Gulf Power

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VIA ELECTRONIC FILING

Ms. Carlotta Stauffer
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Petition for rate increase by Gulf Power Company, Docket No. 160186-EI

Dear Ms. Stauffer:

Attached is the Rebuttal Testimony and Exhibit of Gulf Power Company Witness
James H. Vander Weide, Ph.D.

(Document 14 of 16)

Sincerely,

Robert L. McGee, Jr.
Regulatory & Pricing Manager

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 160186-EI

Gulf Power

REBUTTAL TESTIMONY AND EXHIBIT

OF

JAMES H. VANDER WEIDE, Ph.D.

1   GULF POWER COMPANY

2   Before the Florida Public Service Commission
                                Rebuttal Testimony of
3   James H. Vander Weide, Ph.D.
                              Docket No. 160186-EI
4   In Support of Rate Relief
                                 February 8, 2017
5

6   **I. INTRODUCTION AND PURPOSE**

7

8   Q.   Please state your name, title, and business address.

9   A.   My name is James H. Vander Weide. I am President of Financial Strategy

10   Associates, a firm that provides strategic and financial consulting services to

11   business clients. My business address is 3606 Stoneybrook Drive, Durham,

12   North Carolina 27705.

13

14   Q.   Are you the same James H. Vander Weide who provided direct testimony in

15   this proceeding?

16   A.   Yes, I am.

17

18   Q.   What is the purpose of your rebuttal testimony?

19   A.   I have been asked by Gulf Power Company (Gulf or the Company) to

20   review the direct testimonies and cost of capital recommendations of

21   Dr. J. Randall Woolridge and Mr. Michael P. Gorman. Dr. Woolridge's

22   testimony is presented on behalf of the Florida Office of Public Counsel

23   (OPC), and Mr. Gorman is appearing on behalf of the Federal Executive

24   Agencies (FEA).

25

1 Q. Is there anything in the testimonies of Dr. Woolridge and Mr. Gorman that

2   causes you to change your recommended cost of equity for Gulf?

3 A. No, there is not. I continue to recommend that Gulf be allowed to earn an

4   11.0 percent rate of return on equity.

5

6 Q. Are you sponsoring any rebuttal exhibits?

7 A. Yes, I am sponsoring Exhibit JVW-3, Schedule 1. This exhibit was prepared

8   under my direction and control, and the information contained therein is true

9   and correct to the best of my knowledge and belief.

10

11

12   **II. REBUTTAL OF DR. WOOLRIDGE**

13

14 Q. What is Dr. Woolridge's recommended rate of return on equity for Gulf?

15 A. Dr. Woolridge recommends that Gulf be allowed an opportunity to earn a

16   rate of return on equity equal to 8.875 percent. (Woolridge at 2 – 3)

17

18 Q. What capital structure and senior capital cost rates does Dr. Woolridge

19   recommend for Gulf?

20 A. Dr. Woolridge proposes a capital structure of 1.67 percent short-term debt,

21   42.80 percent long-term debt, 5.53 percent preferred stock, and

22   50.00 percent common equity. (Woolridge at 2)

23

24

25

1 Q. Does Dr. Woolridge also recommend an overall rate of return for investor-

2 supplied capital?

3 A. Yes. Dr. Woolridge recommends an overall rate of return on investor-

4 supplied capital equal to 6.71 percent. (Woolridge Exhibit JRW-1)

5

6 Q. What areas of Dr. Woolridge's testimony will you address in your rebuttal

7 testimony?

8 A. I will address Dr. Woolridge's: (1) discounted cash flow (DCF) analysis;

9 (2) Capital Asset Pricing Model (CAPM) analysis; (3) comments on the

10 relationship between utilities' rates of return on equity and their market-to-

11 book ratios; and (4) comments on my direct testimony.

12

13 A. DCF ANALYSIS

14 Q. What is the DCF model?

15 A. The DCF model is a model of stock valuation that assumes that a

16 company's stock price is equal to the present discounted value of all

17 expected future dividends investors expect to receive from owning the

18 stock. Assuming that dividends grow at a constant annual rate, g, the

19 resulting cost of equity equation is $k = D_1/P_s + g$, where k is the cost of

20 equity, D_1 is the expected next period annual dividend, P_s is the current

21 price of the stock, and g is the constant annual growth rate in earnings,

22 dividends, and book value per share. The term D_1/P_s is called the expected

23 dividend yield component of the annual DCF model, and the term g is called

24 the expected growth component of the annual DCF model.

25

1 Q.   Does Dr. Woolridge use the DCF model to estimate Gulf's cost of equity?

2 A.   Yes, he does.

3

4 Q.   What cost of equity results does Dr. Woolridge obtain from his application of

5   his DCF model?

6 A.   Dr. Woolridge obtains a cost of equity result of 8.5 percent for his Electric

7   Proxy Group and a DCF result of 9.0 percent for the Vander Weide Proxy

8   Group. (Woolridge Exhibit JRW-10, page 1 of 6)

9

10 Q.   What DCF model does Dr. Woolridge use to estimate Gulf's cost of equity?

11 A.   Dr. Woolridge uses an annual DCF model of the form, $k = D_0(1+.5g)/P_0 + g$,

12   where k is the cost of equity, D_0 is the current annual dividend, P_0 is the

13   current stock price, and g is the average expected future growth in the

14   company's earnings and dividends.

15

16 Q.   What are the basic assumptions of Dr. Woolridge's annual DCF model?

17 A.   Dr. Woolridge's annual DCF model is based on the assumptions that: (1) a

18   company's stock price is equal to the present value of the future dividends

19   investors expect to receive from their investment in the company;

20   (2) dividends are paid annually; (3) dividends, earnings, and book values

21   are expected to grow at the same constant rate forever; and (4) the first

22   dividend is received one year from the date of the analysis.

23

24

25

1   Q.   Do you agree with Dr. Woolridge's use of an annual DCF model to estimate

2   Gulf's cost of equity?

3   A.   No. Dr. Woolridge's annual DCF model is based on the assumption that

4   companies pay dividends only at the end of each year. Since Dr.

5   Woolridge's proxy companies all pay dividends quarterly, Dr. Woolridge

6   should have used the quarterly DCF model described in Exhibit JVW-2,

7   Appendix 2 of my direct testimony to estimate Gulf's cost of equity.

8

9   Q.   Why is it unreasonable to use an annual DCF model to estimate the cost of

10   equity for companies that pay dividends quarterly?

11   A.   It is unreasonable to apply an annual DCF model to companies that pay

12   dividends quarterly because: (1) the DCF model is based on the assumption

13   that a company's stock price is equal to the present value of the expected

14   future dividends associated with investing in the company's stock; and

15   (2) the annual DCF model cannot be derived from this assumption when

16   dividends are paid quarterly. I note that this Commission also uses a

17   quarterly DCF model when estimating the cost of equity for water and

18   wastewater utilities. *See*, for example, Memorandum dated June 4, 2015, in

19   Docket No. 150006-WS – Water and wastewater industry annual

20   reestablishment of authorized range of return on common equity for water

21   and wastewater utilities pursuant to Section 367.081(4)(f), F.S., which

22   states that the "market return for the 2015 leverage formula was calculated

23   using a quarterly DCF model."

24

25

1   Q.   Does Dr. Woolridge acknowledge that one must recognize the assumptions

2   of the DCF model when estimating the model's inputs?

3   A.   Yes. Dr. Woolridge states, "In general, one must recognize the assumptions

4   under which the DCF model was developed in estimating its components

5   (the dividend yield and expected growth rate)." (Woolridge at 49)

6

7   Q.   Recognizing your disagreement with Dr. Woolridge's use of an annual DCF

8   model, did Dr. Woolridge apply the annual DCF model correctly?

9   A.   No. Dr. Woolridge's annual DCF model is based on the assumption that

10   dividends will grow at the same constant rate forever. Under the assumption

11   that dividends will grow at the same constant rate forever, the cost of equity

12   is given by the equation, $k = D_0 (1 + g) / P_0 + g$, where D_0 is the current

13   annualized dividend, P_0 is the stock price, and g is the expected constant

14   annual growth rate. Thus, the correct first period dividend in the annual DCF

15   model is the current annualized dividend multiplied by the factor,

16   (1 + growth rate). Instead, Dr. Woolridge uses the current annualized

17   dividend multiplied by the factor (1 + 0.5 times growth rate) as the first

18   period dividend in his DCF model. This incorrect procedure, apart from

19   other errors in his methods, causes him to underestimate Gulf's cost of

20   equity.

21

22   Q.   Does Dr. Woolridge apply his annual DCF model directly to Gulf?

23   A.   No. Because Gulf's stock is not publicly traded, Dr. Woolridge applies his

24   annual DCF model to two groups of electric utilities, including a group of

25   electric utilities that meet Dr. Woolridge's proxy selection criteria (see

1   Woolridge at 29) and the electric utilities in the comparable group I use to

2   estimate Gulf's cost of equity in my direct testimony.

3

4 Q.   What data does Dr. Woolridge consider for estimating the dividend yield

5   component of his annual DCF model?

6 A.   Dr. Woolridge considers the average monthly dividend yield for the past six

7   months and dividend yields calculated by dividing the current annual

8   dividend by stock prices over the most recent thirty-day, ninety-day, and

9   180-day periods. (Woolridge at 49)

10

11 Q.   What data does Dr. Woolridge consider for estimating the expected future

12   growth component of the DCF cost of equity?

13 A.   Dr. Woolridge considers Value Line data on historical growth rates in

14   earnings, dividends, and book value, as well as Value Line data on

15   projected growth rates in earnings, dividends, and book value. For most of

16   his proxy companies, Value Line's average historical growth rates are

17   significantly less than its projected growth rates. Dr. Woolridge also

18   considers analysts' forecasts of future growth provided by Yahoo, Reuters,

19   and Zacks, and prospective growth estimates based on Value Line's

20   estimates of retention ratios and rates of return on book equity. (Woolridge

21   at 51-52)

22

23 Q.   Do you agree with Dr. Woolridge's use of historical growth rates to estimate

24   investors' expectation of future growth in the DCF model?

25 A.   No. Historical growth rates are inherently inferior to analysts' growth

1   forecasts because analysts' forecasts already incorporate all relevant

2   information regarding historical growth rates and also incorporate the

3   analysts' knowledge about current conditions and expectations regarding

4   the future. My studies, described in my direct testimony at pp. 27 – 29,

5   indicate that investors use analysts' earnings growth forecasts in making

6   stock buy and sell decisions rather than historical or internal growth rates

7   such as those presented by Dr. Woolridge.

8

9   Q.   Does Dr. Woolridge recognize the inherent problems in using historical

10   growth rates to estimate investors' expected future growth in the DCF

11   model?

12   A.   Yes. Dr. Woolridge recognizes the inherent problems in using historical

13   growth rates when he states:

14   However, one must use historical growth numbers as

15   measures of investors' expectations with caution. In some

16   cases, past growth may not reflect future growth potential.

17   Also, employing a single growth rate number (for example, for

18   five or ten years) is unlikely to accurately measure investors'

19   expectations, due to the sensitivity of a single growth rate

20   figure to fluctuations in individual firm performance as well as

21   overall economic fluctuations (i.e., business cycles). However,

22   one must appraise the context in which the growth rate is

23   being employed. According to the conventional DCF model,

24   the expected return on a security is equal to the sum of the

25   dividend yield and the expected long-term growth in dividends.

