STATE OF FLORIDA
OFFICE OF PUBLIC COUNSEL

c/o **THE FLORIDA LEGISLATURE**
111 WEST MADISON ST.
ROOM 812
TALLAHASSEE, FLORIDA 32399-1400
1-800-342-0222

EMAIL: OPC_WEBSITE@LEG.STATE.FL.US
WWW.FLORIDAOPC.GOV

DON GAETZ
President of the Senate

J.R. Kelly
Public Counsel

WILL WEATHERFORD
Speaker of the House of Representatives

July 15, 2013

Ms, Ann Cole, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Dear Ms Cole:

Pursuant to our Memorandum of Understanding (MOU), enclosed for filing is the Direct Testimony of, J. Randall Woolridge, Kevin O'Donnell, Jacob Pous, Helmuth W. Schultz, III and the Confidential Direct Testimony of Donna Ramas on a separate disk.

If you have any questions or concerns; please do not hesitate to contact me. Thank you for your assistance in this matter.

Sincerely,

Patricia A. Christensen
Associate Public Counsel

COM ____
AFD ____
APA ____
ECO I
ENG ____
GCL ____
IDM ____
TEL ____
CLK I

cc: Parties of Record

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing Direct Testimony of J. Randall Woolridge, Kevin O'Donnell, Jacob Pous, Helmuth W. Schultz, III and the Confidential Direct Testimony of Donna Ramas has been furnished by electronic mail to the following parties on this 15th day of July, 2013:

James D. Beasley
Ausley Law Firm
P.O. Box 391
Tallahassee, FL 32302
Phone: 850-224-9115
FAX: (850) 222-7560

Martha Brown
Martha Barrera
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Gordon L. Gillette, President
Paula K. Brown, Manager
Tampa Electric Company
P. O. Box 111
Tampa, FL 33601-0111

Jon C. Moyle, Jr.
Moyle Law Firm, P.A.
The Perkins House
118 North Gadsden Street
Tallahassee, FL 32301

Robert Scheffel Wright
Gardner, Bist, Wiener, et at., P.A.
Florida Retail Federation
1300 Thomaswood Drive
Tallahassee, FL 32308

Federal Executive Agencies
c/o Lt Col Gregory J. Fike
AFLOA/JACL-ULFSC
139 Barnes Drive, Suite 1
Tyndall Air Force Base, Fl 32403

WCF Hospital Utility Alliance
c/o Andrew Kurth LLP
Kenneth L. Wiseman
1350 I Street NW, Suite 1100
Washington, DC 20005

Patricia A. Christensen
Associate Public Counsel

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for Rate Increase by   Docket No. 130040-EI
Tampa Electric Company
                                                         July 15, 2013

_____/

DIRECT TESTIMONY

OF

J. RANDALL WOOLRIDGE

On Behalf of the Citizens of the State of Florida

J.R. Kelly
Public Counsel

Patricia A. Christensen
Associate Public Counsel

Office of Public Counsel
c/o The Florida Legislature
111 West Madison Street
Room 812
Tallahassee, FL 32399-1400

Attorney for the Citizens
Of the State of Florida

TABLE OF CONTENTS

LIST OF EXHIBITS

I.   IDENTIFICATION OF WITNESS AND PURPOSE OF TESTIMONY

1

2

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

4 A.   My name is J. Randall Woolridge, and my business address is 120 Haymaker Circle,

5   State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co.

6   and Frank P. Smeal Endowed University Fellow in Business Administration at the

7   University Park Campus of the Pennsylvania State University. I am also the Director

8   of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A

9   summary of my educational background, research, and related business experience is

10   provided in Appendix A, which is attached in Exhibit JRW-16.

11

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

13 A.   I have been asked by the Florida Office of Public Counsel ("OPC") to provide an

14   opinion as to the appropriate return on equity ("ROE") for Tampa Electric Company

15   ("Tampa Electric" or "Company") and to evaluate Tampa Electric's rate of return

16   testimony submitted by witness Robert Hevert in this proceeding.

17

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

19 A.   First, I review my return on equity ("ROE") recommendation for Tampa Electric.

20   Second, I provide an assessment of capital costs in today's capital markets. Third, I

21   discuss the selection of a proxy group of electric utility companies ("Electric Proxy

22   Group") for estimating the cost of capital for Tampa Electric. Fourth, I discuss the

1   relationship between a utility's capital structure and the return on equity that should be

2   associated with that capital structure. Fifth, I discuss the concept of the cost of equity

3   capital, and then estimate the equity cost rate for Tampa Electric. Finally, I provide a

4   critique of Tampa Electric's rate of return testimony.

5

6 **Q.   PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE**

7   **APPROPRIATE RATE OF RETURN FOR TAMPA ELECTRIC.**

8 A.   I initially show that capital costs as measured by interest rates are at historically low

9   levels. With respect to this case, I show that interest rates on utility bonds have

10   declined by more than 150 basis points since the Company's last rate case. To

11   estimate an equity cost rate for Tampa Electric, I have applied the Discounted Cash

12   Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to my Electric

13   Proxy Group as well as Mr. Hevert's proxy group of companies ("Hevert Proxy

14   Group"). My recommended ROE depends on the capital structure that is adopted by

15   the Commission. If the Commission adopts OPC's recommended capital structure

16   with a 50% common equity ratio that is presented in the testimony of OPC witness

17   Kevin O'Donnell, I recommend an equity cost rate of 9.0% for Tampa Electric. If the

18   Commission adopts the Company's recommended capital structure with a 54.2%

19   common equity ratio, I recommend an equity cost rate of 8.75%.   These findings are

20   summarized in Exhibit JRW-1.

1 **Q.   PLEASE SUMMARIZE THE PRIMARY ISSUES REGARDING RATE OF**

2 **RETURN IN THIS PROCEEDING.**

3 A.   The Company's recommended capital structure has a common equity ratio of 54.2%,

4   which is above the average common equity ratio of publicly-traded electric utility

5   companies. OPC's recommended capital structure is provided by Mr. Kevin

6   O'Donnell and includes a common equity ratio of 50.0%. Mr. Hevert has attempted

7   to justify Tampa Electric's proposed capital structure by comparing the 54.2% common

8   equity ratio to the common equity ratios for the operating companies (and not the

9   holding companies) for the companies in his proxy group.

10   Other than the capital structure, the Company's proposed rate of return is

11   inflated primarily due to an overstated equity cost rate.   Mr. Hevert provides a

12   recommended return on equity in the range of 10.50%-11.50%, and within this range he

13   has recommended an 11.25% return on equity.   Mr. Hevert and I both rely

14   predominantly on our DCF results in estimating an equity cost rate in this proceeding.

15   We also both use the CAPM approach as a check on our DCF results. Mr. Hevert

16   also employs a Bond Yield Plus Risk Premium ("RP") approach as a check on his

17   equity cost rate estimate. We both applied our approaches to groups of companies

18   that are similar to Tampa Electric.

19   In terms of the DCF approach, the major area of disagreement is the

20   estimation of the expected growth rate. Mr. Hevert uses a constant-growth DCF

21   model with 30, 90, and 180 day average dividend yields. Mr. Hevert relied on the

22   forecasted earnings per share ("EPS") growth rates of Wall Street analysts and *Value*

23   *Line*. There are two primary issues with the DCF results. First, he has ignored the

1   mean low results because he believes that the equity cost rate results are too low.

2   Second, he has relied exclusively on the EPS growth rate forecasts of Wall Street

3   analysts and *Value Line* to measure the expected DCF growth rate. I provide

4   empirical evidence that demonstrate the long-term earnings growth rates of Wall

5   Street analysts are overly optimistic and upwardly-biased. I also show that the

6   estimated long-term EPS growth rates of *Value Line* are overstated. In developing

7   my DCF growth rate, I used both historic and projected growth rate measures and

8   evaluated growth in dividends, book value, and EPS.

9   The CAPM approach requires an estimate of the risk-free interest rate, beta,

10   and the equity risk premium. The major area of disagreement involves the

11   measurement and magnitude of the market or equity risk premium. In short, Mr.

12   Hevert's market risk premium is excessive and does not reflect current market

13   fundamentals. As I highlight in my testimony, there are three procedures for

14   estimating a market or equity risk premium – historic returns, surveys, and expected

15   return models. Mr. Hevert used projected market risk premiums of 6.03%, 9.88%,

16   and 9.81%. He used a very time-specific Sharpe model to develop his projected

17   market risk premium of 6.03%; however, current measures suggest a much lower risk

18   premium. His projected equity risk premiums of 9.88% and 9.81% use analysts' EPS

19   growth rate projections to compute an expected market return and market risk

20   premium. These EPS growth rate projections and resulting expected market returns

21   and risk premiums include unrealistic assumptions regarding future economic and

22   earnings growth and stock returns. I use an equity risk premium of 5.0%, which: (1)

23   factors in all three approaches to estimating an equity premium; and (2) employs the

1   results of many studies of the equity risk premium. As I note, my market risk

2   premium reflects the market risk premiums: (1) discovered in academic studies by

3   leading finance scholars; and (2) that result from surveys of companies, financial

4   forecasters, financial analysts, and corporate CFOs.

5   In the end, the most significant areas of disagreement in measuring Tampa

6   Electric's cost of capital are: (1) the Company's capital structure, and the ROE that is

7   associated with the capital structure; (2) Mr. Hevert's excessive reliance on the

8   earnings per share growth rate forecasts of Wall Street analysts and *Value Line* to

9   measure expected DCF growth; and (3) the measurement and magnitude of the equity

10   risk premium used in a CAPM approach and RP approaches.

11

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

13

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

15   A.   Long-term capital cost rates for U.S. corporations are a function of the required

16   returns on risk-free securities plus a risk premium. The risk-free rate of interest is the

17   yield on long-term U.S Treasury yields. The yields on ten-year U.S. Treasury bonds

18   from 1953 to the present are provided on page 1 of Exhibit JRW-2. These yields

19   peaked in the early 1980s and have generally declined since that time. These yields

20   have fallen to historically low levels in recent years due to the financial crisis. In

21   2008, Treasury yields declined to below 3.0% as a result of the mortgage and

22   subprime market credit crisis, the turmoil in the financial sector, the monetary

23   stimulus provided by the Federal Reserve, and the slowdown in the economy. From

1	2008 until 2011, these rates fluctuated between 2.5% and 3.5%. In 2012, the yields
2	on ten-year Treasuries declined from 2.5% to below 2.0%, as the Federal Reserve has
3	continued to support a low interest rate environment and economic uncertainties have
4	persisted. In the past month, these yields have increased to the 2.5% range as
5	investors have speculated that the Federal Reserve's aggressive monetary policy in
6	the form of its $85B per month bond buying program will be coming to end in the
7	coming months.
8	Panel B on Exhibit JRW-2 shows the differences in yields between ten-year
9	Treasuries and Moody's Baa-rated bonds since the year 2000. This differential
10	primarily reflects the additional risk required by bond investors for the risk associated
11	with investing in corporate bonds as opposed to obligations of the U.S. Treasury. The
12	difference also reflects, to some degree, yield curve changes over time. The Baa
13	rating is the lowest of the investment grade bond ratings for corporate bonds. The
14	yield differential hovered in the 2.0% to 3.5% range until 2005, declined to 1.5% until
15	late 2007, and then increased significantly in response to the financial crisis. This
16	differential peaked at 6.0% at the height of the financial crisis in early 2009, due to
17	tightening in credit markets, which increased corporate bond yields, and the "flight to
18	quality," which decreased treasury yields. The differential subsequently declined and
19	has been in the 2.5% to 3.5% range over the past three years.
20	The risk premium is the return premium required by investors to purchase
21	riskier securities. The risk premium required by investors to buy corporate bonds is
22	observable based on yield differentials in the markets. The market risk premium is
23	the return premium required to purchase stocks as opposed to bonds. The market or

1		equity risk premium is not readily observable in the markets (as are bond risk
2		premiums) since expected stock market returns are not readily observable. As a
3		result, equity risk premiums must be estimated using market data. There are
4		alternative methodologies to estimate the equity risk premium, and these alternative
5		approaches and equity risk premium results are subject to much debate. One way to
6		estimate the equity risk premium is to compare the mean returns on bonds and stocks
7		over long historical periods. Measured in this manner, the equity risk premium has
8		been in the 5% to 7% range. However, studies by leading academics indicate the
9		forward-looking equity risk premium is actually in the 4.0% to 5.0% range. These
10		lower equity risk premium results are in line with the findings of equity risk premium
11		surveys of CFOs, academics, analysts, companies, and financial forecasters.
12		
13	**Q.**	**PLEASE DISCUSS INTEREST RATES AND THE FINANCIAL CRISIS.**
14	A.	The yields on Treasury securities decreased significantly at the onset of the financial
15		crisis and have remained at historically low levels. In fact, these yields have declined
16		to levels not seen since the 1940s. The decline in interest rates reflects several
17		factors, including: (1) the "flight to quality" in the credit markets as investors sought
18		out low risk investments during the financial crisis; (2) the very aggressive monetary
19		actions of the Federal Reserve, which have been aimed at restoring liquidity and faith
20		in the financial system as well as maintaining low interest rates to boost economic
21		growth; and (3) the continuing slow recovery from the recession.
22		The credit market for corporate and utility debt experienced higher rates due
23		to the credit crisis. The long-term corporate credit markets tightened during the

1   financial crisis, but have improved significantly since 2009. Interest rates on utility

2   and corporate debt have declined to historically low levels. These low rates reflect

3   the monetary policy actions of the Federal Reserve and the weak economy.

4   Panel A of page 2 of Exhibit JRW-2 provides the yields on A- rated public

5   utility bonds. These yields peaked in November 2008 at 7.75% and henceforth

6   declined significantly. They hovered in the 4.0% area for most of the past year, until

7   increasing to about 4.75% in the past two months. Panel B of page 2 of Exhibit JRW-

8   2 provides the yield spreads between long-term A-rated public utility bonds relative

9   to the yields on 20-year Treasury bonds. These yield spreads increased dramatically

10   in the third quarter of 2008 during the peak of the financial crisis and have decreased

11   significantly since that time. For example, the yield spreads between 20-year U.S.

12   Treasury bonds and A-rated utility bonds peaked at 3.40% in November of 2008,

13   declined to about 1.5% in the summer of 2012, and have since remained in that range.

14

15   **Q. PLEASE DISCUSS THE FEDERAL RESERVE'S MONETARY POLICY AND**

16   **INTEREST RATES.**

17   A.   Yes. On September 13, 2012, the Federal Reserve released its policy statement

18   relating to Quantitative Easing III ("QE3"). In the statement, the Federal Reserve

19   announced that it intended to expand and extend its purchasing of long-term securities

20   to about $85B per month.[1] The Federal Open Market Committee ("FOMC") also

21   indicated that it intends to keep the target rate for the federal funds rate between 0 to

22   ¼ % through at least mid-2015. In addition, on December 12, 2012, the Federal

---

[1] Board of Governors of the Federal Reserve System, "Statement Regarding Transactions in Agency Mortgage-Backed Securities and Treasury Securities," September 13, 2012.

1   Reserve reiterated its continuation of its bond buying program and tied future

2   monetary policy moves to unemployment rates and the level of interest rates.

3   Specifically, the Committee decided to keep the target range for the federal funds rate

4   at 0 to 1/4 percent and anticipates that this exceptionally low range for the federal

5   funds rate will be appropriate at least as long as the unemployment remains above

6   6.5%.[2] Subsequently, at the March and April 2013 FOMC meetings, the Federal

7   Reserve voted to continue its bond buying program policy and stick with its plan to

8   keep interest rates at historically low levels until unemployment falls to 6.5%. In its

9   policy statement, the Federal Reserve acknowledged that the U.S. job market has

10   improved, and that consumer spending and business investments have increased and

11   the housing market has improved; however, it also said it still did not expect

12   unemployment to reach 6.5 percent until 2015.[3]

13   Subsequently, in the past two months, speculation has risen that the Federal

14   Reserve's bond buying program is about to be reduced or eliminated in the coming

15   months. This speculation has been fueled by more positive economic data on jobs

16   and the economy as well as statements by FOMC members indicating that QE3 could

17   be reduced later this calendar year. The markets reacted very quickly to the news.

18   The yields on 30-year Treasury Bonds, which were about 3.0% in the first week of

19   May, have increased to 3.60% as of early July. As such, capital costs have come off

20   their bottoms but are still at historically low levels.

---

[2] Board of Governors of the Federal Reserve System, FOMC Statement," December 12, 2012.

[3] Martin Crustinger, "Bernanke: Low interest-rate-policies benefit trade," Associated Press – Mon., Mar 25, 2013 4:20 PM EDT.

1	**Q.**	**HOW DO THE CAPITAL COST INDICATORS COMPARE TODAY TO**
2		**THOSE AT THE TIME OF TAMPA ELECTRIC'S LAST RATE CASE**
3	A.	In Exhibit JRW-3, I provide the yields on ten-year Treasury bonds and thirty-year A-
4		rated utility bonds for the following six month periods: Panel A - June 2008 to
5		November 2008, and February 2013 to July 2013; and Panel B - June 2008 to
6		November 2008, and January 2013 to June 2013. Current interest rates and capital
7		costs are well below those at the time of Tampa Electric's last rate case. Panel A of
8		Exhibit JRW-3 shows the yields on ten-year Treasury bonds. The average ten-year
9		Treasury yields for these two periods are 3.84% and 2.05%, respectively. Panel B of
10		page 1 of Exhibit JRW-3 shows the yields on thirty-year A-rated public utility bonds
11		for the same six month periods. The average yields for these periods are 6.80% and
12		4.22%, respectively. These yields also indicate a decline in utility capital costs. In
13		both cases, the decline in interest rates and capital costs is in excess of 150 basis
14		points.
15		
16	**Q.**	**OVERALL, WHAT DOES YOUR REVIEW OF THE CAPITAL MARKET**
17		**CONDITIONS INDICATE ABOUT THE EQUITY COST RATE FOR**
18		**UTILITIES TODAY?**
19	A.	The market data suggests that capital costs for utilities remain at historically low
20		levels despite the recent increase in interest rates associated with speculation over the
21		end of QE3. As shown on page 2 of Exhibit JRW-2, the yield on long-term A-rated
22		utility bonds is about 4.75%. In addition, utility bond yields and capital costs are

1   more than 150 basis points below their levels at the time of Tampa Electric's last rate

2   case.

3   **III.   PROXY GROUP SELECTION**

4

5   **Q.   PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE**

6   **OF RETURN RECOMMENDATION FOR TAMPA ELECTRIC.**

7   A.   To develop a fair rate of return recommendation for Tampa Electric, I evaluated the

8   return requirements of investors on the common stock of a proxy group of publicly-

9   held electric utility companies ("Electric Proxy Group"). In addition, I have also

10   applied the DCF and CAPM equity cost rate approaches to the Hevert Proxy Group.

11

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

13   A.   My Electric Proxy Group consists of thirty-four electric utility companies. The selection

14   criteria include the following:

15   1.   Listed as Electric Utility by *Value Line Investment Survey* and listed as an

16   Electric Utility or Combination Electric & Gas company in *AUS Utilities Report*;

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

18   *Utilities Report;*

19   3.   An investment grade bond rating as reported by *AUS Utilities Report;*

20   4.   Has paid a cash dividend for the past three years, with no cuts or omissions;

21   5.   Not involved in an acquisition of another utility, and/or was not the target of an

22   acquisition, in the past six months; and

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

2   and/or Zacks.

3   My Electric Proxy Group includes thirty-four companies. Summary financial

4   statistics for the proxy group are listed in Panel A of page 1 of Exhibit JRW-4.[4] The

5   median operating revenues and net plant for the Electric Proxy Group are $4,354.7

6   million (M) and $10,440.2 M, respectively. The group receives 84% of revenues from

7   regulated electric operations, has an A-/BBB+ bond rating from Standard & Poor's, a

8   current common equity ratio of 46.2%, and an earned return on common equity of 9.5%.

9

10 **Q.   PLEASE DESCRIBE THE "HEVERT PROXY GROUP."**

11 A.   Mr. Hevert's Proxy Group includes eleven electric utility companies. The median

12   operating revenues and net plant for the Hevert Proxy Group are $14,799.0 M and

13       $4,449.0 M, respectively. The group receives 95% of revenues from regulated

14   electric operations, has a BBB+ bond rating from Standard & Poor's, a current

15   common equity ratio of 50.3%, and a current earned return on common equity of

16   8.2%.

17

18 **Q.   HOW DOES TAMPA ELECTRIC COMPARE TO THE ELECTRIC AND**

19 **HEVERT PROXY GROUPS?**

20 A.   I believe that bond ratings provide a reasonable measure of investment risk for

21   utilities. Based on AUS Utilities Report, June 2013, Tampa Electric's parent

22   company, TECO Energy, has S&P and Moody's bond ratings of BBB+ and A3,

---

[4] 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		respectively. My Electric Proxy Group has S&P and Moody's bond ratings of A-
2		/BBB+ and A3, respectively; and the Hevert Proxy Group has S&P and Moody's
3		bond ratings of BBB+ and Baa1, respectively. These ratings suggest that the risk
4		level as measured by bond ratings is comparable to the two groups.
5		In addition, on page 2 of Exhibit JRW-4, I have assessed the riskiness of
6		TECO Energy relative to the Electric and Hevert Proxy Groups using five different
7		risk measures published by *Value Line*. These measures include Beta, Safety,
8		Financial Strength, Earnings Predictability and Stock Price Stability. Whereas TECO
9		Energy's Beta of 0.85 is above the Betas of the two groups (0.70 and 0.75), the other
10		risk measures indicate that TECO is very similar in risk to the two proxy groups.
11		
12		**IV.** **CAPITAL STRUCTURE RATIOS AND RETURN ON EQUITY**
13		
14	**Q.**	**WHAT IS TAMPA ELECTRIC'S RECOMMENDED CAPITAL STRUCTURE**
15		**FROM INVESTOR CAPITAL?**
16	A.	Tampa Electric's recommended capital structure from investor capital sources for
17		ratemaking purposes includes 45.8% long-term debt and 54.2% common equity. This
18		is provided in Panel A of Exhibit JRW-5.
19		
20	**Q.**	**HOW DOES TAMPA ELECTRIC'S RECOMMENDED COMMON EQUITY**
21		**RATIO COMPARE TO THAT OF ITS PARENT, TECO ENERGY, AS WELL**
22		**AS THAT OF THE ELECTRIC AND HEVERT PROXY GROUPS?**

1   A.   The common equity ratios for TECO Energy and the Electric and Hevert Proxy

2   Groups are provided on page 1 of Exhibit JRW-4. As reported in AUS Utilities

3   Report, the common equity ratios are 43.6%, 46.2%, and 50.3% for TECO Energy

4   and the Electric and Hevert Proxy Groups, respectively. These ratios show that

5   Tampa Electric's common equity ratio is somewhat above those of TECO Energy and

6   the Electric and Hevert Proxy Groups.

7

8   Q.   **WHY IS IT SIGNIFICANT THAT TAMPA ELECTRIC'S RECOMMENDED**

9   **COMMON EQUITY RATIO IS ABOVE THAT OF TECO ENERGY AND**

10   **THE ELECTRIC AND HEVERT PROXY GROUPS?**

11 A.   The common equity ratios in Exhibit JRW-4 are for the holding companies that trade

12   in the markets that are used to estimate an equity cost rate for Tampa Electric. These

13   ratios indicate that the Electric and Hevert Proxy Groups have, on average, a lower

14   common equity ratio and a higher financial risk than Tampa Electric.

15

16 Q.   **PLEASE ELABORATE ON THE SIGNIFICANCE OF THE AMOUNT OF**

17   **EQUITY THAT IS INCLUDED IN AN ELECTRIC UTILITY'S CAPITAL**

18   **STRUCTURE.**

19 A.   An electric utility's decision as to the amount of equity capital it will incorporate in

20   its capital structure involves fundamental trade-offs relating to the amount of

21   financial risk the firm carries, the overall revenue requirements its customers are

22   required to bear through the rates they pay, and the return on equity that investors will

23   require.

1 **Q. PLEASE DISCUSS A UTILITY'S DECISION TO USE DEBT VERSUS**

2 **EQUITY TO MEET ITS CAPITAL NEEDS.**

3 A. Utilities satisfy their capital needs through a mix of equity and debt. Because equity

4 capital is more expensive than debt, the issuance of debt enables a utility to raise

5 more capital with a given commitment of dollars than it could raise with just equity.

6 Debt is therefore a means of "leveraging" capital dollars. However, as the amount of

7 debt in the capital structure increases, its financial risk increases and the risk of the

8 utility perceived by equity investors also increases. Significantly for this case, the

9 converse is also true. As the amount of debt in the capital structure decreases, the

10 financial risk decreases. The required return on equity capital is a function of the

11 amount of overall risk that investors perceive, including financial risk in the form of

12 debt.

13

14 **Q. WHY IS THIS RELATIONSHIP IMPORTANT TO THE UTILITY'S**

15 **CUSTOMERS?**

16 A. Just as there is a direct correlation between the utility's authorized return on equity

17 and the utility's revenue requirements (the higher the return, the greater the revenue

18 requirement), there is a direct correlation between the amount of equity in the capital

19 structure and the revenue requirements the customers are called on to bear. Again,

20 equity capital is more expensive than debt. Not only does equity command a higher

21 cost rate, it also adds more to the income tax burden that ratepayers are required to

22 pay through rates. As the equity ratio increases, the utility's revenue requirements

23 increase and rates paid by customers increase. If the proportion of equity is too high,

1   rates will be higher than they need to be. For this reason, the utility's management

2   must pursue a capital acquisition strategy that results in the proper balance in the

3   capital structure.

4

5 **Q.   HOW HAVE ELECTRIC UTILITIES TYPICALLY STRUCK THIS**

6 **BALANCE?**

7 A.   Due to regulation and the essential nature of its output, an electric utility is exposed to

8   less business risk than other companies that are not regulated. This means that an

9   electric utility can reasonably carry relatively more debt in its capital structure than

10   can most unregulated companies. The utility should take appropriate advantage of its

11   lower business risk to employ cheaper debt capital at a level that will benefit its

12   customers through lower revenue requirements. Typically, one may see equity ratios

13   for electric utilities range from the 40% to 50% range. As I stated earlier, the average

14   amount of common equity in the average capital structure of the utilities in my proxy

15   group is 46.2%.

16

17 **Q.   GIVEN YOUR VIEW THAT TAMPA ELECTRIC'S EQUITY RATIO IS**

18 **HIGHER THAN THAT OF THE PROXY GROUP, WHAT SHOULD THE**

19 **COMMISSION DO IN THIS RATEMAKING PROCEEDING?**

20 A.   When a regulated electric utility's actual capital structure contains too high an equity

21   ratio, the options are: (1) to impute a more reasonable capital structure and reflect the

22   imputed capital structure in revenue requirements; or (2) to recognize the downward

23   impact that an unusually high equity ratio will have on financial risk of a utility and

1   authorize a lower common equity cost rate.

2

3   Q.   **PLEASE ELABORATE ON THIS "DOWNWARD IMPACT."**

4   A.   As I stated earlier, there is a direct correlation between the amount of debt in a

5   utility's capital structure and the financial risk that an equity investor will associate

6   with that utility. A relatively lower proportion of debt translates into a lower required

7   return on equity, all other things being equal. Stated differently, a utility cannot

8   expect to "have it both ways." Specifically, a utility cannot maintain an unusually

9   high equity ratio and not expect to have the resulting lower risk reflected in its

10   authorized return on equity. The fundamental relationship between the lower risk and

11   the appropriate authorized return should not be ignored.

12

13 Q.   **GIVEN THIS DISCUSSION, HOW ARE YOU EVALUATING THE CAPITAL**

14   **STRUCTURE AND EQUITY COST RATE IN THIS PROCEEDING?**

15 A.   I have estimated an equity cost rate in the range of 9.0% based on my evaluation of

16   the Electric and Hevert Proxy Groups. The average common equity ratios for the

17   Electric and Hevert Proxy Groups are 46.2% and 50.3%, respectively. As such, the

18   financial risks of both proxy groups are less than that of Tampa Electric. OPC

19   witness O'Donnell has recommended a capital structure for Tampa Electric that

20   includes a common equity ratio of 50.0%. To recognize the risk trade-off of the

21   alternative proposed capital structures, I am recommending an equity cost rate of

22   8.75% if the Commission adopts Tampa Electric 54.2% equity capital structure. If

23   the Commission adopts OPC's 50% debt and 50% equity capital structure, I

1   recommend an equity cost rate of 9.0% for Tampa Electric.

2

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

4

5   **A.   OVERVIEW**

6 **Q.   WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF**

7   **RETURN BE ESTABLISHED FOR A PUBLIC UTILITY?**

8 A.   In a competitive industry, the return on a firm's common equity capital is determined

9   through the competitive market for its goods and services. Due to the capital

10   requirements needed to provide utility services and to the economic benefit to society

11   from avoiding duplication of these services, some public utilities are monopolies. It

12   is not appropriate to permit monopoly utilities to set their own prices because of the

13   lack of competition and the essential nature of the services. Thus, regulation seeks to

14   establish prices that are fair to consumers and, at the same time, are sufficient to meet

15   the operating and capital costs of the utility (i.e., provide an adequate return on capital

16   to attract investors).

17

18 **Q.   PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE**

19   **CONTEXT OF THE THEORY OF THE FIRM.**

20 A.   The total cost of operating a business includes the cost of capital. The cost of

21   common equity capital is the expected return on a firm's common stock that the

22   marginal investor would deem sufficient to compensate for risk and the time value of

1   money. In equilibrium, the expected and required rates of return on a company's

2   common stock are equal.

3   Normative economic models of the firm, developed under very restrictive

4   assumptions, provide insight into the relationship between firm performance or

5   profitability, capital costs, and the value of the firm. Under the economist's ideal

6   model of perfect competition, where entry and exit are costless, products are

7   undifferentiated, and there are increasing marginal costs of production, firms produce

8   up to the point where price equals marginal cost. Over time, a long-run equilibrium is

9   established where price equals average cost, including the firm's capital costs. In

10   equilibrium, total revenues equal total costs, and because capital costs represent

11   investors' required return on the firm's capital, actual returns equal required returns,

12   and the market value must equal the book value of the firm's securities.

13   In the real world, firms can achieve competitive advantage due to product

14   market imperfections. Most notably, companies can gain competitive advantage

15   through product differentiation (adding real or perceived value to products) and by

16   achieving economies of scale (decreasing marginal costs of production). Competitive

17   advantage allows firms to price products above average cost and thereby earn

18   accounting profits greater than those required to cover capital costs. When these

19   profits are in excess of that required by investors, or when a firm earns a return on

20   equity in excess of its cost of equity, investors respond by valuing the firm's equity in

21   excess of its book value.

