EXHIBIT NO. ___(RAM-15T)
DOCKET NO. UE-060266/UG-060267
2006 PSE GENERAL RATE CASE
WITNESS: ROGER A. MORIN

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY, INC.,** **Respondent.**	**Docket No. UE-060266** **Docket No. UG-060267**

PREFILED REBUTTAL TESTIMONY (NONCONFIDENTIAL) OF ROGER A. MORIN ON BEHALF OF PUGET SOUND ENERGY, INC.

AUGUST 23, 2006

PUGET SOUND ENERGY, INC.

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PUGET SOUND ENERGY, INC.

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I. INTRODUCTION

Q. Are you the same Roger A. Morin who submitted prefiled direct testimony in this proceeding on February 15, 2006, on behalf of Puget Sound Energy, Inc. ("PSE" or "the Company")?

A. Yes.

Q. Please summarize the purpose of your rebuttal testimony.

A. My rebuttal testimony responds to the assertions made by Mr. Stephen Hill on behalf of the Staff for the Washington Utilities & Transportation Commission ("Commission Staff") and Mr. Michael Gorman on behalf of Industrial Customers of Northwest Utilities ("ICNU").

II. SUMMARIES OF REBUTTAL OF PREFILED RESPONSE TESTIMONIES OF MESSRS. HILL AND GORMAN

A. SUMMARY OF REBUTTAL OF PREFILED RESPONSE TESTIMONY OF MR. HILL

Q. What do you conclude from Mr. Hill's cost of capital testimony?

A. Mr. Hill's testimony seriously understates PSE's cost of common equity. A proper application of cost of capital methodologies would give results substantially higher than those that he obtained. Moreover, Mr. Hill's testimony suffers from several major infirmities:

(i) Mr. Hill's recommended ROE is outside the range of currently authorized rates of return for major electric and gas utilities in the United States and his own sample groups of utilities.

(ii) Application of the standard DCF model to utility stocks understates the investor's expected return when the Market-to-Book ratio exceeds unity.

(iii) Seven of the twelve natural gas utilities included in Mr. Hill's sample group fail his screen for risk comparability.

(iv) Mr. Hill's dividend yield component is understated by 30 basis points because it does not allow for flotation costs.

(v) Mr. Hill's selection of a growth rate for each company in his comparable group is ambiguous, arbitrary and impossible to replicate.

(vi) Mr. Hill's use of historical growth rates is in error because such rates have little relevance as proxies for future long-term growth forecasts in the DCF model.

(vii) Mr. Hill's use of dividend growth forecasts is in error because energy utilities are expected to continue to lower their dividend payout ratio over the next several years.

(viii) A test of the statistical relationship between growth and expected yield for Mr. Hill's DCF analysis shows that the hypothesis that the sample is truly risk-comparable must be rejected.

(ix) Mr. Hill's Modified Earnings Price Ratio and Market-to-Book Ratio are disguised versions of the DCF model and do not constitute independent stand-alone checks.

(x) Mr. Hill's use of the Modified Earnings Price Ratio--a method that is antiquated, fraught with conceptual blemishes and has disappeared from use--is in error.

(xi) Mr. Hill's use of the Market-to-Book ratio--a method irrelevant for regulatory purposes--is in error.

(xii) Mr. Hill's improperly uses the yield on 90-day Treasury Bills as his proxy for the risk-free rate in the CAPM.

(xiii) Mr. Hill understates beta estimates for his sample companies.

(xiv) Mr. Hill's estimate of the market risk premium is far too low because he has erroneously employed geometric means instead of arithmetic means.

(xv) Mr. Hill erroneously relies upon the plain vanilla version of the CAPM--a model known to understate return requirements for low beta firms.

(xvi) Mr. Hill erroneously suggests that the Company's capital structure is less leveraged than the average capital structure of Mr. Hill's comparable group of electric utilities.

(xvii) Mr. Hill fails to adjust his recommended ROE to reflect the fact that PSE's capital structure contains more leverage than the average capital structure of Mr. Hill's comparable group of electric utilities.

