WALL STREET JOURNAL.

Study Suggests Bias in Analysts' Rosy Forecasts

By **ANDREW EDWARDS**

March 21, 2008; Page C6

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

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

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

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

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

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

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

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

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

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

**Bloomberg
Businessweek**

For Analysts, Things Are Always Looking Up

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

By Roben Farzad

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

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

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

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

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

Exhibit JRW-B1
Analysts' Long-Term Projected EPS Growth Rate Analysis
 Page 4 of 6

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

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

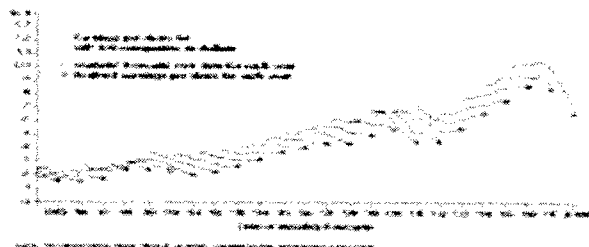
As realities hit home, "It's only natural that analysts will have to revise down their views," says Todd Salamone, senior vice-president at Schaeffer's Investment Research. The market may be making its own downward adjustment, as the S&P 500 has already fallen 14 percent from its high in April. If precedent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

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

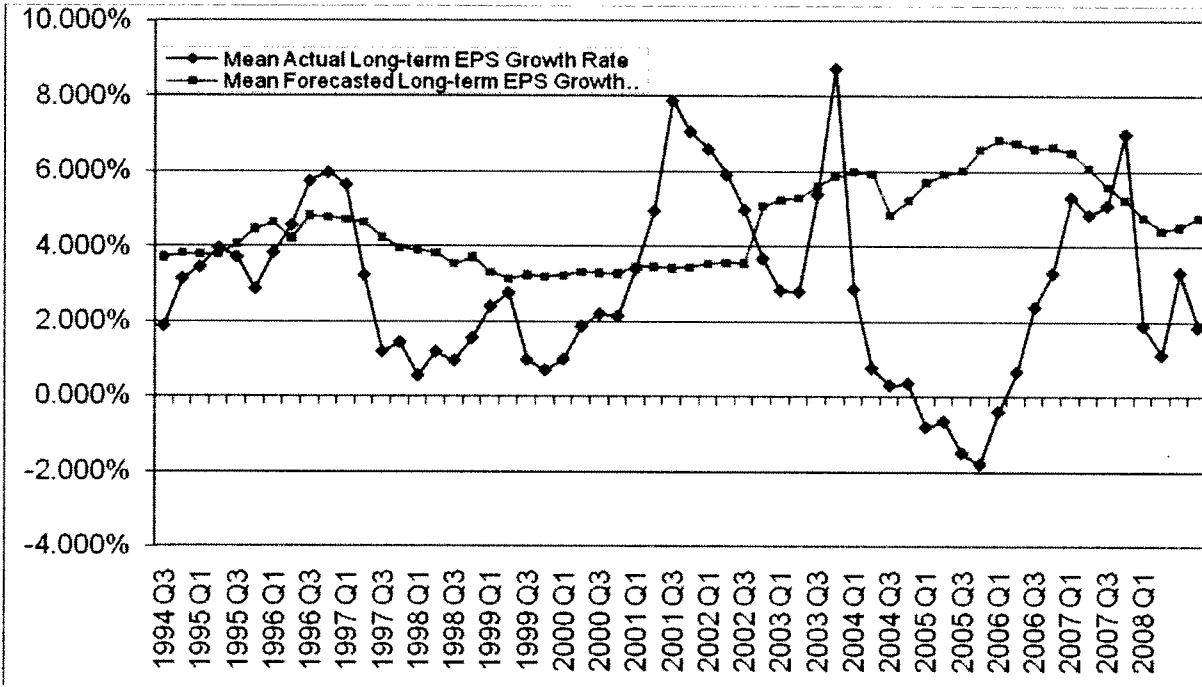
Bloomberg Businessweek Senior Writer Farzad covers Wall Street and international finance.

