BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for rate increase by
Progress Energy Florida, Inc.

Docket No. 050078
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REBUTTAL TESTIMONY OF
JAMES H. VANDER WEIDE, PH.D.

ON BEHALF OF PROGRESS ENERGY FLORIDA

R. Alexander Glenn
James A. McGee
Progress Energy Service Company, LLC
Post Office Box 14042 (33733)
100 Central Avenue (33701)
St. Petersburg, Florida
Telephone: 727-820-5184
Facsimile: 727-820-5519

and

Gary L. Sasso
James Michael Walls
John T. Burnett
Carlton Fields
Post Office Box 3239
4221 West Boy Scout Boulevard
Tampa, Florida 32607-5736

Attorneys for
PROGRESS ENERGY FLORIDA

REBUTTAL TESTIMONY OF
JAMES H. VANDER WEIDE, PH.D.

I.   INTRODUCTION AND SUMMARY

1   **Q.**   **What is your name and business address?**

2   A.   My name is James H. Vander Weide. My business address is 3606 Stoneybrook

3   Drive, Durham, North Carolina.

4

5   **Q.**   **Are you the same James H. Vander Weide who previously provided direct**

6   **testimony filed on April 29, 2005?**

7   A.   Yes, I am.

8

9   **Q.**   **What is the purpose of your rebuttal testimony?**

10   A.   I have been asked by Progress Energy Florida ("PEF") to review the direct

11   testimonies and cost of capital recommendations of Mr. James A. Rothschild, Mr.

12   Michael Gorman, Dr. Philip K. Porter, and Mr. Stephen A. Stewart.

13   Mr. Rothschild's testimony is presented on behalf of the Florida Office of Public

14   Counsel, Mr. Gorman's testimony is presented on behalf of White Springs

15   Agricultural Chemicals, Inc. d/b/a PBS Phosphate – White Springs, Dr. Porter's

16   testimony is presented on behalf of the Florida Industrial Power Users Group, and

17   Mr. Stewart's testimony is presented on behalf of AARP.

18

1   **Q.**   **Do you have any exhibits to your rebuttal testimony?**

2   **A.**   Yes. I have prepared or sponsored the preparation of the following exhibits to my

3   testimony:

4   • Exhibit No. ____ (JVW-14), Current Value Line Betas for Proxy Electric

5   Companies.

6   • Exhibit No. ___ (JVW-15), companies with negative earned rates of return

7   on equity and market-to-book ratios greater than 1.0.

8   • Exhibit No. ___ (JVW-16), companies with earned returns on equity in the

9   range of 0 to 6% and market-to-book ratios exceeding 1.0.

10   These exhibits are true and accurate.

11

12   **I.**   **REBUTTAL OF MR. ROTHSCHILD**

13   **Q.**   **How did Mr. Rothschild estimate PEF's cost of equity?**

14   **A.**   Mr. Rothschild applied four cost of equity methodologies to the Value Line

15   electric and natural gas companies I used in my direct testimony. His cost of

16   equity methodologies include: (1) the DCF model; (2) the complex DCF model;

17   (3) the inflation risk premium method; and (4) the debt risk premium method.

18

19   **A.**   **Mr. Rothschild's Simple DCF Model**

20   **Q.**   **What DCF Model does Mr. Rothschild use to estimate PEF's cost of equity?**

21   **A.**   Mr. Rothschild uses an Annual DCF Model of the form, $k = D(1+.5g)/P + g$, to

22   estimate PEF's cost of equity.

23

1   **Q.**   **What is the basic assumption of the Annual DCF Model?**

2   A.   The Annual DCF Model is based on the assumption that companies only pay

3   dividends at the end of each year, rather than at the end of each quarter.

4

5   **Q**   **Does the Annual DCF Model provide accurate estimates of an investor's**

6   **required or expected rate of return from investing in a firm's stock?**

7   A.   No. The Annual DCF Model of stock valuation produces correct estimates of a

8   firm's cost of equity capital only if the firm pays dividends just once a year. Since

9   Mr. Rothschild's proxy companies pay dividends quarterly, the Annual DCF

10   Model produces downwardly biased estimates of the cost of equity. Investors can

11   expect to earn a higher annual effective return on an investment in a firm that pays

12   quarterly dividends than in one that pays the same amount of dollar dividends

13   once at the end of each year. Furthermore, because of the gain associated with the

14   time value of money, investors value a company that pays dividends quarterly

15   more highly than a company that pays dividends annually. Since quarterly

16   dividends are reflected in the stock price component of the DCF model, they must

17   also be reflected in the dividend yield component of the model. Only the

18   Quarterly DCF Model correctly reflects quarterly dividends in the dividend yield

19   component.

20

21   **Q.**   **Notwithstanding your disagreement with Mr. Rothschild's decision to use an**

22   **Annual DCF Model, did Mr. Rothschild implement his Annual Model**

23   **correctly?**

1	A.	No. The basic assumption of the Annual DCF Model is that dividends are
2		received annually, and the first dividend is assumed to be received one year from
3		now. Thus, the first dividend must be obtained by taking the current dividend and
4		multiplying by one plus the growth rate, "g." Instead, Mr. Rothschild obtained the
5		first dividend by multiplying the current dividend by only one plus one-half the
6		growth rate.
7		
8	Q.	**What method did Mr. Rothschild use to estimate investors' future growth**
9		**expectations, *g*, for his proxy companies?**
10	A.	Mr. Rothschild assumes that investors form their growth expectations for the
11		proxy companies by multiplying their average expected retention ratio, *b*, by their
12		average expected rate of return on book equity, *r*, and then adding a term to
13		account for external financing growth. Thus, $g = br + sv$, where *g* is the growth
14		rate, *b* is the expected percentage of earnings retained in the business, *r* is the
15		expected rate of return on book equity, and *sv* is a term that accounts for growth
16		from the sale of additional shares of stock. The *br* component of the growth rate
17		is called the internal growth component, and the *sv* component of the growth rate
18		is called the external financing component.
19		
20	Q.	**Why does Mr. Rothschild rely on the "*br + sv*" method of estimating future**
21		**growth in his DCF model?**
22	A.	Mr. Rothschild argues that the *br + sv* method is the only consistent method of
23		estimating future growth in the DCF model.

1 Q. **Do you agree with Mr. Rothschild's claim that his *br* + *sv* method is the only**

2   **consistent method of estimating future growth in the DCF model?**

3 A. No. When applied to a regulated firm, the *br* + *sv* method is, in fact, logically

4   inconsistent.

5

6 Q. **Why is Mr. Rothschild's *br* + *sv* method logically inconsistent?**

7 A. Mr. Rothschild's *br* + *sv* method is logically inconsistent because it incorporates

8   information on the firm's expected rate of return on book equity, *r*, in calculating

9   the firm's cost of equity through the DCF model. The firm's cost of equity,

10   however, also determines the allowed rate of return on book equity through rate of

11   return regulation. Thus, the cost of equity is based on knowledge of the allowed

12   rate of return on equity, and the allowed rate of return on equity is based on

13   knowledge of the cost of equity. The logical circularity, or inconsistency, in

14   applying the *br* + *sv* approach to rate-of-return regulated firms cannot be resolved

15   because only one of the two variables can be known before the other is calculated.

16

17 Q. **Can you illustrate the logical inconsistency that results from the application**

18   **of Mr. Rothschild's *br*+ *sv* approach to his proxy companies?**

19 A. Yes. As noted on Schedule, Exhibit No. _____ (JAR 5), page 1, of his direct

20   testimony, Mr. Rothschild assumes that his comparable electric utilities will earn

21   a rate of return on book equity of 11.0 percent in all future years. Mr. Rothschild

22   uses his 11.0 percent projected rate of return on book equity assumption to derive

23   his 8.60 – 8.73 percent estimate of his proxy companies' cost of equity using his

1 DCF model. Mr. Rothschild's recommended cost of equity for his proxy

2 companies is 9.1 percent. It is logically inconsistent for Mr. Rothschild to project

3 that his proxy companies will earn 11 percent on book equity at the same time that

4 he is recommending a cost of equity of 9.1 percent. If rates were based on a 9.1

5 percent cost of equity, regulated companies such as Mr. Rothschild's proxy

6 companies would have a difficult time earning an 11 percent rate of return on

7 book equity.

8

9 Q. **Can the logical inconsistency of the *br + sv* approach be eliminated by**

10 **changing Mr. Rothschild's initial assumption about his proxy companies'**

11 **future earned rate of return on book equity from 11 percent to 9.1 percent?**

12 A. No. The basic circularity problem with Mr. Rothschild's *br + sv* growth method

13 is logical, not numerical. There are several problems with changing the initial

14 earned rate of return on book equity from 11 percent to 9.1 percent. First, in Mr.

15 Rothschild's rate-of-return regulated world, his proxy companies will only earn

16 9.1 percent in the future if regulators set these companies' rates to allow them to

17 earn 9.1 percent on book equity. However, under rate of return regulation,

18 regulators set the allowed rate of return equal to the regulated company's cost of

19 equity. Thus, Mr. Rothschild would have to somehow "know" what the regulated

20 company's cost of equity is before he estimates its cost of equity.

21 Second, if Mr. Rothschild were to assume initially that his proxy

22 companies would earn 9.1 percent on book equity, his DCF methodology would

23 produce a cost of equity in the range 6.67 percent to 6.81 percent. Thus, Mr.

1   Rothschild would still be assuming that his proxy companies would be able to

2   earn 229 to 243 basis points more than the regulated allowed rate of return on

3   book equity.

4

5   Q.   **On pages 44 - 45 of his testimony, Mr. Rothschild claims that the argument**

6   **regarding inconsistency ignores the difference between "accounting rates of**

7   **return" and "market required rates of return." Do you agree with Mr.**

8   **Rothschild's defense of his *br + sv* method?**

9   A.   No. Mr. Rothschild's error has nothing to do with accounting standards or market

10   returns. It is simply a matter of logic: the cost of equity cannot be based on

11   knowledge of the allowed rate of return on equity, at the same time that the

12   allowed rate of return on equity is based on knowledge of the cost of equity. Only

13   one of these two variables can be known before the other is calculated. However,

14   in the br + sv method, a variable that the analyst is attempting to calculate is

15   assumed to be known at the outset of the analysis. Neither variable is determined

16   independently of the other. Thus, the *br + sv* approach cannot be used to calculate

17   the cost of equity for rate-of-return regulated companies.

18   In addition, Mr. Rothschild fails to recognize that his recommended rate of

19   return on equity becomes an accounting rate of return once it is applied to PEF's

20   book value rate based. Thus, the basic inconsistency in the *br + sv* method is that

21   in his calculation of the allowed rate of return Mr. Rothschild assumes that PEF

22   will be able to earn 11 percent on book equity, when he, in fact, is recommending

23   that PEF only be allowed to earn 9.1 percent on book equity. Mr. Rothschild does

1 not explain how PEF could be expected to earn 11 percent on book equity when it

2 is only allowed to earn 9.1 percent on book equity.

3

4 **Q. Turning to Mr. Rothschild's data sources, where does Mr. Rothschild obtain**

5 **his data for the rate of return on book equity values he uses in his *br + sv***

6 **approach to estimating the growth component of the DCF cost of equity?**

7 A. Mr. Rothschild uses rate of return data from the Value Line Investment Survey

8 and Zacks.

9

10 **Q. What rate of return values does Mr. Rothschild report from these data**

11 **sources for his electric proxy companies?**

12 A. Mr. Rothschild reports five mean values of rates of return on book equity on his

13 Schedule JAR 5, page 1: (1) an 11.02 percent Value Line expectation; (2) an

14 11.34 percent expectation derived from Zack's consensus growth rate; (3) an

15 11.17 percent earned return on equity in 2004; (4) an 11.44 percent earned return

16 on equity for 2003; and (5) an 11.70 percent earned return on equity in 2002.

17

18 **Q. What rate of return does Mr. Rothschild use in his br + sv calculations for**

19 **his electric company proxy group?**

20 A. Mr. Rothschild uses 11 percent as his estimate of the expected rate of return on

21 book equity in his *br + sv* calculations for his electric proxy group.

22

1   **Q.**   **Is Mr. Rothschild's method for estimating future rates of return on book**

2   **equity for his proxy electric companies subjective?**

3   **A.**   Yes. Even though all five of his rate of return data points exceed 11 percent, and

4   the average of his rate of return data points is 11.4 percent, Mr. Rothschild

5   arbitrarily picks 11 percent as his estimate of the expected rate of return on book

6   equity in his *br + sv* calculations for his electric proxy group.

7

8   **Q.**   **Is Mr. Rothschild's method for estimating future rates of return on book**

9   **equity for his natural gas proxy group also subjective?**

10 **A.**   Yes. Mr. Rothschild reports five mean values of rates of return on book equity for

11   the gas proxy companies on his Schedule Exhibit No. ___ (JAR 5), page 2: (1) an

12   11.88 percent Value Line expectation; (2) an 12.85 percent expectation derived

13   from Zack's consensus growth rate; (3) an 12.88 percent earned return on equity

14   in 2004; (4) an 12.97 percent earned return on equity for 2003; and (5) an

15   11.87 percent earned return on equity in 2002. Even though the average of these

16   five growth rates is 12.5 percent, Mr. Rothschild arbitrarily picks 12 percent as his

17   estimate of the expected rate of return on book equity in his br + sv calculations

18   for the natural gas companies.

19

20 **Q.**   **What are Value Line's forecasted retention ratios for Mr. Rothschild's proxy**

21   **companies?**

1 A. Value Line's forecasts of the average retention ratios, along with Mr. Rothschild's

2   average reported rate of return on book equity and the corresponding growth rates,

3   are shown in Table 1 below.

4 **Table 1**

5 **Proxy Companies' Forecasted Retention Growth Rates**

	Electric Companies	Gas Companies
Rate of Return on Equity	11.4%	12.5%
Retention Ratio	39.5%	48.3%
Retention Growth Rate	4.5%	6.0%

6

7 Q. **Table 1 shows Value Line retention ratios equal to 39.5 percent for the**

8   **electric proxy group and 48.3 percent for the gas proxy group. Does**

9   **Mr. Rothschild use these retention ratio values in his application of the**

10   **br + sv approach to estimating future growth in the DCF model?**

11 A. No. Mr. Rothschild uses retention ratios in the range 33.57 percent to

12   36.07 percent for the electric group and 31.92 percent to 32.55 percent for the gas

13   proxy group. Mr. Rothschild's use of retention ratios that are significantly less

14   than Value Line's forecasted retention ratios for his proxy groups significantly

15   reduces his DCF results for his proxy groups.

16

17 Q. **How does Mr. Rothschild attempt to justify his use of retention ratios that**

18   **are significantly less than Value Line's average forecasted retention ratios**

19   **for his proxy companies?**

1   A.   Mr. Rothschild attempts to justify his use of low retention ratios on the ground

2   that Value Line and other analysts have failed to recognize that the forecasted

3   retention ratio for a particular company must be consistent with its actual retention

4   ratio embodied in the current dividend. The analysts' failure to recognize this

5   need for consistency, according to Mr. Rothschild, causes them to overestimate

6   forecasted retention ratios, and, hence, growth.

7

8   Q.   **Do you agree with Mr. Rothschild's claim that the forecasted retention ratio**

9   **for a company must be "consistent with" the company's actual retention**

10   **ratio embodied in the current dividend?**

11 A.   No. The retention ratio embodied in the current dividend depends on the

12   company's earnings in the previous year. Since future earnings are likely to be

13   different from the earnings of the previous year, there is no reason why forecasted

14   retention ratios must be "consistent with" the retention ratio embodied in the

15   firm's current dividend. In addition, Mr. Rothschild fails to recognize that the

16   current retention ratio can be distorted by the inclusion of non-recurring items in

17   the firm's previous year's earnings. Analysts generally eliminate non-recurring

18   items when they forecast future earnings and retention ratios.