(xviii) Mr. Hill uses an irrelevant metric to incorrectly suggest that PSE's purchased power risk is lower than average.

Correction of the above-described errors would increase Mr. Hill's recommended ROE from 9.375% to approximately 10.775%.

B. SUMMARY OF REBUTTAL OF PREFILED RESPONSE TESTIMONY OF MR. GORMAN

Q. What do you conclude from Mr. Gorman's cost of capital testimony?

A. Although I agree with several of Mr. Gorman's procedures and methodologies, Mr. Gorman has departed significantly from his past testimonies and previous practices in arriving at his recommendation. These departures result in a recommended ROE that significantly understates PSE's cost of common equity. Moreover, Mr. Gorman's testimony suffers from several major infirmities:

(i) Mr. Gorman's dividend yield component is understated by approximately 30 basis points because it does not allow for flotation costs.

(ii) Mr. Gorman's improperly relies upon *total* returns on government bonds for his market risk premium, thereby understating the market risk premium by approximately 60 basis points.

(iii) Mr. Gorman erroneously relies on a single company's beta estimate rather than on the average beta of his sample companies.

(iv) Mr. Gorman erroneously relies upon the plain vanilla version of the CAPM--a model known to understate return requirements for low beta firms.

(v) Mr. Gorman fails to account for the inverse behavior between authorized risk premiums and interest rates.

(vi) Mr. Gorman fails to adjust his recommended ROE to reflect the fact that PSE's capital structure contains more leverage than the average capital structure of Mr. Gorman's comparable group of electric utilities.

Correction of the above-described errors would increase Mr. Gorman's recommended ROE from 9.9% to approximately 11.2%.

III. REBUTTAL TO MR. HILL'S TESTIMONY

Q. Please summarize Mr. Hill's rate of return recommendation.

A. Mr. Hill recommends a return on common equity ("ROE") of only 9.375%, which is in the lower portion of a range of 9.25% - 9.75%. Mr. Hill's analysis relies primarily on a discounted cash flow ("DCF") analysis of (i) a group of fourteen electric utilities and (ii) a group of twelve natural gas utilities. The DCF study, summarized at Exhibit No. ___(SGH-1CT) at page 38, produces an estimated ROE of 9.21%.

Mr. Hill performs three checks on his DCF estimate, based on the Modified Earnings/Price, Market-to-Book, and Capital Asset Pricing Model ("CAPM") methodologies. Mr. Hill then erroneously concludes that PSE's cost of equity lies

in the lower part of a range of 9.25% to 9.75% because of a mistaken belief that PSE has a lower degree of purchased power risk relative to its peers.

A. AUTHORIZED ROE IN ELECTRIC AND NATURAL GAS UTILITY INDUSTRIES

Q. Is Mr. Hill's recommended ROE consistent with currently authorized ROEs in the electric and natural gas utility industries?

A. No. Authorized ROEs, although not a precise indication of a company's cost of equity capital, are nevertheless important determinants of investor growth perceptions and investor expected returns. They also serve to provide some perspective on the validity and reasonableness of Mr. Hill's recommended ROE.

The average authorized ROEs, as reported by Regulatory Research Associates, in the electric and natural gas utility industries in calendar years 2003, 2004 and 2005 were 11.0%, 10.8%, and 10.5%, respectively.

Q. Is Mr. Hill's recommended ROE consistent with the average authorized ROE of the electric utilities in Mr. Hill's "comparable" group?

A. No. Mr. Hill's recommended ROE for PSE is below the authorized ROE of each electric utility in Mr. Hill's "comparable" group and far below the average authorized ROE for the same group of 10.85%:

	Company	Authorized ROE
1	Cen. Vermont Pub. Serv.	10.0%
2	First Energy	9.8%
3	Green Mountain Power	10.5%
4	Progress Energy	12.4%
5	Ameren	10.9%

6	Cleco Corp	12.3%
7	DPL Inc.	11.0%
8	Empire Dist. Elec.	11.0%
9	Entergy Corp.	11.0%
10	Hawaiian Elec.	10.8%
11	PNM Resources	10.3%
12	Pinnacle West Capital	10.3%
13	Puget Energy, Inc.	10.3%
14	Unisource Energy	10.7%
	AVERAGE	**10.81%**

Source: AUS Utility Reports 6/2006

Q. Is Mr. Hill's recommended ROE consistent with the average authorized ROE of the natural gas utilities in Mr. Hill's "comparable" group?