1   James M. McTaggart, founder of the international management consulting

2   firm 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:[5]

> 4   Fundamentally, the value of a company is determined
> 5   by the cash flow it generates over time for its owners,
> 6   and the minimum acceptable rate of return required by
> 7   capital investors. This "cost of equity capital" is used
> 8   to discount the expected equity cash flow, converting it
> 9   to a present value. The cash flow is, in turn, produced
> 10   by the interaction of a company's return on equity and
> 11   the annual rate of equity growth. High return on equity
> 12   (ROE) companies in low-growth markets, such as
> 13   Kellogg, are prodigious generators of cash flow, while
> 14   low ROE companies in high-growth markets, such as
> 15   Texas Instruments, barely generate enough cash flow to
> 16   finance growth.

> 17   A company's ROE over time, relative to its cost of
> 18   equity, also determines whether it is worth more or less
> 19   than its book value. If its ROE is consistently greater
> 20   than the cost of equity capital (the investor's minimum
> 21   acceptable return), the business is economically
> 22   profitable and its market value will exceed book value.
> 23   If, however, the business earns an ROE consistently
> 24   less than its cost of equity, it is economically
> 25   unprofitable and its market value will be less than book
> 26   value.

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

28   market-to-book ratio is relatively straightforward. A firm that earns a return on

29   equity above its cost of equity will see its common stock sell at a price above its book

30   value. Conversely, a firm that earns a return on equity below its cost of equity will

31   see its common stock sell at a price below its book value.

---

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

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

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

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

5   relationship very succinctly:[6]

> 6   For a given industry, more profitable firms – those able
> 7   to generate higher returns per dollar of equity ("ROE")
> 8   – should have higher market-to-book ratios.
> 9   Conversely, firms which are unable to generate returns
> 10   in excess of their cost of equity ("K") should sell for
> 11   less than book value.

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

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

17   regression study between estimated return on equity ("ROE") and market-to-book

18   ratios using natural gas distribution, electric utility and water utility companies. I

19   used all companies in these three industries that are covered by *Value Line* and have

20   estimated ROE and market-to-book ratio data. The results are presented in Panels A-

21   C of Exhibit JRW-6. The average R-squares for the electric, gas, and water

22   companies are 0.52, 0.71, and 0.77, respectively.[7] This demonstrates the strong

23   positive relationship between ROEs and market-to-book ratios for public utilities.

---

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

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

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

3   A.   Exhibit JRW-7 provides indicators of public utility equity cost rates over the past

4   decade. Page 1 shows the yields on long-term 'A' rated public utility bonds. These

5   yields peaked in the early 2000s at over 8.0%, declined to about 5.5% in 2005, and

6   rose to 6.0% in 2006 and 2007. They stayed in that 6.0% range until the third quarter

7   of 2008 when they spiked to almost 7.5% during the financial crisis. They hovered in

8   the 4.0% area for most of the past year, but have increased to the 4.75% range in the

9   last two months.

10   Page 2 of Exhibit JRW-7 provides the dividend yields for the Electric Proxy

11   Group over the past decade. The dividend yields for the Electric Proxy Group

12   generally declined slightly over the decade until 2007. They increased in 2008 and

13   2009 in response to the financial crisis, but declined in the last three years and now

14   are about 4.2%.

15   Average earned returns on common equity and market-to-book ratios for the

16   group are on page 3 of Exhibit JRW-7. The average earned returns on common

17   equity for the Electric Proxy Group were in the 9.0%-12.0% range over the past

18   decade, and have hovered in the 10.0% range for the past three years. The average

19   market-to-book ratio for the group has been in the 1.20X to 1.80X during the decade.

20   The average declined to about 1.20X in 2009, but has since increased to 1.40X as of

21   2012.

1	Q.	**WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED**

1   Q.   **WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED**

2   **RATE OF RETURN ON EQUITY?**

3   A.   The expected or required rate of return on common stock is a function of market-wide

4   as well as company-specific factors. The most important market factor is the time

5   value of money as indicated by the level of interest rates in the economy. Common

6   stock investor requirements generally increase and decrease with like changes in

7   interest rates. The perceived risk of a firm is the predominant factor that influences

8   investor return requirements on a company-specific basis. A firm's investment risk is

9   often separated into business and financial risk. Business risk encompasses all factors

10   that affect a firm's operating revenues and expenses. Financial risk results from

11   incurring fixed obligations in the form of debt in financing its assets.

12

13   Q.   **HOW DOES THE INVESTMENT RISK OF UTILITIES COMPARE WITH**

14   **THAT OF OTHER INDUSTRIES?**

15   A.   Due to the essential nature of their service as well as their regulated status, public

16   utilities are exposed to a lesser degree of business risk than other, non-regulated

17   businesses. The relatively low level of business risk allows public utilities to meet

18   much of their capital requirements through borrowing in the financial markets,

19   thereby incurring greater than average financial risk. Nonetheless, the overall

20   investment risk of public utilities is below most other industries.

21   Exhibit JRW-8 provides an assessment of investment risk for 100 industries as

22   measured by beta, which according to modern capital market theory, is the only

23   relevant measure of investment risk. These betas come from the *Value Line*

1   *Investment Survey* and are compiled annually by Aswath Damodaran of New York

2   University.[8] The study shows that the investment risk of utilities is very low. The

3   average betas for electric, water, and gas utility companies are 0.73, 0.66, and 0.66,

4   respectively. These are well below the *Value Line* average of 1.15. As such, the cost

5   of equity for utilities is among the lowest of all industries in the U.S.

6

7 **Q.   HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON**

8   **COMMON EQUITY CAPITAL BE DETERMINED?**

9 A.   The costs of debt and preferred stock are normally based on historical or book values

10   and can be determined with a great degree of accuracy. The cost of common equity

11   capital, however, cannot be determined precisely and must instead be estimated from

12   market data and informed judgment. This return to the stockholder should be

13   commensurate with returns on investments in other enterprises having comparable

14   risks.

15   According to valuation principles, the present value of an asset equals the

16   discounted value of its expected future cash flows. Investors discount these expected

17   cash flows at their required rate of return that, as noted above, reflects the time value

18   of money and the perceived riskiness of the expected future cash flows. As such, the

19   cost of common equity is the rate at which investors discount expected cash flows

20   associated with common stock ownership.

21   Models have been developed to ascertain the cost of common equity capital

22   for a firm. Each model, however, has been developed using restrictive economic

---

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

1		assumptions. Consequently, judgment is required in selecting appropriate financial
2		valuation models to estimate a firm's cost of common equity capital, in determining
3		the data inputs for these models, and in interpreting the models' results. All of these
4		decisions must take into consideration the firm involved as well as current conditions
5		in the economy and the financial markets.
6		
7	Q.	**HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY CAPITAL**
8		**FOR THE COMPANY?**
9	A.	I rely primarily on the discounted cash flow ("DCF") model to estimate the cost of
10		equity capital. Given the investment valuation process and the relative stability of the
11		utility business, I believe that the DCF model provides the best measure of equity cost
12		rates for public utilities. It is my experience that this Commission has traditionally
13		relied on the DCF method. I have also performed a capital asset pricing model
14		("CAPM") study, but I give these results less weight because I believe that risk
15		premium studies, of which the CAPM is one form, provide a less reliable indication
16		of equity cost rates for public utilities.
17		
18		**B. DCF ANALYSIS**
19	Q.	**DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.**
20	A.	According to the DCF model, the current stock price is equal to the discounted value
21		of all future dividends that investors expect to receive from investment in the firm.
22		As such, stockholders' returns ultimately result from current as well as future
23		dividends. As owners of a corporation, common stockholders are entitled to a *pro*

1   *rata* share of the firm's earnings. The DCF model presumes that earnings that are not

2   paid out in the form of dividends are reinvested in the firm so as to provide for future

3   growth in earnings and dividends.   The rate at which investors discount future

4   dividends, which reflects the timing and riskiness of the expected cash flows, is

5   interpreted as the market's expected or required return on the common stock.

6   Therefore, this discount rate represents the cost of common equity. Algebraically, the

7   DCF model can be expressed as:

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

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

13   common equity.

14

15 **Q.   IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES**

16   **EMPLOYED BY INVESTMENT FIRMS?**

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

18   technique. One common application for investment firms is called the three-stage

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

20   are presented in Exhibit JRW-9. This model presumes that a company's dividend

21   payout progresses initially through a growth stage, then proceeds through a transition

22   stage, and finally assumes a steady-state stage. The dividend-payment stage of a firm

23   depends on the profitability of its internal investments, which, in turn, is largely a

24   function of the life cycle of the product or service.

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

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

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

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

5   in the growth rate.

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

7   margins and earnings growth slows. With fewer new investment

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

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

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

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

12   and ROE stabilize for the remainder of its life. The constant-growth DCF

13   model is appropriate when a firm is in the maturity stage of the life cycle.

14   In using this model to estimate a firm's cost of equity capital, dividends are

15   projected into the future using the different growth rates in the alternative stages, and

16   then the equity cost rate is the discount rate that equates the present value of the

17   future dividends to the current stock price.

18

19   Q.   **HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED**

20   **RATE OF RETURN USING THE DCF MODEL?**

21   A.   Under certain assumptions, including a constant and infinite expected growth rate,

22   and constant dividend/earnings and price/earnings ratios, the DCF model can be

23   simplified to the following:

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

where D_1 represents the expected dividend over the coming year and g is the expected

growth rate of dividends. This is known as the constant-growth version of the DCF

model. To use the constant-growth DCF model to estimate a firm's cost of equity,

one solves for k in the above expression to obtain the following:

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

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

A. Yes. The economics of the public utility business indicate that the industry is in the

steady-state or constant-growth stage of a three-stage DCF. The economics include

the relative stability of the utility business, the maturity of the demand for public

utility services, and the regulated status of public utilities (especially the fact that their

returns on investment are effectively set through the ratemaking process). The DCF

valuation procedure for companies in this stage is the constant-growth DCF. In the

constant-growth version of the DCF model, the current dividend payment and stock

price are directly observable. However, the primary problem and controversy in

applying the DCF model to estimate equity cost rates entails estimating investors'

expected dividend growth rate.

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

2 **METHODOLOGY?**

3 A.   One should be sensitive to several factors when using the DCF model to estimate a

4   firm's cost of equity capital. In general, one must recognize the assumptions under

5   which the DCF model was developed in estimating its components (the dividend

6   yield and expected growth rate). The dividend yield can be measured precisely at any

7   point in time, but tends to vary somewhat over time. Estimation of expected growth

8   is considerably more difficult. One must consider recent firm performance, in

9   conjunction with current economic developments and other information available to

10   investors, to accurately estimate investors' expectations.

11

12 **Q.   WHAT DIVIDEND YIELDS ARE YOU EMPLOYING IN YOUR DCF**

13 **ANALYSIS FOR THE PROXY GROUPS?**

14 A.   The dividend yields on the common stock for the companies in the proxy groups are

15   provided on page 2 of Exhibit JRW-10 for the six-month period ending June 2013.

16   For the DCF dividend yields for the group, I normally use the median of the six-

17   month and June 2013 dividend yields. However, as previously noted, interest rates

18   and capital costs have changed in the last two months. This is reflected in the

19   dividend yields for the Electric and Hevert Proxy Groups, which increased by 0.4%

20   and 0.6%, respectively, over the May to June time period. As a result, I am using the

21   June 2013 dividend yields for both proxy groups. Therefore, I am using dividend

22   yields of 4.1% and 4.2% for the Electric and Hevert Proxy Groups, respectively.

1 **Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT**

2   **DIVIDEND YIELD.**

3 A. According to the traditional DCF model, the dividend yield term relates to the

4   dividend yield over the coming period. As indicated by Professor Myron Gordon,

5   who is commonly associated with the development of the DCF model for popular use,

6   this is obtained by: (1) multiplying the expected dividend over the coming quarter by

7   4, and (2) dividing this dividend by the current stock price to determine the

8   appropriate dividend yield for a firm that pays dividends on a quarterly basis.[9]

9   In applying the DCF model, some analysts adjust the current dividend for

10   growth over the coming year as opposed to the coming quarter. This can be

11   complicated because firms tend to announce changes in dividends at different times

12   during the year. As such, the dividend yield computed based on presumed growth

13   over the coming quarter as opposed to the coming year can be quite different.

14   Consequently, it is common for analysts to adjust the dividend yield by some fraction

15   of the long-term expected growth rate.

16

17 **Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR WILL YOU**

18   **USE FOR YOUR DIVIDEND YIELD?**

19 A. I will adjust the dividend yield by one-half (1/2) the expected growth so as to reflect

20   growth over the coming year. This is the approach employed by the Federal Energy

---

[9] *Petition for Modification of Prescribed Rate of Return*, Federal Communications Commission, Docket No. 79-05, Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62 (April 1980).

1   Regulatory Commission ("FERC").[10] The DCF equity cost rate ("K") is computed

2   as:

3
4                                 $K = [(D/P) * (1 + 0.5g)] + g$
5

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

7   **MODEL.**

8   A.   There is much debate as to the proper methodology to employ in estimating the

9   growth component of the DCF model. By definition, this component is investors'

10   expectation of the long-term dividend growth rate. Presumably, investors use some

11   combination of historical and/or projected growth rates for earnings and dividends per

12   share and for internal or book value growth to assess long-term potential.

13

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

15   **GROUPS?**

16 A.   I have analyzed a number of measures of growth for companies in the proxy group. I

17   reviewed *Value Line's* historical and projected growth rate estimates for earnings per

18   share ("EPS"), dividends per share ("DPS"), and book value per share ("BVPS"). In

19   addition, I utilized the average EPS growth rate forecasts of Wall Street analysts as

20   provided by Yahoo, Reuters and Zacks. These services solicit five-year earnings

21   growth rate projections from securities analysts and compile and publish the means

22   and medians of these forecasts. Finally, I also assessed prospective growth as

---

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

1   measured by prospective earnings retention rates and earned returns on common

2   equity.

3

4 Q.   **PLEASE   DISCUSS   HISTORICAL   GROWTH   IN   EARNINGS   AND**

5   **DIVIDENDS AS WELL AS INTERNAL GROWTH.**

6 A.   Historical growth rates for EPS, DPS, and BVPS are readily available to investors

7   and are presumably an important ingredient in forming expectations concerning

8   future growth. However, one must use historical growth numbers as measures of

9   investors' expectations with caution. In some cases, past growth may not reflect

10   future growth potential. Also, employing a single growth rate number (for example,

11   for five or ten years), is unlikely to accurately measure investors' expectations due to

12   the sensitivity of a single growth rate figure to fluctuations in individual firm

13   performance as well as overall economic fluctuations (i.e., business cycles).

14   However, one must appraise the context in which the growth rate is being employed.

15   According to the conventional DCF model, the expected return on a security is equal

16   to the sum of the dividend yield and the expected long-term growth in dividends.

17   Therefore, to best estimate the cost of common equity capital using the conventional

18   DCF model, one must look to long-term growth rate expectations.

19   Internally generated growth is a function of the percentage of earnings

20   retained within the firm (the earnings retention rate) and the rate of return earned on

21   those earnings (the return on equity). The internal growth rate is computed as the

22   retention rate times the return on equity. Internal growth is significant in determining

23   long-run earnings and, therefore, dividends. Investors recognize the importance of

1   internally generated growth and pay premiums for stocks of companies that retain

2   earnings and earn high returns on internal investments.

3

4   **Q.   PLEASE DISCUSS THE SERVICES THAT PROVDE ANALYSTS' EPS**

5   **FORECASTS.**

6   A.   Analysts' EPS forecasts for companies are collected and published by a number of

7   different investment information services, including Institutional Brokers Estimate

8   System ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call and Reuters, among others.

9   Thompson Reuters publishes analysts' EPS forecasts under different product names,

10   including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, and Zacks publish their

11   own set of analysts' EPS forecasts for companies. These services do not reveal: (1) the

12   analysts who are solicited for forecasts; or (2) the identity of the analysts who actually

13   provide the EPS forecasts that are used in the compilations published by the services.

14   I/B/E/S, Bloomberg, FactSet, and First Call are fee-based services. These services

15   usually provide detailed reports and other data in addition to analysts' EPS forecasts.

16   Thompson Reuters and Zacks do provide limited EPS forecasts data free-of-charge on

17   the internet. Yahoo finance (http://finance.yahoo.com) lists Thompson Reuters as the

18   source of its summary EPS forecasts. The Reuters website (www.reuters.com) also

19   publishes EPS forecasts from Thompson Reuters, but with more detail. Zacks

20   (www.zacks.com) publishes its summary forecasts on its website. Zack's estimates are

21   also available on other websites, such as msn.money (http://money.msn.com).

22

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

1	A.	The following example provides the EPS forecasts compiled by Reuters for Alliant
2		Energy Corp. (stock symbol "LNT"). The figures are provided on page 2 of Exhibit
3		JRW-9. The top line shows that five analysts have provided EPS estimates for the
4		quarter ending September 30, 2013. The mean, high and low estimates are $1.42,
5		$1.74, and $1.29, respectively. The second line shows the quarterly EPS estimates
6		for the quarter ending December 31, 2013 of 0.50 (mean), 0.63 (high), and 0.20(low).
7		Lines three and four show the annual EPS estimates for the fiscal years ending
8		December 2013 of 3.13 (mean), 3.20 (high), and 3.08 (low) and December 2014 of
9		3.30 (mean), 3.35 (high), and 3.25 (low). The quarterly and annual EPS forecasts in
10		lines 1-4 are expressed in dollars and cents. As in the LNT case shown here, it is
11		common for more analysts to provide estimates of annual EPS as opposed to
12		quarterly EPS. The bottom line shows the projected long-term EPS growth rate,
13		which is expressed as a percentage. For LNT, four analysts have provided long-term
14		EPS growth rate forecasts, with mean, high and low growth rates of 5.93%, 7.00%,
15		and 4.70%, respectively.
16		
17	Q.	**WHICH OF THESE EPS FORECASTS IS USED IN DEVELOPING A DCF**
18		**GROWTH RATE?**
19	A.	The DCF growth rate is the long-term projected growth rate in EPS, DPS, and BVPS.
20		Therefore, in developing an equity cost rate using the DCF model, the projected long-
21		term growth rate is the projection used in the DCF model.

1 **Q.**   **WHY ARE YOU NOT RELYING EXCLUSIVELY ON THE EPS FORECASTS**

2   **OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE**

3   **FOR THE PROXY GROUPS?**

4 A.   There are several issues with using the EPS growth rate forecasts of Wall Street

5   analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is

6   the dividend growth rate, not the earnings growth rate. Nonetheless, over the very

7   long-term, dividend and earnings will have to grow at a similar growth rate.

8   Therefore, consideration must be given to other indicators of growth, including

9   prospective dividend growth, internal growth, as well as projected earnings growth.

10   Second, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts' long-

11   term earnings growth rate forecasts are not more accurate at forecasting future

12   earnings than naïve random walk forecasts of future earnings.[11] Employing data over

13   a twenty year period, these authors demonstrate that using the most recent year's EPS

14   figure to forecast EPS in the next 3-5 years proved to be just as accurate as using the

15   EPS estimates from analysts' long-term earnings growth rate forecasts.   In the

16   authors' opinion, these results indicate that analysts' long-term earnings growth rate

17   forecasts should be used with caution as inputs for valuation and cost of capital

18   purposes. Finally, and most significantly, it is well known that the long-term EPS

19   growth rate forecasts of Wall Street securities analysts are overly optimistic and

20   upwardly biased. This has been demonstrated in a number of academic studies over

21   the years. This issue is discussed at length in Appendix B, which is attached in

---

[11] 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.

1   Exhibit JRW-16 of this testimony. Hence, using these growth rates as a DCF growth

2   rate will provide an overstated equity cost rate. On this issue, a study by Easton and

3   Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an

4   upward bias in estimates of the cost of equity capital of almost 3.0 percentage

5   points.[12]

6

7   Q. **IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE UPWARD**

8   **BIAS IN THE EPS GROWTH RATE FORECASTS?**

9   A. Yes, I do believe that investors are well aware of the bias in analysts' EPS growth

10   rate forecasts, and therefore, stock prices reflect the upward bias.

11

12 Q. **HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A DCF**

13   **EQUITY COST RATE STUDY?**

14 A. According to the DCF model, the equity cost rate is a function of the dividend yield and

15   expected growth rate. Since stock prices reflect the bias, it would affect the dividend

16   yield. In addition, the DCF growth rate needs to be adjusted downward from the

17   projected EPS growth rate to reflect the upward bias.

18

19 Q. **PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN**

20   **THE PROXY GROUPS AS PROVIDED BY** *VALUE LINE.*

21 A. Page 3 of Exhibit JRW-10 provides the 5- and 10-year historical growth rates for the

22   companies in the two proxy groups, as published in the *Value Line Investment Survey.*

---

[12] 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		As shown in Panel A, the historical growth measures in EPS, DPS, and BVPS for the
2		Electric Proxy Group, as measured by the medians, range from 2.5% to 4.5%, with an
3		average of 3.5%. For the Hevert Proxy Group in Panel B, the historical growth
4		measures in EPS, DPS, and BVPS, as measured by the medians, range from -0.5% to
5		4.5%, with an average of 2.3%.
6		
7	Q.	**PLEASE SUMMARIZE *VALUE LINE'S* PROJECTED GROWTH RATES**
8		**FOR THE COMPANIES IN THE PROXY GROUPS.**
9	A.	*Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the
10		proxy groups are shown on page 4 of Exhibit JRW-10. As above, due to the presence
11		of outliers, the medians are used in the analysis. For the Electric Proxy Group, as
12		shown in Panel A, the medians range from 3.8% to 4.5%, with an average of 4.1%.
13		For the Hevert Proxy Group, as shown in Panel B, the medians range from 3.5% to
14		5.0%, with an average of 4.2%.
15		Also provided on page 4 of Exhibit JRW-10 is prospective sustainable growth
16		for the companies in the proxy groups as measured by *Value Line*'s average projected
17		retention rate and return on shareholders' equity. As noted above, sustainable growth
18		is a significant and primary driver of long-run earnings growth. For the Electric and
19		Hevert Proxy Groups, the median prospective sustainable growth rates are 3.9% and
20		3.8%, respectively.
21		
22	Q.	**PLEASE ASSESS GROWTH FOR THE PROXY GROUPS AS MEASURED**
23		**BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EPS GROWTH.**

1   A.   Yahoo, Zacks, and Reuters collect, summarize, and publish Wall Street analysts'

2   long-term EPS growth rate forecasts for the companies in the proxy groups. These

3   forecasts are provided for the companies in the proxy groups on page 5 of Exhibit

4   JRW-10. The median of analysts' projected EPS growth rates for the Electric and

5   Hevert Proxy Groups are 5.0% and 5.4%, respectively. Since there is considerable

6   overlap in analyst coverage between the three services, and not all of the companies

7   have forecasts from the different services, I have averaged the expected five-year EPS

8   growth rates from the three services for each company to arrive at an expected EPS

9   growth rate by company.

10

11   **Q.**   **PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND**

12   **PROSPECTIVE GROWTH OF THE PROXY GROUPS.**

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

14   proxy group.

15   The historical growth rate indicators for the Electric Proxy Group imply a

16   baseline growth rate of 3.5%. The high end of the range for the Electric Proxy Group

17   is 5.0%, which is the projected EPS growth rate of Wall Street analysts. The average

18   of the historic, sustainable, and projected growth rate indicators is 4.1%, and the

19   average of the sustainable and projected EPS growth rates is 4.3%. Focusing

20   primarily on the sustainable and projected growth rate measures, and giving more

21   weight to the projected EPS growth rates, I believe that an expected growth rate of

22   4.5% is appropriate for the Electric Proxy Group.

| 1 | | The historical growth rate indicators for the Hevert Proxy Group imply a |

baseline growth rate of 2.3%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.2%. The average of the projected EPS growth rate of Wall Street analysts is 5.4% for the group. The average of the sustainable and projected growth rate indicators is 4.4%. Focusing primarily on the sustainable and projected growth rate measures, and giving more weight to the projected EPS growth rates, I believe that an expected growth rate of 4.5% to 5.0% is appropriate for the Hevert Proxy Group. Given these figures, I will use the mid-point of this range, 4.75%, as the DCF growth rate for the Hevert Proxy Group.

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

A. My DCF-derived equity cost rates for the groups are summarized on page 1 of Exhibit JRW-10. The results for my Electric Proxy Group is the 4.1% dividend yield, times the 1 and ½ growth adjustment of 1.0225, and the DCF growth rate of 4.50%, results in an Equity cost rate of 8.7%. The results for my Hevert Proxy Group is the 4.2%, dividend yield, times the 1 and ½ growth adjustment of 1.02375, and the DCF growth rate of 4.75% results in an Equity cost rate of 9.0%.

1   **C.   CAPM**

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

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

4   According to the risk premium approach, the cost of equity is the sum of the interest

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

6   k   = R_f +   RP

7

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

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

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

11   with a stock: firm-specific risk or unsystematic risk, and market or systematic risk,

12   which is measured by a firm's beta. The only risk that investors receive a return for

13   bearing is systematic risk.

14   According to the CAPM, the expected return on a company's stock, which is

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

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

1   Where:

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

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

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

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

9   •   *Beta*—(ß) is a measure of the systematic risk of an asset.
10

11   To estimate the required return or cost of equity using the CAPM requires

12   three inputs: the risk-free rate of interest (R_f), the beta (ß), and the expected equity or

13   market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it is

14   represented by the yield on long-term Treasury bonds. ß, the measure of systematic

15   risk, is a little more difficult to measure because there are different opinions about

16   what adjustments, if any, should be made to historical betas due to their tendency to

17   regress to 1.0 over time. And finally, an even more difficult input to measure is the

18   expected equity or market risk premium $(E(R_m) - (R_f))$. I will discuss each of these

19   inputs below.

20

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

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

23   the results, and the following pages contain the supporting data.

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

2   A.   The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free

3   rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn,

4   has been considered to be the yield on U.S. Treasury bonds with 30-year maturities.

5

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

7   A.   As shown on page 2 of Exhibit JRW-11, the yield on 30-year Treasury bonds has been

8   in the 2.5% to 4.0% range over 2012 – 2013 time period. These rates are currently in

9   the 3.60% range. Given the recent range of yields, and the prospect of higher rates in

10   the future, I will use 4.0%, as the risk-free rate, or R_f, in my CAPM.

11

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

13   A.   Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to

14   be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement

15   as the market also has a beta of 1.0. A stock whose price movement is greater than

16   that of the market, such as a technology stock, is riskier than the market and has a

17   beta greater than 1.0. A stock with below average price movement, such as that of a

18   regulated public utility, is less risky than the market and has a beta less than 1.0.

19   Estimating a stock's beta involves running a linear regression of a stock's return on

20   the market return.

21   As shown on page 3 of Exhibit JRW-11, the slope of the regression line is the

22   stock's ß. A steeper line indicates the stock is more sensitive to the return on the

1	overall market. This means that the stock has a higher ß and greater than average
2	market risk. A less steep line indicates a lower ß and less market risk.
3	Several online investment information services, such as Yahoo and Reuters,
4	provide estimates of stock betas. Usually these services report different betas for the
5	same stock. The differences are usually due to: (1) the time period over which the ß
6	is measured; and (2) any adjustments that are made to reflect the fact that betas tend
7	to regress to 1.0 over time. In estimating an equity cost rate for the proxy group, I am
8	using the betas for the companies as provided in the *Value Line Investment Survey*.
9	As shown on page 3 of Exhibit JRW-11, the median beta for the companies in the
10	Electric and Hevert Proxy Groups are 0.70 and 0.75, respectively.
11	

12 **Q. PLEASE DISCUSS THE ALTERNATIVE VIEWS REGARDING THE**
13 **EQUITY RISK PREMIUM.**

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

21

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

1   A.   Page 4 of Exhibit JRW-11 highlights the primary approaches to, and issues in,

2   estimating the expected equity risk premium. The traditional way to measure the

3   equity risk premium was to use the difference between historical average stock and

4   bond returns. In this case, historical stock and bond returns, also called ex post

5   returns, were used as the measures of the market's expected return (known as the ex

6   ante or forward-looking expected return). This type of historical evaluation of stock

7   and bond returns is often called the "Ibbotson approach" after Professor Roger

8   Ibbotson who popularized this method of using historical financial market returns as

9   measures of expected returns. Most historical assessments of the equity risk premium

10   suggest an equity risk premium of 5-7 percent above the rate on long-term U.S.

11   Treasury bonds. However, this can be a problem because: (1) ex post returns are not

12   the same as ex ante expectations; (2) market risk premiums can change over time,

13   increasing when investors become more risk-averse and decreasing when investors

14   become less risk-averse; and (3) market conditions can change such that ex post

15   historical returns are poor estimates of ex ante expectations.

16   The use of historical returns as market expectations has been criticized in

17   numerous academic studies as discussed later in my testimony. The general theme of

18   these studies is that the large equity risk premium discovered in historical stock and

19   bond returns cannot be justified by the fundamental data. These studies, which fall

20   under the category "Ex Ante Models and Market Data," compute ex ante expected

21   returns using market data to arrive at an expected equity risk premium. These studies

22   have also been called "Puzzle Research" after the famous study by Mehra and

1   Prescott in which the authors first questioned the magnitude of historical equity risk

2   premiums relative to fundamentals.[13]

3   In addition, there are a number of surveys of financial professionals regarding

4   the equity risk premium. There have been several published surveys of academics on

5   the equity risk premium. *CFO Magazine* conducts a quarterly survey of CFOs which

6   includes questions regarding their views on the current expected returns on stocks and

7   bonds. Usually over 300 CFOs usually participate in the survey.[14] Questions

8   regarding expected stock and bond returns are also included in the Federal Reserve

9   Bank of Philadelphia's annual survey of financial forecasters which is published as

10   the *Survey of Professional Forecasters*.[15] This survey of professional economists has

11   been published for almost 50 years. In addition, Pablo Fernandez conducts

12   occasional surveys of financial analysts and companies regarding the equity risk

13   premiums they use in their investment and financial decision-making.[16]

14

15   **Q.   PLEASE PROVIDE A SUMMARY OF THE EQUITY RISK PREMIUM**

16   **STUDIES.**

---

[13] Rajnish Mehra & Edward C. Prescott, *The Equity Premium: A Puzzle*, J. MONETARY ECON. 145 (1985).

[14] *See,* www.cfosurvey.org.

[15] Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters,* (February 15, 2013). 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.

[16] Pablo Fernandez, Javier Auirreamalloa, and Javier Corres, "Market Risk Premium and Risk Free Rate used for 51 countries in 2013: a survey with 6,237 answers," June 26, 2013.