1		Therefore, to best estimate the cost of common equity capital
2		using the conventional DCF model, one must look to long-term
3		growth rate expectations. [Woolridge at 52]
4		
5	Q.	How do Value Line's projected growth rates for Dr. Woolridge's proxy
6		groups of electric utilities compare to Value Line's historical growth rates for
7		these companies?
8	A.	For the Electric Proxy Group, Value Line's median projected growth rate,
9		4.9 percent, is seventy basis points higher than the median 4.2 percent
10		Value Line historical growth rate employed by Dr. Woolridge. For the
11		Vander Weide proxy group, the median Value Line projected growth rate,
12		5.2 percent, is 100 basis points higher than the 4.2 percent median Value
13		Line historical growth rate employed by Dr. Woolridge. (Woolridge Exhibit
14		JRW-10, pp. 3, 4, and 6)
15		
16	Q.	How do the analysts' growth rates for Dr. Woolridge's groups of proxy
17		companies compare to Value Line's historical growth rates for these
18		companies?
19	A.	For the Electric Proxy Group, the median analysts' growth rate, 5.4 percent,
20		is 120 basis points higher than the median Value Line historical growth rate
21		employed by Dr. Woolridge, 4.2 percent. For the Vander Weide proxy
22		group, the median analysts' growth rate, 5.7 percent, is 150 basis points
23		higher than the median Value Line historical growth rate employed by Dr.
24		Woolridge, 4.2 percent. (Woolridge Exhibit JRW-10, pp. 3, 5, and 6)
25		

1	Q.	What is the internal growth method of estimating the growth component of
2		the DCF cost of equity?
3	A.	The internal growth method estimates expected future growth by multiplying
4		a company's retention ratio, "b," times its expected rate of return on equity,
5		"r." Thus, "g = b x r," where "b" is the percentage of earnings that are
6		retained in the business and "r" is the expected rate of return on equity.
7		
8	Q.	Do you agree with the use of the internal growth method to estimate
9		investors' expected future growth in the DCF model?
10	A.	No. The internal growth method is logically circular because it requires an
11		estimate of the expected rate of return on equity, "r," in order to estimate the
12		cost of equity using the DCF model. Yet, for regulated companies such as
13		Gulf, the allowed rate of return on equity is set equal to the cost of equity.
14		
15	Q.	How does Dr. Woolridge estimate the expected rate of return on equity for
16		each proxy company in his sustainable or internal growth analysis?
17	A.	Dr. Woolridge uses Value Line's forecast of each company's rate of return
18		on equity for the period 2013 – 2015 to the period 2019 – 2021 as his
19		estimate of the expected rate of return on equity for each company.
20		
21	Q.	What rate of return on equity does Dr. Woolridge assume in his calculation
22		of expected growth using his internal growth method?
23	A.	Dr. Woolridge assumes a median rate of return on equity equal to
24		10.0 percent for the Electric Proxy Group and 10.5 percent for the Vander
25		Weide proxy group. (Woolridge Exhibit JRW-10, p. 4)

1   Q.   Is it reasonable to assume that Dr. Woolridge's proxy companies will earn a

2   rate of return on equity equal to 10.0 percent to 10.5 percent when he is

3   recommending that they be allowed to earn only a return of 8.875 percent?

4   A.   No. Investors are well aware that electric utilities are regulated by rate of

5   return regulation. If investors truly believed that the utilities' cost of equity

6   were equal to Dr. Woolridge's recommended 8.875 percent, they would

7   forecast that the utilities would earn 8.875 percent on equity. Thus, Dr.

8   Woolridge's recommended 8.875 percent rate of return on equity is

9   inconsistent with his own assumed 10.0 percent to 10.5 percent earned rate

10   of return on equity for the proxy groups.

11

12   Q.   Does Dr. Woolridge's internal growth method recognize that, in addition to

13   growth from retained earnings, the companies in his proxy group can also

14   grow by issuing new equity at prices above book value?

15   A.   No. Dr. Woolridge's internal growth method underestimates the expected

16   future growth of his proxy companies because it neglects the possibility that

17   the companies can also grow by issuing new equity at prices above book

18   value. Because all of the proxy companies are selling at prices in excess of

19   book value, and Value Line forecasts that many of them will issue new

20   equity over the next several years, Dr. Woolridge's failure to recognize the

21   "external" component of future growth causes to him to underestimate his

22   proxy companies' expected future growth even more.

23

24

25

1 Q. Does Dr. Woolridge's internal growth method recognize that Value Line's

2   reported rates of return on equity generally understate each company's

3   average rate of return on equity for the year?

4 A. No. Dr. Woolridge fails to recognize that Value Line calculates its reported

5   rates of return on equity by dividing a company's net income by end of year

6   equity, whereas most financial analysts calculate a company's rate of return

7   on equity by dividing net income by the average equity for the year. In the

8   general case in the utility industry where a company's equity is increasing,

9   Value Line's reported ROEs will understate the average ROE for the year.

10   Thus, Dr. Woolridge's failure to recognize that Value Line's reported ROEs

11   understate each company's average ROE for the year is an additional factor

12   causing him to underestimate Gulf's cost of equity.

13

14 Q. Do you agree with Dr. Woolridge's use of analysts' growth forecasts to

15   estimate the expected growth component of his DCF model?

16 A. Yes. As discussed in my direct testimony, I recommend the use of analysts'

17   growth forecasts to estimate investors' expected growth in the DCF model.

18   The DCF model requires the growth forecasts of investors, and there is

19   considerable empirical evidence that investors use analysts' growth

20   forecasts to estimate future earnings growth. (Vander Weide Direct at 26 –

21   29)

22

23

24

25

B. CAPITAL ASSET PRICING MODEL ANALYSIS

2   Q.   What is the CAPM?

3   A.   The CAPM is an equilibrium model of expected returns on risky securities in

4   which the expected or required return on a given risky security is equal to

5   the risk-free rate of interest plus the security's "beta" times the market risk

6   premium:

7   *Expected return = Risk-free rate + (Security beta x Market risk premium).*

8   The risk-free rate in this equation is the expected rate of return on a risk-

9   free government security, the security beta is a measure of the company's

10   risk relative to the market as a whole, and the market risk premium is the

11   premium investors require to invest in the market basket of all securities

12   compared to the risk-free security.

13

14   Q.   How does Dr. Woolridge use the CAPM to estimate Gulf's cost of equity?

15   A.   The CAPM requires estimates of the risk-free rate, the company-specific

16   risk factor, or beta, and either the required return on an investment in the

17   market portfolio, or the risk premium on the market portfolio compared to an

18   investment in risk-free government securities. For the risk-free rate, Dr.

19   Woolridge uses an average 4.0 percent yield on 30-year Treasury bonds

20   (Woolridge at 62); for the company-specific risk factor or beta, Dr.

21   Woolridge uses the median Value Line beta for the proxy utility groups

22   equal to 0.70 (Woolridge at 64); and for the required return or risk premium

23   on the market portfolio, Dr. Woolridge employs an average 5.5 percent risk

24   premium he obtains from his review of the risk premium literature.

25   (Woolridge at 68)

1   Q.   What CAPM result does Dr. Woolridge obtain for his proxy companies?

2   A.   For both the Electric Proxy Group and for the Vander Weide proxy group,

3   Dr. Woolridge obtains a CAPM result of 7.9 percent. (Woolridge at 70)

4

5   Q.   Does Dr. Woolridge believe that the result of his CAPM analysis is a

6   reasonable estimate of Gulf's cost of equity?

7   A.   No. Dr. Woolridge reports results of 8.5 percent and 9.0 percent for his DCF

8   studies and a result equal to 7.9 percent for his CAPM studies. (Woolridge

9   at 70) From these results, Dr. Woolridge concludes that Gulf's cost of equity

10   is in a range of 7.9 percent to 9.0 percent. Despite asserting that the CAPM

11   results are within the appropriate cost of equity range, Dr. Woolridge

12   specifically states that he gives primary weight to his DCF results to reach

13   his final recommended equity cost rate range of 8.75 percent to 9.0 percent.

14   Dr. Woolridge recommends the 8.875 percent midpoint of that range as the

15   cost of equity for Gulf.

16

17   Q.   Do you agree with Dr. Woolridge's application of the CAPM?

18   A.   No, I believe that his CAPM results are outside any reasonable estimate of

19   Gulf Power's cost of equity, as Dr. Woolridge's own point estimate indicates.

20

21   Q.   Why do you believe that the CAPM produces unreasonably low cost of

22   equity results for electric utilities at this time?

23   A.   I believe there are two reasons why the CAPM produces unreasonably low

24   cost of equity results for electric utilities at this time. First, as a result of the

25   economic crisis of recent years, the U.S. Treasury has kept interest rates on

1   Treasury securities unusually low as part of its effort to stimulate the

2   economy. Economists are forecasting that interest rates on Treasury

3   securities will increase significantly once the economy begins to recover. In

4   addition, the average beta of utilities is currently approximately 0.70, and

5   the CAPM tends to underestimate the cost of equity for companies whose

6   equity beta is less than 1.0 and to overestimate the cost of equity for

7   companies whose equity beta is greater than 1.0.

8

9   Q.   Did you summarize in your direct testimony the evidence that the CAPM

10   underestimates the required returns for securities or portfolios with betas

11   less than 1.0 and overestimates required returns for securities or portfolios

12   with betas greater than 1.0?

13   A.   Yes. I summarized this evidence in my direct testimony on pages 45 – 48.

14

15   Q.   What conclusions do you reach from your review of the literature on the

16   CAPM to predict the relationship between risk and return in the

17   marketplace?

18   A.   I conclude that the financial literature strongly supports the proposition that

19   the CAPM underestimates the cost of equity for companies such as public

20   utilities with betas less than 1.0. Because the CAPM significantly

21   underestimates the cost of equity for companies with betas less than 1.0,

22   and both Dr. Woolridge's and my proxy company groups have an average

23   beta that is significantly less than 1.0, I further conclude that the

24   Commission should give little weight to the results of the application of an

25   unadjusted CAPM at this time.

| 1 | | C. DR. WOOLRIDGE'S COMMENTS ON THE RELATIONSHIP |

1   C. DR. WOOLRIDGE'S COMMENTS ON THE RELATIONSHIP

2   BETWEEN UTILITIES' RATE OF RETURN ON EQUITY

3   AND THEIR MARKET-TO-BOOK RATIOS

4   Q.   Does Dr. Woolridge discuss the relationship between rates of return equity,

5   the cost of equity, and market-to-book ratios in his testimony?

6   A.   Yes. Dr. Woolridge asserts that a market-to-book ratio above 1.0 indicates

7   that a company is earning more than its cost of equity:

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

9   cost of equity, and market-to-book ratio is relatively

10   straightforward. A firm that earns a return on equity above its

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

12   its book value. Conversely, a firm that earns a return on equity

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

14   price below its book value. [Woolridge at 40]

15

16   Q.   Dr. Woolridge reports the results of three regression analyses that he

17   believes support his claim that: (1) companies with market-to-book ratios

18   greater than 1.0 are earning more than their costs of equity; (2) companies

19   with market-to-book ratios equal to 1.0 are earning their costs of equity; and

20   (3) companies with market-to-book ratios less than 1.0 are earning less than

21   their costs of equity. (Woolridge at 41) Does Dr. Woolridge's regression

22   analysis for his electric utilities provide any support for this claim?

23   A.   No. Dr. Woolridge claims that: (1) the cost of equity for electric utilities like

24   Gulf is 8.875 percent; and (2) companies with ROEs less than the cost of

25   equity will have market-to-book ratios less than 1.0. However, contrary to

1   Dr. Woolridge's hypothesis, the data in his work papers indicate that in

2   Panel A in Exhibit JRW-6, there are thirteen electric utilities with expected

3   ROEs less than 8.875 percent, and none of these utilities have market-to-

4   book ratios less than 1.0. Similarly, for the natural gas companies shown in

5   Panel B of Exhibit JRW-6, there are three natural gas utilities with expected

6   ROEs less than 8.875 percent, and no company has a market-to-book ratio

7   less than 1.0. With regard to the water utilities in Panel C of Exhibit JRW-6,

8   there are two companies with expected ROEs less than 8.875 percent, and

9   none of these companies has a market-to-book ratio less than 1.0. Thus,

10   Dr. Woolridge's own data contradict his claim that companies earning less

11   than their cost of equity will have market-to-book ratios of less than 1.0.