19

20 Q.   **Do you agree with Mr. Rothschild's assertion that his retention ratio formula**

21   **is the only correct formula for estimating the retention ratio in the DCF**

22   **model?**

1   A.   No. Mr. Rothschild has, in fact, used an incorrect formula to calculate his proxy

2   companies' retention ratios. The retention ratio is commonly calculated as one

3   minus the dividend payout ratio, where the dividend payout ratio is simply

4   dividends divided by earnings, or D/E. Mr. Rothschild, however, calculated the

5   retention ratio incorrectly, as: one minus the ratio of the dividend yield on book

6   value per share to the rate of return on equity. Thus, Mr. Rothschild calculated

7   the retention ratio not as $(1 - D/E)$, but rather, as $[1 - (D/B \div E/B)]$. This formula

8   would be correct only if Mr. Rothschild had divided both dividends and earnings

9   by the same book value per share, B. However, Mr. Rothschild divided his

10   dividends per share by last year's book value per share, and his earnings per share

11   by some unknown future book value per share. In short, Mr. Rothschild's formula

12   does not correctly measure the retention ratio as one minus the dividend payout

13   ratio.

14

15   **Q.**   **Has Mr. Rothschild provided any evidence that investors use his formula for**

16   **the retention ratio, rather than the Value Line forecasted retention ratio, in**

17   **estimating future growth?**

18   A.   No. Indeed, I have never seen another witness or professional use Mr.

19   Rothschild's method for estimating a company's retention ratio.

20

21   **Q.**   **Are there other problems with Mr. Rothschild's DCF analysis?**

22   A.   Yes. There are several additional problems with Mr. Rothschild's DCF analysis.

23   First, Mr. Rothschild's DCF methodology is extremely sensitive to his estimates

1	of each company's future return on equity. Yet, Mr. Rothschild provides no
2	objective method of obtaining his estimates of the future return on equity. As a
3	result of the sensitivity of his model results to the choice of return on equity, and
4	because of his lack of objective standards for estimating the future rate of return
5	on equity, Mr. Rothschild can obtain virtually any result through his choice of
6	return on equity.
7	Second, the growth estimates in Mr. Rothschild's DCF analysis are inconsistent
8	with financial research on the relationship between growth rates and stock prices.
9	Financial research shows that analysts' growth forecasts are more closely related
10	to stock prices than either historical growth rates or *br* growth rates. This research
11	provides strong evidence that investors, in fact, use analysts' growth estimates and
12	that the analysts' growth estimates should be used in the DCF Model to estimate
13	the cost of common equity.
14	Third, Mr. Rothschild fails to include an allowance for flotation costs in his DCF
15	analysis. The Florida Public Service Commission has explicitly recognized the
16	need to include an allowance for flotation costs in Order No. PSC-02-0787-FOF-
17	EI, issued June 10, 2002.

> Regarding flotation costs, we agree with Mr. Benore that these
> costs should be included in the ROE. The Hope and Bluefield
> decisions mandate a return that can attract capital, and flotation
> costs are a necessary part of attracting capital. ... We find that Mr.
> Benore's allowance of 20 basis points for flotation costs is
> reasonable. (Order at pp. 30 – 31.)

1   Mr. Rothschild's failure to include a flotation cost allowance causes him to further

2   underestimate PEF's cost of equity.

3

4   Q.   **How does Mr. Rothschild's use of subjectively low estimates of retention**

5   **ratios and rates of return for his proxy companies affect his DCF**

6   **calculations?**

7   A.   Mr. Rothschild's use of subjectively low retention ratios and rates of return on

8   equity alone reduced his DCF results by approximately 75 to 100 basis points for

9   the electric proxy group and 230 to 240 basis points for the natural gas proxy

10   group.

11

12   **B.   Mr. Rothschild's Complex DCF Model**

13   Q.   **How does Mr. Rothschild's complex DCF model differ from his simplified**

14   **DCF model?**

15   A.   Mr. Rothschild's simplified DCF model assumes that each company's dividends,

16   earnings, and cash flow will grow at the same rate forever, while his complex

17   DCF model assumes that each company's dividends will be equal to Value Line's

18   forecasted dividends per share in each of the next five years, and that dividend

19   growth beyond year five is equal to retention growth plus external financing

20   growth, just as in his simple DCF model.

21

22   Q.   **How do Mr. Rothschild's complex DCF results compare to his simplified**

23   **results?**

1   A.   Mr. Rothschild obtains complex DCF results of 9.34 percent to 9.35 percent for

2   the electric proxy group and 9.78 percent to 9.85 percent for the natural gas proxy

3   group. These results are approximately 80 to 110 basis points higher than the

4   results he obtains from his simple DCF model.

5

6   **Q.**   **Does Mr. Rothschild's complex DCF model provide an accurate estimate of**

7   **the cost of equity for PEF?**

8   A.   No. Mr. Rothschild's complex DCF model is subject to most of the same

9   criticisms as his simplified DCF model. His complex DCF model incorrectly

10   uses: (1) Mr. Rothschild's inconsistent $br + sv$ approach to estimating future

11   growth; (2) future rates of return on book equity that are less than Value Line's

12   forecasted rates of return on book equity; and (3) future retention ratios that are

13   significantly less than Value Line's forecasted retention ratios for his proxy

14   companies. In addition, Mr. Rothschild's complex DCF model, like his

15   simplified DCF model, ignores the quarterly payment of dividends and flotation

16   costs. Given the similarities between Mr. Rothschild's complex and simplified

17   DCF models, it is not surprising that his complex DCF model results are

18   significantly lower than a reasonable estimate of PEF's cost of equity. For the

19   reasons discussed above, the Commission should reject the results of Mr.

20   Rothschild's complex and simplified DCF models.

21

| | | **C.**   **Mr. Rothschild's Inflation Risk Premium Method** |

1   **C.**   **Mr. Rothschild's Inflation Risk Premium Method**

2   **Q.**   **How does Mr. Rothschild use what he calls the inflation risk premium**

3   **method to estimate PEF's cost of equity?**

4   **A.**   Mr. Rothschild begins with Dr. Siegel's estimate that stocks have earned an

5   average real (adjusted for inflation) rate of return over the period 1802 to 1997 in

6   the range of 6.6 percent to 7.2 percent.[1] He then develops a calculation to support

7   his opinion that investors expect long-term inflation to be 3.0 percent per year.

8   From this information, Mr. Rothschild concludes that investors can expect to earn

9   a nominal (*i.e*, not adjusted for inflation) rate of return in the range of 9.60 percent

10   to 10.00 percent on stocks of average risk. Since, in his opinion, PEF's risk is

11   below average, Mr. Rothschild concludes that his inflation risk premium results

12   support his recommended 9.1 percent cost of equity for PEF (see Schedule

13   Exhibit No. _____ (JAR 9)).

14

15   **Q.**   **You mention that Mr. Rothschild began with Dr. Siegel's estimate that stocks**

16   **have earned a real rate of return of 6.6 percent to 7.2 percent over the period**

17   **1802 to 1997. Are stock data for a period beginning in 1802 reliable?**

18   **A.**   No. During the 19th century, the stock market was comprised of very few stocks,

19   mainly the stocks of several banks, railroads, and insurance companies, located in

20   the Northeast. These stocks were thinly traded; and, since no dividend data were

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[1]   As the source for his data, Mr. Rothschild cites page 12 of the book, *Stocks for the Long Run*, 2nd edition, by Jeremy J. Siegel.

1 available, a rough estimate had to be made of the average dividends on these

2 stocks. Furthermore, prices for the period generally were based on averages of

3 high and low bids, not prices at which trades actually occurred. For these and

4 many other reasons, the historical returns on these stocks are simply not indicative

5 of returns investors expect to receive on stock investments in 2005.[2]

6

7 Q. **What is the most appropriate time period for measuring the real rate of**

8 **return on stock investments?**

9 A. In general, the most appropriate period for measuring the real rate of return on

10 stock investments is the period from 1926 to the present. As Ibbotson Associates

11 state in their book, *Stocks, Bonds, Bills, and Inflation, Valuation Edition, 2005*

12 *Yearbook*:

> The Ibbotson Associates equity risk premium covers the time
> period from 1926 to the present. The original data source for the
> time series comprising the equity risk premium is the Center for
> Research in Security Prices . CRSP chose to begin their analysis of
> market returns with 1926 for two main reasons. *CRSP determined*
> *that the time period around 1926 was approximately when*
> *quality financial data became available.* They also made a
> conscious effort to include the period of extreme market volatility
> from the late 20s and early 30s; 1926 was chosen because it
> includes one full business cycle of data before the market crash of
> 1929. These are the most basic reasons why Ibbotson Associate'
> equity risk premium calculation window starts in 1926. [Page 78.
> Emphasis added.]

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[2] Siegel's study relies on data obtained from G. William Schwert, "Indexes of U.S. Stock Prices from 1802 to 1987," *Journal of Business*, 1990. Vol. 63, no. 3. Schwert discusses the many problems with stock return data prior to 1926.

1   The Ibbotson Associates' recommendation to base risk premiums on the 1926 to

2   2004 period is especially compelling because Mr. Rothschild himself cites

3   Ibbotson Associates as providing support for his own testimony.[3]

4 **Q.   What was the average real rate of return on stock investments over the**

5   **period 1926 through 2004 period studied by Ibbotson Associates?**

6 A.   As shown in Table 2-1 of Ibbotson Associates' 2005 Yearbook, page 33, the

7   average real rate of return on stock investments over the period 1926 through

8   2004 was 9.3 percent.

9

10 **Q.   What was the average rate of inflation over the period 1926 through 2004?**

11 A.   The average rate of inflation over this period was 3.1 percent, almost the same as

12   Mr. Rothschild's 3.0 percent estimate of current expected inflation.

13

14 **Q.   What cost of equity would Mr. Rothschild have obtained from his inflation**

15   **risk premium method if he had appropriately used data for the period 1926**

16   **through 2004 rather than data from the period 1802 through 1997?**

17 A.   Mr. Rothschild would have obtained a cost of equity estimate of 12.3 percent

18   (9.3 percent real return + 3 percent inflation = 12.3 percent expected return).

19

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[3]   I will address later in my testimony how Mr. Rothschild mischaracterizes what Ibbotson Associates actually recommends.

D.   Mr. Rothschild's Debt Risk Premium Approach

Q.   **How does Mr. Rothschild implement his debt risk premium method to estimate PEF's cost of equity?**

A.   Mr. Rothschild implements his debt risk premium method in three steps. First, he estimates a market risk premium for investments in a broad portfolio of common stocks compared to investments in corporate bonds, long-term U.S. Treasury bonds, intermediate term U.S. Treasury bonds, and U.S. Treasury bills. Second, he multiplies his estimate of the market risk premium for each of these classes of bonds by the average utility beta to obtain his estimate of the risk premium for utility stocks compared to each class of bonds. Third, he adds his utility stock risk premium for each class of bonds to the current yield on that category of bonds to obtain his debt risk premium estimates of PEF's cost of equity. (See Schedule, Exhibit No. ___ (JAR 10), page 1 of 6.)

Q.   **What are Mr. Rothschild's estimates of the appropriate risk premiums for investments in common stocks compared to investments in corporate bonds, long-term U.S. Treasury bonds, intermediate term U.S. Treasury bonds, and U.S. Treasury bills?**

A.   Mr. Rothschild's estimates of these risk premiums are shown in Table 2 below:

Table 2

**Mr. Rothschild's Estimates of Risk Premiums on Investments
in Common Stocks Compared to Investments in Various
Classes of Bonds**

Bond Class	Risk Premium vs. Common Stocks
Corporate	3.52%
Long-term U.S. Treasury	4.00%
Intermediate-term U.S. Treasury	4.08%
Short-term U.S. Treasury	5.72%

Q. How does Mr. Rothschild obtain his estimates of the risk premiums shown in Table 2?

A. Mr. Rothschild obtains his risk premium estimates by: (1) using the geometric mean risk premiums on common stocks compared to each class of bonds reported in the Ibbotson Associates' 2005 Yearbook; and (2) reducing the Ibbotson Associates' reported geometric mean risk premiums to reflect Mr. Rothschild's opinion that risk premiums have declined over time.

Q. Does Ibbotson Associates recommend that the cost of equity be estimated using the geometric mean data reported in its 2005 Yearbook?

A. No. Ibbotson Associates specifically recommend that its *arithmetic mean return* data be used to estimate the cost of equity.

> The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and

riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return. [*2005 Yearbook Valuation Edition*, p. 75.]

Q. **Can you illustrate how the arithmetic mean is the best measure for estimating future returns on equity?**

A. Yes.[4] Suppose that the expected return on a stock is 10 percent per year, and that the only possible outcome in each of the next two years is a return of plus 30 percent, or minus 10 percent, with equal probability. If the investor invests one dollar at the beginning of year one, their expected wealth at the end of year two will be equal to $1.21, calculated as follows:

Table 3

Outcome	EOY 2 Wealth	Probability	Expected Value
(30,30)	$1.69	.25	0.4225
(30,-10)	1.17	.25	0.2925
(-10,30)	1.17	.25	0.2925
(-10,-10)	0.81	.25	0.2025
		TOTAL	$1.21

The arithmetic mean return on the above investment over the two-year period is 10 percent, calculated as $(30 - 10)/2 = 10$ percent. The geometric mean return on this investment is 8.2 percent, calculated as follows:

$$[(1 + 0.30) \times (1 - 0.10)]^{1/2} - 1 = 0.082$$

1   That the arithmetic mean is the correct rate of return to use in discounting future

2   cash flows can be seen by discounting the expected future value of $1.21 using the

3   arithmetic mean return of 10 percent as the discount rate:

$$\$1 = \frac{\$1.21}{(1.10)^2}$$

5   That the geometric mean is the incorrect term to use as the discount rate of future

6   cash flows can be seen by discounting the expected future value of $1.21 using the

7   geometric mean return of 8.2 percent as the discount rate:

$$\$1.0335 = \frac{\$1.21}{(0.082)^2}$$

9   Thus, the geometric mean return does not equate the expected future value of the

10 investment to its present value, and, hence, is not the correct rate to use in

11 discounting future cash flows.

Q. **On page 81 of his testimony, Mr. Rothschild claims that you "did not apply**

    the geometric or the arithmetic method properly" in the example you

    present. Do you agree with his claim?

A. No. The geometric mean return on an investment that can earn 30 percent with

    probability .5 and 10 percent with probability .5 is undoubtedly 8.2 percent; and

    the arithmetic mean return on this investment is undoubtedly 10 percent. It is Mr.

(. . . continued)

[4] This example, taken from *Stocks, Bonds, Bills, and Inflation Valuation Edition, 2005 Yearbook*, Ibbotson Associates, pp. 76 – 77, is also summarized in my direct testimony, Exhibit JVW-7.