1   A.   Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed the most

2   comprehensive reviews to date of the research on the equity risk premium.[17] Derrig

3   and Orr's study evaluated the various approaches to estimating equity risk premiums

4   as well as the issues with the alternative approaches and summarized the findings of

5   the published research on the equity risk premium. Fernandez examined four

6   alternative measures of the equity risk premium – historical, expected, required, and

7   implied. He also reviewed the major studies of the equity risk premium and

8   presented the summary equity risk premium results. Song provides an annotated

9   bibliography and highlights the alternative approaches to estimating the equity risk

10   summary.

11   Page 5 of Exhibit JRW-11 provides a summary of the results of the primary

12   risk premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as

13   other more recent studies of the equity risk premium. In developing page 5 of Exhibit

14   JRW-11, I have categorized the studies as discussed on page 4 of Exhibit JRW-11. I

15   have also included the results of the "Building Blocks" approach to estimating the

16   equity risk premium, including a study I performed, which is presented in Appendix

17   C, which is attached in Exhibit JRW-16. The Building Blocks approach is a hybrid

18   approach employing elements of both historical and *ex ante* models.

19

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

---

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

1	A.	Page 5 of JRW-11 provides a summary of the results of the equity risk premium
2		studies that I have reviewed. These include the results of: (1) the various studies of
3		the historical risk premium; (2) *ex ante* equity risk premium studies; (3) equity risk
4		premium surveys of CFOs, Financial Forecasters, analysts, companies and academics;
5		and (4) the Building Block approaches to the equity risk premium. There are results
6		reported for over thirty studies and the median equity risk premium is 4.39%.

7

8	Q.	**PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT RISK**
9		**PREMIUM STUDIES AND SURVEYS?**
10	A.	The studies cited on page 5 of Exhibit JRW-11 include all equity risk premium
11		studies and surveys I could identify that were published over the past decade and that
12		provided an equity risk premium estimate. Most of these studies were published prior
13		to the financial crisis of the past two years. In addition, some of these studies were
14		published in the early 2000s at the market peak. It should be noted that many of these
15		studies (as indicated) used data over long periods of time (as long as fifty years of
16		data) and so they were not estimating an equity risk premium as of a specific point in
17		time (e.g., the year 2001). To assess the effect of the earlier studies on the equity risk
18		premium, on page 6 of Exhibit JRW-11, I have reconstructed page 5 of Exhibit JRW-
19		11, but I have eliminated all studies dated before January 2, 2010. The median for
20		this subset of studies is 4.51%.

21

22	Q.	**GIVEN THESE RESULTS, WHAT MARKET OR EQUITY RISK PREMIUM**
23		**ARE YOU USING IN YOUR CAPM?**

1   A.   Much of the data indicates that the market risk premium is in the 4.5% to 5.5% range.

2   I use the midpoint of this range, 5.0%, as the market or equity risk premium.

3

4   **Q.   IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH THE**

5   **EQUITY RISK PREMIUMS USED BY CFOS?**

6   A.   Yes.   In the June, 2013 CFO survey conducted by *CFO Magazine* and Duke

7   University, the expected 10-year equity risk premium was 4.2%.

8

9   **Q.   IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH THE**

10   **EQUITY RISK PREMIUMS OF PROFESSIONAL FORECASTERS?**

11   A.   Yes. The financial forecasters in the previously referenced Federal Reserve Bank of

12   Philadelphia survey project both stock and bond returns.   In the February, 2013

13   survey, the median long-term expected stock and bond returns were 6.13% and

14   3.83%, respectively. This provides an *ex ante* equity risk premium of 2.30% (6.13%-

15   3.83%).

16

17   **Q.   IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH THE**

18   **EQUITY   RISK   PREMIUMS   OF   FINANCIAL   ANALYSTS   AND**

19   **COMPANIES?**

20   A.   Yes. Pablo Fernandez recently published the results of a 2013 survey of academics,

21   financial analysts and companies.[18] This survey included over 6,000 responses. The

22   median equity risk premium employed by U.S. analysts and companies was 5.7%.

---

[18] Pablo Fernandez, Javier Auirreamalloa, and Javier Corres, "Market Risk Premium Used in 51 Countries in

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

2 A. The results of my CAPM study for the proxy groups is summarized on page 1 of

3 Exhibit JRW-11. For the Electric Proxy Group, the risk-free rate of 4.0% plus the

4 beta of 0.70 times the equity risk premium of 5.0% results in 7.5% equity cost rate.

5 For the Hevert Proxy Group, the risk-free rate of 4.0% plus the beta of 0.75 times the

6 equity risk premium of 5.0% results in 7.8% equity cost rate.

7

8 **D.** **EQUITY COST RATE SUMMARY**

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

10 A. My DCF analyses for the Electric and Hevert Proxy Groups indicate equity cost rates

11 of 8.7% and 9.0%, respectively. My CAPM analyses for the Electric and Hevert

12 Proxy Groups indicate equity cost rates of 7.5% and 7.8%, respectively.

13

14 **Q.** **GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST**

15 **RATE FOR THE GROUP?**

16 A. Given these results, I conclude that the appropriate equity cost rate for companies in

17 the Electric and Hevert Proxy Groups is in the 7.5% to 9.0% range. However, since I

18 rely primarily on the DCF model, and given the recent upward movement in interest

19 rates, I am using the upper end of the range as the equity cost rate. Therefore, I

20 conclude that the appropriate equity cost rate, as determined by the companies in the

21 proxy groups, is in the 8.7% to 9.0% range at this time.

2013: A survey with 6,237 Answers," June 26, 2013.

1　**Q.　GIVEN THIS RANGE, WHAT IS YOUR RECOMMENDED ROE FOR**

2　　　**TAMPA ELECTRIC?**

3　A.　Given this range, I am recommending 9.0% as the equity cost rate for Tampa Electric

4　　　using OPC's recommended capital structure of 50% long-term debt and 50%

5　　　common equity. If the Commission adopts Tampa Electric's capital structure with a

6　　　54.2% common equity ratio, I recommend a ROE of 8.75% for Tampa Electric.

7

8　**Q.　PLEASE INDICATE WHY A 9.0% RETURN IS APPROPRIATE FOR**

9　　　**TAMPA ELECTRIC AT THIS TIME.**

10　A.　There are several reasons why a 9.0% return on equity is appropriate for the

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

12　　　industry is *Value Line*'s one of the lowest risk industries in the U.S. as measured by

13　　　beta. As such, the cost of equity capital for this industry is amongst the lowest in the

14　　　U.S. according to the CAPM. Second, as shown in Exhibit JRW-3, capital costs for

15　　　utilities, as indicated by long-term bond yields, are still at historically low levels, even

16　　　given the increase in these rates over the past two months. Third, while the markets

17　　　have recovered significantly over the past four years, the growth in the economy is

18　　　tepid and unemployment is still at 7.6%. The slow economic growth is a major

19　　　reason that interest rates and inflation are at relatively low levels, and hence the

20　　　expected returns on financial assets remain low. Therefore, in my opinion, a 9.0%

21　　　return is appropriate for a regulated electric utility.

| 1 | | **VI.** | **CRITIQUE OF TAMPA ELECTRIC'S RATE OF RETURN TESTIMONY** |

1   **VI.**   **CRITIQUE OF TAMPA ELECTRIC'S RATE OF RETURN TESTIMONY**

2

3 **Q.** **PLEASE SUMMARIZE TAMPA ELECTRIC'S OVERALL RATE OF RETURN**

4   **RECOMMENDATION.**

5 A. Tampa Electric's return on equity recommendation is provided by Mr. Robert Hevert.

6   Tampa Electric's overall rate of return recommendation is summarized on page 1 of

7   Exhibit JRW-12. The Company's recommended capital structure from investor

8   sources consists of 45.8% long-term debt and 54.2% common equity.

9

10 **Q.** **WHAT ISSUES DO YOU HAVE WITH THE COMPANY'S COST OF**

11   **CAPITAL POSITION?**

12 A. The primary areas of disagreement in measuring Tampa Electric cost of capital are:

13   (1) the Company's capital structure, and the ROE that is associated with the capital

14   structure; (2) Mr. Hevert's excessive reliance on the earnings per share growth rate

15   forecasts of Wall Street analysts and *Value Line* to measure expected DCF growth;

16   and (3) the measurement and magnitude of the equity risk premium used in a CAPM

17   approach and RP approaches.

18

19   **A.**   **CAPITAL STRUCTURE**

20 **Q.** **PLEASE REVIEW THE CAPITAL STRUCTURE ISSUE.**

21 A. Tampa Electric has recommended a capital structure that includes a common equity

22   ratio of 54.2%. Such a capital structure includes more equity and less debt than the

23   capital structures of other electric utilities and Tampa Electric and its parent, TECO

1		Energy. As shown on page 1 of Exhibit JRW-4, the average common equity ratios for
2		the Electric Proxy Group and TECO Energy are 46.2% and 43.6%, respectively. These
3		ratios highlight the fact that proxy companies and TECO Energy have a higher degree
4		of financial risk than Tampa Electric.
5		
6	Q.	**HOW HAS MR. HEVERT ATTEMPTED TO DEFEND THE COMPANY'S**
7		**PROPOSED EQUITY-HEAVY CAPITAL STRUCTURE?**
8	A.	Mr. Hevert has attempted to justify Tampa Electric's capital structure by computing the
9		capital structure ratios for the operating companies (and not the holding companies) for
10		the companies in his proxy group.
11		
12	Q.	**PLEASE DISCUSS MR. HEVERT'S ANALYSIS OF THE CAPITALIZATIONS**
13		**OF THE OPERATING COMPANIES OF HIS PROXY GROUP.**
14	A.	In Exhibit No. __ (RBH-1), Document No. 13, Mr. Hevert computes the capitalization
15		ratios for the operating subsidiaries of the companies in his utility group. He claims that
16		this analysis supports the Company's proposed capital structure with a 54.2% common
17		equity ratio.
18		The major issue with Mr. Hevert's analysis is that the capital structure ratios that
19		he uses are for the operating subsidiaries and not for the parent companies. The stocks
20		of the parent companies trade in the markets. Mr. Hevert and I used the data for the
21		parent companies to estimate an equity cost rate for the Company. The investment and
22		financial risks of the parent companies that trade in the markets are a function of the
23		overall capitalization of the parent companies, not the subsidiaries. As such, it is their

1   capitalization ratios, which are indicative of the financial risk they are exposed to, that is

2   relevant when making capitalization comparisons, not the operating subsidiaries.

3

4   **B.   EQUITY COST RATE**

5 **Q.   PLEASE REVIEW MR. HEVERT'S EQUITY COST RATE APPROACHES.**

6 A.   Mr. Hevert estimates an equity cost rate for Tampa Electric using a proxy group of

7   eleven electric utility companies and employs DCF, CAPM, and RP equity cost rate

8   approaches.

9

10 **Q.   PLEASE SUMMARIZE MR. HEVERT'S EQUITY COST RATE RESULTS.**

11 A.   Mr. Hevert's equity cost rate estimates for Tampa Electric are summarized in Exhibit

12   JRW-13. Based on these figures, he concludes that the appropriate equity cost rate is in

13   the range of 10.5% to 11.5%. He has recommended an 11.25% as an equity cost rate in

14   its rate filing.

15

16 **Q.   PLEASE DISCUSS YOUR ISSUES WITH MR. HEVERT'S REQUESTED**

17   **EQUITY COST RATE.**

18 A.   Mr. Hevert's requested return on common equity is too high primarily due to: (1) his

19   asymmetric elimination of low-end DCF results; (2) the DCF growth rate, and in

20   particular the use of (a) the earnings per share growth rates of Wall Street analysts

21   and *Value Line*; and (3) the measurement and magnitude of the market risk premium

22   used in CAPM and RP approaches.

1	**Q.**	**PLEASE INITIALLY REVIEW MR. HEVERT'S PROXY GROUP.**

2   **A.**   Mr. Hevert has used a group of eleven electric utility companies. My Electric Proxy

3   Group includes all of the companies with the exception of Empire District ("EDE") and

4   Otter Tail ("OTTR"). I have excluded EDE because the company, in response to

5   tornadoes in its service territory, suspended its dividend in 2011 and cut its dividend

6   when it subsequently reinitiated the dividend in 2012. I have excluded OTTR because

7   the Company has bonds with below investment grade ratings. Nonetheless, I have

8   included and used an analysis of the Hevert Proxy Group in my equity cost rate analysis.

9

10   **1.   DCF Approach**

11

12   **Q.**   **PLEASE SUMMARIZE MR. HEVERT'S DCF ESTIMATES.**

13   **A.**   On pages 21-27 of his testimony and in Document No. 2 of Exhibit No. ___ (RBH)-1,

14   Mr. Hevert develops an equity cost rate by applying the DCF model to his group of

15   electric companies. Mr. Hevert's DCF results are summarized in Panel A of Exhibit

16   JRW-13. Mr. Hevert uses three dividend yield measures (30, 90, and 180 days) and

17   reports DCF equity cost rates using the Mean and Median Low, Mean/Median, and

18   High DCF results. He adjusts his dividend yield by ½ the expected growth rate. Mr.

19   Hevert has relied on the forecasted EPS growth rates of Zacks, First Call, and *Value*

20   *Line*.

21

22   **Q.**   **WHAT ARE THE ERRORS IN MR. HEVERT'S DCF ANALYSES?**

1   A.   The primary issues in Mr. Hevert's DCF analyses are: (1) <u>The asymmetric elimination</u>

2   <u>of low-end DCF results</u> - he has ignored the mean low DCF results for his three different

3   DCF model applications; and (2) <u>The use of the EPS growth rate forecasts of Wall Street</u>

4   <u>analysts and *Value Line*</u> - the DCF growth rates in all three models employ the overly

5   optimistic and upwardly-biased EPS growth rate estimates of Wall Street analysts and

6   *Value Line*.

7

8   **Q.**   **PLEASE ADDRESS MR. HEVERT'S ASYMMETRIC ELIMINATION OF DCF**

9   **RESULTS.**

10   A.   A significant error with Mr. Hevert's DCF equity cost rate analyses is that he has

11   ignored the mean low DCF results because he claims they are too low. In other words,

12   he has ignored 1/3 of his DCF results in establishing a range of equity cost rates for his

13   proxy group. Mr. Hevert claims that his DCF approach produces a ROE range of 10.6%

14   to 13.19%. By eliminating so-called low-end outliers and not also eliminating the same

15   number of high-end outliers, Mr. Hevert biases his DCF equity cost rate study and

16   reports a higher DCF equity cost rate than the data indicate. I have used the median as a

17   measure of central tendency so as to not give outlier results too much weight while not

18   ignoring the impact of low and/or high results in determining a measure of central

19   tendency.

20

21   **Q.**   **PLEASE REVIEW MR. HEVERT'S DCF GROWTH RATE.**

1   A.   In his DCF model, Mr. Hevert's DCF growth rate is the average of the projected EPS

2   growth rate forecasts: (1) Wall Street analysts as compiled by Zacks and First Call;

3   and (2) *Value Line.*

4

5   **Q.**   **WHY IS IT ERRONEOUS TO RELY EXCLUSIVELY ON THE EPS**

6   **FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF**

7   **GROWTH RATE?**

8   A.   A very significant issue with Mr. Hevert's DCF analysis is his sole reliance on the

9   EPS growth rate forecasts of Wall Street analysts and *Value Line*. There are several

10   issues with using these forecasts as DCF growth rates. First, the relevant cash flows

11   are dividends in the DCF model. Therefore, the appropriate growth rate in the DCF

12   model is the dividend growth rate, not the earnings growth rate. Hence, in my

13   opinion, consideration must be given to other indicators of growth, including

14   prospective dividend growth, internal growth, as well as projected earnings growth.

15   Second, and most significantly, it is well-known that the long-term EPS growth rate

16   forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.

17   This has been demonstrated in a number of academic studies over the years. In

18   addition, I demonstrate that *Value Line*'s EPS growth rate forecasts are consistently

19   too high. Hence, using these growth rates as a DCF growth rate will provide an

20   overstated equity cost rate.

21

22   **Q.**   **PLEASE DISCUSS MR. HEVERT'S RELIANCE ON THE PROJECTED**

23   **GROWTH RATES OF WALL STREET ANALYSTS AND *VALUE LINE.***

1 A.   It seems highly unlikely that investors today would rely excessively on the EPS

2   growth rate forecasts of Wall Street analysts and ignore other growth rate measures in

3   arriving at expected growth. As I previously indicated, the appropriate growth rate in

4   the DCF model is the dividend growth rate, not the earnings growth rate. Hence,

5   consideration must be given to other indicators of growth, including historic growth

6   prospective dividend growth, internal growth, as well as projected earnings growth.

7   In addition, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts'

8   long-term earnings growth rate forecasts are not more accurate at forecasting future

9   earnings than naïve random walk forecasts of future earnings.[19] As such, the weight

10   given to analysts' projected EPS growth rate should be limited. And finally, and most

11   significantly, it is well-known that the long-term EPS growth rate forecasts of Wall

12   Street securities analysts are overly optimistic and upwardly biased.   Hence, using

13   these growth rates as a DCF growth rate produces an overstated equity cost rate. A

14   recent study by Easton and Sommers (2007) found that optimism in analysts' growth

15   rate forecasts leads to an upward bias in estimates of the cost of equity capital of

16   almost 3.0 percentage points.[20]   These issues are addressed in more detail in

17   Appendix B, which is attached in Exhibit JRW-16 of this testimony.

18

19   **2.   CAPM Approach**

---

[19] 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.

[20] Easton, P., & Sommers, G. (2007). Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. *Journal of Accounting Research*, 45(5), 983–1015.

1	**Q.**	**PLEASE DISCUSS MR. HEVERT'S CAPM.**
2	A.	On pages 27-36 of his testimony and in Documents Nos. 3-5 of Exhibit No. ___
3		(RBH)-1, Mr. Hevert estimates an equity cost rate by applying a CAPM model to his
4		proxy group of electric utility companies. The CAPM approach requires an estimate of
5		the risk-free interest rate, beta, and the equity risk premium. Mr. Hevert uses three
6		different measures of the risk-free interest rate (a current rate of 3.12%, a near-term
7		projected rate of 3.25%, and a long-term projected rate of 5.10%), two different Betas
8		(an average Bloomberg Beta of 0.714 and an average *Value Line* Beta of 0.718) and
9		three market risk premium measures (a Bloomberg, DCF-derived market risk
10		premium of 9.88%, a Capital IQ, DCF-derived market risk premium of 9.81%, and a
11		Sharpe ratio premium of 6.03%). Based on these figures, he finds a CAPM equity
12		cost rate range from 7.42% to 12.15%.
13		
14	**Q.**	**WHAT ARE THE ERRORS IN MR. HEVERT'S CAPM ANALYSIS?**
15	A.	There are three primary errors: (1) he has effectively ignored the low-end results of his
16		CAPM; (2) his long-term projected 30-year Treasury yield of 5.10% is about 200 basis
17		points above current rates and is unrealistic; and (3) the measurement and magnitude of
18		the three market risk premium measures.
19		
20	**Q.**	**PLEASE ASSESS MR. HEVERT'S MARKET RISK PREMIUM DERIVED**
21		**FROM APPLYING THE DCF MODEL TO THE S&P 500.**
22	A.	For his Bloomberg and Capital IQ market risk premiums, Mr. Hevert computes
23		market risk premiums of 9.88% and 9.81% by: (1) calculating an expected market

1   return by applying the DCF model to the S&P 500; and (2) subtracting the current 30-

2   year Treasury bond yield. Mr. Hevert's estimated expected market returns from these

3   approaches of 12.93% (using Bloomberg long-term EPS growth rate estimates) and of

4   12.87% (using Capital IQ long-term EPS growth rate estimates), are not realistic. He

5   uses (1) a dividend yield of 1.93% and an expected DCF growth rate of 10.44% for

6   Bloomberg and (2) a dividend yield of 2.02% and an expected DCF growth rate of

7   10.76% for Capital IQ. The primary error is that the expected DCF growth rate is the

8   projected 5-year EPS growth rate from Wall Street analysts as reported by these two

9   services. As explained below, this produces an overstated expected market return and

10   equity risk premium.

11

12   **Q.   WHAT EVIDENCE CAN YOU PROVIDE THAT MR. HEVERT'S GROWTH**

13   **RATES ARE ERRONEOUS?**

14   A.   Mr. Hevert's expected long-term EPS growth rates of 10.88% for Bloomberg and

15   10.93% for Capital IQ represent the forecasted 5-year EPS growth rates of Wall

16   Street analysts. The error with this approach is that the EPS growth rate forecasts of

17   Wall Street securities analysts are overly optimistic and upwardly biased. This is

18   detailed at length in Appendix B, which is attached in Exhibit JRW-16 of this

19   testimony.

20

21   **Q.   ARE EPS GROWTH RATES OF 10.88% AND 10.93% CONSISTENT WITH**

22   **THE HISTORIC AND PROJECTED GROWTH IN EARNINGS AND THE**

23   **ECONOMY?**

1   A.   No. Long-term EPS growth rates of 10.88% and 10.93% are not consistent with

2   historic as well as projected economic and earnings growth in the U.S for several

3   reasons: (1) long-term growth in EPS is far below Mr. Hevert's projected EPS

4   growth rates; (2) more recent trends in GDP growth, as well as projections of GDP

5   growth, suggest slower long-term economic and earnings growth in the future; and

6   (3) over time, EPS growth tends to lag behind GDP growth.

7   The long-term economic, earnings, and dividend growth rate in the U.S. has

8   only been in the 5% to 7% range. I performed a study of the growth in nominal GDP,

9   S&P 500 stock price appreciation, and S&P 500 EPS and DPS growth since 1960.

10   The results are provided on page 1 of Exhibit JRW-14, and a summary is provided for

11   1960 to present: nominal GDP of 6.74%; S&P 500 stock price of 6.35%; S&P 500

12   EPS of 6.96%; S&P 500 DPS of 5.39%; with an average of 6.36%. The results are

13   presented graphically on page 2 of Exhibit JRW-14. In sum, the historical long-run

14   growth rates for GDP, S&P EPS, and S&P DPS are in the 5% to 7% range. By

15   comparison, Mr. Hevert's long-run growth rate projections of 10.88% and 10.93% are

16   vastly overstated. These estimates suggest that companies in the U.S. would be

17   expected to: (1) increase their growth rates of EPS by over 50% in the future and (2)

18   maintain that growth indefinitely in an economy that is expected to grow at about

19   one-half of his projected growth rates.

20

21   **Q.   DO MORE RECENT DATA SUGGEST THAT THE U.S. ECONOMY**

22   **GROWTH IS FASTER OR SLOWER THAN THE LONG-TERM DATA?**

1	A.	The more recent trends suggest lower future economic growth than the long-term
2		historic GDP growth. The historic GDP growth rates for 10-, 20-, 30-, 40- and 50-
3		years, as presented in Panel A of page 3 of Exhibit JRW-14, clearly suggest that nominal
4		GDP growth in recent decades has slowed to the 4.0% to 5.0% area.
5		
6	**Q.**	**WHAT LEVEL OF GDP GROWTH IS FORECASTED BY ECONOMISTS**
7		**AND GOVERNMENT AGENCIES?**
8	A.	As shown in Panel B of page 3 of Exhibit JRW-14, forecasts of annual GDP growth
9		from the *Survey of Professional Forecasters* (4.8%), the Energy Information
10		Administration (4.5%), and the Congressional Budget Office (4.6%), suggests GDP
11		growth in the range of 4.0% to 5.0% is more appropriate today for the U.S. economy.
12		
13	**Q.**	**WHY IS GDP GROWTH RELEVANT IN YOUR DISCUSSION OF MR.**
14		**HEVERT'S USE OF THE LONG-TERM EPS GROWTH RATES IN**
15		**DEVELOPING A MARKET RISK PREMIUM FOR HIS CAPM?**
16	A.	Because, as indicated in recent research, the long-term earnings growth rates of
17		companies are limited to the growth rate in GDP.
18		
19	**Q.**	**PLEASE HIGHLIGHT THE RECENT RESEARCH ON THE LINK**
20		**BETWEEN ECONOMIC AND EARNINGS GROWTH AND EQUITY**
21		**RETURNS.**
22	A.	Brad Cornell of the California Institute of Technology recently published a study on
23		GDP growth, earnings growth, and equity returns. He finds that long-term EPS

| 1 | growth in the U.S. is directly related GDP growth, with GDP growth providing an |

1   growth in the U.S. is directly related GDP growth, with GDP growth providing an

2   upward limit on EPS growth. In addition, he finds that long-term stock returns are

3   determined by long-term earnings growth. He concludes with the following

4   observations:[21]

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

16   Given current inflation in the 2% to 3% range, the results imply nominal

17   expected stock market returns in the 7% to 8% range. As such, Mr. Hevert's

18   projected earnings growth rates and implied expected stock market returns and equity

19   risk premiums are not indicative of the realities of the U.S. economy and stock

20   market. As such, his expected CAPM equity cost rate is significantly overstated.

21

22   **Q.   PLEASE PROVIDE A SUMMARY ASSESSMENT OF MR. HEVERT'S**

23   **PROJECTED EQUITY RISK PREMIUM DERIVED FROM EXPECTED**

24   **MARKET RETURNS.**

25   A.   Mr. Hevert's market risk premium derived from his DCF application to the S&P 500

26   is inflated due to errors and bias in his study. Investment banks, consulting firms, and

27   CFOs use the equity risk premium concept every day in making financing, investment,

---

[21] Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* (January-February, 2010), p. 63.

1	and valuation decisions. On this issue, the opinions of CFOs and financial forecasters
2	are especially relevant. CFOs deal with capital markets on an ongoing basis since they
3	must continually assess and evaluate capital costs for their companies. They are well
4	aware of the historical stock and bond return studies of Ibbotson. The CFOs in the
5	June 2013 *CFO Magazine* – Duke University Survey of over almost 350 CFOs shows
6	an expected return on the S&P 500 of 6.7% over the next ten years. In addition, the
7	financial forecasters in the February 2013 Federal Reserve Bank of Philadelphia
8	survey expect an annual market return of 6.15% over the next ten years. As such,
9	with a more realistic equity or market risk premium, the appropriate equity cost rate
10	for a public utility should be in the 8.0% to 9.0% range and not in the 10.0% to 11.0%
11	range.

12

13 **Q. PLEASE REVIEW MR. HEVERT'S SECOND MARKET RISK PREMIUM.**

14 A. Mr. Hevert's second market risk premium of 6.03% uses the Sharpe Ratio, and

15 calculates the expected market risk premium based on a comparison of historical and

16 expected market volatility. The Sharpe Ratio is computed as:

17 $S(X) = (R_x - R_f)/Std\ Dev\ (X)$

18 where:

19 X = the investment;
20 R_x = the average return of X;
21 R_f = the best available rate of return of a risk free security; and
22 $Std\ Dev$ = the standard deviation of r_x.
23

24 Mr. Hevert defines the constant Sharpe Ratio as the ratio of the historical

25 market risk premium of 6.60% and the historical market volatility of 20.30%. These

1   figures are computed using the Morningstar historical stock and bond market data and

2   use arithmetic mean returns. He then calculates the expected market risk premium as

3   the product of the Sharpe Ratio and the expected market volatility. Mr. Hevert

4   computes the expected market volatility as the thirty-day average of the Chicago

5   Board Options Exchange's ("CBOE") three-month volatility index (*i.e.*, the VXV)

6   and the same thirty-day average of settlement prices of futures on the CBOE's one-

7   month volatility index (*i.e.,* the VIX) for July 2013 through September 2013. Mr.

8   Hevert used a "VIX" volatility measure of 18.54.

9

10 **Q.**   **PLEASE DISCUSS THE VIX.**

11 A.   The VIX is the stock ticker symbol for the Chicago Board Options Exchange Market

12   Volatility Index. The VIX, which is quoted as a percentage, is a measure of the

13   implied volatility of S&P 500 index options for the next 30 day period. Higher levels

14   of the VIX imply that investors expect larger market upward or downward

15   movements in the next 30 days.

16   Panel A of page 1 of Exhibit JRW-15 shows the historic levels of the VIX

17   since 1990. The data indicate that the current level of the VIX, about 16.0, is lower

18   than historic norms. Panel B of page 1 of Exhibit JRW-15 shows the VIX over the

19   past year. The VIX peaked at about 22 at year-end 2012 during the debate over the

20   fiscal cliff. The VIX has increased in the past month in response to concerns about

21   prospective Federal Reserve monetary policy. Panel C of page 1 of Exhibit JRW-15

22   shows the VXV over the past year. The VXV movement has mirrored the VIX

23   movement, and the current level is also about 18.0.

1 **Q. WHAT IS THE ISSUE OF USING THE VIX TO ESTIMATE A MARKET**

2 **RISK PREMIUM?**

3 A. The primary issue with this approach is the use of the VIX in the context of long-term

4 stock market volatility. The VIX is a measure of short-term stock market volatility.

5 Mr. Hevert has used the Sharpe ratio and developed a market risk premium

6 comparing the VIX or short-term volatility measure with the long-term standard

7 deviation of the market. The error is in the comparison of the short-term volatility

8 measure (VIX) with the long-term standard deviation of the market. The VIX is too-

9 short-term of a measure to estimate a long-term expected risk and return.

10

11 **Q. WHAT DO THE CURRENT LEVELS OF THE VIX IMPLY ABOUT THE**

12 **MARKET RISK PREMIUM AND CAPM EQUITY COST RATE USING MR.**

13 **HEVERT'S SHARPE RATIO APPROACH?**

14 A. As shown on page 1 of Exhibit JRW-15, the current levels of the VIX and the VXV

15 are about 16.0 and 18.0. Panel A of page 2 of Exhibit JRW-15 shows Mr. Hevert's

16 market risk premium and CAPM equity cost rate calculations using a VIX level of

17 18.54. In Panel B of page 2 of Exhibit JRW-15, I have replicated Mr. Hevert's

18 market risk premium and CAPM equity cost rate calculations using the current VIX

19 level of 16.44. The range of the CAPM equity cost rates using the updated VIX

20 levels are 6.94% to 8.94%. Hence, current VIX levels support an equity cost rate that

21 is even lower than the equity cost rate of 9.0% that I recommend.