12

13   D. REBUTTAL OF DR. WOOLRIDGE'S COMMENTS ON

14   VANDER WEIDE DIRECT TESTIMONY

15   Q.   What issues does Dr. Woolridge have regarding your estimate of Gulf's cost

16   of equity?

17   A.   Dr. Woolridge disagrees with my: (1) quarterly DCF model; (2) reliance on

18   analysts' growth forecasts; (3) risk premium estimates; (4) allowance for

19   flotation costs; and (5) financial leverage adjustment. (Woolridge at 75)

20

21   1. Quarterly DCF Model

22   Q.   What are Dr. Woolridge's criticisms of your DCF studies?

23   A.   Dr. Woolridge claims that I should: (1) use the annual rather than the

24   quarterly DCF model to estimate Gulf's cost of equity; (2) use a combination

25   of historical and analysts' growth rates to estimate the growth component of

1   the DCF model; (3) make no allowance for flotation costs; and (4) make no

2   adjustment for the difference between the financial risk reflected in my cost

3   of equity estimate and the financial risk reflected in Gulf's rate making

4   capital structure.

5

6   Q.   What is the major difference between the quarterly DCF model which you

7   use and the annual DCF model employed by Dr. Woolridge?

8   A.   The major difference is that my quarterly DCF model is based on the

9   realistic assumption that dividends are paid quarterly, while Dr. Woolridge's

10   annual DCF model is based on the unrealistic assumption that dividends

11   are paid once at the end of each year.

12

13   Q.   Why do you use the quarterly rather than the annual DCF model to estimate

14   Gulf's cost of equity?

15   A.   As I discuss in my direct testimony, the DCF model assumes that a

16   company's stock price is equal to the present discounted value of all

17   expected future dividends. Because the companies in my proxy group all

18   pay dividends quarterly, the current market price that investors are willing to

19   pay reflects the expected quarterly receipt of dividends. Therefore, a

20   quarterly DCF model must be used to estimate the cost of equity for these

21   firms. The quarterly DCF model differs from the annual DCF model in that it

22   expresses a company's price as the present discounted value of a quarterly

23   stream of dividend payments. The annual DCF model is only a correct

24   expression for the present discounted value of future dividends if dividends

25   are paid once at the end of each year.

1   Q.   Why does Dr. Woolridge disagree with your application of the quarterly DCF

2   model?

3   A.   Dr. Woolridge asserts that the quarterly DCF model is not required because:

4   (1) 'the appropriate dividend yield adjustment for growth in the DCF model

5   is the expected dividend for the next quarter multiplied by four;" (Woolridge

6   at 77) and (2) "notion that an adjustment is required to reflect the quarterly

7   timing issue is refuted in a study by Richard Bower of Dartmouth College."

8   (Woolridge at 78)

9

10 Q.   Do you agree with Dr. Woolridge's statement that "the appropriate dividend

11   yield adjustment for growth in the DCF model is the expected dividend for

12   the next quarter multiplied by four"?

13 A.   No. Dr. Woolridge's assertion is undoubtedly incorrect because it ignores

14   the time value of quarterly dividend payments over the course of a year, and

15   he provides no justification for his assertion. In contrast, I explain in detail in

16   Appendix 2 of my direct testimony the appropriate adjustment for the

17   quarterly payment of dividends in the application of DCF model.

18

19 Q.   Do you agree with Dr. Woolridge's assertion that Dr. Bower's study "refutes"

20   the "notion that an adjustment is required to reflect the quarterly timing" of

21   dividend payments in the DCF model?

22 A.   No. Indeed, the Bower study in fact confirms the downward bias of the

23   annual DCF model. However, Bower asserts that an annual DCF model is

24   reasonable because utilities "survive," even without adjusting for the

25   quarterly payment of dividends.

1   Q.   Is Bower's statement in favor of an annual DCF model a reasonable

2   justification for using the annual DCF model in this proceeding?

3   A.   No. Bower's assertion that "too many utilities have survived and sustained

4   market prices above book" provides no financial or statistical refutation of

5   the downward bias to the annual DCF model. As shown in Appendix 2 of

6   Exhibit JVW-2 to my direct testimony, there can be no doubt that when

7   dividends are paid quarterly, the quarterly DCF model must be used to

8   estimate the cost of equity.

9

10   Q.   Do you agree with Dr. Woolridge's assertion that the quarterly DCF model

11   allows investors to earn more than their required return on equity?

12   A.   No. The quarterly DCF model does not allow investors to earn more than

13   their required return on equity; it simply offers a better estimate of investors'

14   required return on equity than an annual DCF model. Whether a company

15   earns more than its cost of equity depends on many factors, including the

16   state of the economy and the demand for electricity, factors which cannot

17   be known at the time the cost of equity is being estimated.

18

19   2. Analysts' Growth Forecasts

20   Q.   Dr. Woolridge also criticizes your use of analysts' growth rates in your DCF

21   model. Why do you use analysts' growth rates to estimate the growth

22   component of the DCF model?

23   A.   I use analysts' growth rates because my studies indicate that the analysts'

24   growth rates are highly correlated with stock prices. This evidence provides

25   strong support for the conclusion that investors use analysts' growth rates in

1		making stock buy and sell decisions, and thus the analysts' growth rates
2		should be used to estimate the growth component of the DCF model.
3		
4	Q.	Does Dr. Woolridge agree with your statistical studies of the relationship
5		between analysts' growth rates and stock prices?
6	A.	No. Dr. Woolridge has four criticisms of my statistical studies of the
7		relationship between analysts' growth rates and stock prices. First, he
8		argues that my statistical study is outdated. Second, he argues that my
9		study is misspecified because I used a "linear approximation" to the DCF
10		model rather than a modified version of the DCF model. Third, he argues
11		that I did not use both historical and analysts' forecasted growth rates in the
12		same regression. Fourth, he argues that I did not perform any tests to
13		determine if the difference between historic and projected growth measures
14		is statistically significant. (Woolridge at 81 – 82)
15		
16	Q.	Do you agree with Dr. Woolridge's assertion that your statistical analysis of
17		the relationship between analysts' growth rates and stock prices is
18		outdated?
19	A.	No. As discussed in my direct testimony, my study was updated by State
20		Street Financial. The updated study continues to support the conclusion that
21		the analysts' growth rates are more highly correlated with stock prices than
22		historical measures such as those employed by Dr. Woolridge.
23		Furthermore, Dr. Woolridge ignores other studies that have corroborated my
24		results, and his own study does not support his criticism of the use of
25		analysts' forecasts in applying the DCF model.

1 Q. Do you agree with Dr. Woolridge's criticism that your DCF model is

2   misspecified because you used a "linear approximation" to the DCF model

3   rather than a modified version of the DCF model?

4 A. No. Most regression analyses are based on the assumption that the

5   relationship between the variables being studied is linear. As part of my

6   studies, I tested whether the linear assumption was sufficiently close to

7   provide reliable estimates of the model parameters. Applying a first order

8   Taylor-series approximation to the DCF equation, I found that the first order,

9   or linear, approximation was sufficiently close to the true equation to justify

10   using linear regression analysis to study the relationship between

11   price/earnings ratios and growth rates.

12

13 Q. Why did you not use a combination of historical and analysts' growth rates

14   in the same regression?

15 A. I did not use a combination of historical and analysts' growth rates in the

16   same regression because there are an infinite number of such combinations

17   which could be tested. My studies indicate that the relationship between

18   analysts' growth forecasts and stock prices is so strong compared to the

19   relationship between historical growth rates and stock prices that there

20   would be little advantage to combining historical growth rates with analysts'

21   forecasts to predict stock prices.

22

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1   Q.   Is there a statistically significant difference between historical and projected

2   growth measures in explaining stock prices in your statistical study?

3   A.   Yes. The difference in performance of historical and projected growth rates

4   is both statistically significant and dramatic.

5

6   Q.   Dr. Woolridge claims in his testimony, "it is well known that the long-term

7   EPS growth rate forecasts of Wall Street securities analysts are overly

8   optimistic and upwardly biased." (Woolridge at 80) Is he correct?

9   A.   No. Contrary to Dr. Woolridge's claim, the academic literature presents

10   compelling evidence that analysts' EPS growth forecasts are unbiased—

11   that is, neither optimistic nor pessimistic. I have reviewed nine articles that

12   address whether analysts' growth forecasts are overly optimistic. At least

13   seven of the nine articles reviewed find no evidence that analysts' growth

14   forecasts are overly optimistic. Two find evidence of optimism in the early

15   years of the study, but also conclude that optimism is not present in the later

16   years of the study. In fact, one study finds that analysts' forecasts for the

17   S&P 500 are pessimistic for the last four years of the study. (See Table 1

18   below and Schedule 1 of Exhibit JVW-3.)

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TABLE 1

ARTICLES THAT STUDY WHETHER ANALYSTS' FORECASTS

ARE BIASED TOWARD OPTIMISM

Author (Date)	*Conclusion*
Crichfield, Dyckman, and Lakonishok (1978)	Unbiased
Elton, Gruber, and Gultekin (1984)	Unbiased
Givoly and Lakonishok (1984)	Unbiased
Brown (1997)	Declining optimism
Keane and Runkle (1998)	Unbiased
Abarbanell and Lehavy (2003)	Unbiased
Ciccone (2005)	Pessimistic
Clarke, Ferris, Jayaraman, and Lee (2006)	Unbiased
Yang and Mensah (2006)	Unbiased

Q. Does some of the later research explain why some earlier studies in the literature conclude that analysts' EPS growth forecasts are optimistic?

A. Yes. Articles by Abarbanell and Lehavy (2003) and Keane and Runkle (1998) recognize that the results of earlier studies are heavily influenced by: (1) the inclusion of large unexpected accounting write-offs and special accounting charges in reported earnings; and (2) the impact of high correlation in analysts' forecasts. These articles conclude that once the statistical problems associated with the inclusion of non-recurring earnings in reported earnings per share and correlations in analysts' forecasts are corrected, the evidence supports the conclusion that analysts' forecasts are unbiased, and hence, not optimistic.

1   Q.   Dr. Woolridge discusses the results of his study of the relationship between

2   analysts' forecasts for utilities and the utilities' subsequent achieved

3   earnings growth rates. Do you have any comments on his study?

4   A.   Yes. First, Dr. Woolridge has misspecified the time frame of his analysts'

5   earnings growth forecasts. In his study, Dr. Woolridge claims that he

6   compares the analysts' forecast made in a particular quarter to the

7   company's realized earnings growth rate in the *same* quarter four years

8   hence. In making this comparison, Dr. Woolridge fails to recognize that:

9   (1) the time frame of the analysts' growth forecast is an indefinite, long-run

10   period that may differ from one analyst to another; (2) quarterly realized

11   earnings are unaudited; and (3) quarterly realized earnings are subject to

12   seasonality. Dr. Woolridge has provided no evidence that analysts' growth

13   estimates were intended to forecast actual results for exactly the same

14   quarter four years hence.

15

16   Second, Dr. Woolridge has not distinguished between recurring and non-

17   recurring earnings. The analysts' growth forecasts are intended to be

18   applied only to growth in recurring earnings, meaning that they are forecasts

19   of earnings in the absence of extraordinary events and one-time write-offs.

20   It is likely that the forecast deviations in Dr. Woolridge's sample are due

21   primarily to the impact of extraordinary events and one-time write-offs rather

22   than to problems with the analysts' forecasts of recurring earnings.