1		Rothschild who did not apply the geometric mean and arithmetic mean methods
2		correctly.
3		
4	Q.	**Does Ibbotson Associates calculate the geometric and arithmetic mean the**
5		**same way you have in the previous example?**
6	A.	Yes. I calculated the geometric and arithmetic mean in precisely the same way as
7		Ibbotson Associates. Indeed, my example is a summary of an example presented
8		on pages 76 – 77 of their 2005 Yearbook, and my conclusion is the same as
9		Ibbotson Associates'.
10		
11	Q.	**On pages 78 – 81 of his testimony, Mr. Rothschild claims that his use of the**
12		**geometric mean risk premium data is supported by the financial community.**
13		**Do you agree with his assertion?**
14	A.	No. Mr. Rothschild fails to note that the references he cites to support his position
15		generally are discussing the appropriate use of geometric mean return data to
16		measure the actual return earned on a portfolio in an historical period. The
17		financial community does not support the use of geometric mean return data to
18		estimate the cost of equity. As Ibbotson Associates clearly states in the quote
19		cited above, the geometric mean is only appropriate for measuring past returns on
20		stock investments. It is not appropriate for estimating the cost of equity because
21		the arithmetic mean return is the only return that will equate the expected value of
22		future wealth to the current investment.
23		

1	Q.	**On page 80 of his testimony, Mr. Rothschild claims that Ibbotson Associates**
2		**supported use of geometric mean data to estimate the cost of equity in its**
3		**1986 yearbook. Do you agree with this claim?**
4	A.	No. The quote provided by Mr. Rothschild is taken out of context--it does not
5		pertain to Ibbotson Associates' discussion of how to estimate the cost of equity.
6		Ibbotson Associates has consistently supported the exclusive use of arithmetic
7		mean return data to estimate the cost of equity. In fact, the following statements
8		from Ibbotson Associates' 1986 yearbook, as shown in Exhibit No. ___ (JAR 14),
9		pp. 32 – 33 of 47, demonstrate that, contrary to Mr. Rothschild's claim, in their
10		1986 yearbook, Ibbotson Associates strongly supported using the arithmetic mean
11		risk premium to estimate the cost of equity:

> 41.   Q.   Why do you use the arithmetic mean risk premium,
> instead of the geometric mean (compound annual return)?
>
> A.   We are interested here in expected year-by-year rates of
> return. In order to achieve a given compound annual return over
> the long run, it is necessary to expect, in each separate year, a
> somewhat higher return – the arithmetic mean. For example, if you
> had a stock with annual returns of +30 percent, then – 10 percent,
> then +30, -10,. +30, -10 *et cetera* forever, the expected return or
> forecast mean in every year would be the arithmetic mean of +30
> and -10, or 10 percent. The compound annual return to an investor
> holding this stock, however, would be only 8.3 percent per year.
> Thus, given this stock's level of variability (a standard deviation of
> 20 percent, roughly that of the actual stock market, although the
> "evenness" of returns in our example is not realistic), it is
> necessary to have an expectancy of 10 percent every year – the
> arithmetic mean – in order to achieve the geometric mean – 8.3
> percent – over a multi-year period. *Since we are interested in the
> year-by-year expectancy, the arithmetic mean is the relevant rate
> of return.* [Emphasis added.]
>
> Furthermore, Ibbotson succinctly reiterates his view that one must use the

arithmetic mean risk premium to estimate the cost of equity in a 1989 publication:

12.   Q.   In your initial example, you use the arithmetic mean historical risk premium as the forecast of the future risk premium. Why do you use the arithmetic mean, instead of the geometric mean (compound annual return)?

A.   The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values. Thus, the arithmetic mean return is appropriate for calculation of a discount rate, because expected cash flows (i.e., the means of distributions of future values) are discounted to arrive at a present value. Similarly, it is appropriate for the cost of capital or market-required rate of return.

Definitionally, the discount rate that equates expected (mean) future values with the present value of an investment is that investment's cost of capital (Van Horne 1977). The logic is that investors will discount their expected (mean) ending wealth values using the arithmetic mean. They will, therefore, require such an expected (mean) return prospectively.[5]

1

2   **Q.   Do textbooks generally support use of the arithmetic mean return, rather**

3   **than the geometric mean return, to estimate the cost of equity?**

4   A.   Yes. In fact, the most widely-used finance text emphasizes the importance of

5   using arithmetic averages to estimate the cost of equity:

> *Moral*: If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return.[6] [Original emphasis.]

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[5] Roger G. Ibbotson, Rex A. Sinquefield, *Stocks, Bonds, Bills, and Inflation: Historical Returns (1926 – 1987)*, The Research Foundation of the Institute of Chartered Financial Analysts, Charlottesville, VA, pp. 125 – 126.

[6] Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, 8th ed., McGraw-Hill Irwin, p. 151.

1 Q. **You noted that Mr. Rothschild also reduces the Ibbotson reported geometric**

2 **mean risk premiums to reflect Mr. Rothschild's opinion that risk premiums**

3 **have trended downward over the last three or four decades. Do you agree**

4 **with Mr. Rothschild's opinion that the market risk premium has declined**

5 **significantly over the last three or four decades?**

6 A. No. I provided evidence in my direct testimony that there is no statistically

7 significant downward trend in historical risk premiums. The absence of a

8 downward trend in risk premiums is also evident from the data on the average risk

9 premium by decade provided by Ibbotson Associates, reproduced below in Table

10 3. (Ibbotson Associates 2005 Yearbook, Valuation Edition, p. 79.)

11 **Table 4**
Historical Risk Premium By Decades

12

1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	1995-2004
17.6%	2.3%	8.0%	17.9%	4.2%	0.3%	7.9%	12.1%	-6.2%	8.1%

13

14 Q. **In Exhibit JAR-10, Mr. Rothschild presents a graph of the 30-year moving**

15 **average risk premium on stocks versus long-term Treasury bonds, which**

16 **seems to indicate that the risk premium has, in fact, declined. Do you agree**

17 **with Mr. Rothschild's conclusion?**

18 A. No. Ibbotson Associates explains that the decline in the 30-year moving average

19 risk premium around this period can be explained entirely by the very large

20 negative returns that were earned in 1973 and 1974 as a result of the oil embargo:

> The key to understanding this result [the apparent downward trend
> in the 30-year period] lies again in the years 1973 and 1974. The
> oil embargo during this period had a tremendous effect on the

market. The equity risk premium for these years alone was -21 and -34 percent, respectively. Periods that include the years 1973 and 1974 result in an average equity risk premium that is as low as 3.1 percent. In the most recent 30-year period [through 2004] that excludes 1973 and 1974, the average rises to close to 7 percent. The early 2000s have also had an enormous effect on the equity risk premium.[7]

Q. **How does the average risk premium over the last 30 years compare to the average risk premium over the entire time period?**

A. As shown below in Table 5, the average risk premium over the last 30 years is 6.9 percent, as compared to the risk premium of 7.2 percent for the entire period 1926 – 2004.

Table 5
Stock Market Return and Equity Risk Premium over Time
1926 – 2004[8]

Period Length (Years)	Beginning Year through 2004	Large Company Stock Arithmetic Mean Return	Long-Horizon Equity Risk Premium
79	1926	12.4%	7.2%
70	1935	13.1%	7.7%
60	1945	13.3%	7.3%
50	1955	12.3%	5.6%
40	1965	11.8%	4.4%
30	1975	14.9%	6.9%
20	1985	14.5%	7.4%
15	1990	12.4%	6.0%
10	1995	14.0%	8.1%
5	2000	-0.7%	-6.2%

---

[7] Ibbotson Associates, 2005 Yearbook Valuation Edition., p. 84.
[8] *Op. cit.*, p. 81.

1   Thus, the average risk premium over the last 30 years has not declined, as Mr.

2   Rothschild claims; rather, it is approximately equal to the average risk premium

3   over the entire 1926 through 2004 period.

4

5 Q. **On page 84 of his testimony, Mr. Rothschild also provides quotes from the**

6   **Ibbotson Associates' 2004 and 2005 yearbooks, which purportedly support**

7   **Mr. Rothschild's view that Ibbotson Associates is now recommending a risk**

8   **premium equal to approximately 3.84 percent. Has Mr. Rothschild correctly**

9   **interpreted Ibbotson Associates?**

10 A. No. Mr. Rothschild has taken the Ibbotson Associates' quotations completely out

11   of context. The statements that Mr. Rothschild refers to do not relate to Ibbotson

12   Associates' recommendations for estimating the cost of equity. There can be little

13   doubt that Ibbotson Associates continue to recommend the arithmetic mean risk

14   premium to estimate the cost of equity. For example, on the last page of Ibbotson

15   Associates' 2005 yearbook valuation edition, Ibbotson lists the key variables in

16   estimating the cost of equity. Among these key variables is the 7.2 percent

17   arithmetic mean equity risk premium on large company stocks compared to long-

18   term government bonds.

19

20 Q. **Do you have other criticisms of Mr. Rothschild's debt risk premium**

21   **approach?**

1   A.   Yes. Mr. Rothschild uses an average beta of .79 to implement his debt risk

2   premium approach, even though the average beta for his proxy group of

3   companies is .83 [see Vander Weide Rebuttal Exhibit No. ___ (JVW-14)].

4

5   Q.   **What cost of equity would Mr. Rothschild have obtained if he had**

6   **implemented his debt risk premium approach correctly?**

7   A.   Mr. Rothschild would have obtained a cost of equity of 10.65 percent using the

8   4.55 percent interest rate on 20-year Treasury bonds at the time of his testimony

9   (see Exhibit No. ____ (JAR-10) and a cost of equity of 11.55 percent using the

10   5.70 percent forecasted interest rate on 20-year Treasury bonds (see Exhibit No.

11   ____ (JVW-8) in my direct testimony). The 11.55 percent cost of equity is

12   slightly higher than the 11.4 percent cost of equity result I obtained before my

13   adjustment for differences in financial risk.

14

         E.   **Response to Mr. Rothschild's Comments on Dr. Vander**
               Weide's Cost of Equity Studies

15   Q.   **What are Mr. Rothschild's criticisms of your cost of equity studies?**

16   A.   Mr. Rothschild has five basic criticisms of my cost of equity studies. First, he

17   argues that I incorrectly excluded companies from my DCF analysis. Second, he

18   argues that I incorrectly use analysts' growth rates as a proxy for future growth in

19   the DCF model. Third, he argues that I mistakenly adjusted my DCF results for

20   the quarterly compounding of dividends and flotation costs. Fourth, he argues

21   that I inappropriately based my risk premium studies on historical arithmetic mean

1 results rather than geometric mean results and failed to recognize that risk

2 premiums have declined. Fifth, he argues that I make an improper adjustment for

3 differences in the financial risk of my proxy companies and the financial risk

4 embodied in PEF's recommended capital structure.

5

6 ### 1. Proxy Companies

7 **Q. How did you choose your proxy companies for the purpose of estimating**

8 **PEF's cost of equity?**

9 A. I selected all the companies in Value Line's groups of electric companies that:

10 (1) paid dividends during every quarter of the last two years; (2) did not decrease

11 dividends during any quarter of the past two years; (3) had at least three analysts

12 included in the I/B/E/S mean growth forecast; (4) have an investment grade bond

13 rating and a Value Line Safety Rank of 1, 2, or 3; and (5) have not announced a

14 merger. I also selected all the companies in Value Line's groups of natural gas

15 companies that receive a significant percentage of revenues and income from

16 regulated natural gas businesses and otherwise meet the same criteria as described

17 above for the electric companies.

18

19 **Q. How do your proxy companies compare in risk to PEF?**

20 A. As described on page 37 and page 40 of my direct testimony, my proxy company

21 groups are less risky than PEF.

22

23 **Q. Does Mr. Rothschild use your proxy companies in his cost of equity studies?**

1   A.   Yes, he does.

2

3   Q.   **On page 62 of his testimony, M. Rothschild asserts that your elimination of**

4   **companies that cut their dividends may have increased your DCF results. Is**

5   **he correct?**

6   A.   No. Since companies generally cut their dividends only as a last resort, those

7   companies that have cut their dividends often are more risky than those companies

8   that have not cut their dividends. Thus, one would expect that companies that

9   have cut their dividends would have a higher cost of equity than companies that

10   have not cut their dividends. In addition, although cutting the dividend generally

11   reduces the company's dividend yield, a dividend cut also generally significantly

12   increases the company's expected earnings growth, because the company's

13   retention ratio can be expected to be higher once the dividend has been cut.

14

15   Q.   **On pages 62 – 63 of his testimony, Mr. Rothschild also argues that your**

16   **exclusion of companies from the S&P 500 that did not have a positive**

17   **forecast of growth "produced what could be a substantial upward skewing of**

18   **[your] analysis." How many companies did you exclude from your S&P 500**

19   **DCF analysis on the basis that the company did not have a positive growth**

20   **estimate?**

21   A.   No companies were eliminated because of a negative expected growth rate.

22

23   Q.   **Did this criterion have any effect on your DCF result for the S&P 500?**

1   A.   No. Since no companies were eliminated from my S&P 500 DCF analysis

2   because they did not have a positive expected growth rate, this criterion had no

3   effect on the results of my S&P 500 DCF analysis.

4

5   2.   Growth Estimates for the DCF Model

6   Q.   **How did you estimate investors' expectations of future growth in your DCF**

7   **analysis?**

8   A.   As my estimate of investors' expectations of future growth in my DCF analysis, I

9   used the mean analysts' long-term expected growth rate published by I/B/E/S

10   Thomson Financial.

11

12   Q.   **Does Mr. Rothschild agree with your use of analysts' growth rates in your**

13   **DCF analysis?**

14   A.   No. Mr. Rothschild claims on page 64 of his testimony that analysts' EPS growth

15   rates should not be used in a DCF analysis because: (1) "analysts' growth rates

16   are different from investors' anticipated growth rates"; and (2) analysts' growth

17   rates tend to be overly optimistic.

18

19   Q.   **Do you agree with Mr. Rothschild's assertion that the analysts' EPS growth**

20   **forecasts are different from investors' anticipated growth rates?**

21   A.   No. As I describe on pp. 31 – 32 of my direct testimony, my studies indicate that

22   analysts' growth forecasts are more highly correlated with stock prices than other

23   growth forecasts that are generally available to investors. My studies, which are

1   consistent with other research on this topic, indicate that investors use analysts'

2   forecasts in making stock buy and sell decisions.

3

4   Q.   **Does Mr. Rothschild discuss studies, including your paper with Professor**

5   **Carleton, in his testimony?**

6   A.   Yes. Mr. Rothschild claims that my conclusion is not justified by the results of

7   my studies because I didn't assess the accuracy of the analysts' growth forecasts

8   compared to other possible growth forecasts such as dividend growth forecasts or

9   growth forecasts determined by multiplying a forecasted earned return on equity

10   by a retention rate. (Rothschild at pp. 64 – 65.)

11

12   Q.   **Is Mr. Rothschild's criticism that you did not test the accuracy of analysts'**

13   **growth forecasts relevant to whether analysts' growth forecasts should be**

14   **used when estimating the cost of equity based on the DCF model?**

15   A.   No. The DCF model requires the use of *investors' expected growth rates,*

16   *whether these growth rates subsequently turn out to be accurate or not.* My

17   studies indicate that the analysts' earnings growth forecasts are good proxies for

18   the growth forecasts actually used by investors.

19

20   Q.   **Did Mr. Rothschild provide any evidence in his testimony that his *br + sv***

21   **growth estimates are reasonable proxies of investors' growth expectations?**

22   A.   No, Mr. Rothschild made no attempt to estimate investors' expected growth

23   forecasts for the proxy companies. It is evident from my earlier discussion of Mr.

33

1   Rothschild's testimony that his $br + sv$ growth forecasts are subjective estimates

2   that reflect his own judgment about the companies' future rates of return on equity

3   and retention rates, not the judgment of investors.

4

5   Q.   **Why did you use analysts' earnings growth forecasts instead of dividend**

6   **growth forecasts?**

7   A.   I relied on analysts' earnings growth forecasts rather than dividend growth

8   forecasts because I am not aware of any sources that provide mean analysts'

9   dividend growth forecasts. Furthermore, in the long run, dividend growth will be

10   identical to earnings growth.

11

12   Q.   **When Mr. Rothschild asserts that analysts' forecasts are consistently overly**

13   **optimistic, is he referring to a comparison of growth forecasts with investors'**

14   **expectations or to a comparison of analysts' forecasts with the earnings that**

15   **subsequently materialized?**

16   A.   Mr. Rothschild's references to articles in the business press generally discuss

17   analysts' forecasts compared to earnings that were subsequently realized, in

18   particular analysts' forecasts in the late 1990's during the high tech bubble to the

19   earnings that were subsequently realized after the bubble burst.