1   **3.   RP Approach**

2

3   **Q.   PLEASE REVIEW MR. HEVERT'S RP ANALYSIS.**

4   A.   On pages 36-39 of his testimony and in Document No. 6 of Exhibit No. ___ (RBH)-1,

5   Mr. Hevert estimates an equity cost rate using a RP model. Mr. Hevert develops an

6   equity cost rate by: (1) regressing the authorized returns on equity from electric utility

7   companies from January 1, 1980 to February 27, 2013 time period on the thirty-year

8   Treasury Yield; and (2) adding the appropriate risk premium established in (1) to the on

9   three different thirty-year Treasury yields (a) a current yield of 3.12%, a near-term

10   projected yield of 3.25%, and a long-term projected yield of 5.10%. Mr. Hevert's RP

11   results are provided in Panel C of Exhibit JRW-13**.** He reports RP equity cost rates

12   ranging from 10.23% to 10.76%.

13

14   **Q.   WHAT ARE THE ERRORS IN MR. HEVERT'S RP ANALYSIS?**

15   A.   There are two primary errors: (1) his long-term projected 30-year Treasury yield of

16   5.10% is about 150 basis points above current rates and is unrealistic; and (2) his

17   measurement and magnitude of the risk premium.

18

19   **Q.   WHAT ARE THE ISSUES WITH MR. HEVERT'S RISK PREMIUM?**

20   A.   The risk premium is inflated as a measure of investor's required risk premium. Mr.

21   Hevert's approach is a study of *Commission* behavior, not a study of *investor*

22   behavior. It does not make sense to find the cost of equity in a new proceeding like

23   this one by studying the outcomes of other cases. Such an approach is circular. It

1   tends to perpetuate any past errors, and over time could become entirely disconnected

2   from financial market realities.   Evidence of such errors is demonstrated by the

3   market-to-book ratios for electric utility companies. Electric utility companies have

4   been selling at market-to-book ratios in excess of 1.0 for many years. This indicates

5   that the authorized rates of return have been greater than the return that investors

6   require.   Therefore, the risk premium produced from the study is overstated as a

7   measure of investor return requirements and produced an inflated equity cost rate.

8

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

10   A.   Yes.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing Testimony of J. Randall Woolridge has been furnished by electronic mail to the following parties on this 15th day of July, 2013:

James D. Beasley
Ausley Law Firm
P.O. Box 391
Tallahassee, FL 32302
Phone: 850-224-9115
FAX: (850) 222-7560

Martha Brown
Martha Barrera
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Gordon L. Gillette, President
Paula K. Brown, Manager
Tampa Electric Company
P. O. Box 111
Tampa, FL 33601-0111

Jon C. Moyle, Jr.
Moyle Law Firm, P.A.
The Perkins House
118 North Gadsden Street
Tallahassee, FL 32301

Federal Executive Agencies
c/o Lt Col Gregory J. Fike
AFLOA/JACL-ULFSC
139 Barnes Drive, Suite 1
Tyndall Air Force Base, Fl 32403

Robert Scheffel Wright
Gardner, Bist, Wiener, et at., P.A.
Florida Retail Federation
1300 Thomaswood Drive
Tallahassee, FL 32308

WCF Hospital Utility Alliance
c/o Andrew Kurth LLP
Kenneth L. Wiseman
1350 I Street NW, Suite 1100
Washington, DC 20005

Patricia A. Christensen
Associate Public Counsel

Exhibit JRW-1
Tampa Electric Company
Recommended Return on Equity

Equity Cost Rate with 50%/50% Capital Structure

Capital Source	Capitalization Ratio	Cost Rate
Common Equity	50.00%	9.00%

Equity Cost Rate with 54.2%/45.8% Capital Structure

Capital Source	Capitalization Ratio	Cost Rate
Common Equity	54.20%	8.75%

Exhibit JRW-2

Panel A
Ten-Year Treasury Yields
1953-Present
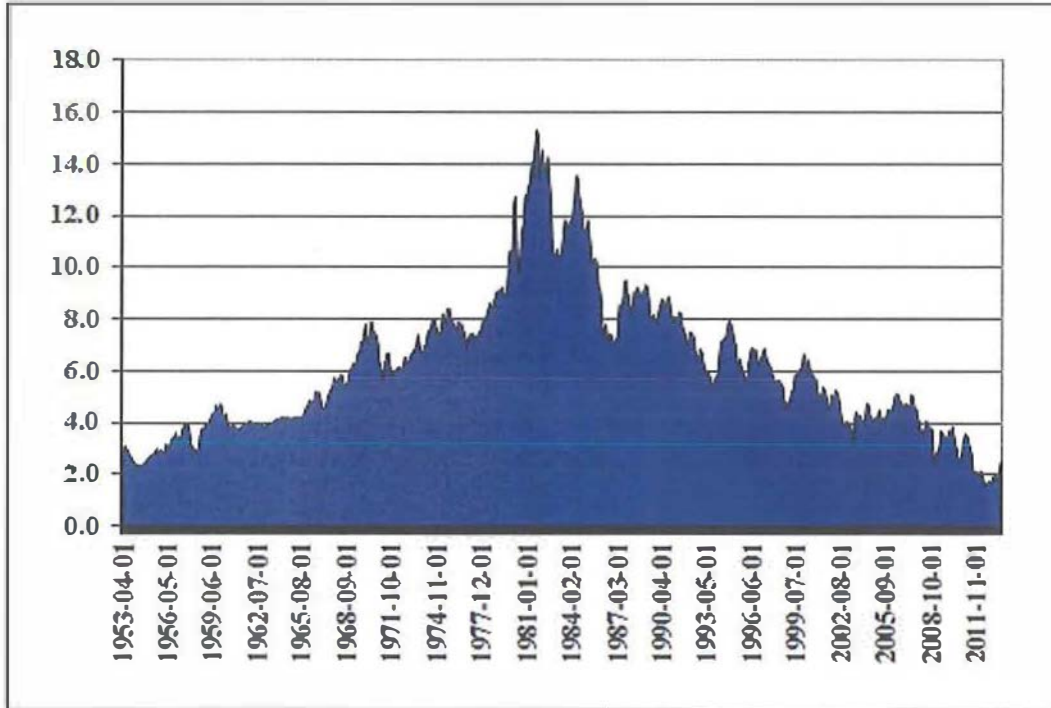
Panel B
Long-Term Moody's Baa Yields Minus Ten-Year Treasury Yields
2000-Present

Source: Federal Reserve Bank of St. Louis, FRED Database.
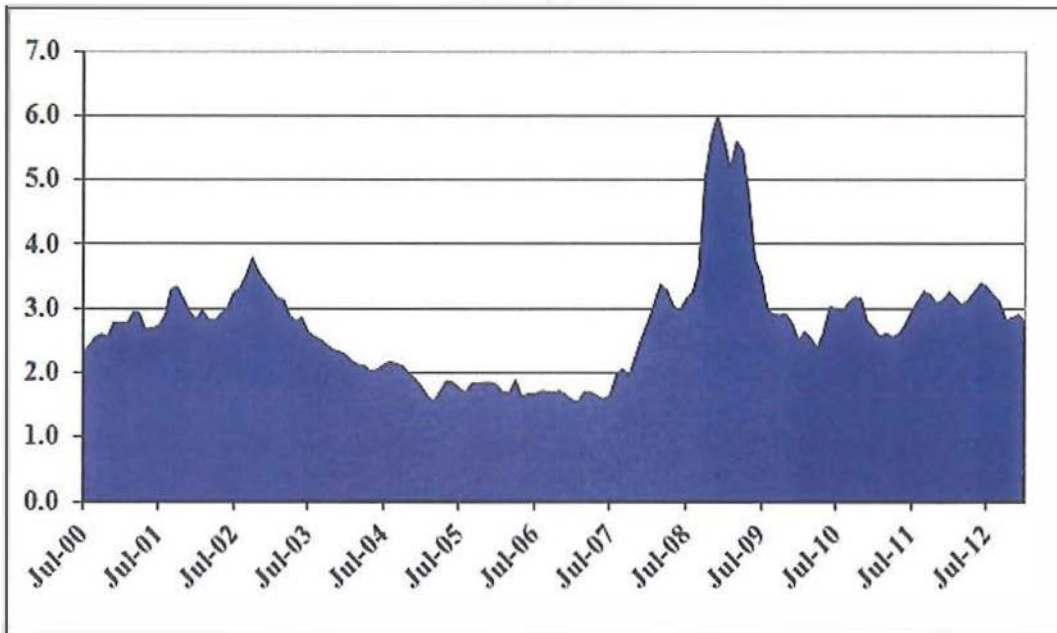
Exhibit JRW-2
Panel A
Long-Term, A-Rated Public Utility Yields
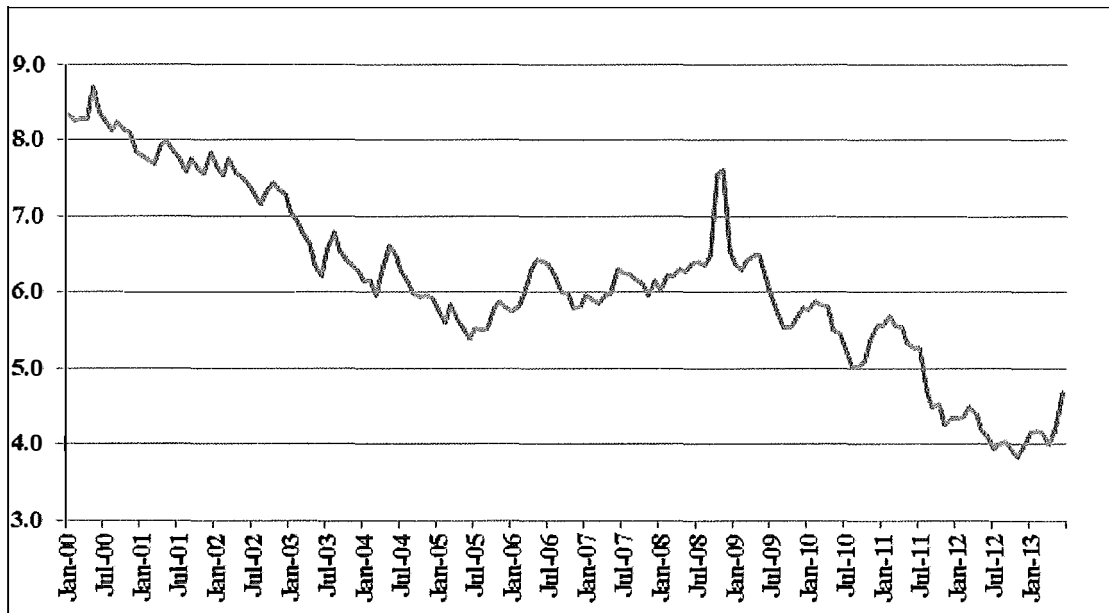
Panel B
Long-Term, A-Rated Public Utility Yields minus -Twenty-Year Treasury Yields
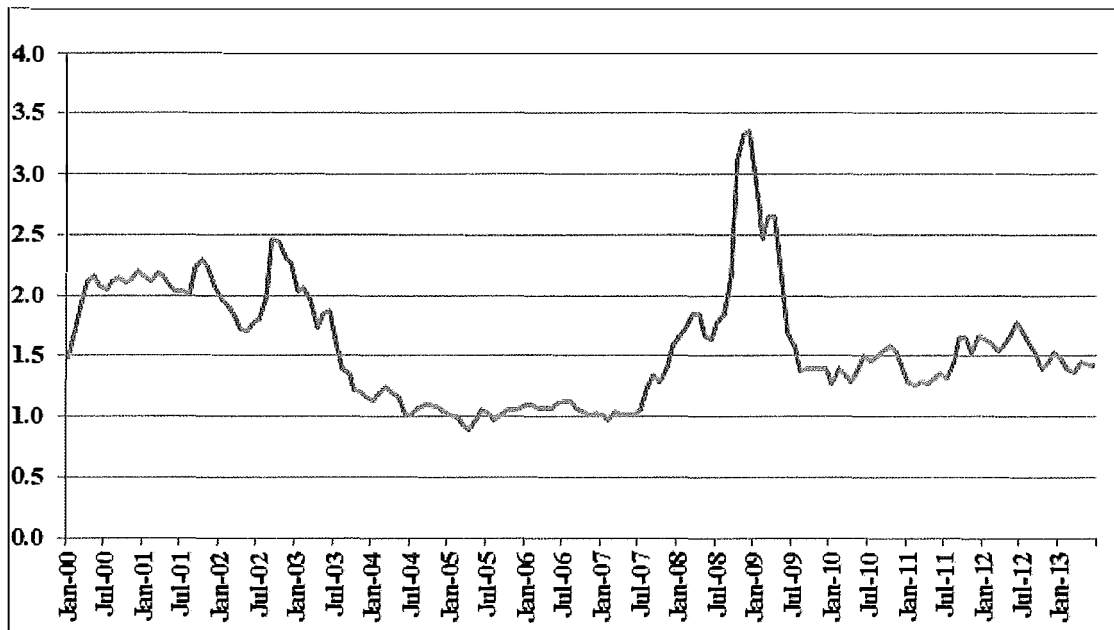
Source: Mergent Bond Record

Exhibit JRW-3

Panel A
Ten-Year Treasury Yields
2008, 2013

Jun-08	4.10	Feb-13	1.98
Jul-08	4.01	Mar-13	1.96
Aug-08	3.89	Apr-13	1.76
Sep-08	3.69	May-13	1.93
Oct-08	3.81	Jun-13	2.13
Nov-08	3.53	Jul-13	2.52
Average	3.84	Average	2.05

Data Source: FRB of St. Louis, FRED Economic Data

Panel B
Moody's Long-Term, A-Rated, Public Utility Bond Yields
2008, 2013

Jun-08	6.38	Jan-13	4.15
Jul-08	6.40	Feb-13	4.18
Aug-08	6.37	Mar-13	4.15
Sep-08	6.49	Apr-13	4.00
Oct-08	7.56	May-13	4.17
Nov-08	7.60	Jun-13	4.67
Average	6.80	Average	4.22

Data Source: Mergent Bond Record

Exhibit JRW-4
Tampa Electric Company
Summary Financial Statistics

Panel A
Electric Proxy Group

Company	Operating Revenue ($mil)	Percent Elec Revenue	Percent Gas Revenue	Net Plant ($mil)	Market Cap ($mil)	S&P Bond Rating	Moody's Bond Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio
ALLETE, Inc. (NYSE-ALE)	985.0	91	0	2,366.7	2.0	A-	A2	3.9	MN, WI	55.0	8.9	1.64
Alliant Energy Corporation (NYSE-LNT)	3,188.4	83	13	7,913.6	5.8	A-	A2/A3	3.8	WS,IA,IL,MN	48.4	10.9	1.73
Ameren Corporation (NYSE-AEE)	6,645.0	86	14	15,408.0	8.8	BBB/BBB-	Baa1/Baa2	3.1	IL,MO	50.2	NM	1.38
American Electric Power Co. (NYSE-AEP)	15,146.0	89	0	39,130.0	24.0	BBB	Baa2	3.2	10 States	45.0	8.1	1.56
Avista Corporation (NYSE-AVA)	1,577.7	63	31	3,053.5	1.7	A-	A3	3.1	WA,OR,ID	46.2	6.6	1.36
Black Hills Corporation (NYSE-BKH)	1,188.7	52	40	2,766.9	2.2	BBB+	A3	1.8	CO,SD,WY,MT	49.5	7.6	1.76
Cleco Corporation (NYSE-CNL)	1,011.9	95	0	3,025.2	2.9	BBB	Baa2	4.3	LA	53.1	10.9	1.91
CMS Energy Corporation (NYSE-CMS)	6,489.0	64	32	11,667.0	7.7	BBB/BBB-	Baa2	2.6	MI	30.1	14.4	2.33
Consolidated Edison, Inc. (NYSE-ED)	12,294.0	72	14	26,756.0	17.8	A-	A3/Baa1	3.9	NY,PA	49.8	9.0	1.50
Dominion Resources, Inc. (NYSE-D)	13,154.0	54	2	30,909.0	35.1	A	Baa1	3.8	VA,NC	33.4	2.7	3.23
DTE Energy Company (NYSE-DTE)	9,058.0	59	16	14,866.0	12.4	A	A2	3.3	MI	48.4	9.4	1.64
Duke Energy Corporation (NYSE-DUK)	21,892.0	82	2	68,813.0	50.4	A-	A3	3.2	NC,SC,FL,OH,KY	49.7	6.6	1.23
Edison International (NYSE-EIX)	11,821.0	94	0	30,673.0	15.8	BBB+	A1	NMF	CA	44.7	NM	1.65
FirstEnergy Corporation (ASE-FE)	14,954.0	63	0	33,286.0	18.1	BBB	Baa2	2.7	OH,PA,NJ,WV,MD,NY	39.1	5.0	1.39
Great Plains Energy Incorporated (NYSE-GXP)	2,372.4	100	0	7,482.8	3.7	BBB/BBB-	Baa1/Baa2	2.8	MO,KS	46.1	7.5	1.12
Hawaiian Electric Industries, Inc. (NYSE-HE)	3,344.2	92	0	3,640.3	2.7	BBB-	Baa2	4.2	HI	47.4	8.5	1.70
IDACORP, Inc. (NYSE-IDA)	1,104.4	100	0	3,554.5	2.5	A-	A2	2.5	ID	52.2	10.3	1.40
MGE Energy, Inc. (NYSE-MGEE)	559.3	71	28	1,097.1	1.3	AA-	A1	6.3	WI	61.5	12.3	2.21
Nextera Energy (NYSE-NEE)	14,164.0	71	0	49,824.0	34.1	A	Aa3	3.5	FL	36.7	11.0	2.11
Northeast Utilities (NYSE-NU)	7,169.2	87	11	16,737.5	14.0	A-	A3	2.7	CT,NH,MA	50.3	9.8	1.50
NorthWestern Corporation (NYSE-NWE)	1,074.3	75	25	2,444.4	1.7	A-	A2	2.2	SD,MT,NE	46.3	11.2	1.79
Pepco Holdings, Inc. (NYSE-POM)	4,641.0	92	4	9,034.0	5.5	A-/BBB	Baa1/Baa2	2.5	DC,MD,VA,NJ	42.3	NM	1.28
PG&E Corporation (NYSE-PCG)	15,071.0	80	15	38,282.0	20.8	BBB/BBB-	A3/Baa1	3.5	CA	49.8	6.3	1.54
Pinnacle West Capital Corp. (NYSE-PNW)	3,367.8	100	0	10,264.3	6.6	BBB+	Baa1	3.9	AZ	53.0	10.7	1.65
PNM Resources, Inc. (NYSE-PNM)	1,354.7	100	0	3,764.5	1.8	BBB	Baa1/Baa2	2.8	NM,TX	44.4	6.2	1.14
Portland General Electric Company (NYSE-POR)	1,799.0	100	0	4,449.0	2.4	A-	A3	2.7	OR	51.8	8.2	1.39
PPL Corporation (NYSE-PPL)	10,631.0	63	0	29,975.0	18.6	A-	A3	3.2	PA,KY	33.7	12.8	1.76
SCANA Corporation (NYSE-SCG)	4,379.0	57	18	11,160.0	7.4	BBB+	Baa1/Baa2	3.2	SC,NC,GA	43.7	10.7	1.66
Southern Company (NYSE-SO)	16,830.0	95	0	48,687.0	40.4	A	A2/A3	4.8	GA,AL,FL,MS	45.3	11.1	2.15
UIL Holdings Corporation (NYSE-UIL)	1,576.2	50	50	2,843.4	2.1	BBB	Baa2	3.2	CT	38.9	9.5	1.82
UNS Energy Corp. (NYSE-UNS)	1,475.0	91	9	3,334.8	2.1	BBB-	Baa2	3.0	AZ	37.0	9.5	1.97
Westar Energy, Inc. (NYSE-WR)	2,332.0	100	0	7,115.5	4.3	BBB+	A3	3.4	KS	45.7	10.5	1.47
Wisconsin Energy Corporation (NYSE-WEC)	4,330.4	75	23	10,616.1	9.9	A-/BBB+	A2/A3	3.6	WI	44.9	13.2	2.34
Xcel Energy Inc. (NYSE-XEL)	10,333.0	84	10	24,219.2	15.0	A-	A3	4.1	MN,WI,ND,SD,MI	45.3	10.8	1.64
Mean	6,685.7	80	11	17,034.1	11.8	A-/BBB+	A3	3.4		45.9	9.4	1.70
Median	4,354.7	84	3	10,440.2	7.0	A-/BBB+	A3	3.2		46.2	9.5	1.64
TECO Energy, Inc. (NYSE-TE)	2,996.5	65	14	5,977.3	4.12	BBB+	A3	3.4	FL	43.6	8.9	1.82

Data Source: *AUS Utility Reports*, June, 2013; Pre-Tax Interest Coverage and Primary Service Territory are from *Value Line Investment Survey*, 2013.

Panel A
Electric Proxy Group

Company	Operating Revenue ($mil)	Percent Elec Revenue	Percent Gas Revenue	Net Plant ($mil)	Market Cap ($mil)	S&P Bond Rating	Moody's Bond Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio
American Electric Power Co. (NYSE-AEP)	15,146.0	89	0	39,130.0	24.0	BBB	Baa2	3.2	10 States	45.0	8.1	1.56
Cleco Corporation (NYSE-CNL)	1,011.9	95	0	3,025.2	2.9	BBB	Baa2	4.3	LA	53.1	10.9	1.91
Empire District Electric Co. (NYSE-EDE)	571.1	91	8	1,677.6	1.0	A-	A3	3.3	MO,KS,OK,AR	50.3	8.2	1.35
Great Plains Energy Incorporated (NYSE-GXP)	2,372.4	100	0	7,482.8	3.7	BBB/BBB-	Baa1/Baa2	2.8	MO,KS	46.1	7.5	1.12
IDACORP, Inc. (NYSE-IDA)	1,104.4	100	0	3,554.5	2.5	A-	A2	2.5	ID	52.2	10.3	1.40
Otter Tail Corporation (NDQ-OTTR)	799.6	77	0	1,057.9	1.1	BBB-/BB+	Baa2	2.7	MN,ND,SD	54.6	0.3	2.02
Pinnacle West Capital Corp. (NYSE-PNW)	3,367.8	100	0	10,264.3	6.6	BBB+	Baa1	3.9	AZ	53.0	10.7	1.65
PNM Resources, Inc. (NYSE-PNM)	1,354.7	100	0	3,764.5	1.8	BBB	Baa1/Baa2	2.8	NM,TX	44.4	6.2	1.14
Portland General Electric Company (NYSE-POR)	1,799.0	100	0	4,449.0	2.4	A-	A3	2.7	OR	51.8	8.2	1.39
Southern Company (NYSE-SO)	16,830.0	95	0	48,687.0	40.4	A	A2/A3	4.8	GA,AL,FL,MS	45.3	11.1	2.15
Westar Energy, Inc. (NYSE-WR)	2,332.0	100	0	7,115.5	4.3	BBB+	A3	3.4	KS	45.7	10.5	1.47
Mean	4,244.4	95	1	11,837.1	8.2	BBB+	Baa1	3.3		49.2	8.4	1.56
Median	1,799.0	100	0	4,449.0	2.9	BBB+	Baa1	3.2		50.3	8.2	1.47

Exhibit JRW-4
Tampa Electric Company
Value Line Risk Metrics

Panel A
Electric Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
ALLETE, Inc. (NYSE-ALE)	0.70	2	A	80	95
Alliant Energy Corporation (NYSE-LNT)	0.70	2	A	75	95
Ameren Corporation (NYSE-AEE)	0.65	3	B++	90	100
American Electric Power Co. (NYSE-AEP)	0.80	3	B++	95	95
Avista Corporation (NYSE-AVA)	0.70	2	A	65	100
Black Hills Corporation (NYSE-BKH)	0.80	3	B+	40	90
Cleco Corporation (NYSE-CNL)	0.65	1	A	75	100
CMS Energy Corporation (NYSE-CMS)	0.75	3	B+	55	95
Consolidated Edison, Inc. (NYSE-ED)	0.60	1	A+	85	100
Dominion Resources, Inc. (NYSE-D)	0.65	2	B++	70	100
DTE Energy Company (NYSE-DTE)	0.75	2	B++	85	100
Duke Energy Corporation (NYSE-DUK)	0.60	2	A	75	100
Edison International (NYSE-EIX)	0.75	2	B++	85	100
FirstEnergy Corporation (ASE-FE)	0.75	3	B+	75	90
Great Plains Energy Incorporated (NYSE-GXP)	0.80	3	B+	70	90
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.70	2	B++	70	90
IDACORP, Inc. (NYSE-IDA)	0.70	3	B+	85	100
MGE Energy, Inc. (NYSE-MGEE)	0.60	1	A	95	100
Nextera Energy (NYSE-NEE)	0.70	2	A	85	100
Northeast Utilities (NYSE-NU)	0.70	2	B++	60	100
NorthWestern Corporation (NYSE-NWE)	0.70	3	B+	90	100
Pepco Holdings, Inc. (NYSE-POM)	0.75	3	B	70	95
PG&E Corporation (NYSE-PCG)	0.55	3	B+	85	100
Pinnacle West Capital Corp. (NYSE-PNW)	0.70	1	A	65	100
PNM Resources, Inc. (NYSE-PNM)	0.95	3	B	15	75
Portland General Electric Company (NYSE-POR)	0.75	2	B++	45	100
PPL Corporation (NYSE-PPL)	0.65	3	B++	60	95
SCANA Corporation (NYSE-SCG)	0.65	2	B++	100	100
Southern Company (NYSE-SO)	0.55	1	A	100	100
UIL Holdings Corporation (NYSE-UIL)	0.70	2	B++	85	95
UNS Energy Corp. (NYSE-UNS)	0.70	3	B+	40	100
Westar Energy, Inc. (NYSE-WR)	0.75	2	B++	80	100
Wisconsin Energy Corporation (NYSE-WEC)	0.60	1	A	95	100
Xcel Energy Inc. (NYSE-XEL)	0.60	2	B++	100	100
Mean	0.70	2.2	B++	75	97
Median	0.70	2.0	B++	78	100

Data Source: *Value Line Investment Survey*, 2013.

TECO Energy, Inc. (NYSE-TE)	0.85	2	B++	75	90

Panel B
Hevert Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
American Electric Power Co. (NYSE-AEP)	0.80	3	B++	95	95
Cleco Corporation (NYSE-CNL)	0.65	1	A	75	100
Empire District Electric Co. (NYSE-EDE)	0.65	2	B++	85	100
Great Plains Energy Incorporated (NYSE-GXP)	0.80	3	B+	70	90
IDACORP, Inc. (NYSE-IDA)	0.70	3	B+	85	100
Otter Tail Corporation (NDQ-OTTR)	0.90	3	B+	55	75
Pinnacle West Capital Corp. (NYSE-PNW)	0.70	1	A	65	100
PNM Resources, Inc. (NYSE-PNM)	0.95	3	B	15	75
Portland General Electric Company (NYSE-POR)	0.75	2	B++	45	100
Southern Company (NYSE-SO)	0.55	1	A	100	100
Westar Energy, Inc. (NYSE-WR)	0.75	2	B++	80	100
Mean	0.75	2.2	B++	70	94
Median	0.75	2.0	B++	75	100

Data Source: *Value Line Investment Survey*, 2013.

Exhibit JRW-5
Tampa Electric Company
Capital Structure Ratios

Panel A -Tampa Electric's Proposed Capitalization Ratios

Capital Source	Capitalization Ratio
Long-Term Debt	45.80%
Common Equity	54.20%
Total	100.00%

Panel B -OPC's 50/50 Proposed Capitalization Ratios

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

Exhibit JRW-6
Electric Utilities
Panel A
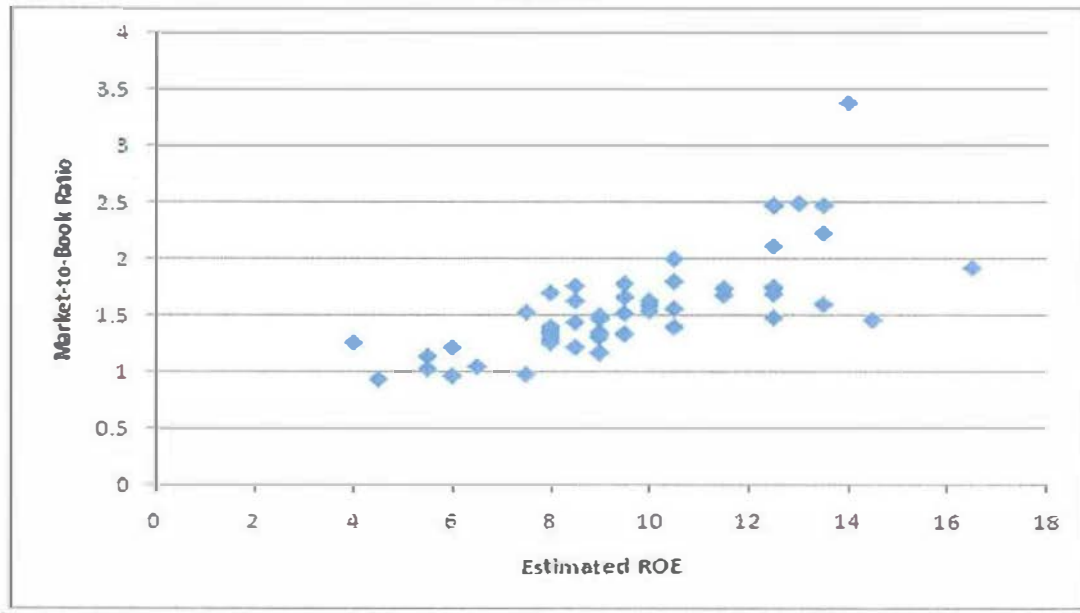
R-Square = .52, N=51.

Panel B
Gas Companies
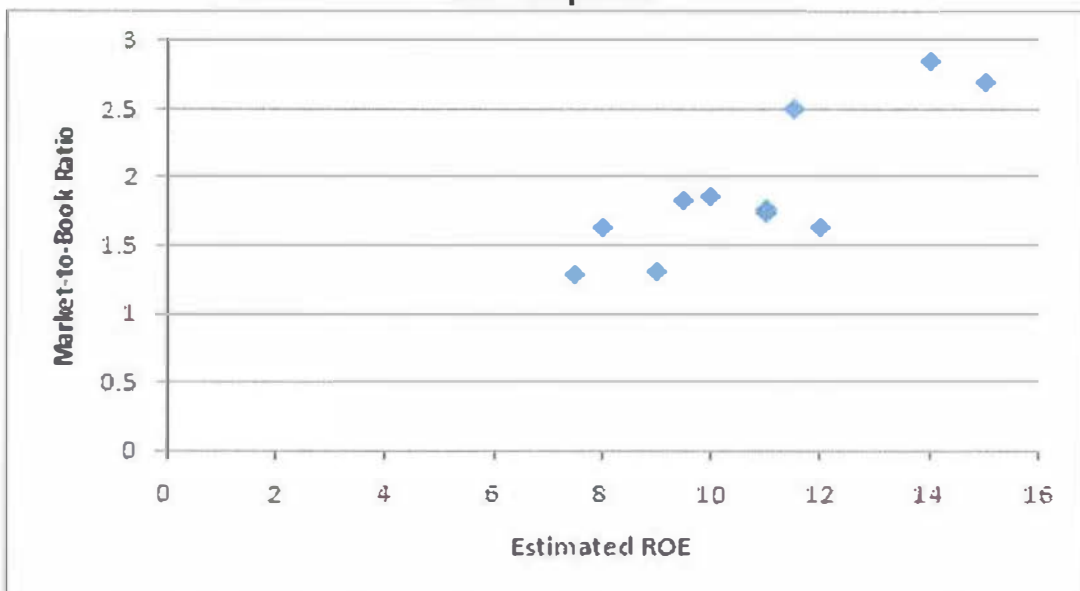
R-Square = .71, N=11.