23

24   Third, Dr. Woolridge fails to adjust for the extremely high correlation in

25   analysts' forecasts across companies. Financial researchers have

1		conclusively demonstrated that there is no evidence of analysts' optimism in
2		data sets that are properly adjusted for the impact of one-time accounting
3		write-offs and the correlation in analysts' forecasts across companies. (*See*
4		Jeffery Abarbanell and Reuven Lehavy, "Biased Forecasts or Biased
5		Earnings? The Role of Reported Earnings in Explaining Apparent Bias and
6		Over/underreaction in Analysts' Earnings Forecasts," *Journal of Accounting*
7		*and Economics,* 36 (2003) 105 – 146; Stephen J. Ciccone, "Trends in
8		Analyst Earnings Forecast Properties," *International Review of Financial*
9		*Analysis*, 14 (2005) 1 – 22)
10		
11	Q.	Why do analysts exclude non-recurring earnings from earnings growth
12		forecasts?
13	A.	Analysts exclude non-recurring earnings from earnings growth forecasts
14		because stock prices reflect the impact of expected future earnings and, by
15		definition, non-recurring earnings or losses are not expected to continue in
16		the future. Because non-recurring earnings do not, in theory, impact stock
17		prices, analysts do not include them in their earnings growth forecasts. In
18		addition, because accounting adjustments are somewhat discretionary, it is
19		virtually impossible to forecast the timing and magnitude of such
20		adjustments, certainly when the long-term earnings per share forecast is
21		intended to apply to a period three to five years in the future.
22		
23		
24		
25		

1 Q. Do you have evidence that non-recurring items can have a significant

2 impact on the reported earnings per share for electric utilities?

3 A. Yes. The impact of non-recurring items on reported earnings per share for

4 electric utilities can be estimated from annual data on aggregate earnings

5 per share for electric utilities, including and excluding non-recurring items,

6 published by The Edison Electric Institute in its annual financial report on

7 investor-owned electric utilities. As shown in Table 2 below, aggregate EPS

8 including non-recurring items (that is, EPS as reported) is generally less

9 than aggregate EPS excluding non-recurring items; and, in many years, the

10 difference is substantial. Thus, Dr. Woolridge's use of EPS data that include

11 non-recurring items would have had a significant impact on his conclusion

12 that analysts' forecasts are optimistic.

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TABLE 2

EARNINGS PER SHARE ("EPS") INCLUDING AND EXCLUDING

NON-RECURRING ITEMS

U.S. INVESTOR-OWNED ELECTRIC UTILITIES

1992 - 2007

Year	EPS Include Non-Recurring	EPS Exclude Non-Recurring	Difference (Exclude-Include)
1992	1.66	1.85	0.19
1993	1.65	1.99	0.34
1994	1.92	1.96	0.04
1995	2.10	2.11	0.01
1996	2.14	2.21	0.07
1997	1.49	2.01	0.52
1998	1.52	1.79	0.27
1999	2.04	2.05	0.01
2000	1.59	2.47	0.88
2001	2.43	2.93	0.50
2002	-0.04	2.40	2.44
2003	1.45	2.20	0.75
2004	2.23	2.00	-0.23
2005	2.09	2.28	0.19
2006	2.42	2.37	-0.05
2007	2.65	2.34	-0.31

		3. Risk Premium

1   3. Risk Premium

2 Q. What is the risk premium approach to estimating the cost of equity?

3 A. The risk premium approach is based on the principle that investors expect

4   to earn a return on an equity investment in Gulf that reflects a "premium"

5   over and above the return they expect to earn on an investment in a

6   portfolio of long-term bonds. This equity risk premium compensates equity

7   investors for the additional risk they bear in making equity investments

8   versus bond investments. Using the risk premium approach, the cost of

9   equity is given by the following equation: cost of equity = interest rate plus

10   risk premium.

11

12 Q. How do you estimate the interest rate component of the risk premium

13   approach?

14 A. I estimate the interest rate component of the risk premium approach using

15   the yield to maturity on A-rated utility bonds.

16

17 Q. Does Dr. Woolridge have any criticisms of your use of the yield to maturity

18   on A-rated utility bonds to estimate the interest rate component of the risk

19   premium approach?

20 A. Yes. Dr. Woolridge argues that my use of the yield to maturity on A-rated

21   utility bonds inflates the required return on equity because long-term utility

22   bonds are not risk free, that is, they are subject to both interest rate risk and

23   credit risk. (Woolridge at 86 – 87)

24

25

1 Q. Do you agree with Dr. Woolridge's criticism of your use of the yield to

2 maturity on A-rated utility bonds to estimate the interest rate component of

3 the risk premium approach?

4 A. No. Dr. Woolridge fails to recognize that the risk premium approach does

5 not require that the interest rate be "risk free." Indeed, the only requirement

6 of the risk premium approach is that the same interest rate be used to

7 estimate the interest rate component as is used to estimate the risk

8 premium component. Because the risk premium approach suggests that the

9 cost of equity equals (the interest rate) plus (the required return on equity

10 minus the interest rate), the cost of equity should be approximately the

11 same in a risk premium analysis, no matter what interest rate is used as the

12 benchmark interest rate. Thus, use of the interest rate on A-rated utility

13 bonds in a risk premium analysis will produce a higher interest rate

14 component than use of a government bond interest rate, but this difference

15 will be offset by the correspondingly lower risk premium. The lower risk

16 premium arises because the difference between the return on equity and

17 yield on A-rated utility bonds is less than the difference between the return

18 on equity and the yield on long-term government bonds.

19

20 Q. Why do you use the yield on A-rated utility bonds rather than the yield on

21 Treasury bonds in your risk premium studies?

22 A. I use the yield on A-rated utility bonds rather than the yield on Treasury

23 bonds in my risk premium studies because I believe that utility bond yields

24 are better indicators of a utility's cost of equity than Treasury bond yields.

25 First, because the U.S. dollar is the major currency for international trade,

1   foreign governments tend to hold their currency reserves in U.S. Treasury

2   bonds. Thus, Treasury bond yields are highly sensitive to changes in

3   international economic conditions, whereas the U.S. utilities' cost of equity

4   is not.

5

6   Second, because U.S. Treasuries are considered to be the safest investment in

7   the world, investors across the world tend to flock to investments in U.S.

8   Treasuries at times of widespread global economic turmoil. In periods of

9   turmoil, the required return on risky investments such as utility bonds and

10 stocks increases while the yield on U.S. Treasury bonds declines. Thus,

11 changes to U.S. Treasury bond yields are poor indicators of changes in a

12 utility's cost of equity.

13

14 Third, yields on U.S. Treasury bonds are highly sensitive to efforts by the

15 Federal Reserve to stimulate the economy. Although most Federal Reserve

16 monetary policy operations are conducted using short-term U. S. Treasury bills,

17 yields on long-term Treasury bonds frequently move in the same direction as

18 yields on short-term Treasury bills

19

20 Fourth, to the extent that there are economic developments that are specific to

21 the utility industry, such as changes in environmental regulations and energy

22 policy, such factors will be reflected both in utility bond yields and the utility cost

23 of equity, but not in U.S. Treasury bond yields. Thus, that utility bond yields

24 reflect utility-specific risks is an argument for—not an argument against—the

25 use of utility bond yields to indicate changes in the utility cost of equity.

1 Q. How do you estimate the risk premium component of the risk premium

2   approach?

3 A. I estimate the risk premium component of the risk premium approach in two

4   ways. First, I estimate the difference between the DCF cost of equity for a

5   proxy group of companies over the previous 199 months and the concurrent

6   yield to maturity on A-rated utility bonds in those months, and then adjust

7   the average risk premium to account for changes in interest rates. This

8   estimate is my "ex ante risk premium approach." Second, I estimate the risk

9   premium from an historical study of stock and bond returns over the period

10   1937 to the present. This second risk premium approach is my "ex post risk

11   premium approach."

12

13 Q. Why does Dr. Woolridge criticize your ex ante risk premium approach?

14 A. Dr. Woolridge criticizes my ex ante risk premium approach because it relies

15   on analysts' forecasts to estimate the required return on equity using the

16   DCF model.

17

18 Q. Have you addressed Dr. Woolridge's criticisms of your use of analysts'

19   growth forecasts elsewhere in this rebuttal testimony?

20 A. Yes, I have. (See Section II, D., 2, above.)

21

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25

1 Q. Does Dr. Woolridge agree with your use of historical stock and bond returns

2   to estimate the equity risk premium?

3 A. No. Dr. Woolridge states:

4   Among the errors are the US stock market survivorship bias

5   (the "Peso Problem"), the company survivorship bias (only

6   successful companies survive), the measurement of central

7   tendency (arithmetic versus geometric mean), the historical

8   time horizon used, the change in risk and required return over

9   time, the downward bias in historical bond returns, and

10   unattainable return bias. (Woolridge at 89)

11

12 Q. Do you agree with Dr. Woolridge's statement that historical bond returns are

13   biased downward?

14 A. No. Because of capital gains and losses, historical bond returns may be

15   higher or lower than what investors expected at the time they purchased the

16   bonds. During the period since 1982, for example, historical bond returns

17   have been biased upward as a measure of expectancy because of the large

18   capital gains achieved by bondholders over this period. However, over the

19   entire period considered in my ex post risk premium study (from 1937 to the

20   present), capital gains and losses on bonds have approximately offset each

21   other, and consequently there is no significant bias as a result from either

22   capital gains or losses.

23

24

25

1   Q.   What is the difference between an arithmetic and a geometric mean return?

2   A.   An arithmetic mean return is an additive return that is calculated by

3   summing the achieved return in each time period and dividing the total by

4   the number of periods. In contrast, the geometric mean return is a

5   multiplicative return that is calculated in two steps. First, one calculates the

6   product of (1 plus the return) in each period of the study. Second, one

7   calculates the nth root of this product and subtracts 1 from the result. Thus, if

8   there are two periods, and r_1 and r_2 are the returns in periods one and two,

9   respectively, the arithmetic mean is calculated from the equation: $a_m = (r_1 +$

10      $r_2) \div 2$. The geometric mean is calculated from the equation,

11
$$a_g = [(1 + r_1) \times (1 + r_2)]^5 - 1.$$

12

13   Q.   Please describe Dr. Woolridge's concern regarding the use of arithmetic

14   versus geometric mean returns.

15   A.   Dr. Woolridge believes that my ex post risk premium study is biased

16   because I calculate the expected risk premium using the arithmetic mean of

17   past returns, whereas he believes I should have calculated the expected

18   risk premium using the geometric mean of past returns.

19

20   Q.   Is Dr. Woolridge's criticism valid?

21   A.   No. As explained in Ibbotson® SBBI® Valuation Edition 2013 Yearbook

22   (SBBI®), the arithmetic mean return is the best approach for calculating the

23   return investors expect to receive in the future:

24   The equity risk premium data presented in this book are

25   arithmetic average risk premia as opposed to geometric

1   average risk premia. The arithmetic average equity risk

2   premium can be demonstrated to be most appropriate when

3   discounting future cash flows. For use as the expected equity

4   risk premium in either the CAPM or the building block

5   approach, the arithmetic mean or the simple difference of the

6   arithmetic means of stock market returns and riskless rates is

7   the relevant number. This is because both the CAPM and the

8   building block approach are additive models, in which the cost

9   of capital is the sum of its parts. The geometric average is

10   more appropriate for reporting past performance, since it

11   represents the compound average return. [SBBI® at 56]

12   A discussion of the importance of using arithmetic mean returns in the

13   context of CAPM or risk premium studies is contained in my direct

14   testimony, Schedule 5 of Exhibit JVW-1, "Using the Arithmetic Mean to

15   Estimate the Cost of Equity Capital."

16

17 Q.   Dr. Woolridge also criticizes your ex post risk premium study because it is

18   based on unattainable and biased historic stock returns. (Woolridge at 89)

19   Is his criticism valid?

20 A.   No. Dr. Woolridge bases his allegation on the assumption that stock index

21   returns such as those reported by Ibbotson® SBBI® are "unattainable to

22   investors." Dr. Woolridge's assumption is false: investors, in fact, can attain

23   the returns achieved by stock indices simply by purchasing the stock index.