20

21   Q.   **Does the fact that analysts' forecasts during the high tech bubble were higher**

22   **than the earnings that were subsequently realized after the bubble burst**

1		**indicate that the analysts' earnings forecasts were not shared by investors at**
2		**the time the forecasts were made?**
3	A.	No. Indeed, the fact that stock prices were unusually high during the tech bubble
4		of the late 1990's indicates that the analysts' growth forecasts were widely shared
5		by investors at that time. Again, recall that the most important issue in applying
6		the DCF model is to use the expected growth rates of investors.
7		
8		3. Quarterly DCF Model and Flotation Costs
9	Q.	**What is the basic assumption of your quarterly DCF model?**
10	A.	My quarterly DCF model is based on the assumption that companies pay
11		dividends at the end of each quarter rather than at the end of each year.
12		
13	Q.	**Is this assumption realistic?**
14	A.	Yes, my proxy companies pay dividends quarterly.
15		
16	Q.	**Would an annual DCF model provide a more accurate estimate of the**
17		**expected of return on stock investments for companies that pay dividends**
18		**quarterly?**
19	A.	No. The DCF model is based on the assumption that a company's stock price is
20		equal to the present value of the future cash flows received by investors. When
21		dividends are paid quarterly, the only DCF equation that equates a company's
22		current stock price to the present value of future dividend payments is the
23		quarterly DCF equation. Since the annual DCF equation cannot be

1   mathematically derived from the assumption that stock prices are equal to the

2   present value of quarterly dividend payments, the annual DCF model necessarily

3   provides a less accurate estimate of the expected rate of return on stock

4   investments than the quarterly DCF equation.

5

6   Q.   **What is Mr. Rothschild's basic objection to your use of a quarterly DCF**

7   **model?**

8   A.   Mr. Rothschild objects to my use of the quarterly DCF model because he claims

9   that it ignores the fact that companies receive revenues on a daily basis.

10

11 Q.   **Is Mr. Rothschild's objection valid?**

12 A.   No. The DCF model has nothing whatsoever to do with the timing of a

13   company's revenues. Rather, the focus of the DCF model is on the timing of the

14   cash flows received by investors. The investors' rate of return, according to the

15   DCF model, is that rate of return which equates the present value of the stream of

16   cash flows *investors receive from the company* to the company's current stock

17   price. When dividends are paid quarterly, the only rate of return that satisfies the

18   requirements of the DCF model is that obtained from the quarterly DCF equation.

19

20 Q.   **Does Mr. Rothschild also object to your inclusion of a flotation cost**

21   **allowance in your DCF results?**

22 A.   Yes. Mr. Rothschild objects to my inclusion of flotation costs for two reasons.

23   First, he claims that the companies in my proxy groups are selling at market prices

1   that exceed book value, and that the difference is sufficient to fully pay for

2   financing costs. (Rothschild p. 86.) Second, he claims that according to the

3   information provided by PEF in response to Citizens' Third Set of Interrogatories,

4   No. 155, PEF showed that my financing allowance for flotation costs greatly

5   exceeds the actual flotation costs incurred by Progress Energy in the last 20 years.

6

7 **Q. Does issuing stock at a market price that exceeds book value compensate a**

8 **company for the financing costs it incurs in issuing this stock?**

9 A. No. The relationship between the price of a stock and its book value has nothing

10   whatsoever to do with financing costs. Financing costs are a legitimate and

11   necessary expense of issuing securities and they must be recovered in additional

12   revenues if the company is to be able to earn a fair rate of return on its investment.

13   Indeed, book value is largely irrelevant in the pricing of common stock.

14

15 **Q. Does Mr. Rothschild's conclusion regarding flotation costs follow from PEF's**

16 **response to Citizen's Third Set of Interrogatories, No. 155?**

17 A. No. PEF's response to the Citizens' Third Set of Interrogatories, No. 155,

18   reported information on the two stock issuances that have occurred since Progress

19   Energy was formed. The data provided in that response, which is reproduced in

20   Table 6, indicates that total expenses paid to outside parties as a percentage of net

21   proceeds received were: 3.8 percent for the August 14, 2001, issuance; and

22   8.5 percent for the November 6, 2002, issuance. Contrary to Mr. Rothschild's

conclusion, these data suggest that my 5 percent flotation cost allowance, which

includes both issuance expenses and market pressure, is conservative.

Table 6
Response to Citizens' Third Set No. 1005:
PGN Flotation Expense

Information	Date	Date
Date of offering	14-Aug-01	6-Nov-02
Number of shares issued	11 mm.	14.67 mm
Net proceeds received by the company	$ 424.6	$ 600.0
Total expenses paid by the company to outside parties	$ 16.2	$ 50.9
Expense as Percent of Proceeds	3.8%	8.5%

Q.   **Does Mr. Rothschild acknowledge that the Florida Public Service**

Commission has explicitly recognized the need to include a flotation cost

allowance in the allowed return on equity in its Order PSC-02-0787-FOF-EI?

A.   No. Mr. Rothschild fails to acknowledge that the Florida PSC recognized the

need to include a flotation cost allowance of 20 basis points in that decision.

4.   Risk Premium Method

Q.   **How did you estimate the required risk premium on stock investments**

compared with bond investments?

A.   I estimated the required risk premium on stock investments compared with bond

investments by: (1) comparing the historical arithmetic mean return on stock

investments to the historical arithmetic mean return on bond investments; and

(2) comparing the expected rate of return on stock investments as measured by the

DCF model to the yield on bond investments over the last five to six years.

1 Q. **Does Mr. Rothschild object to your use of the historical arithmetic mean**

2 **return on stock and bond investments to estimate investors' expected risk**

3 **premium on stock investments?**

4 A. Yes. Mr. Rothschild objects to my use of the historical arithmetic mean return on

5 the grounds that: (1) the arithmetic mean does not provide an accurate measure of

6 the return actually received by investors during the historical time period; (2) the

7 financial community recommends using geometric mean data to measure

8 historical returns, and (3) my example in my direct testimony that demonstrates

9 why the arithmetic mean must be used to measure the expected risk premium is

10 based on an incorrect calculation of the arithmetic and geometric means.

11

12 Q. **Is Mr. Rothschild correct when he claims that the arithmetic mean cannot be**

13 **used to estimate investors' expected risk premium on stock investments**

14 **because the arithmetic mean does not accurately measure the return received**

15 **by investors over the historical period of time?**

16 A. No. Mr. Rothschild fails to understand that our task in this proceeding is to

17 estimate investors' expected risk premium on stock investments, not to measure

18 the actual return earned by investors over the historical period. As discussed

19 earlier in my rebuttal testimony as well as in my direct testimony, the arithmetic

20 mean is the appropriate average for use in estimating investors' expected risk

21 premium because it is the only number that equates the present value of the

22 investors' expected future wealth to investors' current wealth.

23

1 Q. **Does the financial community recommend using the geometric mean to**

2   **measure historical results?**

3 A. Yes. However, the financial community does not recommend that the geometric

4   mean be used to measure the expected future risk premium. As I discussed above,

5   Ibbotson Associates and others strongly recommend the arithmetic mean as the

6   appropriate measure for the purpose of estimating investors' expected future risk

7   premiums on stock investments.

8

9 Q. **Mr. Rothschild criticizes your example explaining why the arithmetic mean**

10   **must be used to estimate the expected future risk premium. Does Mr.**

11   **Rothschild attempt to recalculate your example using an alternative method**

12   **for calculating the arithmetic and geometric mean returns on investment?**

13 A. Yes. Mr. Rothschild provides an alternative example in Exhibit JAR-13.

14   However, Mr. Rothschild has miscalculated the arithmetic and geometric mean

15   returns on his hypothesized investment. As I demonstrated in my Exhibit

16   No. ___ (JVW-7), the arithmetic mean return on an investment that can earn a

17   30 percent return with a probability of ½ and a negative 10 percent return with a

18   probability of ½ is 10 percent, just I showed in my exhibit [(30%) (.5) + (-10%)

19   (.5) = 10%.]. The geometric mean return on this same investment is only

20   8.2 percent. Furthermore, the arithmetic mean of 10 percent is the only rate of

21   return that equates the present value of the expected future wealth of $1.21 to the

22     $1.00 current value of wealth in the example.

23

1	Q.	**Mr. Rothschild also claims that you have ignored the decline in risk**
2		**premiums that, in his opinion, has occurred over the last several decades.**
3		**Have you already addressed Mr. Rothschild's arguments on this subject?**
4	A.	Yes. I have addressed Mr. Rothschild's arguments above in Section D.
5		
6		5. <u>Adjustment of the Cost of Equity for Financial Risk</u>
7	Q.	**How do financial market participants measure risk?**
8	A.	Under the assumption that the probability distribution of returns is symmetric, *i.e.*,
9		centered on the mean return, financial market participants generally measure risk
10		by the forward-looking variance of return on investment.
11		
12	Q.	**Does the forward-looking variance of an investor's return on a stock**
13		**investment in a company depend on the company's capital structure?**
14	A.	Yes. The forward-looking variance of an investor's return depends on the
15		company's debt to equity ratio, where both debt and equity are measured in terms
16		of market values, not book values.
17		
18	Q.	**What is the meaning of the term, "financial risk"?**
19	A.	Economists use the term, "financial risk" to refer to the contribution of the firm's
20		capital structure , *i.e.*, its debt to equity ratio, to the forward-looking variance of
21		return on the firm's stock.
22		

1   **Q.**   **Does financial risk reflect the market values of debt and equity in a**

2   **company's capital structure or the book values of debt and equity in a**

3   **company's capital structure?**

4   A.   Since financial risk measures the contribution of the company's capital structure

5   to the forward-looking variance of return on the company's stock, and the

6   forward-looking variance depends on the market values of debt and equity in the

7   company's capital structure, not the book values.[9]

8

9   **Q.**   **Is PEF recommending that its weighted average cost of capital in this**

10   **proceeding be calculated based on the market values of debt and equity in its**

11   **capital structure?**

12   A.   No. Consistent with previous regulatory practice, PEF is recommending that its

13   weighted average cost of capital be based on the book values of debt and equity in

14   its capital structure.

15

16   **Q.**   **Is the financial risk associated with PEF's recommended capital structure**

17   **measured in the same way as the financial risk associated with the capital**

18   **structures of your proxy companies?**

19   A.   No. The financial risk of my proxy companies is reflected in their market value

20   capital structures, while PEF is recommending that a book value capital structure

21   be used for the purpose of setting rates. Thus, the financial risk of my proxy

1   companies is measured by their market value capital structures, while PEF's

2   financial risk is measured by its book value capital structure.

3

4   Q.   How did you adjust your cost of equity results for your comparable

5   companies to reflect the difference between the market's perception of the

6   financial risk of your proxy companies and the financial risk reflected in

7   PEF's recommended capital structure?

8   A.   As described on pp. 56 – 59 of my direct testimony, I adjusted the cost of equity

9   results for my comparable companies by equating the after-tax weighted average

10   cost of capital of my proxy companies to the after-tax weighted average cost of

11   capital of PEF. In this procedure, I used market-value capital structure weights

12   for my comparable companies because the cost of capital for these companies is

13   based on market values, and I used book value weights for PEF because the

14   recommended cost of capital for PEF in this proceeding is based on book values.

15

16   Q.   What is Mr. Rothschild's basic objection to your financial risk adjustment?

17   A.   Mr. Rothschild's basic objection is that my use of market value capital structures

18   to calculate the weighted average cost of capital of my proxy companies is, in his

19   opinion, inconsistent with the use of a DCF model to estimate the cost of equity.

20

(. . . continued)

[9]   See Brealey, Myers, and Allen, *op. cit.*, Chapter 17.

1 **Q. Do you agree with Mr. Rothschild's assertion that a market value capital**
2 **structure is inconsistent with the use of a DCF model to estimate the cost of**
3 **equity?**

4 A. No. Contrary to Mr. Rothschild's assertion, the DCF model is only consistent

5 with a market value capital structure because the DCF model is based on the

6 market price of the company's equity, and so is the company's market value

7 capital structure. Thus, investors will only have an opportunity to earn their

8 required return on investment if the estimated cost of equity is applied to the

9 market value of the company's equity.

10

11 **Q. Does Mr. Rothschild present an example that purportedly demonstrates that**
12 **the DCF model is inconsistent with the use of a market value capital**
13 **structure?**

14 A. Yes. On pages 92 – 93 of his testimony, Mr. Rothschild states:

> By recommending that a company should be allowed to earn its
> DCF return on the market value of its investment rather than the
> book value of its investment, Dr. Vander Weide is saying that fully
> competitive companies can earn this DCF return on this market
> value. However, in reality this is far from the truth. Consider the
> following: According to page MW 58 of the June 13, 2005 issue
> of Barron's, the earnings yield (earnings divided by price) on the
> S&P 500 index is 5.04%. This means that the return on market
> value for the S&P 500 that investors in these mostly competitive
> industrial companies are earning, is no where near the cost of
> equity indicated by the DCF method.

15

16 **Q. Does Mr. Rothschild's example, in fact, demonstrate his conclusion that the**
17 **DCF model is inconsistent with use of a market value capital structure?**

1   A.   No. Mr. Rothschild's example is based on his incorrect assumption that the

2   investors' expected rate of return on market value is equal to the earnings/price

3   ratio. This assumption is incorrect, because the investors' expected return is

4   actually equal to expected dividend plus expected growth. Because Mr.

5   Rothschild incorrectly measures the investors' expected rate of return on market

6   value, he reaches an incorrect conclusion regarding the consistency of the DCF

7   model and a market value capital structure.

8

9   Q.   **On page 76 of his direct testimony, Mr. Rothschild argues that your DCF**

10   **formula requires earnings, dividends, book value, and stock price to all grow**

11   **at the same rate in each future year. Is he correct?**

12 A.   Although Mr. Rothschild is technically correct in stating that earnings, dividends,

13   book value, and stock price are all assumed to grow at the same rate in the DCF

14   model, he grossly misunderstands how the DCF model is used in practice by

15   investors. While investors recognize that earnings, dividends, book value, and

16   stock price rarely grow at the same rate in every future year, they continue to use

17   the simple constant growth DCF model because it represents a reasonable

18   approximation of reality. As long as the growth term in the DCF model is a

19   reasonable representation of the *average* long-run growth, it is reasonable to use

20   the constant growth DCF model in valuing stocks.

21

1   **Q.**   **On page 74 of his direct testimony, Mr. Rothschild argues that your use of**

2   **the five-year analysts' growth rate implies a continuous increase in a**

3   **company's earned rate of return on equity. Do you agree?**

4   **A.**   No. My use of the I/B/E/S growth rates is simply based on the assumption that

5   these rates accurately reflect investors' long-run average growth expectations for

6   earnings, dividends, book value, and share price. An average growth rate, by

7   implication, is a constant growth rate, and does not imply a "continuous increase"

8   in the earned return on equity.

9

10   **Q.**   **Do you agree with Mr. Rothschild's assertion that your use of the I/B/E/S**

11   **growth estimates implies an average earned rate of return on equity and an**

12   **average retention ratio that are higher than the most recently reported rates**

13   **of return on equity and retention ratios for your proxy companies?**

14   **A.**   Yes. However, my acceptance of this proposition does not imply that investors

15   expect the earned rate of return on equity and retention ratio to increase forever. It

16   only implies that the average forecasted earned rate of return and retention ratios

17   are higher than the most recent historical earned rates of return and retention ratios

18   for the proxy companies. Given the changes in the energy industries I have

19   studied, this is not an unreasonable assumption.

20

21   **Q.**   **Do you have any evidence that investors expect your proxy companies'**

22   **earned rates of return on equity and retention ratios to be higher than their**

23   **most recent historical levels?**

1   A.   Yes. The analysts preparing Value Line reports for my proxy companies clearly

2   believe that the average future rate of return on equity and the average future

3   retention ratio for these companies are likely to be greater than their most recent

4   historical levels.

5

6   Q.   **Do you agree with Mr. Rothschild's assertion that the arithmetic average**

7   **risk premium you used in your historical risk premium study is an upwardly**

8   **biased estimator of future expected risk premiums?**

9   A.   No. Mr. Rothschild fails to understand that the arithmetic average risk premium

10   is the best risk premium for the purpose of discounting expected future cash

11   flows. In particular, the arithmetic average risk premium is the only risk

12   premium, that, when used as a discount rate, will equate the future expected value

13   of an investment with its present value. Since the cost of equity reflects the

14   future, not the past, the arithmetic average risk premium should be used in

15   estimating the cost of equity.