Exhibit JRW-6
Water Companies
Panel C
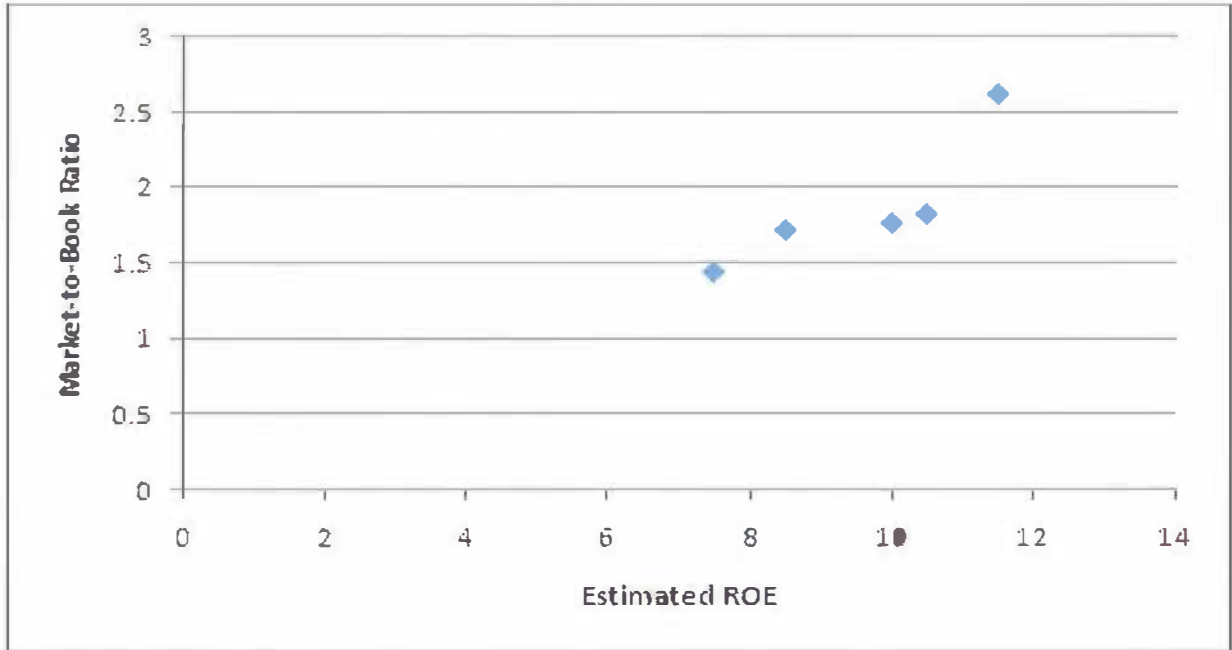
R-Square = .77, N=5.

Exhibit JRW-7
Long-Term 'A' Rated Public Utility Bonds
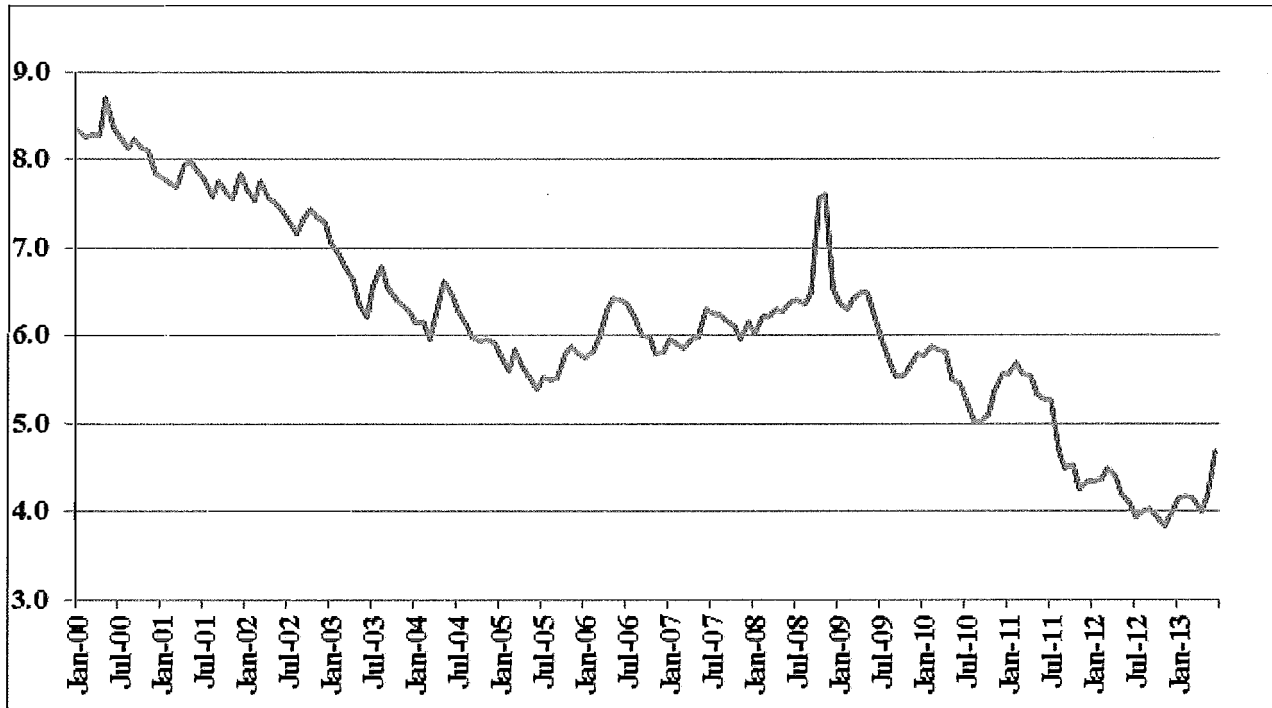
Data Source: Mergent Bond Record

Exhibit JRW-7

Electric Proxy Group Average Dividend Yield
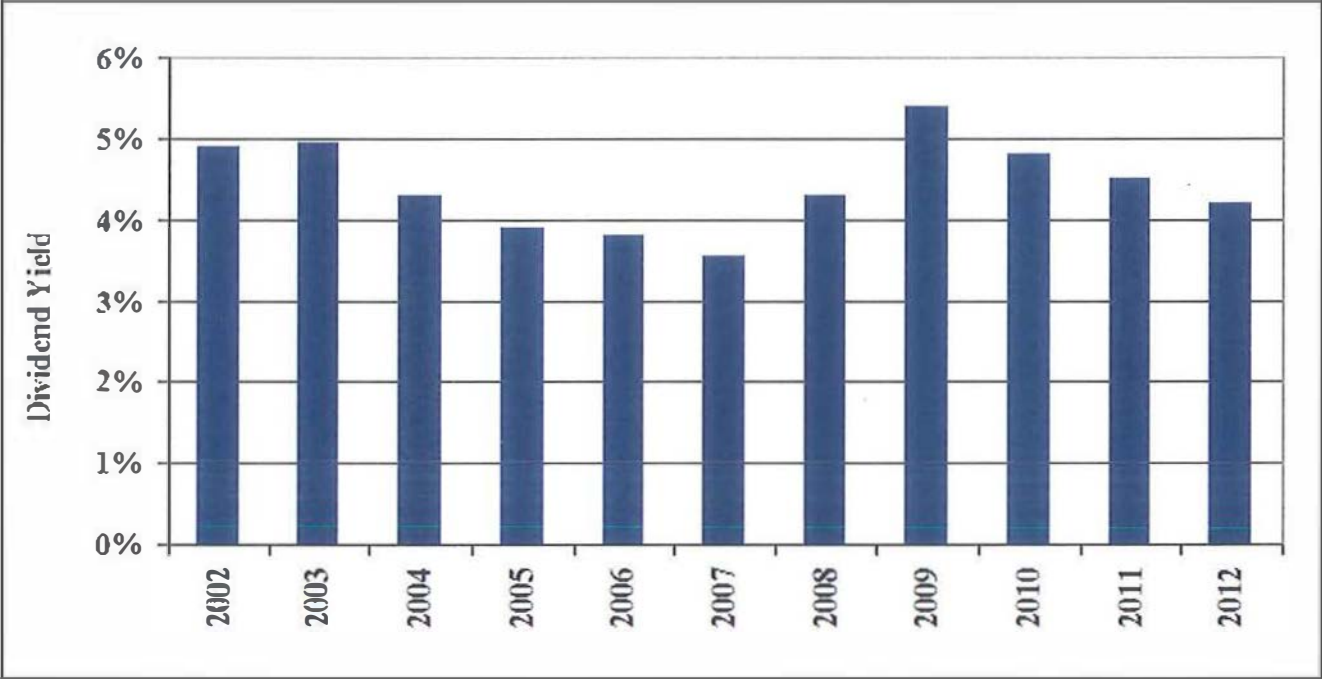
Exhibit JRW-7

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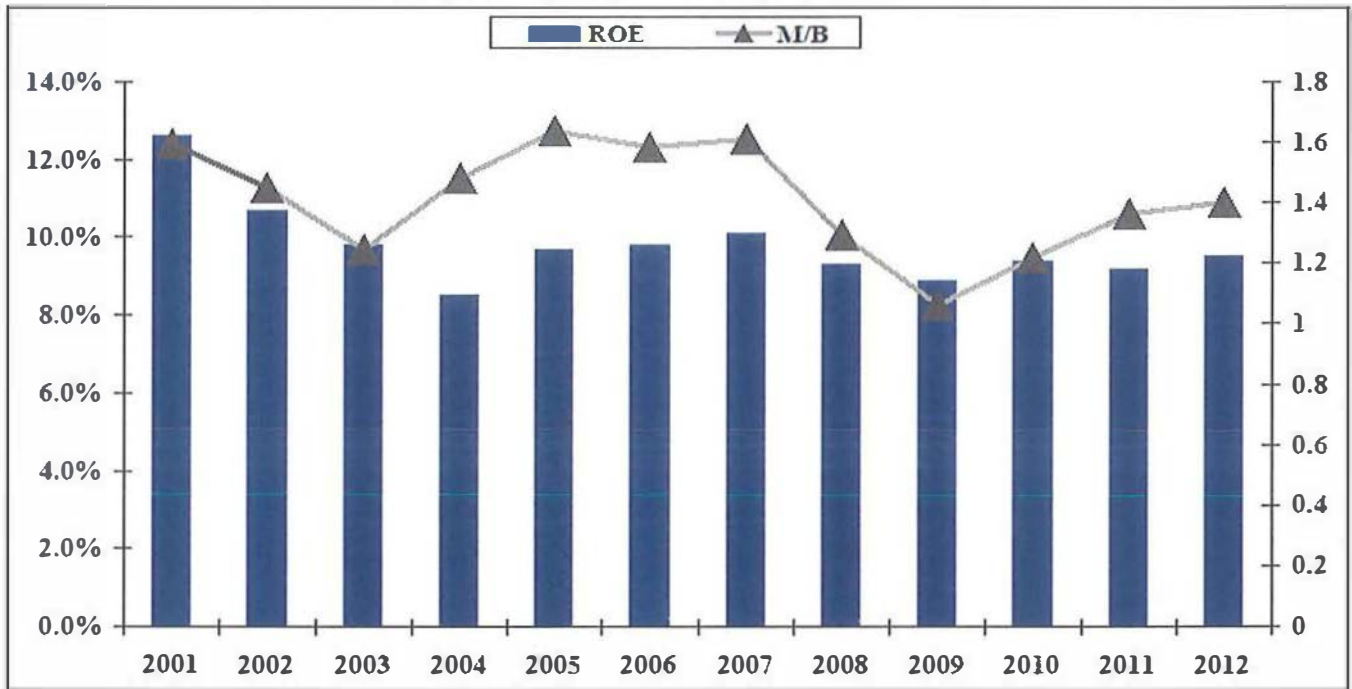
Data Source: *Value Line Investment Survey.*

Exhibit JRW-8

Industry Average Betas

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

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

Exhibit JRW-9
DCF Model

Growth Stage
Earnings Grow
Faster Than
Dividends

Transition Stage
Dividends Grow
Faster Than
Earnings

Maturity Stage
Dividends and
Earnings Grow
At Same Rate

Earnings

Dividends

$

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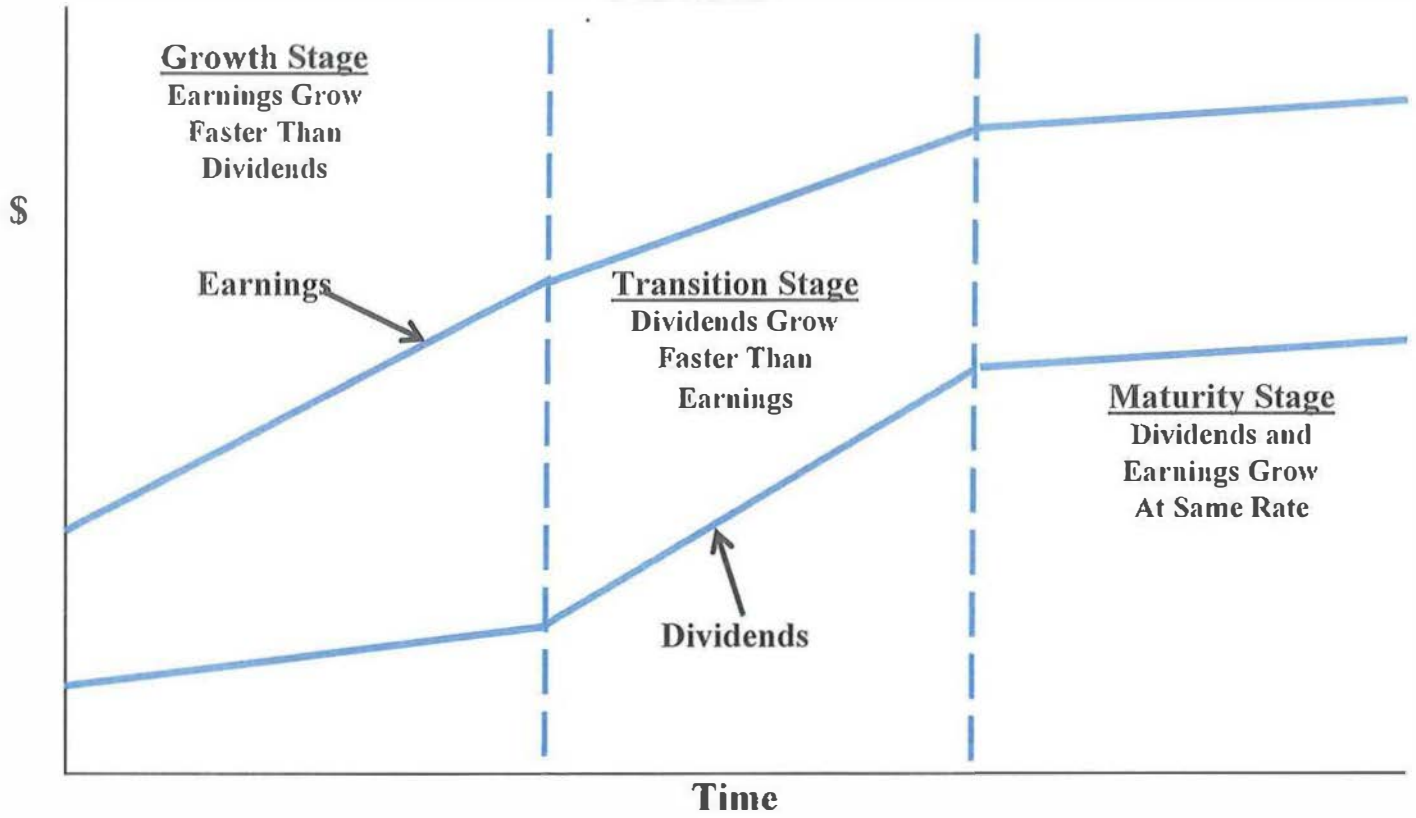
Source: William F. Sharpe, Gordon J. Alexander, and Jeffrey V. Bailey, Investments (Prentice-Hall, 1995), pp. 590-91.

Exhibit JRW-9
DCF Model
Consensus Earnings Estimates
Alliant Energy Corp ("LNT")
www.reuters.com
6/27/2013

	# of Estimates	Mean	High	Low
Earnings (per share)				
Quarter Ending Sep-13	5	1.42	1.74	1.29
Quarter Ending Dec-13	5	0.50	0.63	0.20
Year Ending Dec-13	11	3.13	3.20	3.08
Year Ending Dec-14	11	3.30	3.35	3.25
LT Growth Rate (%)	4	5.93	7.00	4.70

Data Source: www.reuters.com

Exhibit JRW-10

Tampa Electric Company
Discounted Cash Flow Analysis

Panel A
Electric Proxy Group

Dividend Yield*	4.10%
Adjustment Factor	1.0225
Adjusted Dividend Yield	4.2%
Growth Rate**	4.50%
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

Panel B
Hevert Proxy Group

Dividend Yield*	4.20%
Adjustment Factor	1.02375
Adjusted Dividend Yield	4.3%
Growth Rate**	4.75%
Equity Cost Rate	9.0%

* Page 2 of Exhibit JRW-10
** Based on data provided on pages 3, 4, 5, and
    6 of Exhibit JRW-10

Exhibit JRW-10

Tampa Electric Company
Monthly Dividend Yields

Panel A
Electric Proxy Group

Company	Jan	Feb	Mar	Apr	May	Jun	Mean
ALLETE, Inc. (NYSE-ALE)	4.2%	4.1%	3.9%	3.8%	3.6%	4.0%	3.9%
Alliant Energy Corporation (NYSE-LNT)	3.9%	3.9%	3.9%	3.6%	3.9%	4.0%	3.9%
Ameren Corporation (NYSE-AEE)	5.1%	4.8%	4.7%	4.7%	4.4%	4.9%	4.8%
American Electric Power Co. (NYSE-AEP)	4.4%	4.1%	3.9%	3.7%	4.0%	4.5%	4.1%
Avista Corporation (NYSE-AVA)	4.7%	4.4%	4.6%	4.5%	4.2%	4.7%	4.5%
Black Hills Corporation (NYSE-BKH)	3.8%	3.7%	3.5%	3.3%	3.0%	3.3%	3.4%
Cleco Corporation (NYSE-CNL)	3.3%	3.1%	3.0%	2.9%	3.0%	3.3%	3.1%
CMS Energy Corporation (NYSE-CMS)	3.9%	3.9%	3.7%	3.5%	3.5%	3.9%	3.7%
Consolidated Edison, Inc. (NYSE-ED)	4.4%	4.3%	4.2%	3.9%	4.0%	4.4%	4.2%
Dominion Resources, Inc. (NYSE-D)	4.0%	3.8%	4.0%	3.7%	3.7%	4.2%	3.9%
DTE Energy Company (NYSE-DTE)	4.0%	3.8%	3.7%	3.4%	3.5%	4.1%	3.8%
Duke Energy Corporation (NYSE-DUK)	4.6%	4.4%	4.4%	4.1%	4.3%	4.7%	4.4%
Edison International (NYSE-EIX)	2.9%	2.9%	2.7%	2.6%	2.8%	3.0%	2.8%
FirstEnergy Corporation (ASE-FE)	5.6%	5.4%	5.2%	4.8%	5.1%	6.1%	5.4%
Great Plains Energy Incorporated (NYSE-GXP)	4.2%	3.9%	3.8%	3.7%	3.6%	4.0%	3.9%
Hawaiian Electric Industries, Inc. (NYSE-HE)	4.8%	4.5%	4.5%	4.6%	4.5%	5.2%	4.7%
IDACORP, Inc. (NYSE-IDA)	3.5%	3.2%	3.2%	3.2%	3.1%	3.3%	3.3%
MGE Energy (NDQ-MGEE)	3.1%	2.9%	2.8%	2.9%	2.8%	3.0%	2.9%
Nextera Energy (NYSE-NEE)	3.4%	3.3%	3.5%	3.3%	3.5%	3.4%	3.4%
Northeast Utilities (NYSE-NU)	3.5%	3.3%	3.4%	3.3%	3.3%	3.7%	3.4%
NorthWestern Corporation (NYSE-NWE)	4.1%	3.8%	3.9%	3.7%	3.6%	4.0%	3.9%
Pepco Holdings, Inc. (NYSE-POM)	5.7%	5.4%	5.2%	5.0%	4.9%	5.6%	5.3%
PG&E Corporation (NYSE-PCG)	4.5%	4.2%	4.2%	3.8%	3.9%	4.2%	4.1%
Pinnacle West Capital Corp. (NYSE-PNW)	4.2%	4.0%	3.8%	3.6%	3.6%	4.2%	3.9%
PNM Resources, Inc. (NYSE-PNM)	2.8%	2.6%	2.5%	2.8%	2.9%	3.1%	2.8%
Portland General Electric (NYSE-POR)	3.9%	3.7%	3.6%	3.5%	3.3%	3.7%	3.6%
PPL Corporation (NYSE-PPL)	5.0%	4.7%	4.8%	4.5%	4.6%	5.1%	4.8%
SCANA Corporation (NYSE-SCG)	4.3%	4.1%	4.1%	3.9%	3.8%	4.3%	4.1%
Southern Company (NYSE-SO)	4.6%	4.4%	4.3%	4.0%	4.4%	4.8%	4.4%
UIL Holdings Corporation (NYSE-UIL)	4.7%	4.4%	4.5%	4.2%	4.2%	4.7%	4.5%
UNS Energy Corp. (NYSE-UNS)	3.9%	3.7%	3.7%	3.5%	3.5%	4.0%	3.7%
Westar Energy, Inc. (NYSE-WR)	4.5%	4.2%	4.2%	4.0%	4.0%	4.5%	4.2%
Wisconsin Energy Corporation (NYSE-WEC)	3.2%	3.4%	3.3%	3.1%	3.1%	3.5%	3.3%
Xcel Energy Inc. (NYSE-XEL)	4.0%	3.8%	3.7%	3.5%	3.6%	4.0%	3.8%
Mean	4.1%	3.9%	3.9%	3.7%	3.7%	4.2%	3.9%
Median	4.2%	3.9%	3.9%	3.7%	3.6%	4.1%	3.9%

| TECO Energy, Inc. (NYSE-TE) | 5.2% | 5.1% | 5.0% | 4.8% | 4.6% | 5.3% | 5.0% |

Panel B
Hevert Proxy Group

Company	Jan	Feb	Mar	Apr	May	Jun	Mean
American Electric Power Co. (NYSE-AEP)	4.4%	4.1%	3.9%	3.7%	4.0%	4.5%	4.1%
Cleco Corporation (NYSE-CNL)	3.3%	3.1%	3.0%	2.9%	3.0%	3.3%	3.1%
Empire District Electric Co. (NYSE-EDE)	4.8%	4.6%	4.6%	4.4%	4.4%	4.7%	4.6%
Great Plains Energy Incorporated (NYSE-GXP)	4.2%	3.9%	3.8%	3.7%	3.6%	4.0%	3.9%
IDACORP, Inc. (NYSE-IDA)	3.5%	3.2%	3.2%	3.2%	3.1%	3.3%	3.3%
Otter Tail Corporation (NDQ-OTTR)	4.6%	4.2%	3.8%	3.9%	4.0%	4.4%	4.2%
Pinnacle West Capital Corp. (NYSE-PNW)	4.2%	4.0%	3.8%	3.6%	3.6%	4.2%	3.9%
PNM Resources, Inc. (NYSE-PNM)	2.8%	2.6%	2.5%	2.8%	2.9%	2.9%	2.8%
Portland General Electric (NYSE-POR)	3.9%	3.7%	3.6%	3.5%	3.3%	3.7%	3.6%
Southern Company (NYSE-SO)	4.6%	4.4%	4.3%	4.0%	4.4%	4.8%	4.4%
Westar Energy, Inc. (NYSE-WR)	4.5%	4.2%	4.2%	4.0%	4.0%	4.5%	4.2%
Mean	4.1%	3.8%	3.7%	3.6%	3.7%	4.0%	3.8%
Median	4.2%	4.0%	3.8%	3.7%	3.6%	4.2%	3.9%

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

Exhibit JRW-10

Tampa Electric Company
DCF Equity Cost Growth Rate Measures
Value Line Historic Growth Rates
Panel A
Electric Proxy Group

| Company | *Value Line* Historic Growth | | | | | |
| | Past 10 Years | | | Past 5 Years | | |
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
ALLETE, Inc. (NYSE-ALE)				-2.5%	4.5%	5.5%
Alliant Energy Corporation (NYSE-LNT)	3.5%	-1.5%	2.0%	4.0%	8.0%	3.5%
Ameren Corporation (NYSE-AEE)	-2.0%	-4.5%	2.5%	-2.5%	-9.0%	-0.5%
American Electric Power Co. (NYSE-AEP)	2.0%	-3.0%	2.5%	1.0%	4.0%	4.5%
Avista Corporation (NYSE-AVA)	2.5%	8.5%	3.0%	8.5%	14.0%	4.0%
Black Hills Corporation (NYSE-BKH)	-5.5%	2.5%	5.0%	-8.0%	2.0%	3.0%
Cleco Corporation (NYSE-CNL)	5.5%	2.5%	8.0%	13.0%	4.5%	9.0%
CMS Energy Corporation (NYSE-CMS)	18.0%	-5.0%	-1.5%	12.5%		3.0%
Consolidated Edison, Inc. (NYSE-ED)	2.0%	1.0%	4.0%	3.0%	1.0%	4.5%
Dominion Resources, Inc. (NYSE-D)	5.0%	4.5%	2.5%	7.0%	7.0%	3.5%
DTE Energy Company (NYSE-DTE)	2.0%	1.0%	4.0%	6.0%	2.0%	4.0%
Duke Energy Corporation (NYSE-DUK)				4.5%	18.0%	-1.0%
Edison International (NYSE-EIX)		.	11.5%	2.5%	3.0%	5.5%
FirstEnergy Corporation (ASE-FE)	-1.0%	4.0%	2.5%	-8.0%	3.5%	1.0%
Great Plains Energy Incorporated (NYSE-GXP)	-3.0%	-6.5%	4.5%	-6.0%	-12.5%	5.0%
Hawaiian Electric Industries, Inc. (NYSE-HE)	-0.5%		2.0%	2.0%		2.0%
IDACORP, Inc. (NYSE-IDA)	1.5%	-4.0%	4.0%	10.0%	1.0%	5.5%
MGE Energy (NDQ-MGEE)	5.0%	1.5%	6.5%	6.0%	2.0%	5.5%
Nextera Energy (NYSE-NEE)	8.5%	7.0%	8.0%	10.0%	7.5%	8.5%
Northeast Utilities (NYSE-NU)	10.5%	9.5%	4.0%	13.0%	9.5%	6.0%
NorthWestern Corporation (NYSE-NWE)				9.0%	4.0%	2.5%
Pepco Holdings, Inc. (NYSE-POM)	-4.5%		0.5%	-4.5%	1.5%	0.5%
PG&E Corporation (NYSE-PCG)			11.5%	-0.5%	6.5%	6.0%
Pinnacle West Capital Corp. (NYSE-PNW)		4.0%	2.0%	2.5%	2.5%	
PNM Resources, Inc. (NYSE-PNM)	-4.5%	-0.5%	1.5%	-4.0%	-9.0%	-2.0%
Portland General Electric (NYSE-POR)				4.0%	14.5%	2.0%
PPL Corporation (NYSE-PPL)	4.0%	9.0%	10.5%	2.0%	5.5%	6.0%
SCANA Corporation (NYSE-SCG)	3.0%	5.0%	4.0%	2.5%	3.0%	4.5%
Southern Company (NYSE-SO)	3.5%	3.5%	4.5%	3.0%	4.0%	5.5%
UIL Holdings Corporation (NYSE-UIL)	-1.5%		0.5%	3.5%		2.0%
UNS Energy Corp. (NYSE-UNS)	7.0%	15.0%	7.0%	10.5%	14.5%	5.5%
Westar Energy, Inc. (NYSE-WR)	16.0%			1.5%	5.0%	4.5%
Wisconsin Energy Corporation (NYSE-WEC)	9.5%	7.5%	7.0%	10.0%	17.0%	7.0%
Xcel Energy Inc. (NYSE-XEL)	2.0%	-3.0%	1.5%	5.5%	3.0%	4.5%
Mean	3.3%	2.4%	4.3%	3.6%	4.6%	4.0%
Median	2.5%	2.5%	4.0%	3.3%	4.0%	4.5%

Data Source: *Value Line Investment Survey.* | Average of Median Figures = | 3.5% |

| TECO Energy, Inc. (NYSE-TE) | -5.5% | -4.5% | -2.5% | 0.5% | 2.0% | 4.0% |

Panel B
Hevert Proxy Group

| Company | *Value Line* Historic Growth | | | | | |
| | Past 10 Years | | | Past 5 Years | | |
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
American Electric Power Co. (NYSE-AEP)	2.0%	-3.0%	2.5%	1.0%	4.0%	4.5%
Cleco Corporation (NYSE-CNL)	5.5%	2.5%	8.0%	13.0%	4.5%	9.0%
Empire District Electric Co. (NYSE-EDE)	2.0%	-2.5%	1.5%	2.0%	-5.5%	1.0%
Great Plains Energy Incorporated (NYSE-GXP)	-3.0%	-6.5%	4.5%	-6.0%	-12.5%	5.0%
IDACORP, Inc. (NYSE-IDA)	1.5%	-4.0%	4.0%	10.0%	1.0%	5.5%
Otter Tail Corporation (NDQ-OTTR)	-9.5%	1.5%	3.5%	-18.5%	0.5%	-1.0%
Pinnacle West Capital Corp. (NYSE-PNW)		4.0%	2.0%	2.5%	2.5%	
PNM Resources, Inc. (NYSE-PNM)	-4.5%	-0.5%	1.5%	-4.0%	-9.0%	-2.0%
Portland General Electric (NYSE-POR)				4.0%	14.5%	2.0%
Southern Company (NYSE-SO)	3.5%	3.5%	4.5%	3.0%	4.0%	5.5%
Westar Energy, Inc. (NYSE-WR)	16.0%			1.5%	5.0%	4.5%
Mean	1.5%	-0.6%	3.6%	0.8%	0.8%	3.4%
Median	2.0%	-0.5%	3.5%	2.0%	2.5%	4.5%