24

25

1   Q.   Do you agree with Dr. Woolridge's criticism that your ex post risk premium

2   study is characterized by "survivorship bias"? (Woolridge at 89)

3   A.   No. Survivorship bias refers to problems that might arise when data for

4   companies that have failed are excluded from the sample. However, with

5   regard to the U.S. markets that I study, survivorship bias is not a major

6   issue. First, over the period 1937 to the present, there have been relatively

7   few companies in the S&P 500 and the S&P Utilities that have failed.

8   Second, the S&P 500 includes the return on a stock until the day it is

9   dropped from the index, and the effect of a company being dropped from

10   the S&P 500 is generally anticipated by the market well in advance of the

11   delisting. Thus, survivorship is not a material issue with respect to U.S.

12   stocks.

13

14   Q.   What does Dr. Woolridge mean when he refers to the "peso problem"?

15   (Woolridge at 89)

16   A.   Dr. Woolridge uses the term "peso problem" to refer to the fact that U.S.

17   investors have earned higher returns on stock investments than investors in

18   other countries because the U.S. economy has not suffered many of the

19   same economic calamities as the economies of other countries. This

20   criticism of the use of U. S. stock returns in risk premium studies might be

21   appropriate if one were attempting to estimate the expected rates of return

22   on non-U. S. stocks. However, for U. S. stocks, because there is no

23   indication that the U. S. will suffer the economic calamities of other

24   countries, such as hyper-inflation or military invasion, there is no reason

25   why the returns on U. S. stocks would be biased upward.

1 Q.   Dr. Woolridge asserts that your risk premium estimate is unreasonable

2   because it is higher than the risk premium estimate found in the

3   Graham/Harvey survey of Chief Financial Officers in December 2016 and

4   the Fernandez surveys of financial analysts. (Woolridge at 97) Do you agree

5   that surveys of financial managers provide useful information on the

6   expected market risk premium?

7 A.   No. Surveys of business managers provide little or no information on the

8   expected market risk premium because: (1) managers have no incentive to

9   take the survey seriously; (2) their responses are not typically based on

10   market transactions or actual investment decisions; (3) their responses may

11   reflect what they think the investigator wants to hear; and (4) the response

12   rate is frequently low. In addition, Dr. Woolridge fails to recognize that

13   Graham and Harvey comment that their survey responders frequently use

14   hurdle rates for making investment decisions that exceed their estimates of

15   excess returns on the S&P 500. (Graham and Harvey confirm that CEO

16   responses to their survey are not typically based on market transactions or

17   actual investment decisions when they state, "Often their [the CFO's] 10-

18   year risk premium is supplemented so that the company's hurdle rate

19   exceeds their expected excess return on the S&P 500." (John Graham and

20   Campbell Harvey, "The Long-Run Equity Risk Premium," Sep. 9, 2005, p. 6)

21

22

23

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| 1 | | 4. Flotation Costs |

1   4. Flotation Costs

2   Q.   Why do you include an adjustment for flotation costs in your DCF analysis?

3   A.   I include an adjustment for flotation costs because, without such an

4   adjustment, Gulf would not be able to recover all the costs it incurs to

5   finance its investments in electric plant and equipment.

6

7   Q.   Does Gulf issue equity in the capital markets?

8   A.   No. Although Gulf does not issue equity in the capital markets, its parent

9   must issue equity to provide Gulf the necessary financing to make

10   investments in its electric utility operations in Florida. If the parent is not

11   able to recover its flotation costs through Gulf's rates, it will not be able to

12   recover the full cost of issuing equity required to invest in Gulf.

13

14   Q.   Does Dr. Woolridge agree with your flotation cost adjustment?

15   A.   No. Dr. Woolridge claims that a flotation cost adjustment is inappropriate

16   because: (1) the company has not presented any evidence that it actually

17   incurs flotation costs when it issues new equity; and (2) it is frequently

18   asserted that a flotation cost adjustment is required to prevent dilution of the

19   company's existing shareholders, but existing shareholders cannot suffer

20   dilution as long as the company's stock price is above book value.

21

22   Q.   Do you agree with Dr. Woolridge's assertion that the company did not

23   provide any evidence that it incurs flotation costs when it issues new equity?

24   A.   No. In Appendix 3 of Exhibit JVW-1 to my direct testimony, I present

25   evidence that all companies incur flotation costs when they issue new equity

1		securities, that flotation costs represent approximately five percent of the
2		company's pre-issue stock price, and that the company will not be able to
3		earn a fair rate of return on its investment if it does not recover its flotation
4		costs.
5		
6	Q.	Do you justify flotation costs on the grounds that flotation costs are required
7		to prevent dilution of existing shareholders?
8	A.	No. I justify flotation costs on the grounds that the company will not be able
9		to earn a fair rate of return if it does not recover the flotation costs it incurs
10		when it issues new equity. My flotation cost adjustment is completely
11		unrelated to the company's market-to-book ratio.
12		
13	Q.	Has the Commission previously accepted a flotation cost allowance for
14		Florida utilities?
15	A.	Yes. For example, the Commission included an adjustment for flotation
16		costs in its 2009 TECO Order. The Commission states, "We have
17		traditionally recognized a reasonable adjustment for flotation costs in the
18		determination of the investor-required ROE. … such adjustments have
19		typically been on the order of 25 to 50 basis points." (Order No. PSC-09-
20		0283-FOF-EI, Docket No. 080317-EI, April 30, 2009, at 44) In addition, I
21		note that this Commission typically uses a flotation cost allowance of four
22		percent in both DCF and CAPM models to estimate the cost of equity for
23		water utilities in Florida. (See Order No. PSC-16-0254-PAA-WS, issued
24		June 29, 2016 in Docket No. 160006-WS, regarding the annual
25		

1		reestablishment of authorized range of return on common equity for water
2		and wastewater utilities.)
3		
4		5. Financial Risk Adjustment
5	Q.	How do financial market participants measure risk?
6	A.	Under the assumption that the probability distribution of returns is
7		symmetric, *i.e.*, centered on the mean return, financial market participants
8		generally measure risk by the forward-looking variance of return on
9		investment.
10		
11	Q.	Does the forward-looking variance of an investor's return on a stock
12		investment in a company depend on the company's capital structure?
13	A.	Yes. The forward-looking variance of an investor's return depends on the
14		company's debt to equity ratio, where both debt and equity are measured in
15		terms of market values, not book values.
16		
17	Q.	What is the meaning of the term, "financial risk"?
18	A.	Economists use the term, "financial risk" to refer to the contribution of the
19		firm's capital structure, *i.e.*, its debt to equity ratio, to the forward-looking
20		variance of return on the firm's stock.
21		
22	Q.	Does financial risk reflect the market values of debt and equity in a
23		company's capital structure or the book values of debt and equity in a
24		company's capital structure?
25		

1	A.	Financial risk measures the contribution of the company's capital structure
		to the forward-looking variance of return on the company's stock, and the
		forward-looking variance depends on the market values of debt and equity
		in the company's capital structure, not the book values. (*See,* for example*,*
		Richard A. Brealey, Stewart C. Myers, and Franklin Allen, Principles of
		Corporate Finance, 8th ed., McGraw-Hill, 2006, pp. 452 - 456) Thus,
		financial risk reflects the market values of debt and equity in a company's
		capital structure, not the book values.

10 Q.   Is Gulf recommending that its weighted average cost of capital in this
11   proceeding be calculated based on the market values of debt and equity in
12   its capital structure?

13 A.   No. Consistent with previous regulatory practice, Gulf is recommending that
14   its weighted average cost of capital be based on the book values of debt
15   and equity in its capital structure.

17 Q.   Is the financial risk associated with Gulf's recommended capital structure
18   measured in the same way as the financial risk associated with the capital
19   structures of your proxy companies?

20 A.   No. The financial risk of my proxy companies is reflected in their market
21   value capital structures, while Gulf is recommending that a book value
22   capital structure be used for the purpose of setting rates. Thus, the financial
23   risk of my proxy companies is measured by their market value capital
24   structures, while Gulf's financial risk is measured by its book value capital
25   structure.

1	Q.	How do you adjust your cost of equity results for your comparable
		companies to reflect the difference between the market's perception of the
		financial risk of your proxy companies and the financial risk reflected in
		Gulf's recommended capital structure?

1 Q. How do you adjust your cost of equity results for your comparable
2   companies to reflect the difference between the market's perception of the
3   financial risk of your proxy companies and the financial risk reflected in
4   Gulf's recommended capital structure?
5 A. As described in my direct testimony (see pp. 51 – 52), I adjust the cost of
6   equity results for my comparable companies by equating the after-tax
7   weighted average cost of capital of my proxy companies to the after-tax
8   weighted average cost of capital of Gulf. In this procedure, I use market-
9   value capital structure weights for my comparable companies because the
10   cost of capital for these companies is based on market values, and I use
11   book value weights for Gulf because the recommended cost of capital for
12   Gulf in this proceeding is based on book values.
13
14 Q. Does Dr. Woolridge agree with your financial risk adjustment?
15 A. No. Dr. Woolridge claims that my financial risk adjustment is unjustified
16   because: (1) a market-to-book ratio above 1.0 indicates that a company is
17   earning more than its cost of equity; (2) there is no change in the company's
18   leverage; (3) financial publications report capital structures based on book
19   values; (4) no other commissions have accepted using a market value
20   capital structure to calculate the allowed rate of return; (5) Gulf's common
21   equity ratio is in line with the common equity ratios of other utilities; and
22   (6) Gulf's bond ratings suggest that Gulf's investor risk is at or lower than
23   that of other electric utilities. (Woolridge at 69 – 70)
24
25

1   Q.   Do you agree that a market-to-book ratio greater than 1.0 indicates that a

2   company is earning more than its cost of equity?

3   A.   No. As discussed above, Dr. Woolridge's own study, based on October

4   2016 data, demonstrates that many electric, natural gas, and water utilities

5   have estimated ROEs less than 8.875 percent but also have market-to-book

6   ratios greater than 1.0. Dr. Woolridge's data clearly contradict his claim that

7   a company's market-to-book ratio is an indicator of whether a company is

8   earning more than its cost of equity.

9

10   Q.   Does your financial risk adjustment assume a "change" in a company's

11   leverage?

12   A.   No. As discussed above, my financial risk adjustment reflects the difference

13   in the financial risk between the capital structures of the proxy companies

14   and the company's ratemaking capital structure. It is unclear what Dr.

15   Woolridge refers to when he notes a "change" in capital structure.

16

17   Q.   Does the observation that financial publications report capitalization on a

18   book value basis undermine the validity of your financial risk adjustment?