A. No. Mr. Hill's recommended ROE for PSE is below the authorized ROE of each natural gas utility in Mr. Hill's "comparable" group and far below the average authorized ROE for the same group of 11.04%:

	Company	**Authorized ROE**
1	AGL Resources	10.6%
2	Atmos Energy	11.9%
3	Cascade Nat Gas	11.8%
4	Laclede Group	--
5	New Jersey Resources	11.5%
6	Nicor	10.5%
7	Northwest Nat Gas	10.2%
8	Peoples Energy	11.2%
9	Piedmont Nat Gas	--
10	South Jersey Industries	11.8%
11	Southwest Gas	10.3%
12	WGL Holdings	10.6%
	AVERAGE	**11.04%**

Source: AUS Utility Reports 6/2006

In short, Mr. Hill's recommended ROE is (i) outside the mainstream of authorized ROEs of electric and natural gas utilities over the past two years and (ii) outside

the range of the authorized ROEs of the electric and natural gas utilities used by Mr. Hill for his "comparable" groups.

B. MR. HILL'S DCF ANALYSIS

1. Mr. Hill's DCF Model Understates The Cost Of Equity

Q. Does Mr. Hill's DCF result understate the cost of equity?

A. Yes, and so does my DCF results for that matter. Application of the DCF model produces estimates of common equity cost that are consistent with investors' expected return only when stock price and book value are reasonably similar (i.e., the Market-to-Book ratio is close to unity (1)).

As shown below, application of the standard DCF model to utility stocks understates the investor's expected return when the Market-to-Book ratio of a given stock exceeds unity. This is particularly relevant in the current capital market environment where utility stocks are trading at Market-to-Book ratios well above unity and have been for two decades. The converse is also true--the DCF model overstates the investor's return when the stock's M/B ratio is less than unity.

The reason for the distortion is that the DCF market return is applied to a book value rate base by the regulator. In other words, the utility's earnings are limited to earnings on a book value rate base.

Q. Can you illustrate the effect of the Market-to-Book Ratio on the DCF model by means of a simple example?

A. Yes. The following illustration demonstrates the result of applying a market value cost rate to book value rate base under three different M/B scenarios (the stock trades below, equal to, and above book value):

EFFECT OF MARKET-TO-BOOK RATIO ON MARKET RETURN

	Price Below Book	Price Equals Book	Price Above Book
1 Initial purchase price	$25.00	$50.00	$100.00
2 Initial book value	$50.00	$50.00	$50.00
3 **Initial M/B**	**0.50**	**1.00**	**2.00**
4 **DCF Return 10% = 5% + 5%**	**10.00%**	**10.00%**	**10.00%**
5 Dollar Return	$5.00	$5.00	$5.00
6 Dollar Dividends 5% Yield	$1.25	$2.50	$5.00
7 Dollar Growth 5% Growth	$3.75	$2.50	$0.00
8 **Market Return**	**20.00%**	**10.00%**	**5.00%**

The shaded portion of the table is representative of the current capital market environment where utilities' Market-to-Book ratios are generally greater than 1.0. A DCF cost rate of 10%, which implies $10.00 of earnings, translates to only $5.00 of earnings on book value, a 5% return. The DCF cost rate of 10%, which consists of a 5% dividend yield and a 5% growth rate forecast, is applied to the book value rate base of $50 to produce $5.00 of earnings. Of the $5.00 of earnings, the full $5.00 are required for dividends to produce a dividend yield of 5% on a stock price of $100.00 and no earnings are available for growth. The investor's return is therefore only 5% versus a required return of 10%.