The Earnings Roller Coaster

Analysts have a long history of overestimating future profits. As this chart shows, following a crash, analysts' earnings forecasts tend to start high and gradually drop as the earnings gap closes. In estimating their earnings, Wall Street investors proceed to the last line in every company's

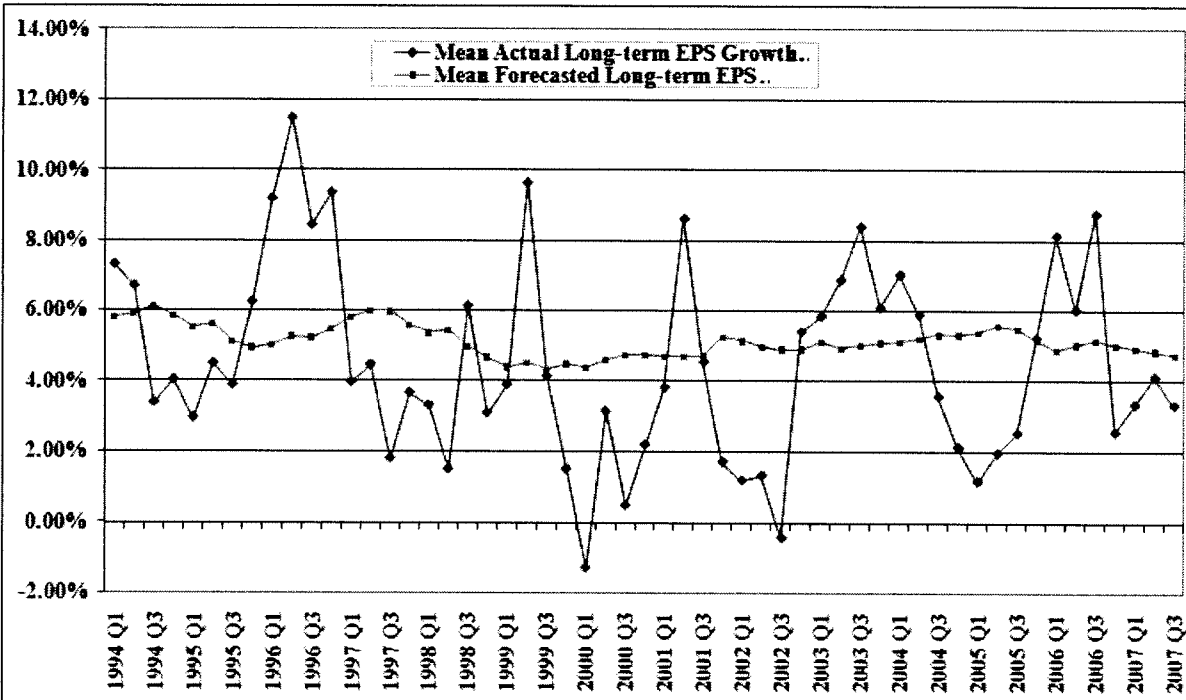


Panel A
Long-Term Forecasted Versus Actual EPS Growth Rates
Electric Utility Companies
1988-2008



Data Source: IBES

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



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

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

Value Line Investment Survey , June, 2012

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

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

Value Line Investment Survey , June, 2012

Appendix C
Building Blocks Equity Risk Premium

A. THE BUILDING BLOCKS MODEL

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

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

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

Appendix C
Building Blocks Equity Risk Premium

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

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

The University of Michigan’s Survey Research Center surveys consumers on their short-term (one-year) inflation expectations on a monthly basis. As shown on page 3 of Exhibit JRW-C1, the current short-term expected inflation rate is 3.3%.

As a measure of expected inflation, I will use the average of the long-term (2.3%) and short-term (3.3%) inflation rate measures, or 2.80%.

D/P – As shown on page 4 of Exhibit JRW-C1, the dividend yield on the S&P 500 has fluctuated from 1.0% to almost 3.5% from 2000-2010. Ibbotson and Chen (2003) report that the long-term average dividend yield of the S&P 500 is 4.3%. As of September 2014, the indicated S&P 500 dividend yield was 2.0%. I will use this figure in my ex ante risk premium analysis.