19   A.   No. The validity of my financial risk adjustment is based on the widely-

20   recognized observation that the equity investor measures financial risk by

21   the variance of portfolio return; and the variance of an investor's portfolio

22   return depends on the *market values* of the securities in the portfolio, not on

23   the *book values* of the securities in the portfolio. The truth of the statement

24   that variance of return depends on market values is recognized both in

25   academia and the marketplace. In addition, investors have no difficulty in

1		calculating market value capital structures from publicly available
2		information.
3		
4	Q.	Dr. Woolridge claims that in response to OPC interrogatory No. 69, you
5		state that you "could not identify any proceeding" in which you have testified
6		"where the regulatory commission had adopted" your "leverage adjustment."
7		(Woolridge at 98 – 99) Does Dr. Woolridge correctly characterize your
8		response?
9	A.	No. I stated that I do not maintain records of regulatory decisions or a list of
10		all cases in which commissions have accepted my recommendations.
11		However, I noted that I was generally aware that financial adjustments
12		similar to that which I propose have been adopted in Pennsylvania and
13		Canada, and that many states use market value capital structures to
14		determine utility property taxes.
15		
16		Furthermore, I am also aware that market value capital structures have
17		been used to set allowed rates of return in numerous telecommunications
18		cases in which I have participated since 1996, including the *Virginia*
19		*Arbitration Proceeding* in which my 12.95 percent overall cost of capital
20		recommendation was accepted, and a Michigan docket in which my
21		75 percent equity market value capital structure recommendation was
22		accepted. (Memorandum Opinion and Order*, Petition of AT&T*
23		*Communications of Virginia Inc., Pursuant to Section 252(e)(5) of the*
24		*Communications Act for Preemption of the Jurisdiction of the Virginia*
25		*Corporation Commission Regarding Interconnection Disputes With Verizon*

1   *Virginia Inc.*, 18 FCC Rcd 17722 ¶ 94 (2003) ("*Virginia Arbitration Order*")

2   In this proceeding, the Wireline Competition Bureau of the FCC, accepting

3   Verizon's proposal, finds that the appropriate capital structure component of

4   the weighted average cost of capital should be based on the market values

5   of debt and equity, stating, "we give no weight to the portion of

6   AT&T/WorldCom's proposal that is based on incumbent LECs' book value

7   capital structure." *See* Order at ¶¶ 103-104. See also, Michigan Public

8   Service Commission Order, *In the matter, on the Commission's own motion,*

9   *to review the total element long run incremental costs and the total service*

10   *long run incremental costs for Verizon North Inc., and Contel of the South,*

11   *Inc., D/B/A Verizon North Systems, to provide telecommunications services*,

12   Case No. U-15210, March 18, 2009. "The Commission is not persuaded

13   that Verizon's capital structure should be based on book value. The

14   Commission agrees with the Staff and adopts Verizon's proposed capital

15   structure of 75 percent equity and 25 percent debt." (Order at 17)

16

17 Q. Dr. Woolridge claims that investment risk is measured by bond ratings, and

18   Gulf's bond rating indicates that "Gulf's investor risk is below that of the

19   proxy groups." (Woolridge at 31) Does a bond rating measure investment

20   risk from the point of view of an equity investor?

21 A. No. Bond ratings reflect investment risk only from the point of view of debt

22   investors, not the point of view of equity investors.

23

24

25

1   Q.   How does the debt investor's view of risk differ from the equity investor's

2   view of risk?

3   A.   The debt investor's view of risk differs from the equity investor's view of risk

4   in that debt investors are senior to equity investors in the event of financial

5   distress. That is, in the event of financial distress, debt investors are entitled

6   to repayment of their investment before equity investors. Thus, debt

7   investors are primarily concerned with the risk that a company will not be

8   able to repay the interest and principal on its debt, whereas equity investors

9   are primarily concerned with the forward-looking variance of return on the

10   market value of their equity investment.

11

12 Q.   Does the risk that a company will be unable to repay the interest and

13   principal on its debt depend on the market values of the company's debt

14   and equity or on the book values of the company's debt and equity?

15 A.   Because the interest and principal on a company's debt is based on the

16   book value of a company's debt, the probability of bankruptcy depends on

17   the book value of a company's debt in relation to the book value of a

18   company's equity; that is, the probability of bankruptcy depends on a

19   company's book value capital structure rather than its market value capital

20   structure.

21

22 Q.   Does the forward-looking variance of return on an equity investment depend

23   on the market values or the book values of a company's debt and equity?

24 A.   The forward-looking variance of return on an equity investment depends on

25   the market values of debt and equity—not the book values of debt and

1		equity—because equity investors can only purchase and sell equity at
2		market values. Thus, from the equity investor's point of view, financial risk
3		depends on a company's market value capital structure, not its book value
4		capital structure.
5		
6	Q.	Does the difference between market and book value capital structures help
7		to explain your financial risk adjustment?
8	A.	Yes. As I discuss in my direct testimony, my financial risk adjustment is
9		required because equity investors look at a company's market value capital
10		structure to determine the financial risk of investing in the company's equity,
11		whereas the rates in this proceeding are based on the company's book
12		value capital structure. Because equity investors' views of financial risk as
13		measured in the marketplace are reflected in my cost of equity estimate, but
14		my cost of equity estimate is applied to a book value capital structure
15		through the regulatory process, the equity investor is unlikely to have an
16		opportunity to earn the required marketplace return without my financial risk
17		adjustment.
18		
19		

III. REBUTTAL OF MR. GORMAN

21		
22	Q.	What is Mr. Gorman's recommended cost of equity for Gulf?
23	A.	Mr. Gorman recommends a cost of equity for Gulf equal to 9.2 percent.
24		(Gorman at 2)
25		

1   Q.   How does Mr. Gorman estimate Gulf's cost of equity?

2   A.   Mr. Gorman estimates Gulf's cost of equity by applying several cost of

3   equity methods to essentially the same comparable group of electric utilities

4   that I use in my direct testimony. His cost of equity methods include: (1) the

5   DCF model; (2) a risk premium method; and (3) a Capital Asset Pricing

6   Model ("CAPM").

7

8   Q.   What areas of Mr. Gorman's testimony will you address in your rebuttal

9   testimony?

10 A.   I will address Mr. Gorman's DCF analysis, risk premium analysis, CAPM

11   analysis, and his comments on my direct testimony.

12

13   A. Mr. Gorman's DCF Model

14 Q.   What DCF model does Mr. Gorman use to estimate Gulf's cost of equity?

15 A.   Mr. Gorman uses an annual DCF model to estimate Gulf's cost of equity.

16

17 Q.   Do you agree with Mr. Gorman's use of an annual DCF model to estimate

18   Gulf's cost of equity?

19 A.   No. As discussed in my rebuttal of Dr. Woolridge, the DCF model is based

20   on the assumption that a company's stock price reflects the present value of

21   the dividends investors expect to receive from their ownership of the stock.

22   Because the companies in Mr. Gorman's analysis all pay dividends

23   quarterly, these companies' stock prices reflect the present value of a

24   quarterly stream of dividends. Hence, the quarterly DCF model is the only

25

1   DCF model that is consistent with the basic assumption that stock prices

2   are equal to the expected present value of future dividends.

3

4   Q.   Does Mr. Gorman present more than one DCF analysis for the Commission

5   to consider?

6   A.   Yes. Mr. Gorman presents three DCF analyses: (1) a constant growth DCF

7   analysis based on analysts' growth rates; (2) a constant growth DCF

8   analysis based on sustainable growth rates; and (3) a three-stage DCF

9   analysis in which growth rates decline to an estimate of long-run Gross

10   Domestic Product (GDP) growth in three stages.

11

12 Q.   What DCF results does Mr. Gorman obtain from his constant growth DCF

13   analysis based on analysts' growth rates?

14 A.   Mr. Gorman obtains an average DCF result equal to 9.23 percent and a

15   median DCF result equal to 9.30 percent. (Gorman at 34)

16

17 Q.   Do you agree with Mr. Gorman's use of analysts' growth forecasts as a

18   proxy for investors' growth expectations in his first DCF analysis?

19 A.   Yes. Mr. Gorman's use of analysts' growth forecasts is consistent with the

20   results of studies, including my own, that demonstrate that analysts' growth

21   forecasts are more highly correlated with stock prices than are other growth

22   forecasts, such as historical growth forecasts and sustainable growth

23   forecasts.

24

25

1   Q.   You note that Mr. Gorman conducts a second constant growth DCF

2   analysis using "sustainable" growth rates. How does Mr. Gorman estimate

3   the "sustainable" growth rate in his second constant growth DCF model?

4   A.   Mr. Gorman estimates the sustainable growth rate in his second constant

5   growth DCF analysis based on Value Line's forecasts of each company's

6   retention ratio and earned ROE. (Gorman at 36)

7

8   Q.   Do you agree with Mr. Gorman's use of the "sustainable growth" method of

9   estimating investors' growth expectations?

10 A.   No. I have two objections to Mr. Gorman's use of the "sustainable growth"

11   method of estimating investors' growth expectations. First, the DCF model

12   requires the growth forecasts of investors. My studies, along with those of

13   others, provide strong evidence that analysts' growth forecasts are a better

14   proxy for investors' growth expectations than the sustainable growth rate

15   used by Mr. Gorman. Second, the sustainable growth method is logically

16   circular in that each company's rate of return on equity must be known in

17   order to estimate the sustainable growth rate at the same time that the

18   sustainable growth rate must be known to estimate the rate of return on

19   equity through the DCF model. It is not possible for the rate of return on

20   equity to be known before the sustainable growth rate and, at the same

21   time, the sustainable growth rate to be known before the rate of return on

22   equity.

23

24

25

1   Q.   What DCF results does Mr. Gorman obtain from his sustainable growth

2   DCF Model?

3   A.   Mr. Gorman obtains an average DCF result of 8.38 percent and a median

4   DCF result of 8.20 percent (Gorman at 36), results that are approximately

5   100 basis points lower than the results he obtains when he uses analysts'

6   growth forecasts in his constant growth DCF analysis.

7

8   Q.   What is the basic assumption of Mr. Gorman's three-stage DCF model?

9   A.   Mr. Gorman's three-stage DCF model is based on the assumption that

10   investors believe his proxy companies will grow at the average analyst

11   growth rates for five years, decline to the long-run growth in the economy in

12   years six through ten and, beginning in the eleventh year, grow at the rate

13   of 4.25 percent forever. (Gorman at 41)

14

15   Q.   What results does Mr. Gorman obtain from his three-stage DCF model?

16   A.   Mr. Gorman obtains results of 8.18 percent and 8.05 percent from the

17   application of his three-stage DCF model. (Gorman at 43)

18

19   Q.   Does Mr. Gorman provide any evidence to support his basic assumption

20   that utilities will grow at analysts' growth rates for the first five years, decline

21   in growth for the next five years, and beginning in year eleven grow at the

22   estimated GDP growth rate in perpetuity?

23   A.   No. He simply assumes that rational investors would make this assumption.

24

25

1   Q.   How does Mr. Gorman justify the results of his three-stage DCF model?

2   A.   Mr. Gorman justifies the results of his three-stage model on the grounds

3   that, in his opinion, analysts' growth rates generally exceed the projected

4   growth of the economy, and companies cannot grow forever at a rate in

5   excess of the expected growth of the economy.

6

7   Q.   Mr. Gorman seems to believe that investors' growth expectations must be

8   "rational." Are investors' growth expectations always "rational"?

9   A.   No. In hindsight, most economists would agree that stock investors' growth

10   expectations during the technology stock boom of the late 1990s and early

11   2000s, and real estate investors' growth expectations during the real estate

12   boom of 2001 to 2007, were irrational. Yet, it was these "irrational" growth

13   expectations that caused stock and real estate prices to rise by so much

14   during those periods.

15

16   Q.   Does the DCF Model only require the use of investors' growth expectations

17   when investors' growth expectations are "rational"?

18   A.   No. The DCF model requires the use of investors' growth expectations,

19   whether rational or irrational.

20

21   Q.   Is it appropriate for Mr. Gorman to adjust the growth term in his DCF model,

22   without also adjusting the stock price term in his model?