The situation is reversed in the first column when the stock trades below book

value. The $5.00 of earnings is more than enough to satisfy the investor's dividend requirements of $1.25, leaving $3.75 for growth, for a total return of 20%. This is because the DCF cost rate is applied to a book value rate base well above the market price.

As demonstrated above, the DCF cost rate understates the investor's required return when stock prices are well above book, as is the case presently. Therefore, Mr. Hill's DCF results, the crux of his recommended ROE, understate PSE's cost of common equity capital.

Q. Have regulators expressed reservations on the reliability of the DCF model?

A. Yes. Some regulatory commissions have explicitly recognized the need to avoid exclusive reliance on the DCF model and have acknowledged the need to adjust the DCF result when Market-to-Book ratios exceed one.[1] The Indiana Utility Regulatory Commission stated the following concerns regarding understatement of the cost of common equity by the DCF model:

> . . . the DCF model, heavily relied upon by the Public, understates the cost of common equity. The Commission has recognized this fact before. In Indiana Mich. Power Co. (IURC 8/24/90), Cause No. 38728, 116 PUR4th 1, 17-18, we found:
>
> > The unadjusted DCF result is almost always well below what any informed financial analyst would regard as defensible, and therefore requires an upward adjustment based largely on the expert witness's judgment."

[1] *See, e.g., Pa. Pub. Util. Comm'n v. Pa.-Am. Water Co.*, 97 Pa.P.U.C. 1, 33-34 (Pa. Pub. Util. Comm'n 2002); *U.S. West Comms., Inc.,* 152 P.U.R.4th 459 (Iowa Utils. Bd. 1993); *In re Haw. Elec. Co., Inc.*, 134 P.U.R.4th 418 (Haw. Pub. Utils. Comm'n 1992); *Ind. Mich. Power Co.*, 116 P.U.R.4th 1, 17-19 (Ind. Util. Reg. Comm'n 1990).

S. Ind. Gas & Elec., Cause 40078, page 24 (Ind. Util. Reg. Comm'n June 21, 1995). The Commission also expressed its concern with a witness relying solely on one methodology:

> **. . .** the Commission has had concerns in our past orders with a witness relying solely on one methodology in reaching an opinion on a proper return on equity figure.

Id. at page 25.

Market-to-Book ratios have exceeded unity for two decades, which provides evidence that regulators have, in fact, not relied on the DCF model exclusively. Had regulators relied exclusively on the DCF model, utility stocks would have traded at or near book value. Regulators have "corrected" for this Market-to-Book problem by considering alternative methods for estimating capital cost.

Q. Is the Indiana Utility Regulatory Commission unique in its recognition of the limitations of the DCF model?

A. No. Contrary to the inference one could draw from Mr. Hill's testimony at page 64, line 18, through page 65, line 2, a vast majority of regulatory commissions do not rely solely on the DCF in determining authorized ROEs for electric and natural gas utilities. The results posted in the survey conducted by the National Association of Regulatory Utility Commissioners cited in that portion of Mr. Hill's testimony demonstrate that regulators utilize a variety of methods and rely on all the evidence submitted.

2. Mr. Hill's "Comparable" Utility Gas Companies Fail to Meet His Own Screens

Q. Do Mr. Hill's "comparable" natural gas utilities meet his own screens?

A. No. In his prefiled response testimony, Mr. Hill asserts that the twelve natural gas utilities in his sample group have "at least 70% of revenues generated by gas distribution operations."[2] In fact, only five of the twelve "comparable" natural gas utilities used by Mr. Hill meet that screen, according to the data source used by Mr. Hill:

Company	% Utility Revenues
1 AGL Resources	62
2 Atmos Energy	61
3 Cascade Nat Gas	94
4 Laclede Group	58
5 New Jersey Resource	35
6 Nicor	87
7 Northwest Nat Gas	99
8 Peoples Energy	64
9 Piedmont Nat Gas	78
10 South Jersey Industries	66
11 Southwest Gas	85
12 WGL Holdings	64

Source: AUS Utility Reports July 2006

Q. Do you have similar comments regarding Mr. Hill's "comparable" electric utilities?

A. Yes. Mr. Hill has assembled an unusual collection of heterogeneous electric utilities to estimate PSE's cost of equity. Many of these companies' traits diverge markedly from those of PSE.