Appendix C
Building Blocks Equity Risk Premium

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

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

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

PEGAIN – PEGAIN is the repricing gain associated with an increase in the P/E ratio. It accounted for 1.3% of the 10.7% annual stock return in the 1926-2000 period. In estimating an ex ante expected stock market return, one issue is whether investors expect P/E ratios to increase from their current levels. The P/E ratios for the S&P 500 over the past 25 years are shown on page 4 of Exhibit JRW-C1. The run-up and eventual peak in P/Es in the year 1999 is very evident in the chart. The average P/E declined until late 2006, and then increased to higher high levels, primarily due to the decline in EPS as a result of the financial crisis and the recession. As of September, 2014, the average P/E for the S&P 500 was 16.75X, which is above the historic average. Since the current figure is

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

Appendix C
Building Blocks Equity Risk Premium

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

Expected Return from Building Blocks Approach - The current expected market return is represented by the last column on the right in the graph entitled “Decomposing Equity Market Returns: The Building Blocks Methodology” set forth on page 1 of Exhibit JRW-C1. As shown, the expected market return of 7.55% is composed of 2.80% expected inflation, 2.0% dividend yield, and 2.75% real earnings growth rate.

This expected return of 7.55% is consistent with other expected return forecasts.

1. In the first quarter 2014 *Survey of Financial Forecasters*, published on February 15, 2014 by the Federal Reserve Bank of Philadelphia, the median long-term expected return on the S&P 500 was 6.43% (see Panel D of page 2 of Exhibit JRW-C1).
2. John Graham and Campbell Harvey of Duke University conduct a quarterly survey of corporate CFOs. The survey is a joint project of Duke University and *CFO Magazine*. In the June 2014 survey, the mean expected return on the S&P 500 over the next ten years was 6.6%.⁴

B. THE BUILDING BLOCKS EQUITY RISK PREMIUM

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

Appendix C
Building Blocks Equity Risk Premium

1 The current 30-year U.S. Treasury yield is about 3.25%. This ex ante
2 equity risk premium is simply the expected market return from the Building
3 Blocks methodology minus this risk-free rate:

4

$$\text{Ex Ante Equity Risk Premium} = 7.55\% - 3.25\% = 4.3\%$$

6

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

Exhibit JRW-C1

Decomposing Equity Market Returns
The Building Blocks Methodology

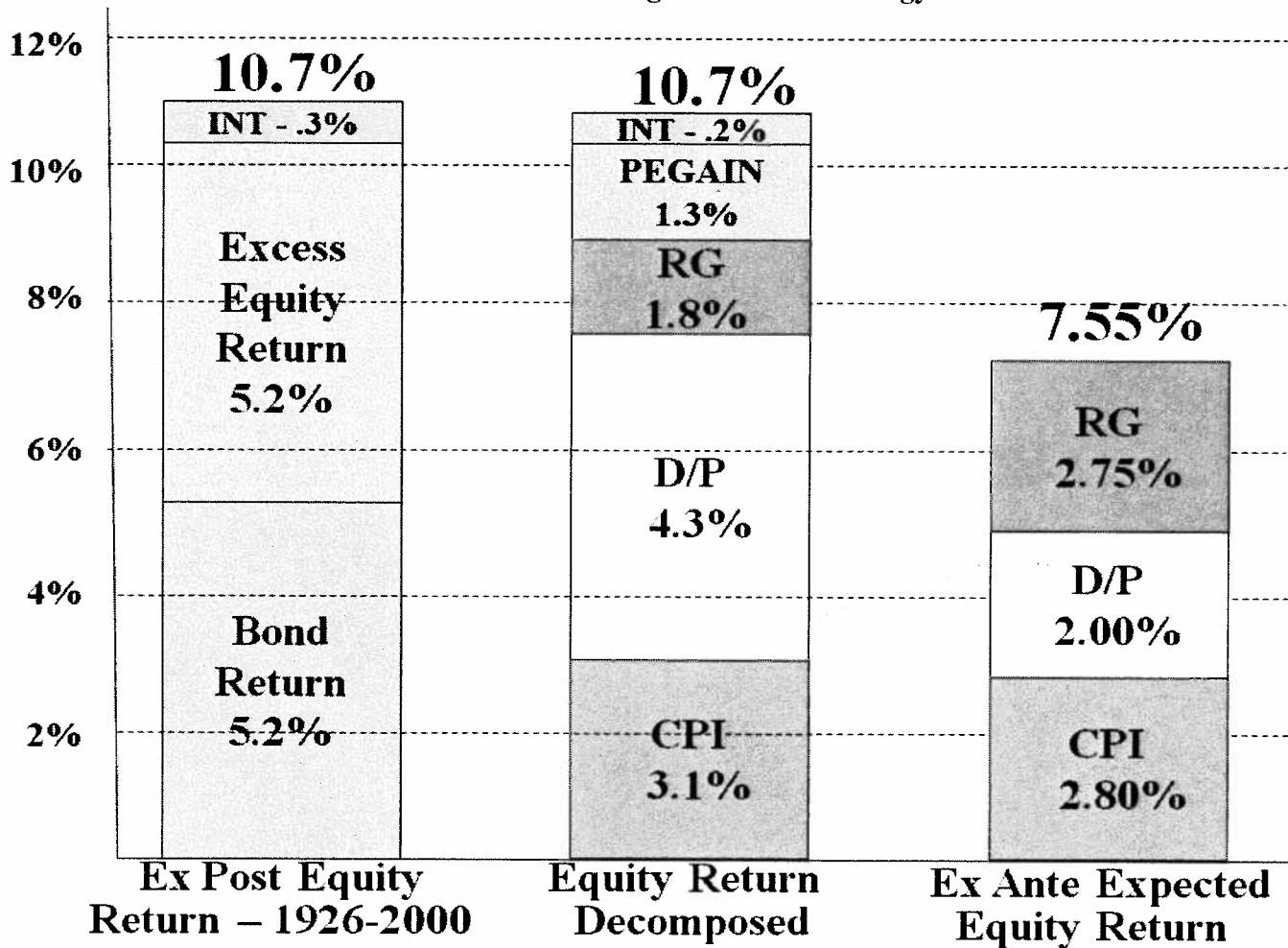


Exhibit JRW-C1

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

Table Seven
LONG-TERM (10 YEAR) FORECASTS

Panel A

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

Panel B

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

Panel C

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

Panel D

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

Panel E

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

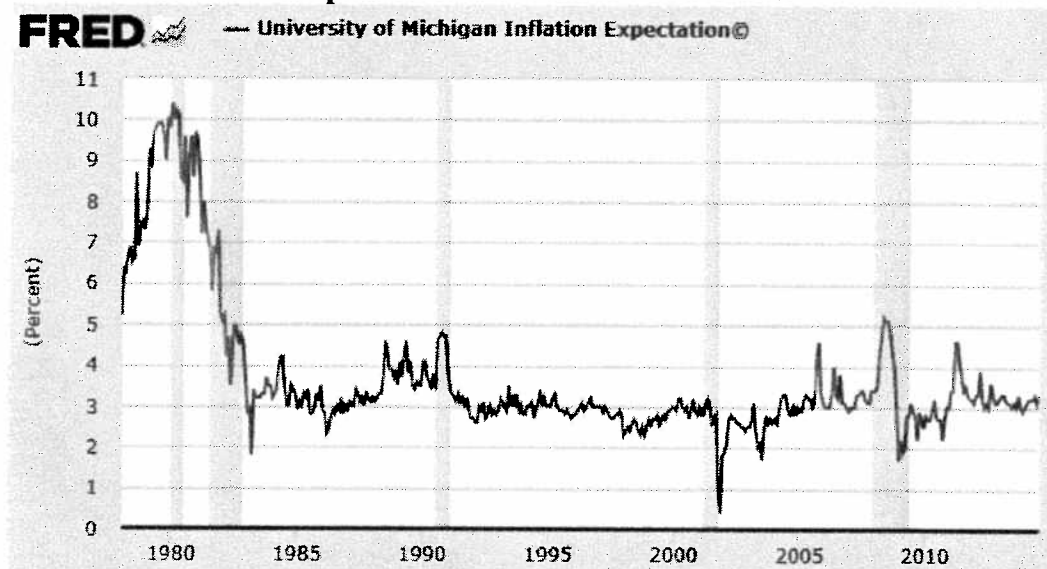
Panel F

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