23   A.   No. If Mr. Gorman believes that investors' growth expectations are irrational,

24   he should recognize that "irrational" growth expectations are likely to be

25   accompanied by "irrational" stock prices. Indeed, as discussed above, both

1		growth expectations and stock prices were "irrational" during the stock
2		market boom of the late 1990s and early 2000s. To be consistent in
3		applying his own definition of "rational," Mr. Gorman would need to adjust
4		not only his growth estimates to reflect the long-run growth in the economy,
5		but also his stock prices to reflect a "rational" estimate of the value of the
6		company.
7		
8	Q.	Does Mr. Gorman's opinion that a company cannot grow at a rate greater
9		than the rate of growth in GDP forever imply that a single-stage DCF model
10		cannot be used to estimate the cost of equity?
11	A.	No. Mr. Gorman fails to recognize that the DCF model requires the growth
12		expectations of investors, not the growth expectations of Mr. Gorman. If
13		investors use analysts' growth rates to value stocks in the marketplace, Mr.
14		Gorman should use analysts' growth rates to estimate the growth
15		component of the DCF model. Mr. Gorman also fails to recognize that
16		companies do not have to grow at the same rate forever for the single-stage
17		DCF Model to be a reasonable approximation of how prices are determined
18		in capital markets.
19		
20	Q.	Have you done any studies on the growth rates that investors use to value
21		stocks in the marketplace?
22	A.	Yes. As discussed in my direct testimony and above, my studies indicate
23		that investors use analysts' forecasted growth rates to value stocks in the
24		marketplace.
25		

1 Q. Does the opinion that a company cannot grow at a rate of growth greater

2   than the growth in GDP forever imply that Mr. Gorman's assumption is

3   correct that companies can only grow at rates faster than the economy for

4   five years?

5 A. No. The opinion that a company's earnings cannot grow at a rate greater

6   than the rate of growth in the GDP forever does not imply that companies

7   can only grow faster than the rate of growth in the economy for five years.

8   Mr. Gorman's assumption that companies must grow at the same rate as

9   the economy after year five is completely arbitrary.

10

11 Q. Does Mr. Gorman include an allowance for flotation costs in his DCF

12   analysis?

13 A. No.

14

15 Q. Do you agree with Mr. Gorman's failure to include flotation costs in his DCF

16   analysis?

17 A. No. As discussed in my direct testimony, flotation costs are a cost of issuing

18   securities that must be reflected in a cost of equity analysis for investors to

19   earn a return that is commensurate with returns on other investments of the

20   same risk.

21

22

23

24

25

1		B. Mr. Gorman's Risk Premium Model
2	Q.	How does Mr. Gorman estimate the required risk premium for investing in
3		his electric utility proxy group?
4	A.	Mr. Gorman estimates the required risk premium for investing in his proxy
5		electric utilities by comparing the average authorized electric utility rate of
6		return on equity for each year from 1986 through September 2016 to both
7		the average interest rate on long-term Treasury bonds and the average
8		interest rate on A-rated utility bonds in each year. Mr. Gorman finds that the
9		risk premium over the yield on long-term Treasury bonds falls in the range
10		4.25 percent to 6.75 percent, and the risk premium over the yield on A-rated
11		utility bonds falls in the range 2.88 percent to 5.58 percent. Recognizing that
12		allowed equity risk premiums have tended to increase as interest rates
13		decline, Mr. Gorman applies a 0.75 weight to the high end of his risk
14		premium ranges and a 0.25 weight to the low end of his risk premium
15		ranges. Mr. Gorman thus concludes that the appropriate risk premium on an
16		investment in utility stocks compared to long-term Treasury bonds is
17		6.13 percent, and the appropriate risk premium on an investment in utility
18		stocks compared to A-rated utility bonds is 4.91 percent. (Gorman at 50)
19		
20	Q.	What risk premium cost of equity estimates does Mr. Gorman obtain from
21		his analysis of the relationship between authorized allowed ROEs and the
22		interest rates on Treasury bonds and utility bonds?
23	A.	Adding his 6.13 percent risk premium over long-term Treasury bonds to his
24		forecasted Treasury bond yield of 3.4 percent, Mr. Gorman obtains a risk
25		premium cost of equity of 9.53 percent. Adding a 4.91 percent risk premium

| 1 | | over A-rated utility bonds to a 4.55 percent utility bond yield, Mr. Gorman |

1   over A-rated utility bonds to a 4.55 percent utility bond yield, Mr. Gorman

2   obtains a risk premium cost of equity of 9.46 percent. Taking the midpoint of

3   his 9.46 percent to 9.53 percent range, Mr. Gorman concludes that the risk

4   premium cost of equity is 9.50 percent. (Gorman at 50)

5

6 Q.   Do you agree with Mr. Gorman's method of estimating the required risk

7   premium on electric utility stocks?

8 A.   No. Although Mr. Gorman correctly recognizes that the required equity risk

9   premium increases when interest rates decline, his method of estimating the

10   relationship between the required equity risk premium and interest rates is

11   not statistically rigorous.

12

13 Q.   Have you studied the statistical relationship between the risk premiums

14   implied by historical allowed rates of return on equity and the yields on long-

15   term Treasury bonds and utility bonds over the period 1986 to the present

16   reported by Mr. Gorman?

17 A.   Yes. I perform a regression analysis of the relationship between the risk

18   premium implied by the allowed rates of return on equity issued by

19   regulatory commissions and the level of interest rates. In his risk premium

20   analyses, Mr. Gorman examines historical data on the spreads between

21   allowed ROEs, 30-year Treasury bond yields, and A-rated utility bond

22   yields. Thus, I have performed statistical regression analyses of the

23   relationship between the historical allowed equity risk premiums and 30-

24   year Treasury bond yields, and A-rated utility bond yields.

25

1 Q.   What does your statistical regression analysis of the relationship between

2   historical allowed risk premiums and Treasury bond yields show?

3 A.   The relationship between the risk premium implied by historical allowed

4   ROEs and the yield on 30-year Treasury bonds is given by the following

5   equation:

6            $RP_{AUTHORIZED}$ =   8.01   –   0.45 x T_B

7   t-statistic   =   (33.45)   (11.16)

8   where:

9            $RP_{AUTHORIZED}$ =   the risk premium implied by utility

10   commission authorized rates of return on

11   equity,

12   8.01 and 0.45   =   estimated regression coefficients with t-

13   statistics shown in parentheses; and

14   T_B =   the yield on long-term Treasury bonds.

15

16 Q.   What is the meaning of the negative 0.45 coefficient on the Treasury bond

17   variable?

18 A.   The negative 0.45 coefficient on the Treasury bond variable indicates that

19   the authorized risk premium increases by approximately forty-five basis

20   points for every one hundred basis point decrease in interest rates.

21

22 Q.   What is the meaning of the 11.16 t-statistic in the above equation?

23 A.   The 11.16 t-statistic indicates that the strong negative relationship between

24   the risk premium and the yield on 30-year Treasury bond is statistically

25   significant.

1   Q.   What risk premium do you obtain from your statistical analysis of the

2   relationship between allowed rates of return and the interest rate on long-

3   term Treasury bonds?

4   A.   Using Mr. Gorman's forecasted 3.4 percent interest rate on long-term

5   Treasury bonds, I obtain a risk premium of 6.5 percent over the forecasted

6   yield to maturity on long-term Treasury bonds. This risk premium estimate is

7   110 basis points higher than the average 5.4 percent risk premium on U.S.

8   Treasury bonds shown on Mr. Gorman's Exhibit MPG-13, page 1 of 1, and

9   forty basis points higher than the 6.1 percent risk premium used by Mr.

10   Gorman.

11

12   Q.   Do these regression equations support the conclusion that the risk premium

13   tends to increase when interest rates decline?

14   A.   Yes. The negative coefficients associated with the interest rate variables, T_B

15   and A_B, indicate that the risk premium moves in the opposite direction as

16   interest rates, thus verifying the conclusion that the risk premium increases

17   when interest rates decline.

18

19   Q.   Have you also studied the relationship between the historical allowed equity

20   risk premiums and the yield on utility bonds, as reported by Mr. Gorman?

21   A.   Yes. Using the data found in Mr. Gorman's Exhibit MPG-14, the risk

22   premium implied by historical allowed rates of return compared to the yield

23   on utility bonds is given by the relationship:

24               $RP_{AUTHORIZED}$ =   7.29   –   0.45 x A_B

25   t-statistic   =   (27.15)   (12.34)

1   where:

2   RP$_{AUTHORIZED}$ =   the risk premium implied by utility

3   commission authorized rates of return on

4   equity,

5   7.29 and 0.45   =   estimated regression coefficients with t-

6   statistics shown in parentheses; and

7   A$_B$ =   the yield on Moody's A-rated utility bonds.

8

9   Q. What is the meaning of the negative 0.45 coefficient on the A-utility bond

10   yield variable?

11 A. The negative 0.45 coefficient on the A-utility bond yield variable indicates

12   that the allowed equity risk premium increases by approximately 45 basis

13   points for every one hundred basis point decrease in the yield on A-rated

14   utility bonds.

15

16 Q. What is the meaning of the negative 12.34 t-statistic in the above equation?

17 A. The negative 12.34 t-statistic indicates that the strong negative relationship

18   between the risk premium and utility bond yields is statistically significant.

19

20 Q. What risk premium do you obtain from your statistical analysis of the

21   relationship between allowed rates of return and the interest rate on utility

22   bonds?

23 A. Using Mr. Gorman's 4.55 percent interest rate on utility bonds, I obtain a risk

24   premium of 5.23 percent. This risk premium estimate is one hundred twenty

25   basis points higher than the average 4.0 percent risk premium shown on Mr.

1   Gorman's Exhibit MPG-14, page 1 of 1 and approximately thirty basis points

2   higher than the 4.9 percent risk premium used by Mr. Gorman.

3

4   Q. Why are the estimated risk premiums from your regression analyses higher

5   than the average risk premiums over the period 1986 through September

6   2016?

7   A. The risk premiums from my regression analyses are higher than the average

8   risk premiums over the period of Mr. Gorman's studies because, as discussed

9   above, risk premiums generally increase when interest rates decline, and

10   interest rates have declined over the period of Mr. Gorman's studies. My

11   regression analyses correctly take into account the inverse relationship

12   between risk premiums and interest rates.

13

14 Q. What cost of equity estimates would Mr. Gorman have obtained from his risk

15   premium analyses if he had correctly calculated the inverse relationship

16   between allowed equity risk premiums and interest rates, as you have done in

17   your regression analyses?

18 A. Adding the calculated risk premiums of 6.5 percent over Treasury bonds and

19   5.23 percent over utility bonds to Mr. Gorman's forecasted 3.4 percent yield on

20   long-term Treasury bonds and his 4.55 percent utility bond yield produces an

21   average risk premium cost of equity estimate equal to 9.84 percent (the

22   average of 9.9 percent and 9.78 percent). This cost of equity estimate is 60

23   basis points higher than Mr. Gorman's recommended 9.2 percent cost of equity

24   and 30 basis points higher than his reported 9.5 percent risk premium cost of

25   equity estimate.

1		C. Mr. Gorman's CAPM
2	Q.	The CAPM requires estimates of the risk-free rate, the company-specific
3		risk factor, or beta, and either the required return on an investment in the
4		market portfolio, or the risk premium on the market portfolio compared to an
5		investment in risk-free government securities. How does Mr. Gorman
6		estimate these CAPM inputs?
7	A.	For the risk-free rate, Mr. Gorman uses a 3.4 percent forecasted yield on
8		long-term Treasury bonds. For the company-specific risk factor or beta, Mr.
9		Gorman uses the average 0.70 Value Line beta for his proxy companies.
10		For his estimate of the expected risk premium on the market portfolio, Mr.
11		Gorman uses both a forward-looking risk premium estimate equal to 7.8
12		percent and an historical risk premium estimate equal to 6.0 percent.
13		(Gorman at 52 - 53)
14		
15	Q.	How does Mr. Gorman arrive at his 7.8 percent and 6.0 percent estimates of
16		the market risk premium?
17	A.	Mr. Gorman derives his forward-looking risk premium estimate (7.8 percent)
18		from the difference between an expected market return (11.2 percent) and a
19		risk-free rate (3.4 percent). Mr. Gorman derives his historical risk premium
20		estimate (6 percent) from the 6 percent difference between the historical
21		arithmetic average of achieved total return on the S&P 500 (12 percent) and
22		the total return on long-term Treasury bonds (6 percent). (Gorman at 54)
23		
24		
25		

1   Q.   What CAPM cost of equity estimate does Mr. Gorman obtain from his

2   CAPM analyses?

3   A.   Mr. Gorman obtains a high CAPM estimate of 8.8 percent (8.8 = 3.4 + .70 x

4   7.8) and a low CAPM estimate of 7.57 percent (7.57 = 3.4 + .70 x 6).