16

17   **II.   REBUTTAL OF MR. GORMAN**

18 Q.   **How did Mr. Gorman estimate PEF's cost of equity?**

19 A.   Mr. Gorman applied several cost of equity methodologies to the same groups of

20   electric and natural gas companies that I presented in my direct testimony. His

21   cost of equity methodologies include: (1) a constant growth DCF; (2) a risk

22   premium method; and (3) a Capital Asset Pricing Model ("CAPM").

A. Mr. Gorman's DCF Model

Q. What DCF model did Mr. Gorman use to estimate PEF's cost of equity?

A. Mr. Gorman used an annual growth DCF model without flotation costs. His annual DCF model can be described by the equation, $k = D_1/P_0 + g$, where k is the cost of equity, D_1 is the expected next period dividend, P_0 is the current price, and g is the expected growth rate.

Q. Does Mr. Gorman's annual DCF model provide accurate estimates of the cost of equity?

A. No. Mr. Gorman's annual DCF model ignores the fact that dividends are paid quarterly and fails to adjust for flotation costs. For the reasons discussed in my direct testimony at pp. 28 – 29 and 33 - 35, quarterly dividends and flotation costs are important considerations in the proper application of the DCF model. Inclusion of these considerations would add approximately 40 basis points to Mr. Gorman's annual constant growth DCF results.

Q. How did Mr. Gorman estimate the growth component of his annual DCF model?

A. Mr. Gorman used an average of the consensus analysts' growth rates provided by Zack's, I/B/E/S, and Reuters to estimate the growth component of his annual DCF model.

1 Q. **Did you also use analysts' growth rates to estimate the growth component of**

2   **your DCF model?**

3 A. Yes, I did.

4

5 Q. **On page 22 of his testimony, Mr. Gorman states that his use of analysts'**

6   **forecasts for his proxy companies produces a growth estimate that is**

7   **"conservatively high." Do you agree?**

8 A. No. As I discuss on pp. 37 – 38 of my direct testimony, at this time the DCF

9   model in general produces cost of equity results that are unreasonably low. First,

10   the monthly DCF results for electric companies have been considerably more

11   volatile than interest rates over the last five years, even though it is widely

12   recognized that the cost of equity varies significantly less than interest rates.

13   Indeed, DCF results for electric companies varied within a range of 445 basis

14   points over this period, while interest rates varied within a range of only 309 basis

15   points. Second, the DCF results are significantly less than estimates of the cost of

16   equity using the risk premium and CAPM methodologies. The high volatility of

17   DCF results and the fact that DCF results are significantly less than the cost of

18   equity results produced by other methodologies suggests that the DCF model is

19   not providing an appropriate indication of the electric companies' cost of equity at

1   this time.[10]

2

3   **B.**   **Mr. Gorman's Risk Premium Model**

4 **Q.**   **How did Mr. Gorman estimate the required risk premium for investing in his**

5   **electric company proxy group?**

6 A.   Mr. Gorman estimated the required risk premium for investing in electric utility

7   stocks from data on the average authorized electric utility rates of return on equity

8   for each year from 1986 to 2004. Mr. Gorman found that the average authorized

9   rate of return on equity for electric utilities over this period was 4.96 percent

10   higher than the yield on long-term Treasury bonds and 3.54 percent higher than

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

12

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

14   **premium on electric utility stocks?**

15 A.   No. Mr. Gorman fails to recognize that the Florida Public Service Commission

16   has a responsibility to make an independent assessment of the required return on

17   equity for PEF in this proceeding. In addition, Mr. Gorman fails to recognize that

18   the indicated risk premium in his data base tends to increase as interest rates

19   decline. Mr. Gorman should have adjusted his average risk premiums to account

---

[10]   Mr. Gorman argues that his growth estimates are conservatively high, noting that utility earnings cannot grow at a rate in excess of GDP growth forever. However, Mr. Gorman fails to recognize that his growth estimates are less than forecasted GDP growth, not higher than the GDP growth estimates.

1 for the relationship between the allowed risk premium on equity and the level of

2 interest rates on long-term Treasury bonds and A-rated utility bonds.

3

4 Q. **Have you studied the relationship between the allowed rates of return on**

5   **equity by regulatory commissions and the interest rates on long-term**

6   **Treasury bonds and A-rated utility bonds?**

7 A. Yes. Using the data found in Mr. Gorman's Exhibit Nos. ____ (MPG-10) and

8   (MPG-11), I performed a regression analysis of the relationship between the risk

9   premium implied by the allowed rates of return on equity issued by regulatory

10 commissions and the interest rates on long-term Treasury bonds and A-rated

11 utility bonds. I found that the risk premium implied by allowed rates of return

12 compared to the yield on long-term Treasury bonds is given by the relationship:

$$RP_{AUTHORIZED} = 7.87 - 0.424 \times T_B$$

where:

$RP_{AUTHORIZED}$ = the risk premium implied by utility commission authorized rates of return on equity,

7.87 and 0.424 = estimated regression coefficients; and

T_B = the yield on long-term Treasury bonds.

Similarly, I found that the risk premium implied by allowed rates of return

compared to the yield on A-rated utility bonds is given by the relationship:

$$RP_{AUTHORIZED} = 6.68 - .378 \times A_B$$

where:

$RP_{AUTHORIZED}$ = the risk premium implied by utility commission authorized rates of return on equity,

6.68 and 0.378 = estimated regression coefficients; and

A_B = the yield on Moody's A-rated utility bonds.

Q. What risk premiums do you obtain from your statistical analysis of the relationship between allowed rates of return and interest rates using Mr. Gorman's data?

A. Using current forecasted interest rates, I obtain a risk premium of 5.94 percent over the yield on 20-year U.S. Treasury bonds and 4.57 percent over the yield to maturity on A-rated utility bonds. These risk premiums are approximately 100 basis points higher than the 4.96 percent and 3.54 percent risk premiums obtained by Mr. Gorman.

Q. Why are the estimated risk premiums from your regression analysis so much higher than the average risk premiums over the 1986 – 2004 period that Mr. Gorman used?

A. The risk premiums from my regression analysis are higher than the average risk premiums over the period of Mr. Gorman's study because, as my regression analysis demonstrates, risk premiums generally increase when interest rates decline; and interest rates have declined over the period of Mr. Gorman's study.

Q. How did Mr. Gorman estimate the interest rate component of his risk premium method?

	A.	Mr. Gorman estimated the interest rate component of his risk premium method in
1		
2		two ways. For his risk premium over the Treasury bond yield, Mr. Gorman used
3		the 5.5 percent projected yield on 20-year Treasury bonds. For the risk premium
4		over A-rated utility bonds, Mr. Gorman used the average yield on A-rated utility
5		bonds for the three-month period ending June 17, 2005.
6		
7	Q.	**Does Mr. Gorman explain why he used a forecasted interest rate in the case**
8		**of the Treasury bond risk premium, but an historical three-month average**
9		**interest rate in the case of the utility bond risk premium?**
10	A.	No, he does not.
11		
12	Q.	**What interest rates should Mr. Gorman have used in his risk premium**
13		**analysis?**
14	A.	Mr. Gorman should have used forecasted interest rates on both the Treasury and
15		A-rated utility bonds in his risk premium analysis because PEF is using a
16		forecasted test year in this case.
17		
18	Q.	**What cost of equity estimates would Mr. Gorman have obtained from his**
19		**risk premium analysis if he had used forecasted interest rates to measure the**
20		**interest rate component of his risk premium equation?**
21	A.	Using forecasted interest rates of 5.5 percent on long-term Treasury bonds and
22		6.72 percent on A-rated utility bonds for the test year, Mr. Gorman would have
23		obtained estimated risk premiums of 5.54 percent over long-term Treasury bonds

1	and 4.14 percent over A-rated utility bonds. Adding these risk premium estimates
2	to the forecasted interest rates and including a flotation allowance of 25 basis
3	points, Mr. Gorman would have obtained cost of equity estimates of 11.3 percent
4	and 11.1 percent. These results are approximately equal to the cost of equity
5	results I obtained for my proxy companies before my financial risk adjustment,
6	but they exceed Mr. Gorman's risk premium estimates of the cost of equity by 50
7	to 200 basis points.
8	
9	**C. Mr. Gorman's Capital Asset Pricing Model ("CAPM")**
10	Q. **How does Mr. Gorman use the CAPM to estimate the cost of equity for his**
11	**proxy companies?**
12	A. The CAPM requires an estimate of the risk-free rate, the company-specific risk
13	factor or beta, and the expected return on the market portfolio. For his estimate of
14	the risk-free rate, Mr. Gorman used the forecasted yield to maturity on long-term
15	Treasury bonds. For his estimate of the company-specific risk, or beta, Mr.
16	Gorman used the average Value Line beta for his proxy companies. For his
17	estimate of the expected return on the market portfolio, Mr. Gorman used data on
18	the return on the S&P 500 over the period 1926 to 2004 reported in Ibbotson
19	Associates' 2005 Yearbook.
20	
21	Q. **What risk premium values did Mr. Gorman use in his application of the**
22	**CAPM?**

1   A.   As explained on page 29 of his testimony, Mr. Gorman used risk premium values

2   in the range 6.4 percent to 6.6 percent in his CAPM approach.

3

4   **Q.   Do you agree with the values Mr. Gorman used to estimate the risk premium**

5   **on the market portfolio in his CAPM approach?**

6   A.   No. Mr. Gorman relies on data from Ibbotson Associates to estimate the expected

7   risk premium on the market portfolio. Ibbotson Associates strongly recommend

8   the use of an arithmetic mean risk premium equal to 7.2 percent, not 6.4 percent

9   or 6.6 percent. The Ibbotson Associates 7.2 percent recommended risk premium

10   is the difference between the arithmetic average return on the market portfolio

11   over the period 1926 through 2004 and the income return on long-term Treasury

12   bonds.

13

14 **Q.   Why does Ibbotson Associates use the arithmetic average return on long-**

15   **term Treasury bonds rather than the arithmetic average total return on long-**

16   **term Treasury bonds to measure the market risk premium?**

17 A.   Ibbotson Associates explain the use of the income return on long-term Treasury

18   bonds on page 75 of their 2005 yearbook:

> Price changes in bonds due to unanticipated changes in yields
> introduce price risk into the total return. Therefore, the total return
> on the bond series does not represent the riskless rate of return.
> The income return better represents the unbiased estimate of the
> purely riskless rate of return, since an investor can hold a bond to
> maturity and be entitled to the income return with no capital loss.

19

1   **Q.**   **How did Mr. Gorman estimate the risk-free rate component of his CAPM**

2   **approach?**

3   **A.**   Mr. Gorman estimated the risk-free rate component of his CAPM approach using

4   the forecasted 5.5 percent yield to maturity on long-term Treasury bonds at the

5   time of his testimony.

6

7   **Q.**   **How did Mr. Gorman estimate the beta component of his CAPM approach?**

8   **A.**   Mr. Gorman used the average Value Line betas for his proxy groups, which were

9   .80 for the electric proxy group and .81 for the gas proxy group at the time of his

10   testimony.

11

12   **Q.**   **What cost of equity range would Mr. Gorman have obtained from his CAPM**

13   **approach if he had correctly used the Ibbotson Associates' 7.2 percent**

14   **market risk premium ?**

15   **A.**   Mr. Gorman would have obtained a CAPM cost of equity estimate of

16   11.7 percent, 100 basis points higher than the 10.7 percent CAPM cost of equity

17   estimate Mr. Gorman reports in his testimony. This estimate is based on Mr.

18   Gorman's risk-free rate of 5.5 percent, the Ibbotson risk premium of 7.2 percent,

19   the most recent average .83 Value Line beta for the proxy companies, and a

20   flotation allowance of 25 basis points.

21

D. Mr. Gorman's Return on Equity Recommendation

Q. Does Mr. Gorman summarize the results he obtains from his cost of equity analyses?

A. Yes. Mr. Gorman summarizes his cost of equity results in Table 1 on page 30 of his testimony, which I have reproduced below in Table 7:

Table 7
Mr. Gorman's Return on Common Equity Summary

Method	Cost of Equity
DCF	9.2%
Risk Premium	9.9%
CAPM	10.7%

Q. How does Mr. Gorman arrive at his recommended 9.8 percent cost of equity using the results of his DCF, risk premium, and CAPM methods?

A. Mr. Gorman first averaged the results of his risk premium and CAPM approaches, obtaining a value of 10.3 percent. He then took as his recommendation the 9.8 percent midpoint between the range of the DCF result of 9.2 percent and the average of the risk premium and CAPM, 10.3 percent.

Q. What cost of equity would Mr. Gorman have found if he had simply taken the midpoint of the range of results from his studies, 9.2 percent to 10.7 percent?

A. Mr. Gorman would have found a midpoint cost of equity of 10.0 percent, 20 basis points higher than the 9.8 percent value he found by averaging the risk premium and CAPM results into a single number before taking his range.

1

2 Q. **In your rebuttal of Mr. Gorman you have demonstrated that Mr. Gorman's**

3   **cost of equity results are biased downward by incorrect choices he made in**

4   **implementing his three cost of equity methods. Can you summarize what**

5   **cost of equity results you believe Mr. Gorman would have obtained if he had**

6   **correctly implemented his cost of equity models?**

7 A. Yes. The results Mr. Gorman would have obtained if he had correctly

8   implemented his cost of equity models are shown below in Table 8:

9
Table 8
Mr. Gorman's Return on Common Equity
Summary Results Corrected

Method	*Mr. Gorman's Cost of Equity*	*Corrected Cost of Equity Result*
DCF	9.2%	9.6%
Risk Premium (1)	9.1%	11.3%
Risk Premium (2)	10.6%	11.2%
CAPM (1)	10.6%	11.7%
CAPM (2)	10.8%	11.7%
Average	10.1%	11.1%

10

   E. **Response to Mr. Gorman's Comments on**
      Dr. Vander Weide's Testimony

11 Q. **What basic criticisms does Mr. Gorman have of your cost of equity estimate**

12   **for PEF?**

13 A. Mr. Gorman has five basic criticisms of my cost of equity estimate for PEF. First,

14   he argues that I should have excluded the impact of quarterly dividend payments

15   and flotation costs in my DCF analyses. Second, he argues that I should have

16   used current interest rates rather than forecasted future interest rates in my risk

1		premium analyses. Third, he argues that I failed to demonstrate why the proxy
2		companies in my ex post risk premium analysis are comparable in risk to PEF.
3		Fourth, he argues that I should have used the Ibbotson Associates' total return on
4		bond investments rather than their income return on bond investments in my
5		CAPM risk premium calculations. Finally, he argues that I should not have
6		adjusted the cost of equity results of my proxy group to reflect the differences in
7		the financial risk of my proxy companies and the financial risk of PEF.
8		
9	Q.	**Why does Mr. Gorman believe that you should have excluded the impact of**
10		**the quarterly payment of dividends and flotation costs in your DCF**
11		**analyses?**
12	A.	On page 40 of his testimony, Mr. Gorman claims that the quarterly DCF model
13		gives investors an opportunity to earn reinvestment returns twice on their
14		investment. On page 41 of his testimony, he argues that I did not demonstrate that
15		the results of my flotation cost analysis are representative of flotation expenses
16		that PEF has incurred.
17		
18	Q.	**Do you agree with Mr. Gorman's argument regarding the ability of investors**
19		**to earn reinvestment returns twice when the quarterly DCF model is used to**
20		**estimate the cost of equity?**
21	A.	No. The quarterly DCF model only assumes that dividends are reinvested once, at
22		the time they are received. As I explain in both my direct and rebuttal
23		testimonies, the quarterly DCF model is the correct model to estimate the cost of

1		equity for companies that pay dividends quarterly because it correctly represents
2		the quarterly timing of dividend payments to investors. Since my role in this
3		proceeding is to estimate investors' required rate of return on an equity investment
4		in utilities that are similar in risk to PEF, I have used the quarterly DCF model in
5		my DCF analyses.
6		
7	Q.	**Do you agree with Mr. Gorman's argument that PEF has not demonstrated**
8		**that your flotation cost allowance is representative of flotation expenses that**
9		**PEF has incurred?**
10	A.	No. As noted above, in response to Citizens' Third Set of Interrogatories,
11		No. 155, PEF provided information on the flotation costs associated with the
12		issuances of equity made by its parent since the merger. As discussed in my
13		rebuttal of Mr. Rothschild, these data indicate that my five percent flotation cost
14		allowance is conservative.
15		
16	Q.	**Why did you use forecasted interest rates rather than current interest rates**
17		**to estimate the interest rate component of your risk premium analyses?**
18	A.	I used forecasted interest rates for the test year 2006 in my risk premium analyses
19		because PEF's test year in this proceeding is 2006.
20		
21	Q.	**Did Mr. Gorman also use forecasted interest rates when he estimated PEF's**
22		**cost of equity using his risk premium approach?**

1	A.	Yes. In risk premium analysis comparing the expected return on an equity
2		investment in PEF to the interest rate on 20-year Treasury bonds, Mr. Gorman
3		used forecasted interest rates for the test year 2006 rather than current interest
4		rates.
5		
6	Q.	**Mr. Gorman claims on page 43 of his testimony that your forecasted bond**
7		**yield "is not based on an independent source, but rather is based on his own**
8		**projections supporting his inflated return on equity in this proceeding." Is**
9		**Mr. Gorman correct that you did not base your projected bond yield on an**
10		**independent source?**
11	A.	No. I took my projected bond yield from Blue Chip Financial Forecasts, the same
12		source that Mr. Gorman used when he used the forecasted yield to maturity on
13		Treasury bonds.[11]
14		
15	Q.	**Do you agree with Mr. Gorman's contention that your ex post risk premium**
16		**results for the S&P 500 are not relevant in this proceeding?**
17	A.	No. Mr. Gorman fails to note that I provided ex post risk premium results for
18		both the S&P 500 [Exhibit No.___(JVW-5)] and the S&P Utilities
19		[Exhibit No. ___ (JVW-6)] over the period 1937 to 2001. The ex post risk
20		premium for the S&P 500 was 5.3 percent and the ex post risk premium for the

---

[11] My direct testimony at page 52 and in Exhibit Nos.___(JVW-8), (JVW-9), and (JVW-12) clearly references Blue Chip as the source for the forecasted interest rates that I used.