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

Exhibit JRW-C1

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

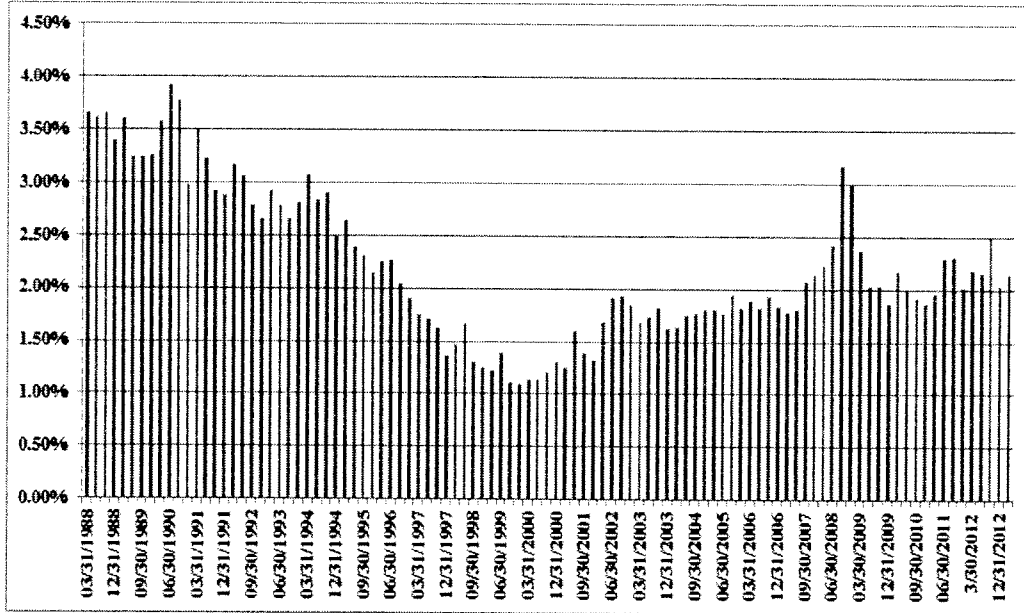


Data Source: <http://research.stlouisfed.org/fred2/series/MICH?cid=98>

Exhibit JRW-C1

Decomposing Equity Market Returns
The Building Blocks Methodology

S&P 500 Dividend Yield



S&P 500 P/E Ratio

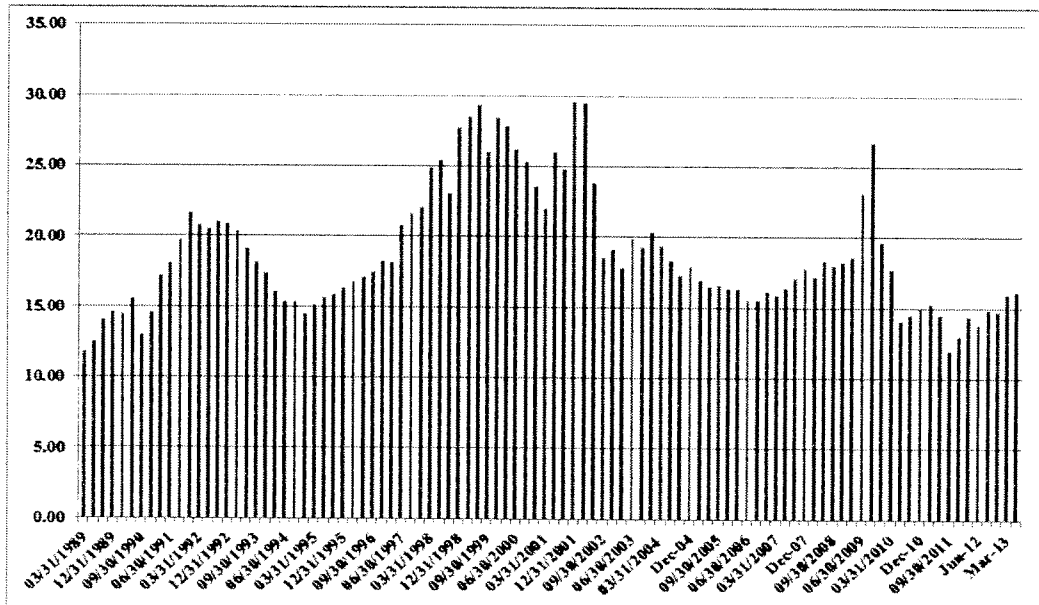


Exhibit JRW-C1

Real S&P 500 EPS Growth Rate

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

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Case No(s). 14-1297-EL-SSO

Summary: Testimony Direct Testimony of J. Randall Woolridge, Ph. D. on Behalf of the Ohio Consumers' Counsel electronically filed by Ms. Gina L Brigner on behalf of Sauer, Larry S Mr.