5   (Gorman at 56)

6

7   Q.   Do you agree with Mr. Gorman's CAPM analysis of the cost of equity?

8   A.   No. I disagree with Mr. Gorman's estimate of the risk-free rate and his

9   failure to acknowledge the substantial evidence that the CAPM tends to

10   underestimate the cost of equity for companies such as his comparable

11   companies with betas less than 1.0.

12

13   Q.   Why do you disagree with Mr. Gorman's 3.4 percent estimate of the risk-

14   free rate?

15   A.   I disagree with Mr. Gorman's 3.4 percent estimate of the risk-free rate

16   because the analysis presented in my direct testimony indicates that the

17   forecasted yield on long-term Treasury bonds is approximately 4.2 percent.

18

19   Q.   You note that Mr. Gorman uses a beta equal to 0.70. Does Mr. Gorman

20   acknowledge the evidence that the CAPM tends to underestimate the cost

21   of equity for companies, such as his proxy companies, that have betas less

22   than 1.0?

23   A.   No.

24

25

1 Q.   Did you cite evidence that the CAPM tends to underestimate the cost of

2   equity in your direct testimony and in your rebuttal of Dr. Woolridge?

3 A.   Yes. I cited this evidence in my direct testimony and in my rebuttal of

4   Dr. Woolridge above. (Vander Weide Direct at 45 – 48)

5

6 Q.   In your direct testimony, did you provide evidence that the CAPM

7   underestimates the cost of equity for companies, such as the proxy electric

8   utilities, that have betas less than 1.0?

9 A.   Yes. I present such evidence in my direct testimony. (Vander Weide Direct

10   at 48 and Schedule 7) My comparison of the earned risk premiums on

11   investments in utility stocks and investments in the S&P 500 over the period

12   1937 to 2016 indicates that the historical ratio of the utility risk premium to

13   the S&P 500 risk premium is 0.90. Thus, the use of a 0.70 measured utility

14   beta in the CAPM underestimates the cost of equity for electric utilities at

15   this time.

16

17   D. Response to Mr. Gorman's Comments on

18   Dr. Vander Weide's Testimony

19 Q.   Does Mr. Gorman agree with your cost of equity estimate for Gulf?

20 A.   Mr. Gorman disagrees with my: (1) financial risk adjustment (Gorman at 63

21   – 66); (2) DCF analysis (Gorman at 66 – 68); (3) risk premium analysis

22   (Gorman at 54 – 57); and (4) flotation cost adjustment. (Gorman at 68 – 70)

23

24

25

1   1. Financial Risk Adjustment

2   Q.   Why do you adjust the cost of equity results for your proxy companies to

3   reflect the average difference between the financial risk of your proxy

4   companies and the financial risk reflected in Gulf's recommended capital

5   structure?

6   A.   I adjust my cost of equity results because they reflect a higher degree of

7   financial risk than Gulf's recommended capital structure. In making this

8   assessment, I recognize that investors measure the financial risk of

9   investing in the equity of my proxy companies based on these companies'

10   market value capital structures, while Gulf is recommending a book value

11   capital structure. Since investors demand a higher return for bearing greater

12   risk, an adjustment is required to the cost of equity result for the proxy

13   companies. (Vander Weide Direct at 50 – 52)

14

15 Q.   You note that "investors measure the financial risk of investing in the equity

16   of my proxy companies based on these companies' market value capital

17   structures." Why do equity investors measure the financial risk of your proxy

18   companies based on their market value capital structures?

19 A.   Equity investors measure financial risk based on market value capital

20   structures because, from the equity investor's point of view, risk is

21   measured by the forward-looking variance of return on investment; and the

22   variance of return on investment depends on a company's market value

23   capitalization, not its book value capitalization.

24

25

1   Q.   How does Mr. Gorman define financial risk?

2   A.   Mr. Gorman defines financial risk as the ability of a company to meet its

3   financial obligation to pay the interest and principal on its debt. (See, for

4   example, Gorman at 25 – 26.)

5

6   Q.   Does Mr. Gorman's definition of financial risk reflect the point of view of

7   equity investors?

8   A.   No. Mr. Gorman's definition of financial risk reflects the point of view of debt

9   investors, not the point of view of equity investors. Whereas debt investors

10   are justifiably concerned with a company's ability to cover the interest and

11   principal payments on its debt, equity investors are primarily concerned with

12   the forward-looking variance of return on their investment. As noted above,

13   the forward-looking variance of return on investment depends on a

14   company's market value capital structure, not its book value capital

15   structure. Indeed, equity investors generally cannot buy a company's stock

16   at book value.

17

18   Q.   In summary, do you agree with Mr. Gorman's criticism of your financial risk

19   adjustment?

20   A.   No. Mr. Gorman fails to recognize that equity investors measure financial

21   risk by the forward-looking variance of return on their equity investment in

22   the company, and the forward-looking variance of return on an equity

23   investment in a company reflects the company's market value capital

24   structure. Mr. Gorman's criticism of my financial risk adjustment depends on

25   his incorrect assertion that financial risk reflects book value capitalization

1		ratios rather than market value capitalization ratios. While his assertion may
2		be correct from the bond investor's point of view, it is certainly not correct
3		from the equity investor's point of view. The equity investor's point of view is
4		the only point of view that is relevant for determining the cost of equity.
5		
6		2. DCF Analysis
7	Q.	What issues does Mr. Gorman have with regard to your DCF analysis?
8	A.	Mr. Gorman addresses my: (1) use of a quarterly DCF model; (2) flotation
9		cost adjustment; and (3) reliance on analysts' growth forecasts.
10		
11	Q.	Why does Mr. Gorman disagree with your use of a quarterly DCF model?
12	A.	Mr. Gorman claims that my use of a quarterly DCF model is inappropriate
13		because "the compounded return associated with quarterly dividends is not
14		a cost to the utility." (Gorman at 67)
15		
16	Q.	Do you agree with Mr. Gorman's claim that "the compounded return
17		associated with quarterly dividends is not a cost to the utility"?
18	A.	No. The compounded return associated with quarterly dividends is the cost
19		to the company of paying *quarterly* dividends rather than an *annual* dividend
20		at the end of the year. Paying quarterly dividends is a cost to the company
21		because the company must finance the quarterly dividend payments sooner
22		rather than later. Thus, the cost of the quarterly dividend payments is the
23		time value of money. Mr. Gorman fails to understand that the time value of
24		money reflects a cost to the utility.
25		

1 Q. Are Mr. Gorman's concerns with your use of analysts' forecasts and a

2 flotation cost adjustment similar to the concerns expressed by

3 Dr. Woolridge?

4 A. Yes, they are.

5

6 Q. Have you responded to these concerns in your rebuttal of Dr. Woolridge?

7 A. Yes, I have.

8

9 3. Risk Premium Analysis

10 Q. What issue does Mr. Gorman have with regard to your risk premium

11 analysis?

12 A. Mr. Gorman objects to my use of a forecasted, rather than a current interest

13 rate, in my risk premium analysis. (Gorman at 72)

14

15 Q. Why do you use a forecasted, rather than a current interest rate, in your risk

16 premium analysis?

17 A. I use a forecasted interest rate because the fair rate of return standard

18 requires that Gulf have an opportunity to earn its cost of equity during the

19 period when rates are in effect, and the rates approved in this case will not

20 come into effect until later in 2017.

21

22 Q. Does Mr. Gorman also use forecasted interest rates in estimating Gulf's

23 cost of equity in his risk premium approach?

24 A. Yes. Mr. Gorman uses forecasted, rather than current interest rates in his

25 risk premium analysis comparing the average allowed return on equity for

1   electric utilities to a forecasted yield on thirty-year Treasury bonds. (Gorman

2   at 48)

3

4 Q.   Does Mr. Gorman attempt to estimate the cost of equity you would have

5   obtained from your ex ante risk premium analysis if you had used current

6   bond yields rather than forecasted bond yields?

7 A.   Yes. Mr. Gorman claims that my ex ante risk premium analysis would have

8   produced a cost of equity equal to 8.68 percent to 9.25 percent if I were to

9   use an A-rated utility bond yield of 3.98 percent and a Baa-rated utility bond

10   yield of 4.55 percent. (Gorman at 74).

11

12 Q.   Do you agree with Mr. Gorman's claim that your ex ante risk premium

13   analysis would produce a cost of equity result in the range 8.68 percent to

14   9.25 percent if you were to use utility bond yields in the range 3.98 percent

15   to 4.55 percent?

16 A.   No. Mr. Gorman obtains these incorrect results by adding my estimated

17   4.7 percent equity risk premium reported in my direct testimony to the

18   3.98 percent and 4.55 percent current yields on A-rated and Baa-rated utility

19   bonds. However, Mr. Gorman fails to recognize that my estimated ex ante

20   risk premium depends on the value of the interest rate employed in the

21   study through the estimated regression equation described in Appendix 4 of

22   Exhibit JVW-2 to my direct testimony. Although 4.7 percent is the correct ex

23   ante risk premium estimate given an interest rate of 6.2 percent, the correct

24   ex ante risk premium estimate when the interest rate is 3.98 percent is

25   6.0 percent (6.0 = 8.4 − 0.60 x 3.98). When the interest rate is 4.55 percent,

1   the ex ante risk premium estimate is 5.7 percent (5.7 = 8.4 - .60 x 4.55).

2   Adding the correct 6.0 percent estimated ex ante risk premium to the

3   interest rate of 3.98 percent produces an ex ante risk premium cost of

4   equity equal to 10.0 percent. Adding the correct 5.7 percent estimated ex

5   ante risk premium to the interest rate of 4.55 percent produces an ex ante

6   risk premium cost of equity equal to 10.2 percent. These results exceed Mr.

7   Gorman's incorrect estimates by 100 and 132 basis points.

8

9   Q.   Does this conclude your rebuttal testimony?

10   A.   Yes, it does.

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AFFIDAVIT

STATE OF NORTH CAROLINA)   Docket No. 160186-EI

)

COUNTY OF DURHAM   )

Before me the undersigned authority, personally appeared James H. Vander Weide, Ph.D., who being first duly sworn, deposes and says that he is the President of Financial Strategy Associates, and that the foregoing is true and correct to the best of his knowledge, information, and belief. He is personally known to me.

s/ _James H. Vander Weide_

James H. Vander Weide, Ph.D.

President

Sworn to and subscribed before me this ___1st___ day of _February_ , 2017.

Bryan W. Mister II

Notary Public, State of North Carolina

Commission No. _____

My Commission Expires _01/03/2021_

Exhibit

Florida Public Service Commission
Docket No. 160186-EI
GULF POWER COMPANY
Witness: James H. Vander Weide, Ph.D.
Exhibit No. _____ (JVW-3)
Schedule 1
Page 1 of 1

TABLE 1. RESEARCH LITERATURE THAT STUDIES
THE EFFICACY OF ANALYSTS' EARNINGS FORECASTS

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