Data Source: *Value Line Investment Survey.* | Average of Median Figures = | 2.3% |

Exhibit JRW-10

Tampa Electric Company
DCF Equity Cost Growth Rate Measures
Value Line Projected Growth Rates

Panel A
Electric Proxy Group

Company	*Value Line* Projected Growth Est'd. '10-'12 to '16-'18			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	7.0%	3.5%	4.0%	9.5%	38.0%	3.6%
Alliant Energy Corporation (NYSE-LNT)	5.0%	4.5%	4.0%	11.0%	39.0%	4.3%
Ameren Corporation (NYSE-AEE)	-0.5%	1.5%	-0.5%	8.5%	33.0%	2.8%
American Electric Power Co. (NYSE-AEP)	4.5%	4.0%	4.0%	10.0%	39.0%	3.9%
Avista Corporation (NYSE-AVA)	4.0%	4.5%	3.0%	8.5%	34.0%	2.9%
Black Hills Corporation (NYSE-BKH)	11.5%	2.5%	3.0%	9.0%	44.0%	4.0%
Cleco Corporation (NYSE-CNL)	5.5%	10.0%	5.0%	11.0%	43.0%	4.7%
CMS Energy Corporation (NYSE-CMS)	5.5%	8.0%	5.5%	13.0%	38.0%	4.9%
Consolidated Edison, Inc. (NYSE-ED)	2.5%	1.5%	3.5%	9.0%	40.0%	3.6%
Dominion Resources, Inc. (NYSE-D)	6.0%	5.5%	4.5%	16.0%	32.0%	5.1%
DTE Energy Company (NYSE-DTE)	4.0%	5.5%	4.0%	9.0%	36.0%	3.2%
Duke Energy Corporation (NYSE-DUK)	4.0%	2.0%	3.0%	8.0%	33.0%	2.6%
Edison International (NYSE-EIX)	2.5%	5.5%	4.5%	11.0%	54.0%	5.9%
FirstEnergy Corporation (ASE-FE)	3.5%	0.0%	2.5%	8.5%	28.0%	2.4%
Great Plains Energy Incorporated (NYSE-GXP)	6.5%	6.0%	2.5%	8.0%	40.0%	3.2%
Hawaiian Electric Industries, Inc. (NYSE-HE)	5.5%	2.0%	4.5%	9.0%	28.0%	2.5%
IDACORP, Inc. (NYSE-IDA)	2.0%	7.0%	4.5%	8.5%	48.0%	4.1%
MGE Energy (NDQ-MGEE)	4.5%	3.5%	5.0%	11.5%	49.0%	5.6%
Nextera Energy (NYSE-NEE)	5.0%	8.5%	6.0%	12.0%	43.0%	5.2%
Northeast Utilities (NYSE-NU)	8.0%	8.0%	6.0%	9.5%	44.0%	4.2%
NorthWestern Corporation (NYSE-NWE)	3.0%	4.0%	4.5%	9.5%	37.0%	3.5%
Pepco Holdings, Inc. (NYSE-POM)	6.0%	1.0%	2.0%	8.0%	31.0%	2.5%
PG&E Corporation (NYSE-PCG)	4.0%	2.5%	3.0%	9.0%	34.0%	3.1%
Pinnacle West Capital Corp. (NYSE-PNW)	5.0%	2.0%	3.5%	10.0%	38.0%	3.8%
PNM Resources, Inc. (NYSE-PNM)	12.0%	12.5%	4.0%	8.5%	49.0%	4.2%
Portland General Electric (NYSE-POR)	3.5%	3.5%	3.5%	8.0%	41.0%	3.3%
PPL Corporation (NYSE-PPL)	0.0%	2.0%	5.0%	11.0%	39.0%	4.3%
SCANA Corporation (NYSE-SCG)	4.5%	2.5%	5.5%	9.5%	43.0%	4.1%
Southern Company (NYSE-SO)	4.5%	3.5%	4.0%	12.5%	30.0%	3.8%
UIL Holdings Corporation (NYSE-UIL)	4.0%	0.0%	4.5%	9.0%	32.0%	2.9%
UNS Energy Corp. (NYSE-UNS)	6.5%	5.5%	5.5%	11.5%	40.0%	4.6%
Westar Energy, Inc. (NYSE-WR)	6.0%	3.0%	5.0%	9.5%	46.0%	4.4%
Wisconsin Energy Corporation (NYSE-WEC)	5.5%	12.0%	3.5%	14.0%	34.0%	4.8%
Xcel Energy Inc. (NYSE-XEL)	4.5%	4.5%	4.5%	10.0%	42.0%	4.2%
Mean	4.9%	4.5%	4.0%	10.0%	38.8%	3.9%
Median	4.5%	3.8%	4.0%	9.5%	39.0%	3.9%
Average of Median Figures =		4.1%				3.9%

Data Source: *Value Line Investment Survey.*

TECO Energy, Inc. (NYSE-TE)	3.5%	2.0%	2.5%	12.0%	34.0%	4.1%

Panel B
Hevert Proxy Group

Company	*Value Line* Projected Growth Est'd. '10-'12 to '16-'18			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
American Electric Power Co. (NYSE-AEP)	4.5%	4.0%	4.0%	10.0%	39.0%	3.9%
Cleco Corporation (NYSE-CNL)	5.5%	10.0%	5.0%	11.0%	43.0%	4.7%
Empire District Electric Co. (NYSE-EDE)	5.0%	3.5%	2.5%	8.5%	29.0%	2.5%
Great Plains Energy Incorporated (NYSE-GXP)	6.5%	6.0%	2.5%	8.0%	40.0%	3.2%
IDACORP, Inc. (NYSE-IDA)	2.0%	7.0%	4.5%	8.5%	48.0%	4.1%
Otter Tail Corporation (NDQ-OTTR)	21.5%	1.5%	2.0%	11.0%	34.0%	3.7%
Pinnacle West Capital Corp. (NYSE-PNW)	5.0%	2.0%	3.5%	10.0%	38.0%	3.8%
PNM Resources, Inc. (NYSE-PNM)	12.0%	12.5%	4.0%	8.5%	49.0%	4.2%
Portland General Electric (NYSE-POR)	3.5%	3.5%	3.5%	8.0%	41.0%	3.3%
Southern Company (NYSE-SO)	4.5%	3.5%	4.0%	12.5%	30.0%	3.8%
Westar Energy, Inc. (NYSE-WR)	6.0%	3.0%	5.0%	9.5%	46.0%	4.4%
Mean	6.9%	5.1%	3.7%	9.6%	39.7%	3.8%
Median	5.0%	3.5%	4.0%	9.5%	40.0%	3.8%
Average of Median Figures =		4.2%				3.8%

Data Source: *Value Line Investment Survey.*

Exhibit JRW-10

Tampa Electric Company
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates
Panel A
Electric Proxy Group

Company	Yahoo	Zacks	Reuters	Mean
ALLETE, Inc. (NYSE-ALE)	6.0%	6.5%	6.0%	6.2%
Alliant Energy Corporation (NYSE-LNT)	5.9%	5.7%	5.9%	5.9%
Ameren Corporation (NYSE-AEE)	-1.2%	2.5%	-1.2%	0.0%
American Electric Power Co. (NYSE-AEP)	3.8%	3.4%	3.8%	3.7%
Avista Corporation (NYSE-AVA)	4.5%	4.3%	4.5%	4.4%
Black Hills Corporation (NYSE-BKH)	6.0%	6.0%	6.0%	6.0%
Cleco Corporation (NYSE-CNL)	8.0%	8.0%	8.0%	8.0%
CMS Energy Corporation (NYSE-CMS)	5.9%	5.8%	5.9%	5.9%
Consolidated Edison, Inc. (NYSE-ED)	3.2%	3.3%	3.2%	3.2%
Dominion Resources, Inc. (NYSE-D)	7.3%	4.6%	6.8%	6.2%
DTE Energy Company (NYSE-DTE)	4.6%	4.7%	4.6%	4.6%
Duke Energy Corporation (NYSE-DUK)	4.2%	3.9%	4.2%	4.1%
Edison International (NYSE-EIX)	-0.2%	4.6%	0.8%	1.7%
FirstEnergy Corporation (ASE-FE)	3.6%	0.6%	3.5%	2.6%
Great Plains Energy Incorporated (NYSE-GXP)	6.3%	5.1%	6.3%	5.9%
Hawaiian Electric Industries, Inc. (NYSE-HE)	2.4%	3.7%	3.7%	3.3%
IDACORP, Inc. (NYSE-IDA)	4.0%	4.0%	n/a	4.0%
MGE Energy (NDQ-MGEE)	4.0%	4.0%	n/a	4.0%
Nextera Energy (NYSE-NEE)	6.4%	6.1%	6.1%	6.2%
Northeast Utilities (NYSE-NU)	7.7%	7.1%	7.1%	7.3%
NorthWestern Corporation (NYSE-NWE)	5.0%	5.0%	n/a	5.0%
Pepco Holdings, Inc. (NYSE-POM)	4.6%	6.0%	4.6%	5.1%
PG&E Corporation (NYSE-PCG)	3.1%	1.4%	3.7%	2.7%
Pinnacle West Capital Corp. (NYSE-PNW)	6.0%	4.1%	6.0%	5.4%
PNM Resources, Inc. (NYSE-PNM)	6.4%	7.3%	6.4%	6.7%
Portland General Electric Company (NYSE-POR)	5.7%	6.5%	5.8%	6.0%
PPL Corporation (NYSE-PPL)	6.0%	-3.1%	6.0%	3.0%
SCANA Corporation (NYSE-SCG)	4.8%	4.7%	4.9%	4.8%
Southern Company (NYSE-SO)	4.8%	4.8%	5.0%	4.9%
UIL Holdings Corporation (NYSE-UIL)	8.1%	6.5%	7.0%	7.2%
UNS Energy Corp. (NYSE-UNS)	8.0%	8.0%	n/a	8.0%
Westar Energy, Inc. (NYSE-WR)	4.8%	5.1%	4.8%	4.9%
Wisconsin Energy Corporation (NYSE-WEC)	4.9%	5.2%	4.9%	5.0%
Xcel Energy Inc. (NYSE-XEL)	5.1%	4.9%	5.4%	5.1%
Mean	5.0%	4.7%	5.0%	4.9%
Median	5.0%	4.9%	5.2%	5.0%

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, June 27, 2013.

TECO Energy, Inc. (NYSE-TE)	3.0%	3.8%	3.0%	3.3%

Panel B
Electric Proxy Group

Company	Yahoo	Zacks	Reuters	Mean
American Electric Power Co. (NYSE-AEP)	3.8%	3.4%	3.8%	3.7%
Cleco Corporation (NYSE-CNL)	8.0%	8.0%	8.0%	8.0%
Empire District Electric Co. (NYSE-EDE)	3.0%	3.0%	3.0%	3.0%
Great Plains Energy Incorporated (NYSE-GXP)	6.3%	5.1%	6.3%	5.9%
IDACORP, Inc. (NYSE-IDA)	4.0%	4.0%	n/a	4.0%
Otter Tail Corporation (NDQ-OTTR)	6.0%	6.0%	6.0%	6.0%
Pinnacle West Capital Corp. (NYSE-PNW)	6.0%	4.1%	6.0%	5.4%
PNM Resources, Inc. (NYSE-PNM)	6.4%	7.3%	6.4%	6.7%
Portland General Electric Company (NYSE-POR)	5.7%	6.5%	5.8%	6.0%
Southern Company (NYSE-SO)	4.8%	4.8%	5.0%	4.9%
Westar Energy, Inc. (NYSE-WR)	4.8%	5.1%	4.8%	4.9%
Mean	5.4%	5.2%	5.5%	5.3%
Median	5.7%	5.1%	5.9%	5.4%

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, June 27, 2013.

Exhibit JRW-10

Tampa Electric Company
DCF Growth Rate Indicators

Electric and Hevert Proxy Groups
Summary Growth Rates

Growth Rate Indicator	Electric Proxy Group	Hevert Proxy Group
Historic *Value Line* Growth in EPS, DPS, and BVPS	3.5%	2.3%
Projected *Value Line* Growth in EPS, DPS, and BVPS	4.1%	4.2%
Sustainable Growth ROE * Retention Rate	3.9%	3.8%
Projected EPS Growth from Yahoo, Zacks, and Reuters	5.0%	5.4%
Average of Historic and Projected Growth Rates	4.1%	3.9%
Average of Sustainable and Projected Growth Rates	4.3%	4.4%

Exhibit JRW-11

Tampa Electric Company
Capital Asset Pricing Model

Panel A
Electric Proxy Group

Risk-Free Interest Rate	4.00%
Beta*	0.70
Ex Ante Equity Risk Premium**	5.00%
CAPM Cost of Equity	7.5%

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

Panel B
Hevert Proxy Group

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

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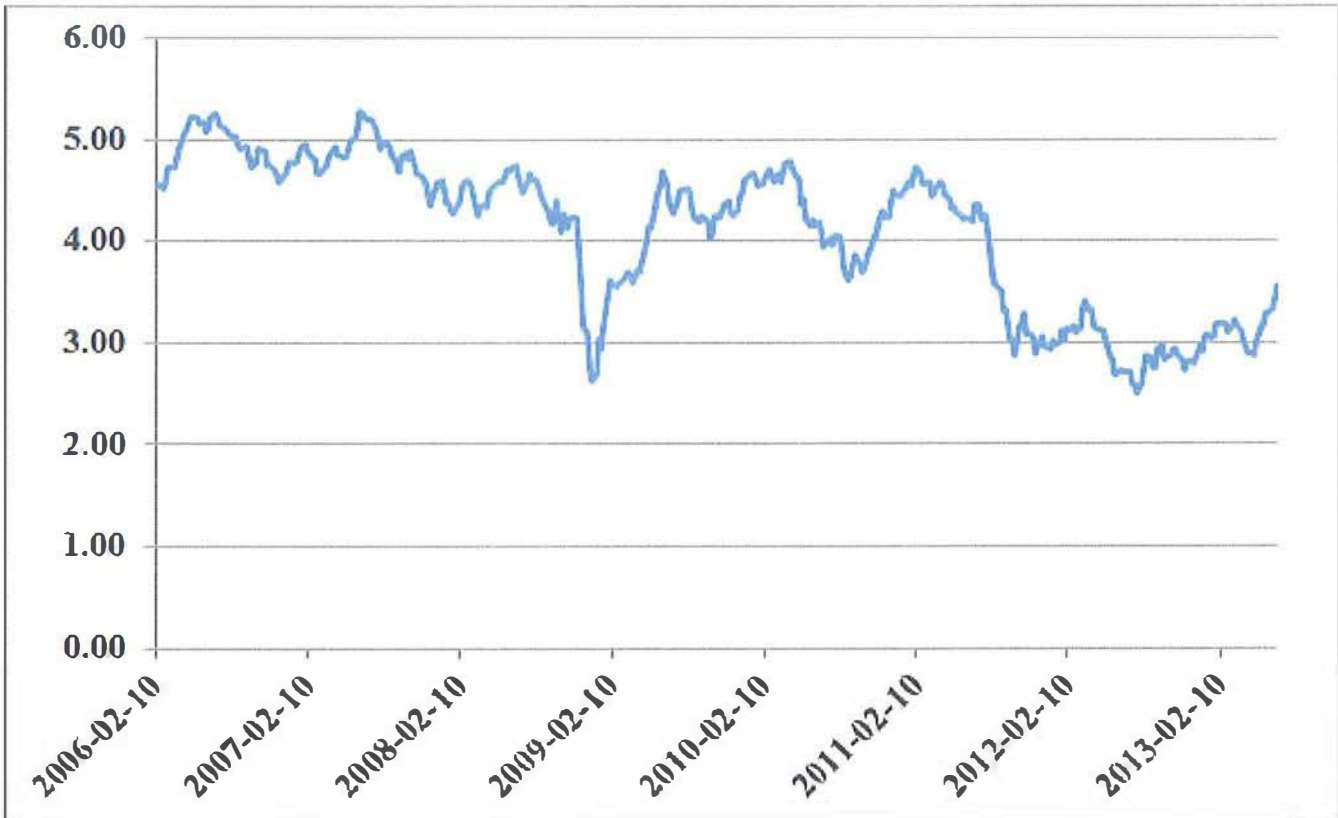** See pages 5 and 6 of Exhibit JRW-11

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
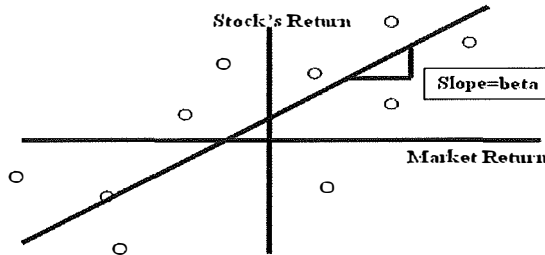
Panel A
Electric Proxy Group

Company Name	Beta
ALLETE, Inc. (NYSE-ALE)	0.70
Alliant Energy Corporation (NYSE-LNT)	0.70
Ameren Corporation (NYSE-AEE)	0.65
American Electric Power Co. (NYSE-AEP)	0.80
Avista Corporation (NYSE-AVA)	0.70
Black Hills Corporation (NYSE-BKH)	0.80
Cleco Corporation (NYSE-CNL)	0.65
CMS Energy Corporation (NYSE-CMS)	0.75
Consolidated Edison, Inc. (NYSE-ED)	0.60
Dominion Resources, Inc. (NYSE-D)	0.65
DTE Energy Company (NYSE-DTE)	0.75
Duke Energy Corporation (NYSE-DUK)	0.60
Edison International (NYSE-EIX)	0.75
FirstEnergy Corporation (ASE-FE)	0.75
Great Plains Energy Incorporated (NYSE-GXP)	0.80
Hawaiian Electric Industries, Inc. (NYSE-HE)	0.70
IDACORP, Inc. (NYSE-IDA)	0.70
MGE Energy, Inc. (NYSE-MGEE)	0.60
Nextera Energy (NYSE-NEE)	0.70
Northeast Utilities (NYSE-NU)	0.70
NorthWestern Corporation (NYSE-NWE)	0.70
Pepco Holdings, Inc. (NYSE-POM)	0.75
PG&E Corporation (NYSE-PCG)	0.55
Pinnacle West Capital Corp. (NYSE-PNW)	0.70
PNM Resources, Inc. (NYSE-PNM)	0.95
Portland General Electric Company (NYSE-PO]	0.75
PPL Corporation (NYSE-PPL)	0.65
SCANA Corporation (NYSE-SCG)	0.65
Southern Company (NYSE-SO)	0.55
UIL Holdings Corporation (NYSE-UIL)	0.70
UNS Energy Corp. (NYSE-UNS)	0.70
Westar Energy, Inc. (NYSE-WR)	0.75
Wisconsin Energy Corporation (NYSE-WEC)	0.60
Xcel Energy Inc. (NYSE-XEL)	0.60
Mean	0.70
Median	0.70

Data Source: *Value Line Investment Survey, 2013.*

Panel B
Hevert Proxy Group

Company Name	Beta
American Electric Power Co. (NYSE-AEP)	0.80
Cleco Corporation (NYSE-CNL)	0.65
Empire District Electric Co. (NYSE-EDE)	0.65
Great Plains Energy Incorporated (NYSE-GXP)	0.80
IDACORP, Inc. (NYSE-IDA)	0.70
Otter Tail Corporation (NDQ-OTTR)	0.90
Pinnacle West Capital Corp. (NYSE-PNW)	0.70
PNM Resources, Inc. (NYSE-PNM)	0.95
Portland General Electric Company (NYSE-PO]	0.75
Southern Company (NYSE-SO)	0.55
Westar Energy, Inc. (NYSE-WR)	0.75
Mean	0.75
Median	0.75

Data Source: *Value Line Investment Survey*, 2013.

Exhibit JRW-11
Risk Premium Approaches

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

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

Exhibit JRW-11

Tampa Electric Company
Capital Asset Pricing Model
Equity Risk Premium

Category	Study Authors	Publication Date	Time Period OfStudy	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Median
Historical Risk Premium										
	Ibbotson	2013	1926-2012	Historical Stock Returns - Bond Returns	Arithmetic				5.70%	
					Geometric				4.10%	
	Damodaran	2013	1928-2012	Historical Stock Returns - Bond Returns	Arithmetic				5.88%	
					Geometric				4.20%	
	Dimson, Marsh, Staunton	2013	1900-2012	Historical Stock Returns - Bond Returns	Arithmetic					
					Geometric				4.20%	
	Bate	2008	1900-2007	Historical Stock Returns - Bond Returns	Geometric				4.50%	
	Shiller	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				7.00%	
					Geometric				5.50%	
	Siegel	2005	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				6.10%	
					Geometric				4.60%	
	Dimson, Marsh, and Staunton	2006	1900-2005	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
	Goyal & Welch	2006	1872-2004	Historical Stock Returns - Bond Returns					4.77%	
	Median									5.14%
Ex Ante Models (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	2013	Projection	Fundamental Economic and Market Factors					6.50%	
	Duarte & Rosa - NY Fed	2013	projection	Projections from 29 Models					5.40%	
	Duff & Phelps	2013	Projection	Normalized with 4.0% Long-Term Treasury Yield					5.00%	
	Damodaran	2013	Projection	Fundamentals - Implied from FCF to Equity Model					5.74%	
	Social Security									
	Office of Chief Actuary		1900-1995							
	John Campbell	2001	1860-2000	Historical & Projections (D/P & Earnings Growth)	Arithmetic	3.00%	4.00%	3.50%	3.50%	
			Projected for 75 Years		Geometric	1.50%	2.50%	2.00%	2.00%	
	Peter Diamond	2001	Projected for 75 Years	Fundamentals (D/P, GDP Growth)		3.00%	4.80%	3.90%	3.90%	
	John Shoven	2001	Projected for 75 Years	Fundamentals (D/P, P/E, GDP Growth)		3.00%	3.50%	3.25%	3.25%	
	Median									4.00%
Surveys										
	Survey of Financial Forecasters	2013	10-Year Projection	About 50 Financial Forecasters					2.30%	
	Duke - CFO Magazine Survey	2013	10-Year Projection	Approximately 350 CFOs					4.20%	
	Welch - Academics	2008	30-Year Projection	Random Academics		5.00%	5.74%	5.37%	5.37%	
	Fernandez - Academics, Analysts, and Compan	2013	Long-Term	Survey of Academics, Analysts, and Companies					5.70%	
	Median									4.79%
Building Block										
	Ibbotson and Chen	2013	1926-2012	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			6.13%	5.11%	
					Geometric			4.09%		
	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		2013	Current Supply Model (D/P & Earnings Growth)					4.00%	
	Median									4.00%
Mean										4.48%
Median										4.39%

Exhibit JRW-11

Tampa Electric Company
Capital Asset Pricing Model
Equity Risk Premium

Summary of 2010-13 Equity Risk Premium Studies

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Average
Historical Risk Premium										
	Ibbotson	2013	1926-2012	Historical Stock Returns - Bond Returns	Arithmetic				5.70%	
					Geometric				4.10%	
	Damodaran	2013	1928-2012	Historical Stock Returns - Bond Returns	Arithmetic				5.88%	
					Geometric				4.20%	
	Dimson, Marsh, Staunton	2013	1900-2012	Historical Stock Returns - Bond Returns	Arithmetic					
					Geometric				4.20%	
	Median									4.82%
Ex Ante Models (Puzzle Research)										
	Siegel - Rethink ERP	2011	Projection	Real Stock Returns and Components					5.50%	
	American Appraisal Quarterly ERP	2013	Projection	Fundamental Economic and Market Factors					6.50%	
	Duarte & Rosa - NY Fed	2013	Projection	Projections from 29 Models					5.40%	
	Duff & Phelps	2013	Projection	Normalized with 4.0% Long-Term Treasury Yield					5.00%	
	Damodaran	2013	Projection	Fundamentals - Implied from FCF to Equity Model					5.74%	
	Median									5.50%
Surveys										
	Survey of Financial Forecasters	2013	10-Year Projection	About 50 Financial Forecasters					2.30%	
	Duke - CFO Magazine Survey	2013	10-Year Projection	Approximately 350 CFOs					4.20%	
	Fernandez - Academics, Analysts, and Companies	2013	Long-Term	Survey of Academics, Analysts, and Companies					5.70%	
	Median									4.20%
Building Block										
	Ibbotson and Chen	2013	Projection	Historical Supply Model (D/P & Earnings Growth)	Arithmetic		6.13%		5.11%	
					Geometric		4.09%			
	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	2013	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				4.00%	
	Median								4.00%	
Mean										4.63%
Median										4.51%

Exhibit JRW-12

Tampa Electric Company
Company's Proposed Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	45.80%	5.40%	2.47%
Common Equity	54.20%	11.25%	6.09%
Total	100.00%	100.00%	8.57%

Summary of Tampa Electric Company's ROE Results

Panel A
Summary of Mr. Hevert's DCF Results

Summary of Mr. Hevert's Constant Growth DCF Results

	Mean Low	Mean	Mean High
Mean Results			
30-Day Average	8.80%	10.60%	13.09%
90-Day Average	8.88%	10.69%	13.18%
180-Day Average	8.90%	10.70%	13.19%

Summary of Mr. Hevert's Constant Growth DCF Results

	Median Low	Median	Median High
Median Results			
30-Day Average	9.58%	10.84%	11.45%
90-Day Average	9.74%	10.86%	11.47%
180-Day Average	9.68%	10.81%	11.42%

Panel B
Summary of Mr. Hevert's CAPM Results

	Sharpe Ratio Derived Market Risk Premium	Bloomberg Derived Market Risk Premium	Capital IQ Derived Market Risk Premium
Average Bloomberg Beta - 0.714			
Current 30-Year Treasury - 3.12%	7.42%	10.18%	10.13%
Near-Term Projected 30-Year Treasury (3.25%)	7.56%	10.31%	10.26%
Long-Term Projected 30-Year Treasury (5.10%)	9.41%	12.16%	12.11%
Average Value Line Beta - 0.718			
Current 30-Year Treasury - 3.12%	7.45%	10.22%	10.16%
Near-Term Projected 30-Year Treasury (3.25%)	7.58%	10.35%	10.30%
Long-Term Projected 30-Year Treasury (5.10%)	9.43%	12.20%	12.15%

Panel C
Summary of Mr. Hevert's RP Results

	30-Year Treasury Yield	Risk Premium	Return on Equity
Current 30-Year Treasury - 3.12%	3.12%	7.11%	10.23%
Near-Term Projected 30-Year Treasury (3.25%)	3.25%	6.99%	10.24%
Long-Term Projected 30-Year Treasury (5.10%)	5.10%	5.66%	10.76%

Growth Rates
GDP, S&P 500 Price, EPS, and DPS

	GDP	S&P 500	Earnings	Dividends	
1960	526.4	58.11	3.10	1.98	
1961	544.8	71.55	3.37	2.04	
1962	585.7	63.10	3.67	2.15	
1963	617.8	75.02	4.13	2.35	
1964	663.6	84.75	4.76	2.58	
1965	719.1	92.43	5.30	2.83	
1966	787.7	80.33	5.41	2.88	
1967	832.4	96.47	5.46	2.98	
1968	909.8	103.86	5.72	3.04	
1969	984.4	92.06	6.10	3.24	
1970	1038.3	92.15	5.51	3.19	
1971	1126.8	102.09	5.57	3.16	
1972	1237.9	118.05	6.17	3.19	
1973	1382.3	97.55	7.96	3.61	
1974	1499.5	68.56	9.35	3.72	
1975	1637.7	90.19	7.71	3.73	
1976	1824.6	107.46	9.75	4.22	
1977	2030.1	95.10	10.87	4.86	
1978	2293.8	96.11	11.64	5.18	
1979	2562.2	107.94	14.55	5.97	
1980	2788.1	135.76	14.99	6.44	
1981	3126.8	122.55	15.18	6.83	
1982	3253.2	140.64	13.82	6.93	
1983	3534.6	164.93	13.29	7.12	
1984	3930.9	167.24	16.84	7.83	
1985	4217.5	211.28	15.68	8.20	
1986	4460.1	242.17	14.43	8.19	
1987	4736.4	247.08	16.04	9.17	
1988	5100.4	277.72	24.12	10.22	
1989	5482.1	353.40	24.32	11.73	
1990	5800.5	330.22	22.65	12.35	
1991	5992.1	417.09	19.30	12.97	
1992	6342.3	435.71	20.87	12.64	
1993	6667.4	466.45	26.90	12.69	
1994	7085.2	459.27	31.75	13.36	
1995	7414.7	615.93	37.70	14.17	
1996	7838.5	740.74	40.63	14.89	
1997	8332.4	970.43	44.09	15.52	
1998	8793.5	1229.23	44.27	16.20	
1999	9353.5	1469.25	51.68	16.71	
2000	9951.5	1320.28	56.13	16.27	
2001	10286.2	1148.09	38.85	15.74	
2002	10642.3	879.82	46.04	16.08	
2003	11142.2	1111.91	54.69	17.88	
2004	11853.3	1211.92	67.68	19.41	
2005	12623.0	1248.29	76.45	22.38	
2006	13377.2	1418.30	87.72	25.05	
2007	14028.7	1468.36	82.54	27.73	
2008	14291.5	903.25	65.39	28.05	
2009	13973.7	1115.10	59.65	22.31	
2010	14498.9	1257.64	83.66	23.12	
2011	15075.7	1257.60	97.05	26.02	Average
2012	15681.5	1426.19	102.47	30.44	
Growth Rates	6.74	6.35	6.96	5.39	6.36

Data Sources: GDPA - http://research.stlouisfed.org/fred2/categories/106
S&P 500, EPS and DPS - http://pages.stern.nyu.edu/~adamodar/