[2] Exhibit No. ___(SGH-1CT) at page 42, lines 13-14.

To illustrate, Hawaiian Electric Industries has no interconnections with other utilities and owns a bank. Central Vermont has recently sold its nuclear interests and acquires most of its energy from Canada. First Energy has experienced severe difficulty with a nuclear unit and has received a punitive regulatory decision as a result. Ameren is an aggressive acquirer of neighboring utilities. Cleco and Empire District are very small utilities compared to PSE. PNM Resource has been, and is expected to be, a very poor performing company. Finally, Entergy is heavily involved in nuclear generation.

Several of the companies are much larger than PSE. For example, Progress Energy, First Energy, and Entergy have more than twice the number of customers of PSE. Finally, PSE purchases a large share of the energy it delivers to its customers relative to the companies in the sample group and has a weaker balance sheet. Thus, Mr. Hill's electric group that includes these companies provides a questionable proxy for PSE.

3. DCF Dividend Yield And Flotation Costs

Q. Why should the authorized return on equity be adjusted to include an allowance for flotation costs?

A. Flotation costs represent the discounts that must be provided to place new securities in the issues of new equity. Flotation costs have a direct and an indirect component. The direct component represents monetary compensation to the security underwriter for (i) marketing/consulting services, (ii) the risks involved in distributing the issue, and (iii) any operating expenses associated with the issue

(printing, legal, prospectus, etc.). The indirect component represents the downward pressure on the stock price as a result of the increased supply of stock from the new issue (frequently referred to as "market pressure").

Flotation costs for common stock is analogous to the flotation costs associated with past bond issues, which, as a matter of routine regulatory policy, continue to be amortized over the life of the bond, even though no new bond issues are contemplated. Flotation costs for common stock are not amortized because such securities have no finite life. Therefore, the recovery of flotation cost requires an upward adjustment to the authorized ROE by dividing the expected dividend yield component of the DCF model by (1 - f), where "f" is the flotation cost factor.

Q. Has the Commission recently suggested a policy regarding adjustments for flotation costs?

A. Yes, the Commission has recently suggested that adjustments for flotation costs are appropriate where the utility issued equity in the test year or plans to do so in the future:

> While, in some circumstances, we have permitted adjustments to a Company's cost of equity to reflect issuance expenses or flotation costs, we cannot do so in this case because PacifiCorp did not incur such expenses in the test year, nor does the Company expect to incur such expenses in the future.[3]

Here, Puget Energy issued common stock during the test year and expects to incur such expenses in the future to finance PSE's considerable construction program.

[3] *WUTC v. PacifiCorp dba Pacific Power & Light Company*, Docket Nos. UE-050684 and Docket UE-050412, Order Nos. 03 and 04 at ¶112 (Apr. 17, 2006).

Therefore, an upward adjustment for flotation costs is appropriate.

Q. What flotation cost treatment did Mr. Hill recommend in this case?

A. Mr. Hill failed to include any allowance whatsoever for issuance expense in his ROE recommendation. Therefore, his DCF estimates of equity costs are downward-biased by approximately 30 basis points as a result of that omission alone.

Moreover, Mr. Hill's testimony is somewhat inconsistent with regard to flotation costs. In his discussion of sustainable growth in the DCF model, he recognizes that "investor expectations regarding growth from external source (sales of stock) must be considered and examined."[4] Indeed, Mr. Hill carefully quantifies the effect of such issues on company growth in Exhibit No. ___(SGH-10), under the heading "external growth." Finally, Mr. Hill's disregard of flotation costs is inconsistent with (i) Value Line forecasts that show that electric utilities will be issuing new common stock in the future and (ii) Exhibit No. ___(SGH-10), which shows that Mr. Hill's own "comparable" groups are scheduled to issue considerable amounts of new equity.[5]

Q. How does Mr. Hill rationalize the omission of flotation costs?

A. Mr. Hill offers five spurious reasons as to why a flotation cost allowance is unwarranted.

[4] Exhibit No. ___(SGH-1CT) at page 45, lines 12-14.
[5] *See* Exhibit No. ___(SGH-10) at pages 1-9, under the heading "external growth" for 2007 and 2009-2011.