1		S&P Utilities was 4.2 percent over the yield on A-rated utility bonds. Since the
2		S&P utility stocks faced little or no competition over much of the period 1937 to
3		2004, I believe electric utilities today face risks that are somewhere in between the
4		average risk of the S&P Utilities and the S&P 500 over the years 1937 to 2004.
5		Thus, taken in conjunction with my ex post risk premium studies on the S&P
6		Utilities, the risk premium on the S&P 500 is relevant in this proceeding.
7		
8	Q.	**Do you agree with Mr. Gorman's assertion on page 45 of his testimony that**
9		**the "S&P Utility Index includes companies that may not be risk comparable**
10		**to PEF"?**
11	A.	No. The S&P Utilities Index includes companies like PEF that were considered to
12		be regulated public utilities at the time they were included in the S&P Utilities
13		Index.
14		
15	Q.	**What is the difference between the total return on a bond investment and the**
16		**income return on a bond investment?**
17	A.	The total return on a bond investment includes both the interest earned on the
18		bond investment and the capital gain or loss that the investor experiences on the
19		bond when interest rates change. The income return on a bond investment
20		includes only the known interest rate at the time the investment is made.
21		

1   **Q.**   **Why did you use the arithmetic mean _income_ return on long-term Treasury**

2   **bonds rather than the arithmetic mean total return on long-term Treasury**

3   **bonds in your CAPM analyses?**

4   **A.**   I used the arithmetic mean income return on long-term Treasury bonds in my

5   CAPM analyses because the CAPM requires that the return on equity investments

6   be compared to the rate of return on a risk-free investment. Since capital gains

7   and losses are highly uncertain, the income return on Treasury bonds is the best

8   estimate of the risk-free rate in the long-horizon CAPM.

9

10   **Q.**   **How do investors measure the financial risk on an equity investment?**

11   **A.**   As I explained in my rebuttal of Mr. Rothschild, investors measure financial risk

12   by a company's debt to equity ratio, where both debt and equity are measured in

13   terms of their market values.

14

15   **Q.**   **Why did you adjust the cost of equity results for your proxy companies to**

16   **reflect the average difference between the financial risk of your proxy**

17   **companies and the financial risk reflected in PEF's recommended capital**

18   **structure?**

19   **A.**   As explained in my testimony, I adjusted my cost of equity results because they

20   reflect a higher degree of financial risk than PEF's recommended capital structure.

21   In making this assessment, I recognized that investors measure the financial risk

22   of investing in the equity of my proxy companies based on these companies'

23   market value capital structures, while PEF is recommending a book value capital

1		structure. Since investors demand a higher return for bearing greater risk, an
2		adjustment is required to the cost of equity result for the proxy companies.
3		
4	Q.	**Does Mr. Gorman agree with your cost of equity adjustment?**
5	A.	No. On pp. 37 – 38 of his testimony, Mr. Gorman argues that I: (1) only
6		examined financial risk, not business risk; (2) failed to consider off-balance-sheet
7		debt obligations; and (3) failed to compare the book value capital structures of my
8		proxy groups to PEF's book value capital structure.
9		
10	Q.	**Is it necessary to consider PEF's relative business risk as part of your cost of**
11		**equity adjustment?**
12	A.	No. Since, as I demonstrated in my direct testimony, PEF's business risk is
13		similar to the average business risk of my proxy companies, an adjustment for
14		differences in business risk was not required to estimate PEF's cost of equity.
15		
16	Q.	**Did you consider both on-balance sheet and off-balance sheet debt**
17		**obligations for your proxy companies compared to PEF?**
18	A.	I did not explicitly consider a comparison of the off-balance sheet debt obligations
19		of my proxy companies because this information is quite difficult and burdensome
20		to obtain. However, I am aware that PEF has a relatively high proportion of off-
21		balance sheet debt obligations; and on the basis of my reading of information
22		contained in sources such as Value Line, it is highly likely that the percentage of
23		PEF's off-balance sheet debt obligations is higher than my proxy companies' off-

1   balance sheet debt obligations. Thus, I consider my cost of equity adjustment to

2   be conservative.

3

4   Q.   **Do you agree with Mr. Gorman's assertion on page 38 of his testimony that**

5   **you should have compared your proxy companies' book value capital**

6   **structures to PEF's book value capital structure?**

7   A.   No. As I explained in my direct testimony and in my rebuttal of Mr. Rothschild,

8   the financial risk of an equity investment in my proxy companies is based on

9   investors' assessments of the companies' market value capital structures, not their

10   book value capital structures. However, PEF is recommending a book value

11   capital structure in this proceeding that reflects a significantly higher degree of

12   financial risk than is contained in my cost of equity estimates for the proxy

13   companies. Thus, it is appropriate for me to compare the market value capital

14   structures of my proxy companies to the recommended book value capital

15   structure of PEF.

16

17   Q.   **After making numerous adjustments to your cost of equity analyses, Mr.**

18   **Gorman claims on page 38 of his testimony that your cost of equity analyses**

19   **support his recommended cost of equity for PEF. Is this a fair**

20   **characterization of your analyses?**

21   A.   No. As stated in my direct testimony, my analyses support a 12.3 percent cost of

22   equity, not Mr. Gorman's low 9.8 percent cost of equity recommendation.

23

III. **REBUTTAL OF DR. PORTER**

    A.   **Dr. Porter's Qualifications**

Q. **What is the purpose of Dr. Porter's testimony?**

A. Dr. Porter's testimony presents both his estimate of PEF's cost of equity and his rebuttal of PEF's positions on cost of capital and fair rate of return.

Q. **Has Dr. Porter previously provided expert testimony on the cost of capital?**

A. No, in response to PEF's interrogatory, Dr. Porter stated that he has not previously provided cost of capital testimony.

Q. **Is there anything in Dr. Porter's vita that would indicate that Dr. Porter has the requisite background and experience to testify as an expert on PEF's cost of equity?**

A. No. As shown in the vita attached to his testimony, Dr. Porter's background, education, and research interests have been focused on public policy issues rather than financial markets and the cost of capital.

Q. **Is there any evidence on his vita that Dr. Porter has taught courses in corporate finance, investments, or capital markets?**

A. No. There is no evidence that Dr. Porter has taught courses in these subject areas.

Q. **Does Dr. Porter use standard cost of equity models such as the DCF, risk premium, and CAPM to estimate PEF's cost of equity in this proceeding?**

1	A.	No. Dr. Porter testifies on pp. 2 – 9 of his testimony that standard cost of equity
2		models such as these provide highly inaccurate results and are "subject to
3		manipulation by anyone with a bias." (Porter at p. 3.)
4		
5	Q.	**Are Dr. Porter's views regarding the DCF, risk premium, and CAPM**
6		**methods shared by the investment community?**
7	A.	No, they are not. Indeed, in the financial community, the DCF, risk premium, and
8		CAPM are the most frequently used and most accepted methods for estimating the
9		cost of capital.
10		
11		**B. Dr. Porter's Cost of Equity Estimate**
12	Q.	**What is Dr. Porter's estimate of PEF's cost of equity?**
13	A.	Dr. Porter estimates a 9.03 percent cost of equity for PEF.
14		
15	Q.	**How did Dr. Porter arrive at his 9.03 percent estimate of PEF's cost of**
16		**equity?**
17	A.	Dr. Porter simply adds the 5.66 percent geometric mean risk premium on large
18		stocks compared to the return on short-term Treasury securities for the 50-year
19		period 1955 to 2004 to the 3.37 percent "July 1, 2005, six-month U.S. Treasury
20		bond yield."[12] (Porter at p. 13.)

---

[12] Investors would normally refer to six-month Treasury instruments as "Treasury bills," not Treasury bonds.

1

2   Q.   **What is Dr. Porter's source for the data he uses?**

3   A.   Dr. Porter uses a subset of the data published in the Ibbotson Associates' 2005

4   Yearbook.

5

6   Q.   **What period of time does the Ibbotson Associates' data base cover?**

7   A.   The Ibbotson Associates' data base covers the 79-year period from 1926 through

8   2004.

9

10 Q.   **Why does the Ibbotson Associates' data base cover the period from 1926**

11   **through 2004?**

12 A.   As discussed in my rebuttal of Mr. Rothschild, the Ibbotson Associates' data base

13   covers the period 1926 through the present because "1926 was approximately

14   when quality financial data became available." (Ibbotson 2005 Yearbook

15   Valuation Edition, p. 78.)

16

17 Q.   **Does Dr. Porter explain why he chose to use only the Ibbotson Associates'**

18   **data for the last 50 years, *i.e.*, 1955 through 2004, rather than data for the**

19   **entire period 1926 through 2004?**

20 A.   Yes. On page 13 of his testimony, Dr. Porter states,

> I chose 50 years (rather than the more extended data set beginning
> in 1926 from which this data was drawn) to avoid distortions
> caused by the extraordinary events of the Great Depression and
> World War II.

1

2   Q.   **Does Ibbotson Associates recommend that analysts only look at return data**

3   **for the last 50 years, like Dr. Porter, to form their expectations for the**

4   **future?**

5   A.   No. Ibbotson Associates strongly recommend using data for the entire period

6   1926 through the present.

7

8   Q.   **Why does Ibbotson Associates recommend using return data for the entire**

9   **period 1926 through the present rather than return data for shorter periods**

10 **such as 1955 through the present, as Dr. Porter has done?**

11 A.   On pp. 80 - 81 of the 2005 Valuation edition, Ibbotson Associates state:

> Some analysts estimate the expected equity risk premium using a
> shorter, more recent time period on the basis that recent events are
> more likely to be repeated in the near future; furthermore, they
> believe that the 1920s, 1930s, and 1940s contain too many unusual
> events. This view is suspect because all periods contain "unusual"
> events. Some of the most unusual events of this century took place
> quite recently, including the inflation of the late 1970s and the
> early 1980s, the October 1987 stock market crash, the collapse of
> the high-yield bond market, the major contraction and
> consolidation of the thrift industry, the collapse of the Soviet
> Union, and the development of the European Economic
> Community—all these happened approximately in the last 30
> years.
>
> …Without an appreciation of the 1920s and 1930s, no one would
> believe that such events could happen. The 79-year period starting
> with 1925 is representative of what can happen; it includes high
> and low returns, volatile and quiet markets, war and peace,
> inflation and deflation, and prosperity and depression. Restricting
> attention to a shorter historical period underestimates the amount
> of change that could occur in a long future period. Finally, because
> historical event-types (not specific events) tend to repeat
> themselves, long-run capital market return studies can reveal a

great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this.

1

2 Q. **On page 4 of his testimony, Dr. Porter claims that he does not use cost of**

3 **equity models such as the DCF and CAPM because it is possible for users of**

4 **these models "to come to virtually any finding one might wish." Could Dr.**

5 **Porter "come to virtually any finding" he might wish by choosing a shorter**

6 **period of return data than Ibbotson Associates presents and recommends**

7 **using?**

8 A. Yes. Dr. Porter would have come to a significantly higher conclusion regarding

9 PEF's cost of equity if he had chosen to rely on the Ibbotson Associates' entire

10 data base rather than a shorter period that he chose arbitrarily.

11

12 Q. **How does Dr. Porter's choice of a 50-year time period, rather than a 79-year**

13 **time period, affect his estimate of the investors' required risk premium and**

14 **PEF's cost of equity?**

15 A. As shown below in Table 9, Dr. Porter's choice of a 50-year time period, rather

16 than the entire 79-year time period available in the Ibbotson data base, reduces his

17 estimate of the geometric mean risk premium by 100 basis points; and reference to

18 this shorter time period reduces the arithmetic mean risk premium by 170 basis

19 points.

Table 9
Historical Arithmetic and Geometric Risk Premium for
Time Periods of Different Lengths

Period Length (Years)	Beginning Year through 2004	Short-Horizon Arithmetic RP	Short-Horizon Geometric RP
79	1926	8.6%	6.7%
70	1935	9.2%	7.6%
60	1945	8.7%	7.4%
50	1955	6.9%	5.7%
40	1965	5.8%	4.5%
30	1975	8.7%	7.6%
20	1985	9.7%	8.4%
15	1990	8.2%	6.8%

2   Q.   **In addition to his choice of time period, does Dr. Porter make any other**

3   **choices that bias his results downward?**

4   A.   Yes. Dr. Porter chose to report geometric mean returns rather than the arithmetic

5   mean returns that Ibbotson Associates recommend for the purpose of estimating

6   the cost of equity. My direct and rebuttal testimony have previously summarized

7   the reasons why it is necessary to use the arithmetic mean return when estimating

8   the cost of equity.

9

10   Q.   **On page 10 of his testimony, Dr. Porter claims that size adjustments are not**

11   **needed for PEF because PEF is a large cap stock. Is Dr. Porter correct in his**

12   **assessment of PEF's market capitalization?**

13   A.   No. Dr. Porter fails to recognize that PEF does not have a market capitalization

14   because it is a wholly-owned subsidiary of Progress Energy. Furthermore, since

15   PEF's book equity is small in comparison to the equity values of companies in the

1		S&P 500, a size adjustment would be required for PEF if it were a market-traded
2		entity.
3		
4	Q.	**Does Dr. Porter attempt to corroborate his low cost of equity estimate for**
5		**PEF?**
6	A.	Yes. Dr. Porter states on page 15 of his testimony:

> Compustat publishes market value to book ratios for all publicly traded companies. For the parent company, Progress Energy, this value is PV/RB = 1.37. If this value hold for PEF it means the present regulated return on equity is 37 percent higher than that needed to reward equity investors for their contributions to the historic cost of the firm. The present regulated return of 12.0% should be reduced to 8.8%.