Long-Term Growth of GDP, S&P 500, S&P 500 EPS, and S&P 500 DPS
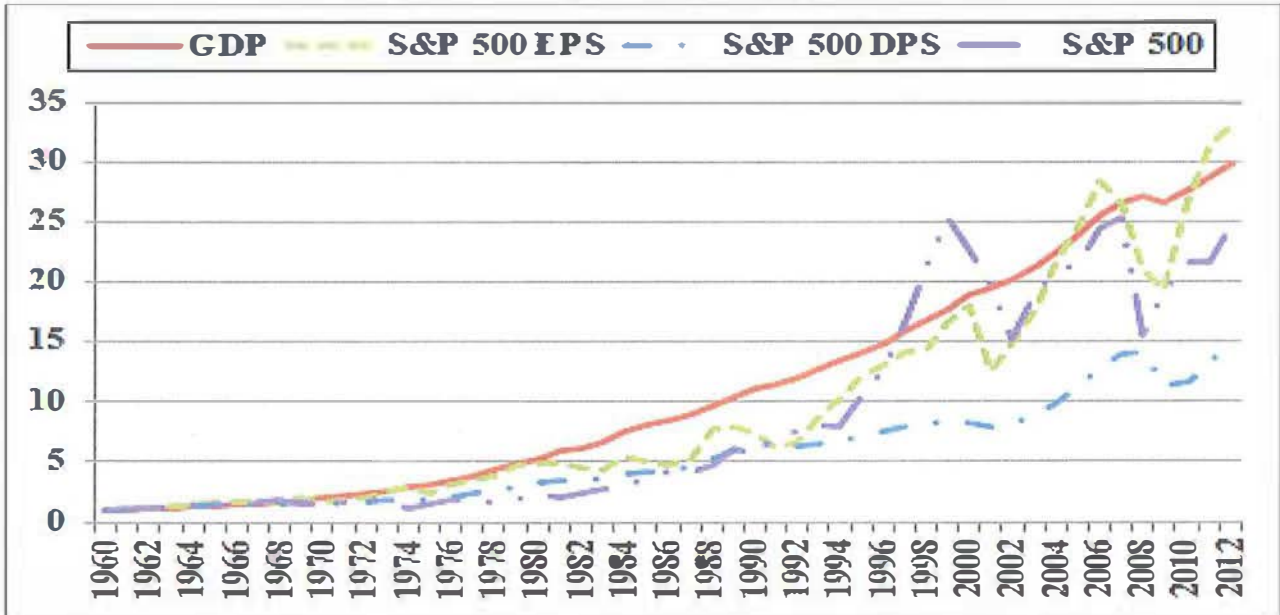
	GDP	S&P 500	S&P 500 EPS	S&P 500 DPS
Growth Rates	6.74%	6.35%	6.96%	5.39%

Panel A
Historic GDP Growth Rates

10-Year Average	4.0%
20-Year Average	4.6%
30-Year Average	5.1%
40-Year Average	6.6%
50-Year Average	6.8%

Calculated from Page 1 of Exhibit JRW-14

Panel B
Projected GDP Growth Rates

	Time Frame	Projected Nominal GDP Growth Rate
Congressional Budget Office	2013-2023	4.6%
Survey of Financial Forecasters	Ten Year	4.8%
Energy Information Administration	2011-2040	4.5%

Sources:
http://www.cbo.gov/ftpdocs/120xx/doc12039/01-26_FY2013Outlook.pdf page XIII
http://www.eia.gov/forecasts/aeo/tables_ref.cfm Table 20
http://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/2013/survq113.cfm

Panel A
S&P 500 - VIX - 1990-Present

Mar 1990: ^VIX 19.73
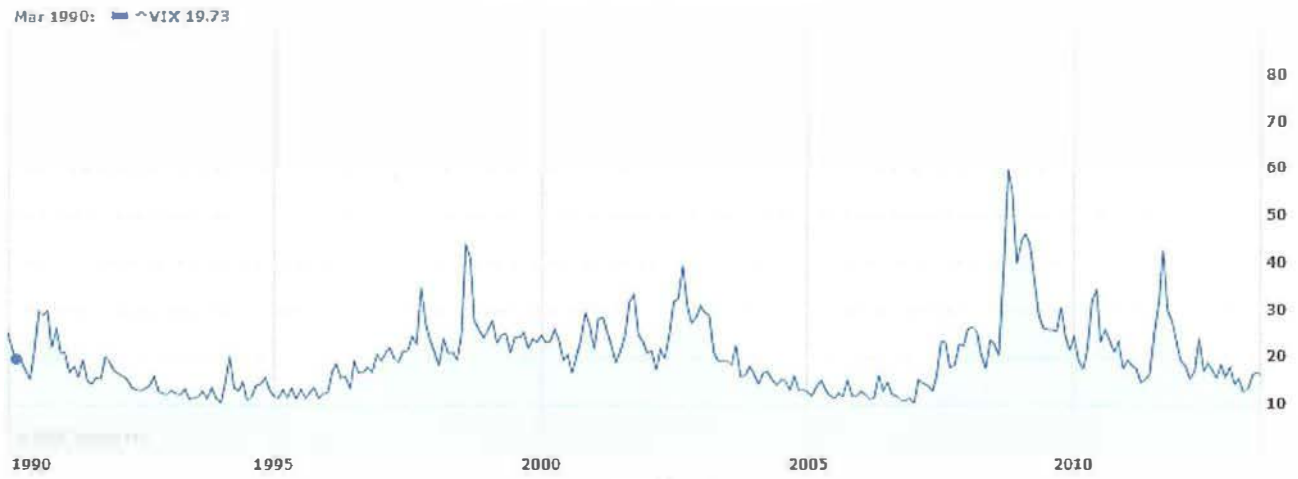
Panel B
S&P 500 - VIX - Last Year

May 2, 2013: ^VIX 13.59
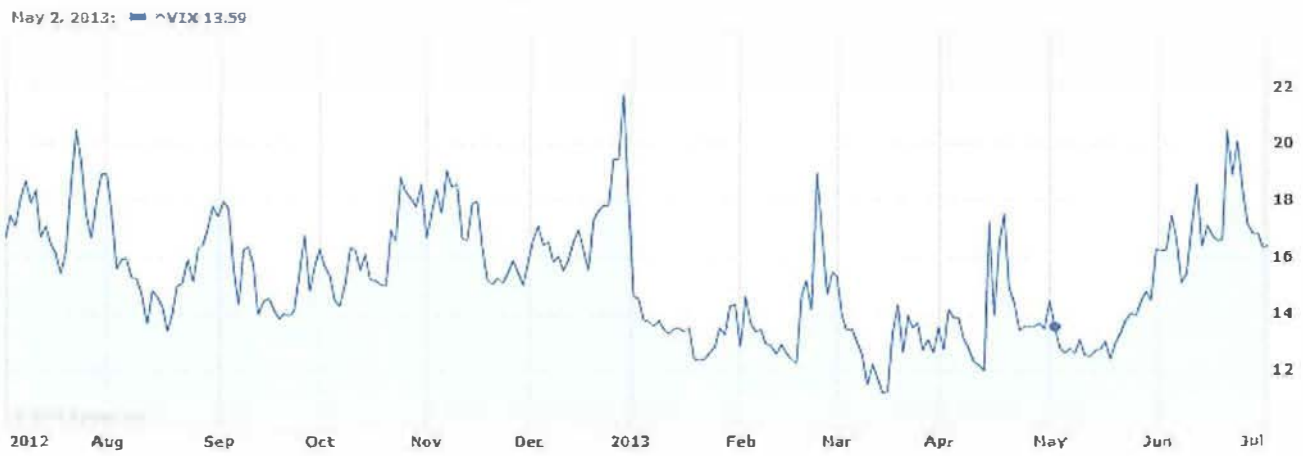
Panel C
S&P 500 - VXV - Last Year

Mar 13, 2013: ^VXV 14.51
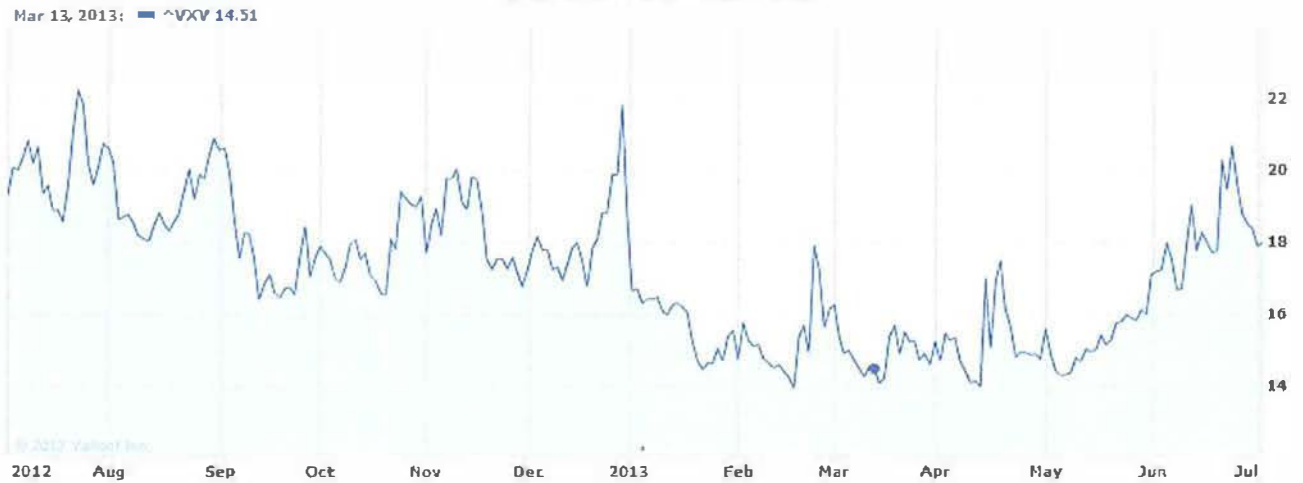
Panel A
Hevert Expected Risk Premium - VIX = .1854

Formula RBH-5

$$\frac{RP_h}{Vol_h} \times Vol_e = RP_e$$

RP_h	Vol_h	
6.6%	0.203	

Vol_e	Expected Market Sharpe Ratio	RPe
0.1854	0.3252	6.03%

RP_h = historical arithmetic average Risk Premium

Vol_h = historical market volatility

Vol_e = expected market volatility

Average Bloomberg Beta

	Rf	B	MRP	Equity Cost Rate
Current Rf	3.12%	0.714	6.03%	7.42%
Near-Term	3.25%	0.714	6.03%	7.55%
Long-Term	5.10%	0.714	6.03%	9.40%
Mean				8.13%

Average Value Line Beta

	Rf	B	MRP	Equity Cost Rate
Current Rf	3.12%	0.718	6.03%	7.45%
Near-Term	3.25%	0.718	6.03%	7.58%
Long-Term	5.10%	0.718	6.03%	9.43%
Mean				8.15%

Panel B
Current Expected Risk Premium - VIX = .1644

Formula RBH-5

$$\frac{RP_h}{Vol_h} \times Vol_e = RP_e$$

RP_h	Vol_h	
6.6%	0.203	

Vol_e	Expected Market Sharpe Ratio	RPe
0.1644	0.3252	5.35%

RP_h = historical arithmetic average Risk Premium

Vol_h = historical market volatility

Vol_e = expected market volatility

Average Bloomberg Beta

Calculated Beta	Rf	B	MRP	Equity Cost Rate
Current Rf	3.12%	0.714	5.35%	6.94%
Near-Term	3.25%	0.714	5.35%	7.07%
Long-Term	5.10%	0.714	5.35%	8.92%

Average Value Line Beta

	Rf	B	MRP	Equity Cost Rate
Current Rf	3.12%	0.718	5.35%	6.96%
Near-Term	3.25%	0.718	5.35%	7.09%
Long-Term	5.10%	0.718	5.35%	8.94%

Resume
J. Randall Woolridge

<table>
<tr><td><u>Office Address</u></td><td><u>Home Address</u></td></tr>
<tr><td>302 Business Building</td><td>120 Haymaker Circle</td></tr>
<tr><td>The Pennsylvania State University</td><td>State College, PA 16801</td></tr>
<tr><td>University Park, PA 16802</td><td>814-238-9428</td></tr>
<tr><td>814-865-1160</td><td></td></tr>
</table>

Academic Experience

Professor of Finance, the Smeal College of Business Administration, the Pennsylvania State University (July 1, 1990 to the present).
> **President, Nittany Lion Fund LLC,** (January 1, 2005 to the present)
> **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).

Associate Professor of Finance, College of Business Administration, the Pennsylvania State University (July 1, 1984 to June 30, 1990).

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*.

Business and Professional Experience
J. Randall Woolridge

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

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

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

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

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

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

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   Most of the attention given the accuracy of analysts' EPS forecasts comes

2 from media coverage of company's quarterly earnings announcements. When

3 companies' announced earnings beat Wall Street's EPS estimates ("a positive

4 surprise"), their stock prices usually go up. When a company's EPS figure misses or

5 is below Wall Street's forecasted EPS ("a negative surprise"), their stock price

6 usually declines, sometimes precipitously so. Wall Street's estimate is the

7 consensus forecast for quarterly EPS made by analysts who follow the stock as of

8 the announcement date. And so Wall Street's estimate is the consensus EPS made in

9 the days leading up to the EPS announcement.

10   In recent years, it has become more common for companies to beat Wall

11 Street's quarterly EPS estimate. A recent *Wall Street Journal* article summarized the

12 results for the first quarter of 2012:

13   While this "positive surprise ratio" of 70% is above the 20 year
14   average of 58% and also higher than last quarter's tally, it is just
15   middling since the current bull market began in 2009. In the past
16   decade, the ratio only dipped below 60% during the financial
17   crisis. Look before 2002, though, and 70% would have been
18   literally off the chart. From 1993 through 2001, about half of
19   companies had positive surprises, . . .[1]
20
21 Figure 1 below provides the record for companies beating Wall Street's EPS

22 estimate on a quarterly basis over the past twenty years.

23
24
25

---

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

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1

2 **Figure 1**

3 **Percent of Companies Beating Wall Street's Quarterly Estimates**

Source: BBH Equity Strategy Research

4
5

6
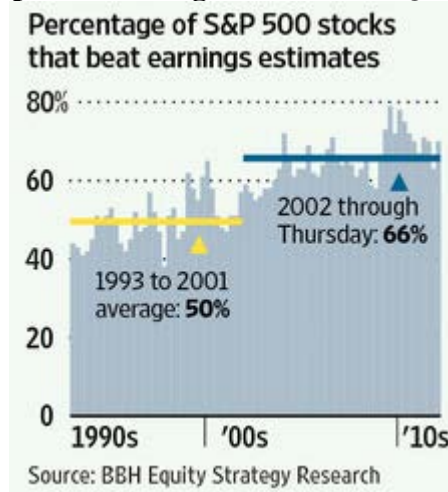
7   **A.   RESEARCH ON THE ACCURACY OF ANALYSTS'**

8   **NEAR-TERM EPS ESTIMATES**

9

10   There is a long history of studies that evaluate how well analysts forecast

11 near-term EPS estimates and long-term EPS growth rates. Most of these studies

12 have evaluated the accuracy of earnings forecasts for the current quarter or year.

13 Many of the early studies indicated that analysts make overly optimistic EPS

14 earnings forecasts for quarter-to-quarter EPS (Stickel (1990); Brown (1997);

15 Chopra (1998)).[2] More recent studies have shown that the optimistic bias tends

16 to be larger for longer-term forecasts and smaller for forecasts made nearer to 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).

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   EPS announcement date. Richardson, Teoh, and Wysocki (2004) report that the

2   upward bias in earnings growth rates declines in the quarters leading up to the

3   earnings announcement date.[3] They call this result the "walk-down to beatable

4   analyst forecasts." They hypothesize that the walk-down might be driven by the

5   "earning-guidance game," in which analysts give optimistic forecasts at the start

6   of a fiscal year, then revise their estimates downwards until the firm can beat the

7   forecasts at the earnings announcement date.

8   However, two regulatory developments over the past decade have

9   potentially impacted analysts' EPS growth rate estimates. First, Regulation Fair

10   Disclosure ("Reg FD") was introduced by the Securities and Exchange

11   Commission ("SEC") in October of 2000. Reg FD prohibits private

12   communication between analysts and management so as to level the information

13   playing field in the markets. With Reg FD, analysts are less dependent on gaining

14   access to management to obtain information and, therefore, are not as likely to

15   make optimistic forecasts to gain access to management. Second, the conflict of

16   interest within investment firms with investment banking and analyst operations

17   was addressed in the Global Analysts Research Settlements ("GARS"). GARS,

18   as agreed upon on April 23, 2003, between the SEC, NASD, NYSE, and ten of

19   the largest U.S. investment firms, includes a number of regulations that were

---

[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).

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

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

2   favorable projections.

3   The previously cited *Wall Street Journal* article acknowledged the impact of

4   the new regulatory rules in explaining the recent results:[4]

5   What changed? One potential reason is the tightening of rules
6   governing analyst contacts with management. Analysts now must
7   rely on publicly available guidance or, gasp, figure things out by
8   themselves. That puts companies, with an incentive to set the bar
9   low so that earnings are received positively, in the driver's seat.
10   While that makes managers look good short-term, there is no
11   lasting benefit for buy-and-hold investors.
12
13   These comments on the impact of regulatory developments on the

14   accuracy of short-term EPS estimates were addressed in a study by Hovakimian

15   and Saenyasiri (2010).[5] The authors investigate analysts' forecasts of annual

16   earnings for the following time periods: (1) the time prior to Reg FD (1984-2000);

17   (2) the time period after Reg FD but prior to GARS (2000-2002);[6] and (3) the

18   time period after GARS (2002-2006). For the pre-Reg FD period, Hovakimian

19   and Saenyasiri find that analysts generally make overly optimistic forecasts of

20   annual earnings. The forecast bias is higher for early forecasts and steadily

21   declines in the months leading up to the earnings announcement. The results are

22   similar for the time period after Reg FD but prior to GARS. However, the bias is

---

[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.

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   lower in the later forecasts (the forecasts made just prior to the announcement).

2   For the time period after GARS, the average forecasts declined significantly, but a

3   positive bias remains. In sum, Hovakimian and Saenyasiri find that: (1) analysts

4   make overly optimistic short-term forecasts of annual earnings; (2) Reg FD had

5   no effect on this bias; and (3) GARS did result in a significant reduction in the

6   bias, but analysts' short-term forecasts of annual earnings still have a small

7   positive bias.

8   **B.   RESEARCH ON THE ACCURACY OF ANALYSTS'**
9   **LONG-TERM EPS GROWTH RATE FORECASTS**
10
11   There have been very few studies regarding the accuracy of analysts' long-

12   term EPS growth rate forecasts. Cragg and Malkiel (1968) studied analysts' long-

13   term EPS growth rate forecasts made in 1962 and 1963 by five brokerage houses

14   for 185 firms. They concluded that analysts' long-term earnings growth forecasts

15   are on the whole no more accurate than naive forecasts based on past earnings

16   growth.   Harris (1999) evaluated the accuracy of analysts' long-term EPS

17   forecasts over the 1982-1997 time period using a sample of 7,002 firm-year

18   observations.[7] He concluded the following: (1) the accuracy of analysts' long-

19   term EPS forecasts is very low; (2) a superior long-run method to forecast long-

20   term EPS growth is to assume that all companies will have an earnings growth

21   rate equal to historic GDP growth; and (3) analysts' long-term EPS forecasts are

---

[7] R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-755 (June/July 1999).

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   significantly upwardly biased, with forecasted earnings growth exceeding actual

2   earnings growth by seven percent per annum. Subsequent studies by DeChow, P.,

3   A. Hutton, and R. Sloan (2000), and Chan, Karceski, and Lakonishok (2003) also

4   conclude that analysts' long-term EPS growth rate forecasts are overly optimistic

5   and upwardly biased.[8] The Chan, Karceski, and Lakonishok (2003) study

6   evaluated the accuracy of analysts' long-term EPS growth rate forecasts over the

7   1982-98 time period. They reported a median IBES growth forecast of 14.5%,

8   versus a median realized five-year growth rate of about 9%. They also found that

9   the IBES forecasts of EPS beyond two years are not accurate. They concluded

10   the following: "Over long horizons, however, there is little forecastability in

11   earnings, and analysts' estimates tend to be overly optimistic."

12   Lacina, Lee, and Xu (2011) evaluated the accuracy of analysts' long-term

13   earnings growth rate forecasts over the 1983-2003 time period.[9] The study

14   included 27,081 firm year observations, and compared the accuracy of analysts'

15   EPS forecasts to those produced by two naïve forecasting models: (1) a random

16   walk model ("RW"), where the long-term EPS (t+5) is simply equal to last year's

17   EPS figure (t-1); (2) a RW model with drift ("RWGDP"), where the drift or

---

[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

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   growth rate is GDP growth for period t-1. In this model, long-term EPS (t+5) is

2   simply equal to last year's EPS figure (t-1) times (1 + GDP growth (t-1)). The

3   authors conclude that that using the RW model to forecast EPS in the next 3-5

4   years proved to be just as accurate as using the EPS estimates from analysts' long-

5   term earnings growth rate forecasts. They find that the RWGDP model performs

6   better than the pure RW model, and that both models perform as well as analysts

7   in forecasting long-term EPS. They also discover an optimistic bias in analysts'

8   long-term EPS forecasts. In the authors' opinion, these results indicate that

9   analysts' long-term earnings growth rate forecasts should be used with caution as

10   inputs for valuation and cost of capital purposes.

11

12   **C.   ISSUES REGARDING THE SUPERIORITY OF**
13   **ANALYSTS' EPS FORECASTS OVER HISTORIC AND**
14   **TIME-SERIES ESTIMATES OF LONG-TERM EPS GROWTH**
15

16   As highlighted by the classic study by Brown and Rozeff (1976) and the

17   other studies that followed, analysts' forecasts of quarterly earnings estimates are

18   superior to the estimates derived from historic and time-series analyses.[10] This is

19   often attributed to the information and timing advantage that analysts have over

20   historic and time-series analyses. These studies relate to analysts' forecasts of

21   quarterly and/or annual forecasts, and not to long-term EPS growth rate forecasts.

---

[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).

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   The previously cited studies by Harris (1999), Chan, Karceski, and Lakonishok

2   (2003), and Lacina, Lee, and Xu (2011) all conclude that analysts' forecasts are

3   no better than time-series models and historic growth rates in forecasting long-

4   term EPS. Harris (1999) and Lacina, Lee, and Xu (2011) concluded that historic

5   GDP growth was superior to analysts' forecasts for long run earnings growth.

6   These overall results are similar to the findings by Bradshaw, Drake, Myers, and

7   Myers (2009) that discovered that time-series estimates of annual earnings are

8   more accurate over longer horizons than analysts' forecasts of earnings. As the

9   authors state, "These findings suggest an incomplete and misleading

10 generalization about the superiority of analysts' forecasts over even simple time-

11 series-based earnings forecasts."[11]

12   **D. STUDY OF THE ACCURACY OF ANALYSTS'**
13   **LONG-TERM EARNINGS GROWTH RATES**
14
15   To evaluate the accuracy of analysts' EPS forecasts, I have compared

16 actual 3-5 year EPS growth rates with forecasted EPS growth rates on a quarterly

17 basis over the past 20 years for all companies covered by the I/B/E/S data base.

18 In Panel A of page 1 of Exhibit JRW-16, Appendix B1, I show the average

19 analysts' forecasted 3-5 year EPS growth rate with the average actual 3-5 year

20 EPS growth rate for a recent twenty year period.

---

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

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   The following example shows how the results can be interpreted. For the

2   3-5 year period prior to the first quarter of 1999, analysts had projected an EPS

3   growth rate of 15.13%, but companies only generated an average annual EPS

4   growth rate over the 3-5 years of 9.37%. This projected EPS growth rate figure

5   represented the average projected growth rate for over 1,510 companies, with an

6   average of 4.88 analysts' forecasts per company. For the entire twenty-year

7   period of the study, for each quarter there were on average 5.6 analysts' EPS

8   projections for 1,281 companies. Overall, my findings indicate that forecast errors

9   for long-term estimates are predominantly positive, which indicates an upward

10   bias in growth rate estimates. The mean and median forecast errors over the

11   observation period are 143.06% and 75.08%, respectively. The forecasting errors

12   are negative for only eleven of the eighty quarterly time periods: five consecutive

13   quarters starting at the end of 1995 and six consecutive quarters starting in 2006.

14   As shown in Panel A of page 1 of Exhibit JRW-16, Appendix B1, the quarters

15   with negative forecast errors were for the 3-5 year periods following earnings

16   declines associated with the 1991 and 2001 economic recessions in the U.S. Thus,

17   there is evidence of a persistent upward bias in long-term EPS growth forecasts.

18   The average 3-5 year EPS growth rate projections for all companies

19   provided in the I/B/E/S database on a quarterly basis from 1988 to 2007 are

20   shown in Panel B of page 1 of Exhibit JRW-16, Appendix-B1. In this graph, no

21   comparison to actual EPS growth rates is made, and hence, there is no follow-up

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   period. Therefore, since companies are not lost from the sample due to a lack of

2   follow-up EPS data, these results are for a larger sample of firms. The average

3   projected growth rate increased to the 18.0% range in 2006, and it has since

4   decreased to about 14.0%.

5   The upward bias in analysts' long-term EPS growth rate forecasts appears to

6   be known in the markets. Page 2 of Exhibit JRW-16, Appendix B1 provides an

7   article published in the *Wall Street Journal*, dated March 21, 2008, that discusses the

8   upward bias in analysts' EPS growth rate forecasts.[12]   In addition, a recent

9   *Bloomberg Businessweek* article also highlighted the upward bias in analysts' EPS

10   forecasts, citing a study by McKinsey Associates. This article is provided on pages

11   3 and 4 of Exhibit JRW-16, Appendix B1.   The article concludes with the

12   following:[13]

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

15

16   **E.   REGULATORY DEVELOPMENTS AND THE ACCURACY**
17   **OF ANALYSTS' LONG-TERM EARNINGS GROWTH RATES FORECASTS**
18
19

---

[12] Andrew Edwards, "Study Suggests Bias in Analysts' Rosy Forecasts," *Wall Street Journal* (March 21, 2008), p. C6.
[13] Roben Farzad, 'For Analysts, Things are Always Looking Up,' *Bloomberg Businessweek* (June 14, 2010), pp. 39-40.

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   Whereas Hovakimian and Saenyasiri evaluated the impact of regulations

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

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

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

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

6   in the post Reg FD and GARS period.[14] Analysts' long-term EPS growth rate

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

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

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

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

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

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

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

22

---

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

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   These observations are echoed in a recent McKinsey study entitled

2   "Equity Analysts: Still too Bullish" which involved a study of the accuracy on

3   analysts long-term EPS growth rate forecasts. The authors conclude that after a

4   decade of stricter regulation, analysts' long-term earnings forecasts continue to be

5   excessively optimistic. They made the following observation (emphasis added):

6   [16]

7   Alas, a recently completed update of our work only reinforces this
8   view—despite a series of rules and regulations, dating to the last
9   decade, that were intended to improve the quality of the analysts'
10   long-term earnings forecasts, restore investor confidence in them,
11   and prevent conflicts of interest. For executives, many of whom go
12   to great lengths to satisfy Wall Street's expectations in their
13   financial reporting and long-term strategic moves, this is a
14   cautionary tale worth remembering.

15   . . .

16   This pattern confirms our earlier findings that analysts typically lag
17   behind events in revising their forecasts to reflect new economic
18   conditions. When economic growth accelerates, the size of the
19   forecast error declines; when economic growth slows, it increases.
20   So as economic growth cycles up and down, the actual earnings
21   S&P 500 companies report occasionally coincide with the analysts'
22   forecasts, as they did, for example, in 1988, from 1994 to 1997,
23   and from 2003 to 2006.

24   Moreover, analysts have been persistently overoptimistic for the
25   past 25 years, with estimates ranging from 10 to 12 percent a year,
26   compared with actual earnings growth of 6 percent. Over this time
27   frame, actual earnings growth surpassed forecasts in only two
28   instances, both during the earnings recovery following a recession.

---

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

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1 <u>. . On average, analysts' forecasts have been almost 100 percent</u>

2 <u>too high.</u> (Emphasis added)

3

4

5 **F. ANALYSTS' LONG-TERM EPS GROWTH RATE**

6 **FORECASTS FOR UTILITY COMPANIES**

7

8 To evaluate whether analysts' EPS growth rate forecasts are upwardly

9 biased for utility companies, I conducted a study similar to the one described

10 above using a group of electric utility and gas distribution companies. The results

11 are shown on Panels A and B of page 5 of Exhibit JRW-16, Appendix B1. The

12 projected EPS growth rates for electric utilities have been in the 4% to 6% range

13 over1994 through 2008 timeframe, with the recent figures approximately 5%. As

14 shown, the achieved EPS growth rates have been volatile and on average, below

15 the projected growth rates. Over the entire period, the average quarterly 3-5 year

16 projected and actual EPS growth rates are 4.59% and 2.90%, respectively.

17 For gas distribution companies, the projected EPS growth rates have

18 declined from about 6% in the 1990s to about 5% in the 2000s. The achieved

19 EPS growth rates have been volatile. Over the entire period, the average quarterly

20 3-5 year projected and actual EPS growth rates are 5.15% and 4.53%,

21 respectively.

22 Overall, the upward bias in EPS growth rate projections for electric utility

23 and gas distribution companies is not as pronounced as it is for all companies.

24 Nonetheless, the results here are consistent with the results for companies in

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   general -- analysts' projected EPS growth rate forecasts are upwardly-biased for

2   utility companies.

3

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

5   To assess *Value Line*'s earnings growth rate forecasts, I used the *Value*

6   *Line Investment Analyzer*. The results are summarized in Panel A of Page 6 of

7   Exhibit JRW-16, Appendix B1. I initially filtered the database and found that

8   *Value Line* has 3-5 year EPS growth rate forecasts for 2,333 firms. The average

9   projected EPS growth rate was 14.70%. This is high given that the average

10   historical EPS growth rate in the U.S. is about 7%. A major factor seems to be

11   that *Value Line* only predicts negative EPS growth for 43 companies. This is less

12   than two percent of the companies covered by *Value Line*. Given the ups and

13   downs of corporate earnings, this is unreasonable.

14   To put this figure in perspective, I screened the *Value Line* companies to

15   see what percent of companies covered by *Value Line* had experienced negative

16   EPS growth rates over the past five years. *Value Line* reported a five-year historic

17   growth rate for 2,219 companies. The results are shown in Panel B of page 6 of

18   Exhibit JRW-16, Appendix B1 and indicate that the average 5-year historic

19   growth rate was 3.90%, and *Value Line* reported negative historic growth for 844

20   firms, which represents 38.0% of these companies.