First, Mr. Hill erroneously asserts that flotation costs on common stocks are analogous to bonds sold at a premium to par value (i.e., the company's cost of debt is less than the coupon rate). In practice, the calculation of the embedded cost of debt accounts for issuance costs, premium or discounts at the time of issue, and recognizes sinking fund and call provisions. This is because premiums or discounts and flotation costs influence the effective yield to the investor and cost to the utility and are typically allowed to be recovered by regulators.

Unlike bonds, however, a utility's book equity account is credited by the net proceeds of a common stock issue after issuance costs and not by the gross proceeds. In other words, the common stock investment recorded on the balance sheet, unlike bond issues, is less than the amount of money actually put up by the investor by the amount of issuance costs, regardless of whether the net issue price is less than, equal to or greater than book value. If the investor is to earn the required return on a reduced book equity base, the allowed return needs to exceed the required return by an amount sufficient to cover the discrepancy between gross and net proceeds from a common stock issue. Moreover, unlike bonds, the allowed return on equity is the market, or current, return and not the embedded cost of debt.

Q. What is the second rationale provided by Mr. Hill regarding his omission of flotation costs?

A. Mr. Hill argues that "the reduction of the book value of stockholder investment due to issuance expenses can occur only when the utility's stock is selling at a

market price at to or below its book value."[6] This argument fails to address the simple fact that, in issuing common stock, a company's common equity account is credited by an amount less than the market value of the issue. Therefore, the company must earn slightly more on its reduced rate base to produce a return equal to that required by shareholders. The stock's Market-to-Book ratio is irrelevant because flotation costs are present, irrespective of whether the stock trades above, below, or at book value.

Q. What is the third rationale provided by Mr. Hill regarding his omission of flotation costs?

A. Mr. Hill then argues that the majority of the flotation costs are not out-of-pocket expenses incurred by the issuing utility and, as such, should not be recovered.[7] This argument, if taken to a logical conclusion, would suggest that depreciation expenses associated with the construction of plant should not be recovered because depreciation expenses are not out-of-pocket expenses.

In theory, flotation costs could be expensed and recovered through rates as they are incurred. This procedure is not considered appropriate, however, because the equity capital raised in a given stock issue remains on the utility's common equity account and continues to provide benefits to ratepayers indefinitely. The expense and recovery of flotation costs would burden current ratepayers with the full costs of raising capital when the benefits of that capital extend indefinitely. Moreover, as discussed in my prefiled direct testimony, common stocks, unlike bonds, have

[6] Exhibit No. ___(SGH-1CT) at page 53, lines 14-16.
[7] *Id.* at page 53, lines 22, through page 54, line 4.

no finite life over which flotation costs could be amortized. Therefore, the most appropriate method to recover flotation costs is via an upward adjustment to the authorized ROE.

Mr. Hill then makes the circular argument that the flotation cost allowance is unwarranted because investors factor these costs in the stock price. Such circular reasoning could be used to justify any regulatory policy, regardless of the propriety of the policy. For example, under Mr. Hill's reasoning, it would be appropriate to authorize a clearly confiscatory ROE, such as of 1%, because investors would reflect this fact in the stock price.

Q. What are the fourth and fifth rationales provided by Mr. Hill regarding his omission of flotation costs?

A. Mr. Hill then argues that

> my DCF growth rate analysis includes an upward adjustment to equity capital costs which accounts for investor expectations regarding stock sales at market prices in excess of book value, and any further explicit adjustment for issuance expenses related to increases in stock outstanding is unnecessary.[8]

This argument is simply a variation of his first argument, which I have already addressed above.