7		
8	Q.	**What is the basic assumption of Dr. Porter's market-to-book analysis?**
9	A.	Dr. Porter's market-to-book analysis is based on his underlying assumption that a
10		market-to-book ratio significantly above 1.0 is evidence that a company is earning
11		more than its cost of equity, and a market-to-book ratio below 1.0 indicates that a
12		company is earning less than its cost of equity.
13		
14	Q.	**Do you agree with Dr. Porter's assumption that a market-to-book ratio in**
15		**excess of 1.0 indicates that a company is earning more than its cost of equity?**
16	A.	No. There are many examples of companies with market-to-book ratios
17		significantly in excess of 1.0 that are clearly earning less then their costs of equity.
18		

72

1   Q. **Is it highly unusual for a company that is clearly earning less than its cost of**

2   **common equity capital to have a market price exceeding the book value of its**

3   **shares?**

4   A. No. It is common for companies whose accounting rates of return on book equity

5   are less than their costs of common equity capital to have market prices exceeding

6   the book values of their shares. Indeed, as I explain below, one would expect

7   companies to have market-to-book ratios significantly in excess of 1.0, even if the

8   company is earning less than its cost of capital, simply as a result of the

9   accounting rules for determining book value.

10

11 Q. **Do you have any evidence that firms with market to book ratios greater than**

12   **1.0 may not be earning returns in excess of their costs of equity?**

13 A. Yes. Companies with negative rates of return on equity are clearly not earning

14   more than their costs of equity, because a company's cost of equity must be

15   positive. Yet the Value Line universe of firms has 84 companies whose reported

16   rates of return on equity are negative and whose market-to-book ratios are greater

17   than 1.0 (see Vander Weide Rebuttal Exhibit No. ___ (JVW-15). The average

18   market-to-book ratio for these companies is 3.38, and their average rate of return

19   on book equity is *negative* 10.29%. Clearly, a company whose rate of return on

20   common equity is negative cannot be earning more than its cost of equity capital.

21   In addition, as shown on Vander Weide Rebuttal Exhibit No. ___ (JVW-

22   16), the Value Line universe of firms also has 175 companies that have market-to-

23   book ratios above 1.0 and rates of return on book equity in the range 0 percent to

6 percent (the approximate yield on Baa-rated utility bonds). The average earned rate of return on equity for these companies is 3.57 percent, and the average market-to-book ratio, 2.06. Clearly these firms have market-to-book ratios greater than 1.0 even though they are earning significantly less than the return investors can earn on a less risky bond investment and therefore less than their costs of equity.

Q. **Are there any electric and gas companies that have market-to-book ratios greater than 1.0 but that are clearly earning less than their cost of equity?**

A. Yes. Electric and gas companies followed by Value Line that have market-to-book ratios greater than 1.0 but that are clearly earning less than their cost of equity are shown in the following table:

Table 10
Electric and Gas Companies in Value Line that
Have Market-to-Book Ratios Exceeding 1.0 and
Earned Rates of Return on Book Equity that
Are Less than Their Costs of Equity

Company Name	Industry	Return on Common Equity	Stock Price	Book Value per share	Market to Book
Allegheny Energy	UTILEAST	4.99	25.73	9.85	2.61
Avista Corp.	UTILWEST	4.72	18.52	15.54	1.19
Edison Int'l	UTILWEST	3.53	40.16	18.57	2.16
Empire Dist. Elec.	UTILCENT	5.76	23.89	14.76	1.62
Northeast Utilities	UTILEAST	5.07	20.64	17.80	1.16
TECO Energy	UTILEAST	(31.49)	19.12	6.84	2.80
SEMCO Energy	GASDISTR	2.52	6.00	5.79	1.04

1		Contrary to Dr. Porter's assumption, these companies are clearly earning
2		significantly less than their costs of equity, even though they have market-to-book
3		ratios exceeding 1.0.
4		
5	Q.	**How many companies are there in the Value Line universe of companies**
6		**which you have examined?**
7	A.	At July 2005, Value Line reports a market-to-book ratio for 1,591 companies.
8		
9	Q.	**Out of these 1,591 companies, how many have market-to-book ratios of less**
10		**than 1?**
11	A.	Out of the 1,591 companies, only 31 have market-to-book ratios of less than 1.0.
12		
13	Q.	**In a competitive economy such as ours, is it likely that only 31 out of 1,591**
14		**companies would be earning less than their costs of equity, while the remaining**
15		**companies are earning in excess of their costs of equity?**
16	A.	No. In a competitive economy such as ours, one would expect the average
17		company to earn exactly its cost of equity. Thus, roughly half of the companies
18		would be earning more than their costs of equity, and half earning less than their
19		costs of equity.
20		
21	Q.	**Why do the vast majority of companies in the Value Line universe have**
22		**market-to-book ratios greater than 1.0?**

1	A.	There are at least two reasons why the vast majority of companies in the Value
2		Line universe have market-to-book ratios greater than 1.0. First, accounting rules
3		require that, for book value purposes, most assets be measured in terms of the
4		historical cost of these assets. In a world of positive inflation, the current market
5		value of many assets is likely to exceed book value. Land purchased in 1920, for
6		example, is likely to be worth considerably more today than the value reported on
7		the firm's balance sheet. Second, accounting rules require companies to write off
8		the value of their assets when the market value of the asset sinks below book
9		value. However, accounting rules do not allow companies to increase the book
10		value of assets when the market value of these assets exceeds book value.
11		Because of the asymmetrical nature of accounting rules, the value of assets
12		reported on a company's books tends to be less than its market value.
13		
14	Q.	**What conclusions do you draw from these long lists of companies that have**
15		**negative or low rates of return on book equity and market-to-book ratios in**
16		**excess of 1.0?**
17	A.	I conclude that Dr. Porter's market-to-book analysis provides no support
18		whatsoever for his recommended cost of equity in this proceeding.
19		
20	Q.	**Does Dr. Porter make any other attempts to corroborate his low cost of**
21		**equity estimate for PEF?**
22	A.	Yes. On pp. 16 – 17 of his testimony Dr. Porter claims that a regulated utility
23		such as PEF "faces little of the risk that proprietary firms face."

1

2   Q.   **Do you agree with Dr. Porter's assessment that regulated utilities face little**

3   **risk?**

4   A.   No. As I explain on pp. 15 - 17 in my direct testimony, regulated utilities face

5   many risks similar to those faced by non-regulated companies. However, in

6   addition, regulated utilities face regulatory risks that are not faced by non-

7   regulated companies. Dr. Porter is apparently unaware that companies such as

8   Pacific Gas & Electric Company went bankrupt specifically because of actions

9   taken by the California Public Utilities Commission.

10

11   C.   **Response to Dr. Porter's Comments on**
12   **Dr. Vander Weide's Testimony**

13 Q.   **What is Dr. Porter's basic criticism of your testimony in this proceeding?**

14 A.   Dr. Porter's basic criticism is that I have consistently chosen estimates of

15   parameters in my models "that favor a high estimate of the cost of capital relative

16   to a more prudent choice." (Porter at page 18.)

17

18 Q.   **Does Dr. Porter attempt to provide evidence that you have "consistently**

19   **chosen" parameters "that favor a high estimate of the cost of capital"?**

20 A.   Yes. First, Dr. Porter claims on page 19 of his testimony that my decision to

21   eliminate companies from my proxy group that decreased dividends in the last

22   two years "will greatly overstate the expected growth rate of earnings for the

23   electric utility industry." Second, Dr. Porter claims on page 20 of his testimony

1   that the 0.81 beta I used in my CAPM "is significantly higher than the beta for all

2   utilities." Third, he claims on page 20 of his testimony that my use of arithmetic

3   mean data to estimate the risk premium "adds 200 basis points to the risk

4   premium." Fourth, Dr. Porter claims that my use of forecasted interest rates

5   biases my results upward.

6

7 Q. **Did your decision to eliminate companies that decreased dividends in the last**

8   **two years cause you to overstate the expected growth in earnings for the**

9   **electric utility industry?**

10 A. No. My decision to eliminate companies that decreased dividends very likely

11   caused me to understate growth in the electric utility industry. As I explained in

12   my rebuttal of Mr. Rothschild, companies decrease their dividends so that they

13   can retain a higher percentage of their earnings in their business. When

14   companies retain a higher percentage of earnings in their business, their growth

15   rates will generally increase.

16

17 Q. **Does Dr. Porter agree with the 0.81 beta you used in your CAPM analysis?**

18 A. No. On page 20 of his testimony, Dr. Porter states:

       In Dr. Vander Weide's application of the CAPM model beta is
       estimated as the average beta for the proxy group. This value is
       0.81. This is significantly higher than the beta for all utilities.

19

20 Q. **Do you agree with Dr. Porter's claim that the 0.81 beta you used in your**

21   **CAPM analysis is "significantly higher than the beta for all utilities"?**

1   A.   No. My 0.81 beta was the average beta for my proxy companies at the time of my

2   testimony, as reported by Value Line. Value Line's current beta for these

3   companies has increased to 0.83.

4

5   **Q.**   **Do you agree with Dr. Porter's criticism that your use of arithmetic mean**

6   **data rather than geometric mean data biased your results upward?**

7   A.   No. As I have discussed at length in my direct and rebuttal testimony, the

8   arithmetic mean data is the correct data for use in estimating the cost of equity.

9   As Ibbotson Associates explain clearly in their yearbooks, geometric mean data

10   will underestimate future expected returns.

11

12 **Q.**   **Why did you use forecasted interest rates in your cost of equity studies?**

13 A.   I used forecasted interest rates because PEF is using a 2006 test year in this

14   proceeding. My forecasted interest rates apply to the year 2006.

15

16   **IV. REBUTTAL OF MR. STEWART**

17 **Q.**   **Is Mr. Stewart presenting himself as a cost of capital expert in this**

18   **proceeding?**

19 A.   No. On page 4 of his testimony, Mr. Stewart states:

> I do not consider myself to be an expert on either cost of capital or
> return on equity matters, and I am not offering an opinion on what
> the current required ROE is.

20

1 Q. **Does Mr. Stewart nonetheless present evidence on what he considers to be**

2 **the maximum allowed ROE in this proceeding?**

3 A. Yes, he does.

4

5 Q. **What evidence does Mr. Stewart present?**

6 A. Mr. Stewart presents evidence on what he believes the Commission would allow

7 PEF based on previous ROE decisions and the statistical relationship between

8 average allowed rates of return on equity and average public utility bond yields

9 since 1980.

10

11 Q. **What relationship does Mr. Stewart find between average allowed rates of**

12 **return on equity and average public utility bond yields?**

13 A. Mr. Stewart finds that the allowed rate of return on equity can be predicted from

14 the equation:

15
$$AROEE = 7.0766 + 0.578 \times (APUBY)$$

Where:

AROEE	=	allowed rate of return on equity
7.0766, 0.578	=	regression coefficients
APUBY	=	average utility bond yield

16

17 Q. **What forecast allowed rate of return on equity does Mr. Stewart obtain from**

18 **his regression analysis?**

19 A. Mr. Stewart obtains a forecast allowed rate of return on equity of 10.4 percent

20 based on an estimated bond yield of 5.8 percent.

21

1   Q.   **Do you agree with Mr. Stewart's cost of equity analysis?**

2   A.   No. First, Mr. Stewart's analysis is not really a cost of equity analysis. Rather, it

3   is a prediction of what the Commission might authorize based on the relationship

4   between previous authorized rates of return on equity and average public utility

5   bond yields over the last 25 years. Second, the Commission is obligated to

6   determine the allowed rate of return on equity in this proceeding based on the

7   evidence presented in this proceeding. The evidence presented in my testimony

8   indicates that the allowed rate of return should be significantly higher than the

9   number produced from Mr. Stewart's regression analysis. Third, to obtain an

10   authorized rate of return for a 2006 test year, Mr. Stewart should have used the

11   forecasted interest rate for that time period.

12

13   Q.   **What cost of equity would Mr. Stewart have obtained if he had used a**

14   **forecasted interest rate to determine the predicted allowed rate of return?**

15   A.   Mr. Stewart would have obtained a predicted allowed rate of return equal to

16   11.04 percent. This result is similar to the result I present in my rebuttal of Mr.

17   Gorman's risk premium analysis, which was also based on the relationship

18   between allowed rates of return and interest rates.

19

20   Q.   **Does this conclude your rebuttal testimony?**

21   A.   Yes, it does.

Vander Weide Rebuttal Exhibit No. ___ (JVW-14)
Current Value Line Betas for Proxy Electric Companies

Company Name	Beta	Market Cap $ (bil)
Alliant Energy	0.85	3.2
Ameren Corp.	0.75	10.8
Cinergy Corp.	0.85	8.7
Consol. Edison	0.60	10.9
Constellation Energy	0.90	9.3
Dominion Resources	0.90	24.0
DTE Energy	0.70	8.2
Duke Energy	1.15	26.0
Energy East Corp.	0.85	4.1
Entergy Corp.	0.75	16.0
FirstEnergy Corp.	0.75	14.0
FPL Group	0.75	15.8
G't Plains Energy	0.85	2.4
Hawaiian Elec.	0.65	2.0
MDU Resources	0.85	3.3
Northeast Utilities	0.80	2.5
NSTAR	0.70	3.1
OGE Energy	0.70	2.6
Pepco Holdings	0.90	4.2
Pinnacle West Capital	0.85	3.9
PPL Corp.	0.95	10.7
Progress Energy	0.85	10.8
Puget Energy Inc.	0.75	2.2
SCANA Corp.	0.75	4.7
Sempra Energy	0.95	9.4
Southern Co.	0.65	25.1
Vectren Corp.	0.80	2.2
Wisconsin Energy	0.70	4.3
WPS Resources	0.75	2.1
Xcel Energy Inc.	0.80	6.9
AGL Resources	0.85	2.7
Atmos Energy	0.70	2.3
Equitable Resources	0.80	4.0
KeySpan Corp.	0.80	6.4
New Jersey Resources	0.75	1.2
NICOR Inc.	1.10	1.6
Northwest Nat. Gas	0.70	1.0

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ONEOK Inc.	*0.95*	*3.2*
Peoples Energy	0.80	1.6
Piedmont Natural Gas	0.75	1.8
Questar Corp.	0.85	5.3
Southwest Gas	0.75	1.0
WGL Holdings Inc.	0.75	1.6
Average	**0.83**	

Source of data: The Value Line Investment Survey
East Electrics   3-Jun-05
Central Electric 1-Jul-05
West Electric   13-May-2005

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**Vander Weide Rebuttal Exhibit No. ___ (JVW-15)
Companies with Negative Earned Rates of
Return on Equity and Market-to-Book Ratios
Greater than 1.0**

Company	Return on Equity	Stock Price	Book Value per Share	Market-to-Book
Abgenix Inc.	(73.69)	9.27	2.59	3.58
Active Power	(39.07)	3.40	1.36	2.50
Ahold ADR	(0.84)	8.07	3.91	2.06
Allegheny Technologies	(5.44)	22.24	4.45	5.00
Alloy Inc.	(48.44)	5.17	4.47	1.16
Amer. Superconductor	(23.15)	8.82	4.18	2.11
Amer. Tower 'A'	(16.26)	21.46	6.41	3.35
Amkor Technology	(10.15)	4.62	2.10	2.20
ArthroCare Corp.	(14.94)	34.68	7.34	4.72
Astec Inds.	(15.88)	21.99	8.49	2.59
Atmel Corp.	(1.07)	2.51	2.33	1.08
Bombardier Inc. 'B'	(5.36)	2.78	1.35	2.06
Bowater Inc.	(4.55)	32.24	26.31	1.23
Cable & Wireless ADR	(13.58)	7.45	4.01	1.86
Capstone Turbine	(41.35)	1.49	1.37	1.09
Ciena Corp.	(31.94)	2.19	2.02	1.08
Cirrus Logic	(4.06)	5.35	2.39	2.24
Concurrent Computer	(20.56)	2.07	0.73	2.84
Cont'l Airlines	(95.86)	13.40	4.00	3.35
Crown Castle Int'l	(18.42)	20.86	8.18	2.55
CryoLife Inc.	(37.75)	7.60	2.12	3.58
Diamond Offshore	(0.44)	54.45	12.65	4.30
DIRECTV Group (The)	(3.13)	15.44	5.42	2.85
Domtar Inc.	(2.16)	7.61	7.27	1.05
Dreyer's Grand	(3.27)	81.44	26.29	3.10
Dynegy Inc. 'A'	(2.18)	4.88	3.86	1.26
Eclipsys Corp.	(26.41)	13.59	2.60	5.23
EMCORE Corp.	(45.92)	4.11	1.83	2.25
Energy Conversion	(63.36)	23.55	3.22	7.31
Enzo Biochem	(5.98)	17.20	3.25	5.29
Extreme Networks	(0.76)	4.11	1.91	2.15
Federal Signal	(3.07)	15.73	8.56	1.84
Fleetwood Enterprises	(2.94)	10.37	4.73	2.19
FuelCell Energy	(35.82)	10.60	4.21	2.52
Gateway Inc.	(45.52)	3.40	0.65	5.23
Gaylord Entertainm.	(4.57)	45.96	21.78	2.11
GenCorp Inc.	(60.99)	18.86	3.18	5.93
Goodyear Tire	(68.54)	14.87	0.41	36.27
G't Atlantic & Pacific	(49.27)	28.98	6.03	4.81
Human Genome	(35.04)	12.10	5.03	2.41