Exhibit JRW-16
Appendix B
The Research on Analysts' Long-Term EPS Growth Rate Forecasts

1   These results indicate that *Value Line*'s EPS forecasts are excessive and

2   unrealistic. It appears that the analysts at *Value Line* are similar to their Wall

3   Street brethren in that they are reluctant to forecast negative earnings growth.

4

Panel A

Mean Forecasted Versus Actual Long Term EPS Growth Rates

Panel B

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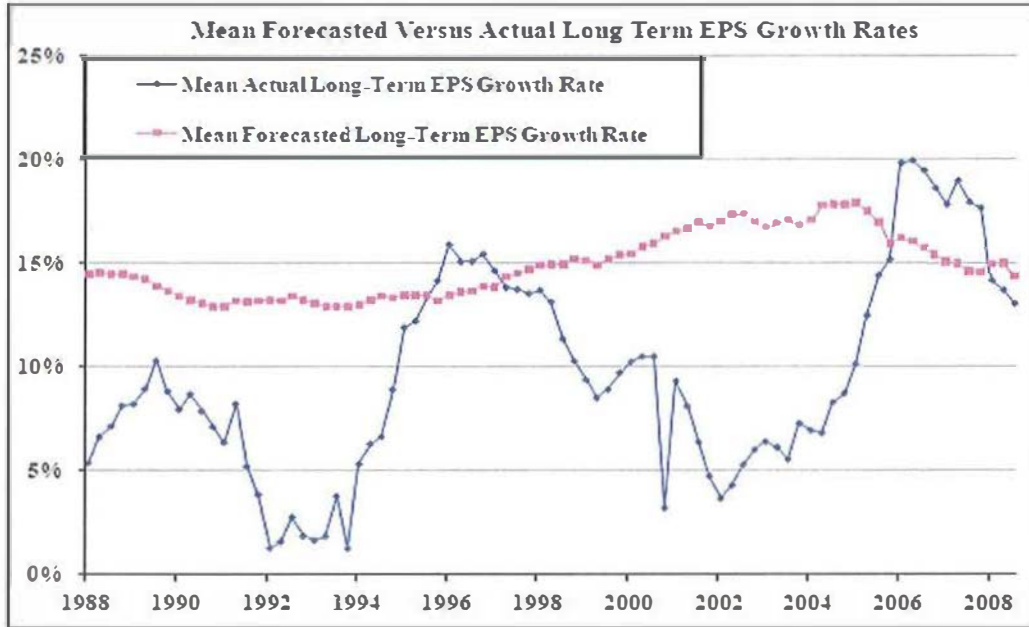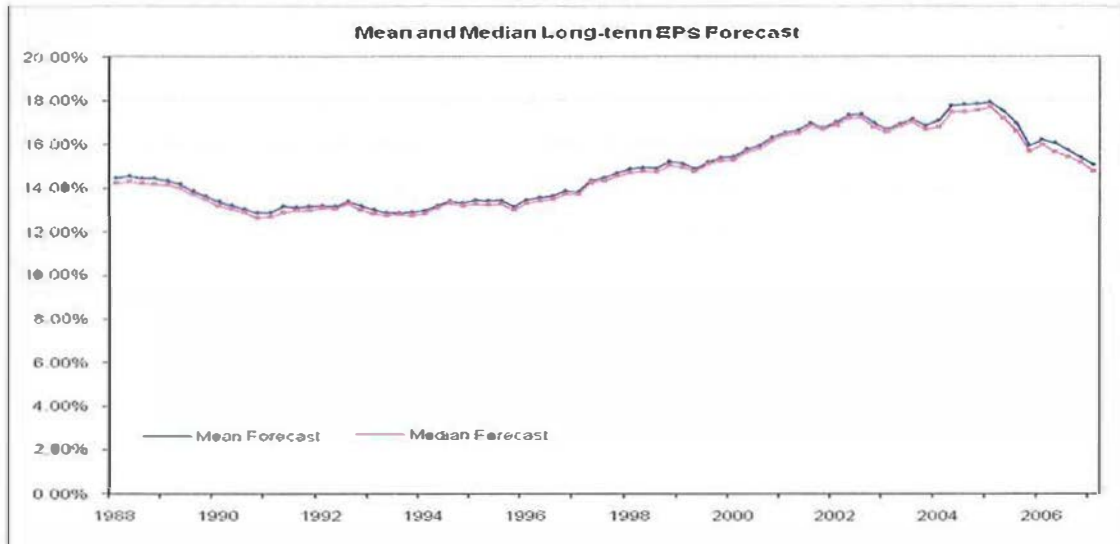
Source: Patrick J. Cusatis and J. Randall Woolridge, "The Accuracy of Analysts' Long-Term Earnings Per Share Growth Rate Forecasts," (July, 2008).

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.

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

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

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

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

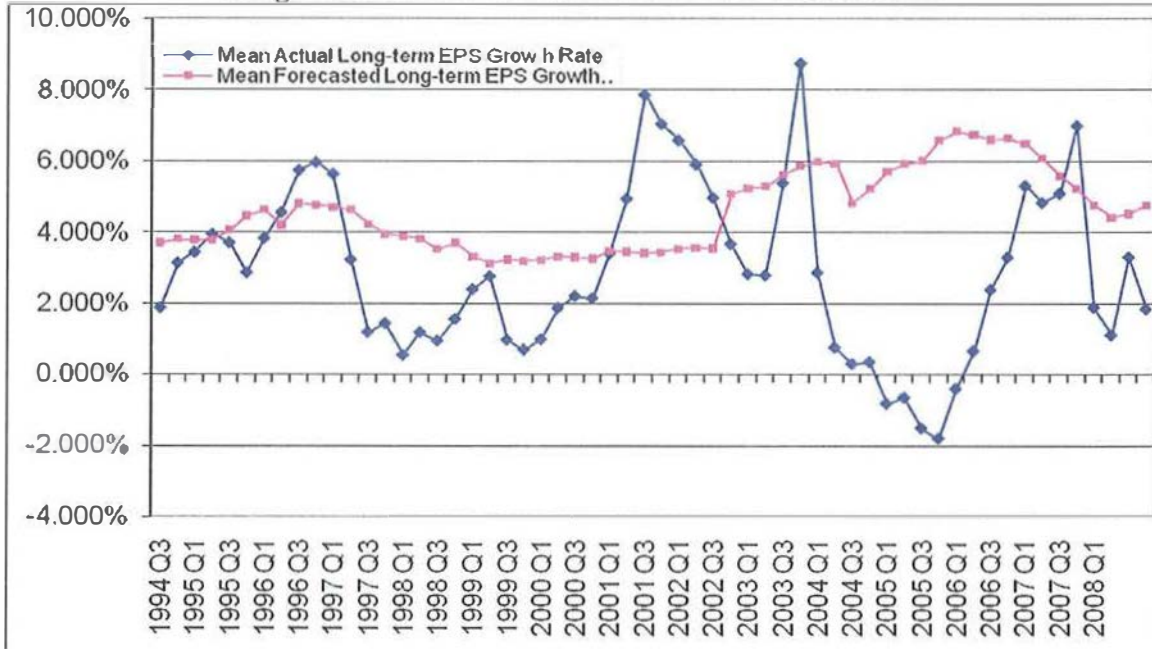*Bloomberg Businessweek* Senior Writer Farzad covers Wall Street and international finance.

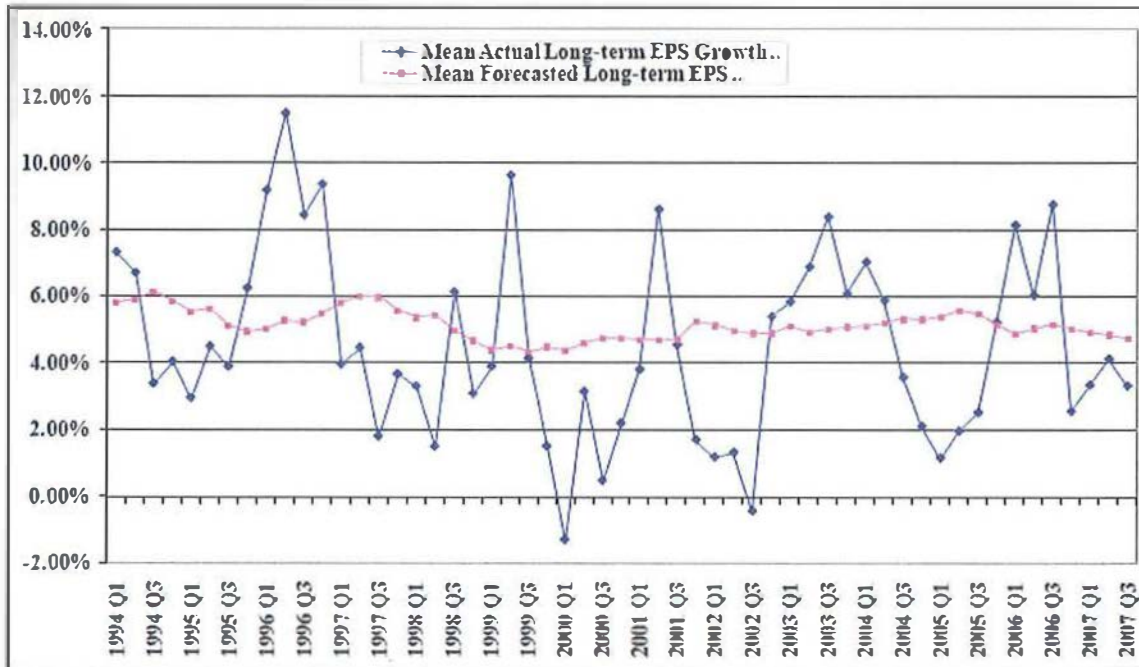## The Earnings Roller Coaster

Panel A
Long-Term Forecasted Versus Actual EPS Growth Rates

Data Source: IBES

Panel B

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

Exhibit JRW-16
Appendix C
Building Blocks Equity Risk Premium

1   **A.   THE BUILDING BLOCKS MODEL**

2   Ibbotson and Chen (2003) evaluate the ex post historical mean stock and

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

4   of data and relate the compounded historical returns to the different fundamental

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

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

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

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

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

10   (2003) illustrates this approach using the geometric returns and five fundamental

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

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

13   ("INT").[2] This is shown on page 1 of Exhibit JRW-16, Appendix C1. The first

14   column breaks the 1926-2000 geometric mean stock return of 10.7% into the

15   different return components demanded by investors: the historical U.S. Treasury

16   bond return (5.2%), the excess equity return (5.2%), and a small interaction term

17   (0.3%). This 10.7% annual stock return over the 1926-2000 period can then be

18   broken down into the following fundamental elements: inflation (3.1%), dividend

---

[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.

C-1

Exhibit JRW-16
Appendix C
Building Blocks Equity Risk Premium

1   yield (4.3%), real earnings growth (1.8%), repricing gains (1.3%) associated with

2   higher P/E ratios, and a small interaction term (0.2%).

3

4   The third column in the graph on page 1 of Exhibit JRW-16, Appendix C1

5   shows current inputs to estimate an ex ante expected market return. These inputs

6   include the following:

7   <u>CPI</u> – To assess expected inflation, I have employed expectations of the short-

8   term and long-term inflation rate.   Long term inflation forecasts are available in the

9   Federal Reserve Bank of Philadelphia's publication entitled *Survey of*

10   *Professional Forecasters*. While this survey is published quarterly, only the first

11   quarter survey includes long-term forecasts of gross domestic product ("GDP")

12   growth, inflation, and market returns. In the first quarter 2013 survey, published

13   on February 15, 2013, the median long-term (10-year) expected inflation rate as

14   measured by the CPI was 2.30% (see Panel A of page 2 of Exhibit JRW-16,

15   Appendix C1).

16   The University of Michigan's Survey Research Center surveys consumers

17   on their short-term (one-year) inflation expectations on a monthly basis. As

18   shown on page 3 of Exhibit JRW-C1, the current short-term expected inflation

19   rate is 3.1%.

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

21   (2.3%) and short-term (3.1%) inflation rate measures, or 2.75%.

Exhibit JRW-16
Appendix C
Building Blocks Equity Risk Premium

1

2   D/P – As shown on page 4 of Exhibit JRW-16 Appendix C1, the dividend yield

3   on the S&P 500 has fluctuated from 1.0% to almost 3.5% over the past decade.

4   Ibbotson and Chen (2003) report that the long-term average dividend yield of the

5   S&P 500 is 4.3%.   As of July, 2013, the indicated S&P 500 dividend yield was

6   2.1%. I will use this figure in my ex ante risk premium analysis.

7   RG – To measure expected real growth in earnings, I use the historical real

8   earnings growth rate S&P 500 and the expected real GDP growth rate. The S&P

9   500 was created in 1960 and includes 500 companies which come from ten

10   different sectors of the economy. On page 5 of Exhibit JRW-16 Appendix C1,

11   real EPS growth is computed using the CPI as a measure of inflation. The real

12   growth figure over 1960-2011 period for the S&P 500 is 2.8%.

13   The second input for expected real earnings growth is expected real GDP

14   growth. The rationale is that over the long-term, corporate profits have averaged

15   5.50% of U.S. GDP.[3] Expected GDP growth, according to the Federal Reserve

16   Bank of Philadelphia's *Survey of Professional Forecasters,* is 2.5% (see Panel B

17   of page 2 of Exhibit JRW-16, Appendix C1).

18   Given these results, I will use 2.65%, for real earnings growth.

---

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

Exhibit JRW-16
Appendix C
Building Blocks Equity Risk Premium

1   PEGAIN – PEGAIN is the repricing gain associated with an increase in the P/E

2   ratio.   It accounted for 1.3% of the 10.7% annual stock return in the 1926-2000

3   period.   In estimating an ex ante expected stock market return, one issue is

4   whether investors expect P/E ratios to increase from their current levels. The P/E

5   ratios for the S&P 500 over the past 25 years are shown on page 4 of Exhibit

6   JRW-16, Appendix C1. The run-up and eventual peak in P/Es in the year 2000 is

7   very evident in the chart. The average P/E declined until late 2006, and then

8   increased to higher high levels, primarily due to the decline in EPS as a result of

9   the financial crisis and the recession. As of July, 2013, the average P/E for the

10   S&P 500 was 15X, which is in line with the historic average. Since the current

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

12   estimating an ex ante expected stock market return.

13   Expected Return form Building Blocks Approach - The current expected

14   market return is represented by the last column on the right in the graph entitled

15   "Decomposing Equity Market Returns: The Building Blocks Methodology" set

16   forth on page 1 of Exhibit JRW-16, Appendix C1. As shown, the expected

17   market return of 7.50% is composed of 2.75% expected inflation, 2.10% dividend

18   yield, and 2.65% real earnings growth rate.

19   This expected return of 7.50% is consistent other expected return

20   forecasts.

Exhibit JRW-16
Appendix C
Building Blocks Equity Risk Premium

1   1. In the first quarter 2013 *Survey of Financial Forecasters*, published on

2   February 15, 2013 by the Federal Reserve Bank of Philadelphia, the

3   median long-term expected return on the S&P 500 was 6.13% (see

4   Panel D of page 2 of Exhibit JRW-16, Appendix C1).

5   2. John Graham and Campbell Harvey of Duke University conduct a

6   quarterly survey of corporate CFOs. The survey is a joint project of

7   Duke University and *CFO Magazine.* In the June 2013 survey, the

8   mean expected return on the S&P 500 over the next ten years was

9   6.70%.[4]

10   **B.   THE BUILDING BLOCKS EQUITY RISK PREMIUM**

11

12   The current 30-year U.S. Treasury yield is 3.50%. This ex ante equity risk

13   premium is simply the expected market return from the Building Blocks

14   methodology minus this risk-free rate:

15

16   Ex Ante Equity Risk Premium   =   7.5%   -   3.50%   = 4.10%

17

18   This is only one estimate of the equity risk premium. As shown on page 6

19   of Exhibit JRW-11, I am also using the results of other studies and surveys to

20   determine an equity risk premium for my CAPM.

---

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

Exhibit JRW-C1

Decomposing Equity Market Returns
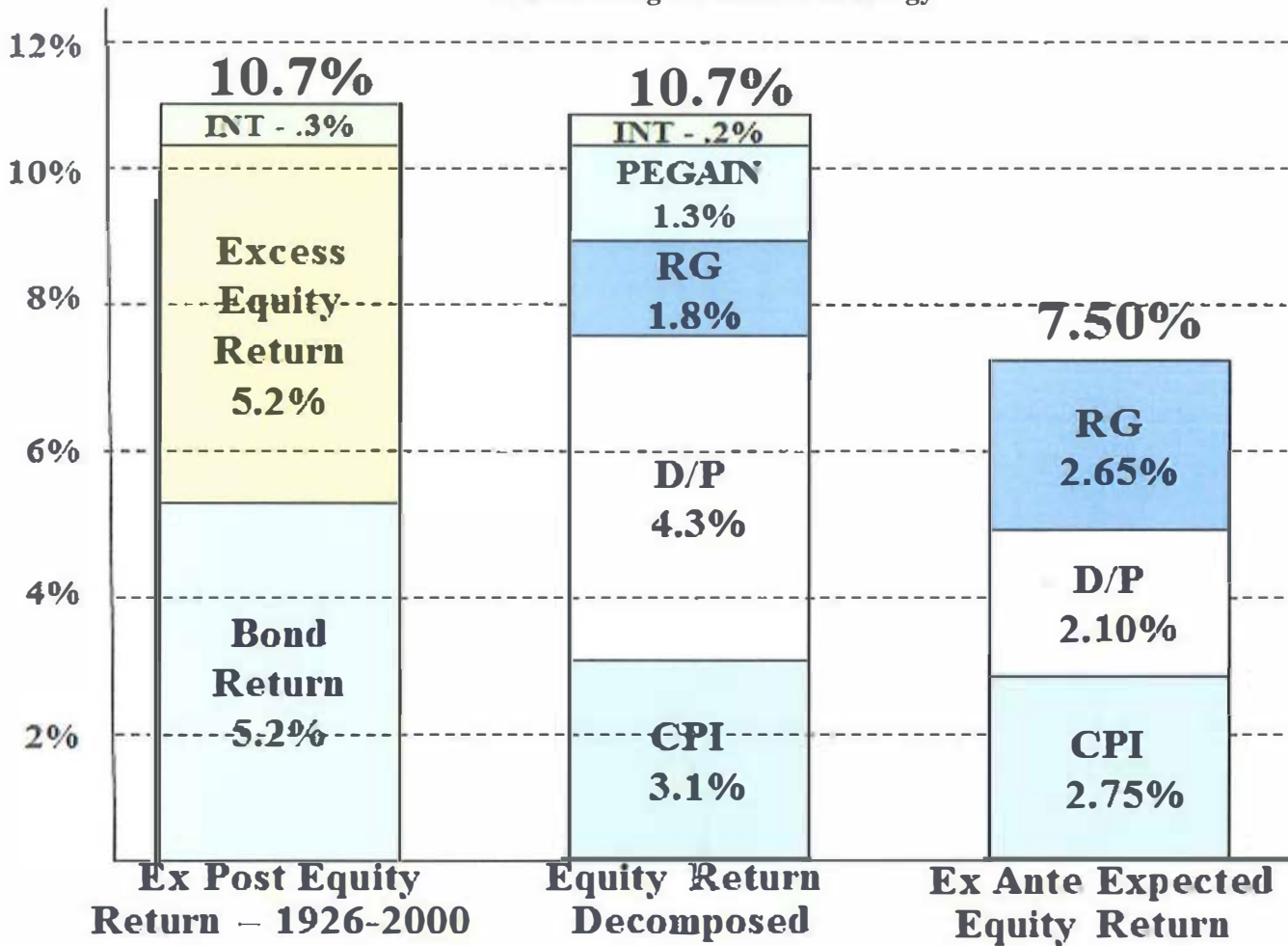The Building Blocks Methodology

Exhibit JRW-C1

2013 Survey of Professional Forecasters
### Philadelphia Federal Reserve Bank
Long-Term Forecasts

Table Seven
LONG-TERM (10 YEAR) FORECASTS

Panel A		Panel B	
SERIES: CPI INFLATION RATE		SERIES: REAL GDP GROWTH RATE	
STATISTIC		STATISTIC	
MINIMUM	0.97	MINIMUM	1.90
LOWER QUARTILE	2.05	LOWER QUARTILE	2.50
MEDIAN	2.30	MEDIAN	2.64
UPPER QUARTILE	2.60	UPPER QUARTILE	2.90
MAXIMUM	3.50	MAXIMUM	3.75
MEAN	2.33	MEAN	2.67
STD. DEV.	0.45	STD. DEV.	0.41
N	39	N	37
MISSING	7	MISSING	8
Panel C		Panel D	
SERIES: PRODUCTIVITY GROWTH		SERIES: STOCK RETURNS (S&P 500)	
STATISTIC		STATISTIC	
MINIMUM	0.90	MINIMUM	4.00
LOWER QUARTILE	1.50	LOWER QUARTILE	5.05
MEDIAN	1.80	MEDIAN	6.13
UPPER QUARTILE	2.20	UPPER QUARTILE	6.95
MAXIMUM	3.00	MAXIMUM	10.00
MEAN	1.86	MEAN	6.15
STD. DEV.	0.51	STD. DEV.	1.58
N	30.00	N	24
MISSING	16	MISSING	22
Panel E		Panel F	
SERIES: BOND RETURNS (10-YEAR)		SERIES: BILL RETURNS (3-MONTH)	
STATISTIC		STATISTIC	
MINIMUM	1.90	MINIMUM	0.50
LOWER QUARTILE	2.75	LOWER QUARTILE	1.80
MEDIAN	3.83	MEDIAN	2.40
UPPER QUARTILE	4.30	UPPER QUARTILE	2.85
MAXIMUM	7.00	MAXIMUM	4.25
MEAN	3.70	MEAN	2.46
STD. DEV.	1.32	STD. DEV.	0.98
N	26.00	N	25
MISSING	20	MISSING	21

Source: Philadelphia Federal Reserve Bank, Survey of Professional Forecasters, February 15, 2013.

Exhibit JRW-C1

University of Michigan Survey Research Center
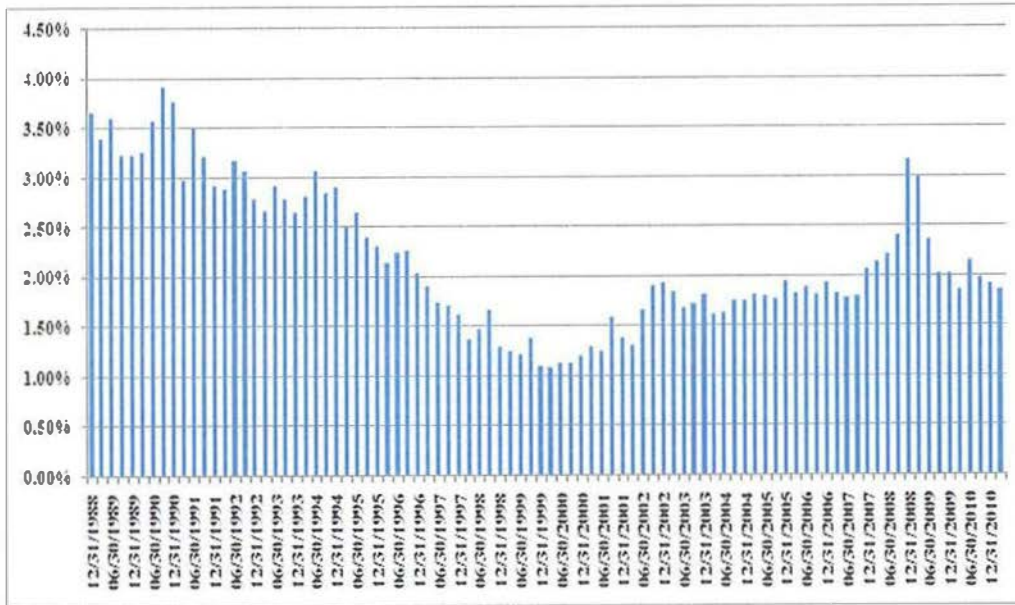## Expected Short-Term Inflation Rate
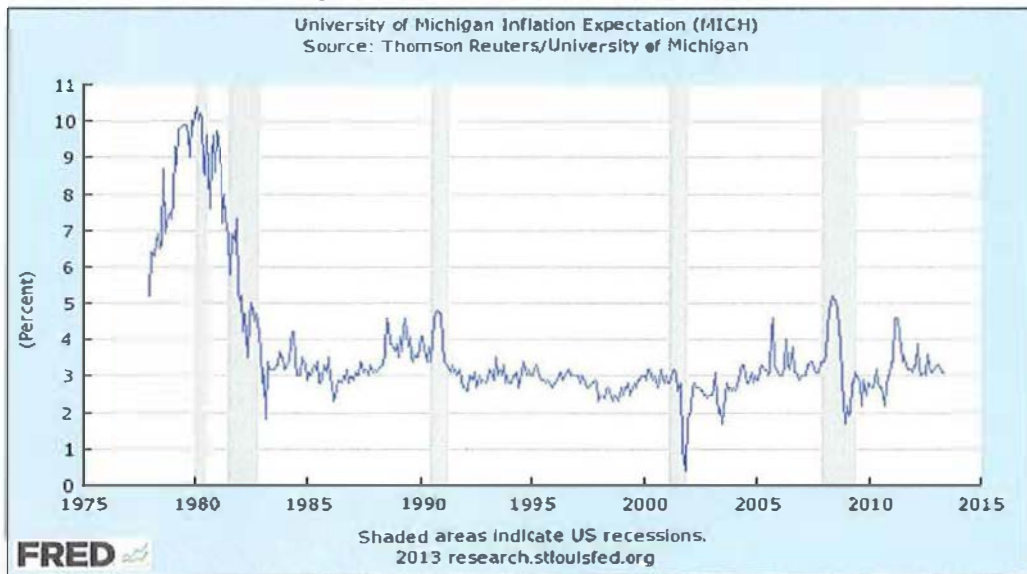
Data Source: http://research.stlouisfed.org/fred2/series/MICH?cid=98

Exhibit JRW-C1

Decomposing Equity Market Returns
The Building Blocks Methodology
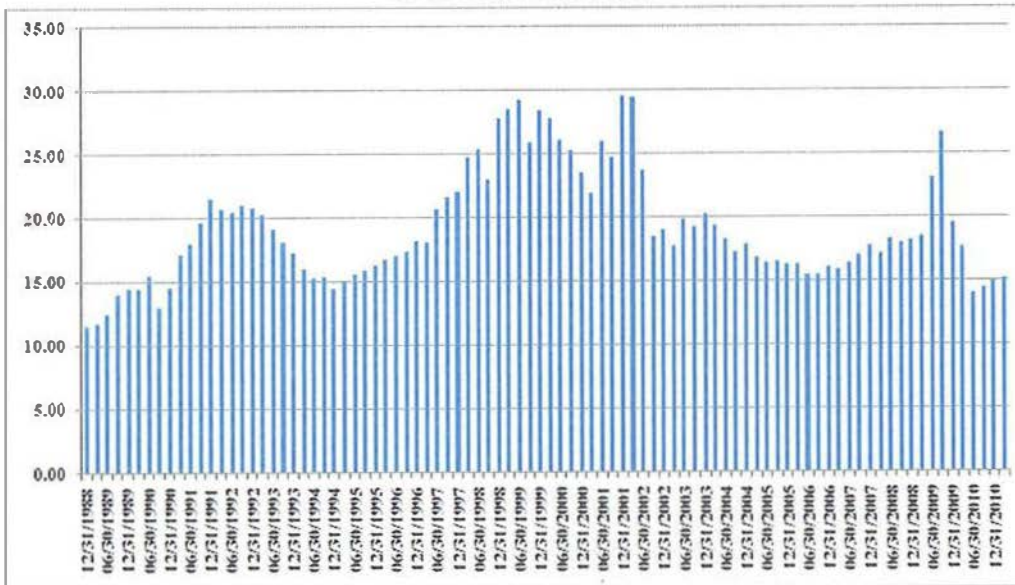
S&P 500 Dividend Yield

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		3.10		
1961	3.37	0.07	1.01	3.35		
1962	3.67	1.22	1.02	3.59		
1963	4.13	1.65	1.04	3.99		
1964	4.76	1.19	1.05	4.55		
1965	5.30	1.92	1.07	4.97		
1966	5.41	3.35	1.10	4.90		
1967	5.46	3.04	1.14	4.80		
1968	5.72	4.72	1.19	4.81		
1969	6.10	6.11	1.26	4.83	10-Year	
1970	5.51	5.49	1.34	4.13	2.89%	2.89%
1971	5.57	3.36	1.38	4.04		
1972	6.17	3.41	1.43	4.33		
1973	7.96	8.80	1.55	5.13		
1974	9.35	12.20	1.74	5.37		
1975	7.71	7.01	1.86	4.14		
1976	9.75	4.81	1.95	4.99		
1977	10.87	6.77	2.08	5.22		
1978	11.64	9.03	2.27	5.13		
1979	14.55	13.31	2.57	5.66	10-Year	
1980	14.99	12.40	2.89	5.18	2.30%	2.30%
1981	15.18	8.94	3.15	4.82		
1982	13.82	3.87	3.27	4.23		
1983	13.29	3.80	3.40	3.91		
1984	16.84	3.95	3.53	4.77		
1985	15.68	3.77	3.66	4.28		
1986	14.43	1.13	3.70	3.90		
1987	16.04	4.41	3.87	4.15		
1988	22.77	4.42	4.04	5.64		
1989	24.03	4.65	4.22	5.69	10-Year	
1990	21.73	6.11	4.48	4.85	-0.65%	-0.65%
1991	19.10	3.06	4.62	4.14		
1992	18.13	2.90	4.75	3.81		
1993	19.82	2.75	4.88	4.06		
1994	27.05	2.67	5.01	5.40		
1995	35.35	2.54	5.14	6.88		
1996	35.78	3.32	5.31	6.74		
1997	39.56	1.70	5.40	7.33		
1998	38.23	1.61	5.48	6.97		
1999	45.17	2.68	5.63	8.02	10-Year	
2000	52.00	3.39	5.82	8.93	6.29%	6.29%
2001	44.23	1.55	5.92	7.48		
2002	47.24	2.38	6.06	7.80		
2003	54.15	1.88	6.17	8.77		
2004	67.01	3.26	6.37	10.51		
2005	68.32	3.42	6.60	10.35		3.00%
2006	81.96	2.54	6.77	12.11		
2007	87.51	4.08	7.04	12.43		
2008	65.39	0.09	7.05	9.28		
2009	59.65	2.72	7.24	8.24	10-Year	
2010	83.66	1.50	7.35	11.39	2.46%	2.46%
2011	97.05	2.96	7.57	12.83		

				Real EPS Growth	2.8%

Data Source: http://pages.stern.nyu.edu/~adamodar/

1.0736351