Mr. Hill's fifth argument is that "research has shown that a specific adjustment for issuance expenses is unnecessary."[9] In support of this assertion, Mr. Hill cites a sole source--an "unpublished note" in a relatively obscure bulletin. Mr. Hill's

[8] *Id.* at page 54, lines 13-16.
[9] *Id.* at page 54, lines 17-18.

statement stands in sharp contrast to (i) most finance textbooks and (ii) the myriad articles published in academic journals documenting and quantifying the flotation cost allowance. Please see Exhibit No. ___(RAM-16) for a review of such literature.

4. Sustainable Growth Method

Q. What specific DCF methodology did Mr. Hill employ to determine the cost of equity?

A. Mr. Hill applied a DCF analysis to two samples of energy utilities (electric and natural gas utilities). Mr. Hill based the expected dividend yield component on a 6-week average stock price. For the growth component, Mr. Hill examined an array of growth rate estimates, including (i) sustainable growth rate forecasts, (ii) historical growth rates in book value, earnings, and dividends, (iii) Value Line growth forecasts, and (iv) the consensus growth forecasts reported in Reuters.[10] Although Mr. Hill examined ten proxies for growth in Exhibit No. ___(SGH-11), Mr. Hill chose, without explanation, the sustainable growth rate forecast and ignored the other nine.

Adding the dividend yield component to the arbitrary growth component selected for each company, Mr. Hill produced an estimated ROE of 9.37% for the group of electric utilities and 9.44% for the group of natural gas utilities.

[10] *See* Exhibit No. ___(SGH-11) at pages 2 and 4.

Q. Could you please replicate Mr. Hill's DCF analysis for a specific company to illustrate Mr. Hill's methodology?

A. Yes. Mr. Hill selected Piedmont Natural Gas ("Piedmont") as his "case study" to derive his DCF growth rate forecast. Mr. Hill cites the following growth rate estimates for Piedmont:[11]

	Growth
5-yr sustainable	2.96%
2005 sustainable	3.60%
projected sustainable	4.00%
projected Book Value	3.50%
5-yr historical Book Value	6.50%
5-yr historical Dividend	5.00%
Projected dividend	5.50%
Projected earnings	6.00%
5-yr historical earnings	5.00%
analyst projection 1	4.87%
analyst projection 2	5.20%

From this array of growth rate estimates, Mr. Hill selects, without explanation, 5.0% as his final choice of DCF growth rate forecast.[12] I was unable to replicate the 5% growth rate forecast from this array of growth rate estimates, given that the average, the truncated average, and the midpoint of the range are all 4.7%.

Q. Could you please replicate Mr. Hill's DCF analysis for PSE?

A. Page 1 of Exhibit No. ___(SGH-13) shows the DCF estimate of equity cost for PSE as 9.55% (the sum of a dividend yield of 4.79% plus a growth rate forecast of 4.76%).

[11] Exhibit No. ___(SGH-1CT) at page 43, line 14, through page 45, line 2.
[12] *Id.* at page 45, lines 6-7.

Mr. Hill derives the growth rate forecast of 4.76% directly from the last column of Exhibit No. ___(SGH-11), page 1, which computes the sustainable growth rate forecast (g = br + sv) for PSE as the sum of internal growth (4.50%) and external growth (0.26%). The "internal growth" and "external growth" figures are presumably derived from Exhibit No. ___(SGH-10), page 5, under the labels "internal growth" and "external growth," but the 4.50% cannot be found on page 5 of Exhibit No. ___(SGH-10). The 4.50% sustainable internal growth figure, however, is contained within the qualitative discussion of PSE's sustainable growth rate forecast in Exhibit No. ___(SGH-4).

From the following array of growth rate estimates, Mr. Hill selects, without support or explanation, 4.5% as the growth rate forecast for PSE:

	Growth
5-yr sustainable	0.30%
2005 sustainable	2.13%
Projected sustainable	3.00%
Projected Book Value	4.00%
5-yr historical Book Value	0.50%
5-yr historical Dividend	-11.50%
Projected dividend	1.50%
Projected earnings	5.00%
5-yr historical earnings	-7.50%
analyst projection 1	5.14%
analyst projection 2	7.00%

Source: Exhibit No. ___(SGH-4) at page 5.