Company	Return on Equity	Stock Price	Book Value per Share	Market-to-Book
Identix Inc.	(11.63)	5.48	2.30	2.38
IDT Corp.	(5.90)	12.91	10.30	1.25
Illumina Inc.	(13.13)	12.00	1.90	6.32
Instinet Group	(5.37)	5.23	2.93	1.78
Interpublic Group	(24.76)	12.05	5.34	2.26
Interwoven Inc.	(5.29)	7.09	7.02	1.01
JDS Uniphase	(3.27)	1.49	1.09	1.36
LeapFrog Enterpr. 'A'	(1.50)	11.65	7.12	1.64
Martha Stewart	(31.48)	29.42	3.70	7.95
Material Sciences	(13.09)	15.36	7.93	1.94
Millennium Pharmac.	(11.18)	9.51	7.42	1.28
Myriad Genetics	(23.44)	16.65	5.66	2.94
Nektar Therapeutics	(21.80)	17.76	5.59	3.18
Neose Technologies	(68.42)	3.44	2.46	1.40
NetIQ Corp.	(43.34)	11.16	8.00	1.40
Neurocrine Biosci.	(11.62)	42.78	10.78	3.97
Nortel Networks	(2.50)	2.53	0.93	2.72
Nuance Communic.	(13.00)	4.44	1.36	3.26
OM Group	(16.05)	22.88	12.31	1.86
On Assignment	(11.89)	4.99	2.95	1.69
Openwave Systems	(17.25)	16.97	2.68	6.33
Pathmark Stores	(8.43)	9.29	2.17	4.28
Pinnacle Systems	(4.13)	5.65	3.06	1.85
Power-One	(4.03)	6.18	3.20	1.93
Protein Design	(12.90)	20.45	4.30	4.76
Quanta Services	(1.38)	8.89	5.72	1.55
RealNetworks Inc.	(6.03)	4.87	2.23	2.18
Regeneron Pharmac.	(35.50)	9.01	3.27	2.76
Schering-Plough	(0.27)	18.49	4.15	4.46
Smurfit-Stone Cont.	(0.13)	10.01	8.55	1.17
Standard Motor Prod.	(4.29)	13.22	10.68	1.24
Standard Register	(2.08)	15.92	6.75	2.36
Steelcase Inc 'A'	(2.20)	13.78	8.15	1.69
Sun Microsystems	(12.28)	3.58	1.93	1.85
TECO Energy	(31.49)	19.12	6.84	2.80
Trinity Inds.	(1.25)	31.69	19.97	1.59
TriQuint Semic.	(6.58)	3.41	3.18	1.07
ValueVision Media	(33.14)	11.50	4.69	2.45
Visteon Corp.	(57.98)	6.54	3.13	2.09
Vitesse Semiconductor	(8.93)	2.20	1.74	1.26
webMethods Inc.	(8.61)	5.65	3.84	1.47
Wellman Inc.	(8.32)	9.97	8.97	1.11
Wild Oats Markets	(7.66)	11.61	3.55	3.27
WMS Industries	(0.37)	34.10	7.89	4.32
Average	(19.00)			3.12

Source of data: The Value Line Investment Analyzer July 2005.

Vander Weide Rebuttal Exhibit No. ___ (JVW-16)
Companies with Earned Returns on Equity in
the Range 0 to 6% and Market-to-Book Ratios
Exceeding 1.0

Company Name	Return on Common Equity	Stock Price	Book Value per share	Market to Book
AAR Corp.	1.49	15.22	9.36	1.63
Advanced Energy	3.58	7.79	4.43	1.76
Advanced Micro Dev.	4.68	18.66	7.82	2.39
Agilysys Inc.	2.12	16.66	9.62	1.73
Alaska Air Group	1.33	29.56	24.51	1.21
Allegheny Energy	4.99	25.73	9.85	2.61
Allied Waste	5.91	7.92	7.16	1.11
Allscripts Healthcare	3.95	16.77	1.96	8.56
Amer. Italian Pasta	4.13	20.15	18.91	1.07
Analogic Corp.	2.27	49.27	26.84	1.84
Andrew Corp.	2.12	12.38	9.42	1.31
Angelica Corp.	5.16	24.05	16.69	1.44
Apple Computer	5.43	37.30	6.48	5.76
Applied Materials	2.76	16.31	4.81	3.39
Arch Chemicals	4.80	25.00	15.25	1.64
Arch Coal	4.89	56.15	15.06	3.73
Avista Corp.	4.72	18.52	15.54	1.19
Avnet Inc.	3.73	24.37	16.21	1.50
AVX Corp.	3.67	12.38	8.32	1.49
Barrick Gold	2.86	24.50	6.68	3.67
Bassett Furniture	3.77	19.68	18.85	1.04
BearingPoint	3.47	7.45	6.21	1.20
Belden CDT	4.30	20.58	17.16	1.20
Big Lots Inc.	2.82	11.30	9.54	1.18
Biogen Idec Inc.	0.36	34.48	20.38	1.69
Blair Corp.	5.26	39.30	34.34	1.14
BMC Software	4.98	18.20	5.44	3.35
Brocade Communic.	4.31	3.91	1.69	2.31
Calgon Carbon	3.50	9.69	4.29	2.26
Callaway Golf	1.26	15.46	8.48	1.82
Capitol Fed. Fin'l	4.84	34.90	11.25	3.10
Caraustar Inds.	3.93	10.59	7.56	1.40
Casella Waste Sys.	5.63	12.47	5.53	2.25
CDI Corp.	2.81	22.20	13.56	1.64
Celestica Inc.	3.87	16.77	11.21	1.50
Central Parking	4.59	13.98	11.89	1.18
CEVA Inc.	2.03	5.66	5.53	1.02
CheckFree Corp.	0.81	34.01	14.41	2.36
Chemed Corp.	5.77	42.55	13.14	3.24

Company Name	Return on Common Equity	Stock Price	Book Value per share	Market to Book
Chiron Corp.	4.88	34.92	13.57	2.57
Circuit City Stores	2.87	17.63	11.09	1.59
Coherent Inc.	2.97	36.22	19.37	1.87
Columbus McKinnon	1.89	10.99	4.33	2.54
Comcast Corp.	2.34	29.25	18.73	1.56
Computer Associates	1.63	27.76	8.10	3.43
Compuware Corp.	5.04	7.35	3.90	1.88
Comverse Technology	3.19	23.68	9.02	2.63
Cooper Tire & Rubber	2.34	18.53	16.45	1.13
CP Ships Ltd.	5.39	15.47	15.19	1.02
Deutsche Telekom ADR	1.45	18.25	13.61	1.34
DoubleClick Inc.	5.12	8.41	4.60	1.83
Echelon Corp.	2.49	6.84	5.13	1.33
Edison Int'l	3.53	40.16	18.57	2.16
El Paso Corp.	1.85	11.85	7.49	1.58
Electro Scientific	3.63	18.02	11.60	1.55
Electronic Data Sys.	2.12	19.30	14.44	1.34
Empire Dist. Elec.	5.76	23.89	14.76	1.62
ENSCO Int'l	4.71	37.19	14.44	2.58
Enterprise Products	5.03	26.98	14.45	1.87
Entrust Inc.	1.41	5.30	1.22	4.34
Enzon Pharmac.	2.18	7.31	6.66	1.10
Fairchild Semic.	4.81	15.43	10.28	1.50
Fairmont Hotels	3.12	34.90	21.60	1.62
FEI Company	4.36	23.32	11.36	2.05
Ferro Corp.	5.73	19.98	10.98	1.82
FSI Int'l	1.36	3.95	3.69	1.07
Genzyme Corp.	3.27	59.53	19.13	3.11
Glatfelter	3.17	12.28	9.56	1.28
Global Inds.	1.44	9.05	4.01	2.26
GlobalSantaFe Corp.	1.35	41.34	18.93	2.18
Hain Celestial Group	5.43	20.06	13.65	1.47
Helmerich & Payne	3.95	49.14	18.23	2.70
Hooper Holmes	4.69	4.19	3.50	1.20
IAC/InterActiveCorp	0.95	24.08	19.21	1.25
Informatica Corp.	4.20	9.12	2.27	4.02
Input/Output	0.73	6.54	4.00	1.64
Insituform Techn.	0.20	16.60	10.81	1.54
Integrated Device	4.57	10.26	7.42	1.38
Interface Inc. 'A'	3.31	8.10	3.70	2.19
Internet Security	4.05	20.77	10.02	2.07
Intersil Corp. 'A'	3.55	19.37	16.97	1.14
Invitrogen Corp.	4.64	84.50	34.00	2.49
Juniper Networks	3.98	24.85	11.09	2.24
Kadant Inc.	5.58	21.30	15.02	1.42

Company Name	Return on Common Equity	Stock Price	Book Value per share	Market to Book
Kaman Corp.	4.26	18.51	12.48	1.48
Kansas City South'n	2.28	20.61	16.09	1.28
Kelly Services 'A'	3.38	28.87	18.43	1.57
Kimball Int'l 'B'	4.99	13.75	11.31	1.22
Lamar Advertising	0.73	42.89	16.63	2.58
Learning Tree Int'l	0.83	12.09	4.03	3.00
Liberty Media 'A'	0.65	10.17	8.78	1.16
Longs Drug Stores	5.02	43.48	19.43	2.24
Longview Fibre	3.13	20.37	8.69	2.34
LSI Logic	2.79	9.51	4.18	2.28
Lyondell Chemical	4.41	26.36	10.97	2.40
Marsh & McLennan	3.48	27.82	9.02	3.08
Marvell Technology	5.76	39.87	9.00	4.43
Massey Energy	2.53	39.22	10.16	3.86
Matsushita Elec. ADR	1.22	15.22	14.31	1.06
McDATA Corp. 'A'	5.79	4.21	3.60	1.17
MeadWestvaco	3.38	27.49	21.17	1.30
MedImmune Inc.	4.89	26.94	6.74	4.00
Micron Technology	2.52	10.78	9.18	1.17
Moldflow Corp.	4.50	13.00	6.55	1.98
Molecular Devices	5.73	.20.37	12.28	1.66
MPS Group	4.23	9.66	8.09	1.19
MSC.Software	0.00	13.51	8.14	1.66
National Oilwell Varco	5.17	47.31	22.54	2.10
NEC Corp. ADR	5.77	5.13	3.55	1.45
Newport Corp.	2.56	13.53	9.66	1.40
Northeast Utilities	5.07	20.64	17.80	1.16
Orbotech Ltd.	2.71	21.59	9.12	2.37
palmOne Inc.	1.62	29.02	10.45	2.78
PAREXEL Int'l	5.58	19.44	9.30	2.09
Payless ShoeSource	5.89	19.94	8.85	2.25
Penford Corp.	3.86	15.95	10.85	1.47
Playboy Enterprises 'B'	5.65	13.82	5.91	2.34
Plexus Corp.	3.84	13.87	8.18	1.70
Polycom Inc.	3.58	14.17	9.73	1.46
Potlatch Corp.	2.28	53.42	23.22	2.30
Powerwave Techn.	1.87	10.20	5.19	1.97
Quantum Corporation	4.19	2.99	1.69	1.77
Red Hat Inc.	3.42	14.39	2.25	6.40
Regal-Beloit	5.65	28.57	18.54	1.54
Research in Motion Ltd	3.02	72.31	9.29	7.78
Robbins & Myers	3.22	21.52	20.87	1.03
Rowan Cos.	1.35	31.10	13.12	2.37
Saks Inc.	3.92	19.39	16.37	1.18
SeaChange Int'l	4.87	7.23	5.86	1.23

Company Name	Return on Common Equity	Stock Price	Book Value per share	Market to Book
SEMCO Energy	2.52	6.00	5.79	1.04
Sequa Corp. 'A'	1.62	66.05	62.08	1.06
Shaw Commun. 'B'	3.14	25.07	7.78	3.22
Shaw Group	2.81	22.50	13.87	1.62
Siebel Systems	5.19	8.75	4.41	1.98
Sinclair Broadcast	1.69	9.15	2.66	3.44
Smith (A.O.)	5.99	26.78	19.74	1.36
Solectron Corp.	0.53	3.65	2.47	1.48
Sony Corp. ADR	3.80	34.59	24.68	1.40
SOURCECORP	3.60	21.56	18.67	1.15
Southwest Airlines	5.66	13.73	7.04	1.95
SPX Corp.	0.99	46.73	28.66	1.63
St. Paul Travelers	5.64	39.86	31.35	1.27
Stillwater Mining	4.64	7.35	5.67	1.30
Symyx Technologies	5.60	29.75	5.88	5.06
Tasty Baking	3.04	8.26	4.99	1.66
TDC A/S ADS	5.58	20.92	16.04	1.30
Telecom. de Chile ADR	0.78	10.24	9.08	1.13
Telephone & Data	1.31	39.78	27.75	1.43
Tellabs Inc.	5.72	8.72	6.03	1.45
Tetra Tech	5.97	13.48	7.06	1.91
Texas Inds.	1.86	57.83	35.93	1.61
Thoratec Corp.	1.22	15.55	6.04	2.57
Tidewater Inc.	4.29	38.70	23.95	1.62
Time Warner	5.28	16.34	13.51	1.21
Titan Corp	3.90	22.84	4.12	5.54
Topps Co.	5.88	10.20	5.42	1.88
Toys 'R' Us	4.74	26.45	20.03	1.32
TransAlta Corp.	3.49	20.52	12.74	1.61
Transocean Inc.	1.17	55.13	22.81	2.42
Tredegar Corp.	5.78	15.85	12.45	1.27
Triarc Cos. 'A'	0.48	16.00	5.02	3.19
U.S. Cellular	3.68	49.75	29.97	1.66
Union Pacific	5.99	63.84	45.90	1.39
Unisys Corp.	5.74	6.40	4.44	1.44
United Rentals	4.05	20.09	14.79	1.36
Univision Communic.	4.74	27.36	16.61	1.65
Valeant Pharmac.	1.23	17.35	5.66	3.07
Veeco Instruments	1.39	16.51	8.45	1.95
Wausau Paper	5.71	12.03	6.91	1.74
WebMD Corp.	3.58	10.05	3.90	2.58
WellPoint Inc.	5.37	69.58	32.15	2.16
Williams Cos.	5.27	19.48	8.88	2.19
Wind River Sys.	3.19	16.16	3.07	5.26
Zoran Corp.	3.33	13.64	11.59	1.18

Company Name	Return on Common Equity	Stock Price	Book Value per share	Market to Book
Zygo Corp.	3.25	10.11	7.30	1.38
Average	3.57			2.06

Source of data: Value Line Investment Analyzer July 2007.