Again, I was unable to replicate the 4.5% growth rate forecast from this array of growth rate estimates, given that the average, the truncated average, and the midpoint of the range are all between 3% and 4% even if the two negative growth rate estimates are eliminated from the table.

Q. Were you able to replicate Mr. Hill's growth rate estimates for any of the companies contained in Exhibit No. __(SGH-4)?

A. No. I was unable to replicate the growth rate estimates of any utility in Mr. Hill's sample groups of electric and natural gas utilities from the array of growth rate estimates provided in Exhibit No. ___(SGH-4). The growth estimates simply appear without scientific foundation, derivation or ability to replicate.

Q. Dr. Morin, can you comment on the sustainable growth rate technique in implementing the DCF model?

A. It is clear from the discussion above that Mr. Hill seems to rely almost exclusively on the so-called sustainable growth method. In the sustainable growth method, the growth rate forecast is based on the equation g = b(ROE), where b is the percentage of earnings retained and ROE is the expected rate of return on book equity (ROE). Mr. Hill also accounts for the impact of external stock financing on growth by adding an external growth term (g = sv).

Q. Are the growth rate forecasts used by Mr. Hill consistent with his rate of return recommendation?

A. No, they are not. Mr. Hill's sustainable growth methodology contains a logical contradiction because the method requires an explicit assumption on the ROE expected from the retained earnings that drive future growth. Mr. Hill bases his ROE estimate on (i) achieved ROEs in the past five years 2002 – 2006 and (ii) Value Line's forecast ROE for 2007 and for the 2009-2011 period. The ROEs

used by Mr. Hill in calculating his sustainable growth rate forecast, however, do not match Mr. Hill's ROE recommendation:

Electric Utilities
Mr. Hill's Forecast ROE

Company	2007 Expected ROE	2009-2011 Expected ROE
1 Cen. Vermont Pub. Serv.	9.0%	11.0%
2 First Energy	12.0%	11.0%
3 Green Mountain Power	10.0%	10.5%
4 Progress Energy	10.0%	10.0%
5 Ameren	10.0%	9.5%
6 Cleco Corp	8.0%	9.0%
7 DPL Inc.	24.5%	21.0%
8 Empire Dist. Elec.	8.5%	9.5%
9 Entergy Corp.	11.0%	10.5%
10 Hawaiian Elec.	10.0%	10.0%
11 PNM Resources	8.5%	8.5%
12 Pinnacle West Capital	9.0%	9.0%
13 Puget Sound Energy	8.5%	8.5%
14 Unisource Energy	9.5%	8.5%
AVERAGE	**10.6%**	**10.5%**

Source: Exhibit No. ___(SGH-10)

Natural Gas Utilities
Mr. Hill's Forecast ROE

Company	2007 Expected ROE	2009-2011 Expected ROE
1 AGL Resources	12.0%	12.0%
2 AtmosEnergy	9.5%	10.5%
3 Cascade Nat Gas	8.0%	8.5%
4 Laclede Group	13.0%	13.0%
5 New Jersey Ress	15.5%	14.5%
6 Nicor	13.5%	13.0%
7 Northwest Nat Gas	10.5%	10.5%
8 Peoples Energy	11.5%	13.5%
9 Piedmont Nat Gas	11.5%	12.5%
10 South Jersey Industries	12.5%	13.0%
11 Southwest Gas	9.5%	10.5%
12 WGL Holdings	10.0%	11.0%
AVERAGE	**11.8%**	**12.1%**

Source: Exhibit No. ___(SGH-10)

The tables above demonstrate that the ranges of average expected ROE for Mr. Hill's sample group of electric utilities is 10.5%–10.6% and for his sample group of natural gas utilities is 11.8%–12.1%. These ranges of average expected ROE exceed his recommended ROE of 9.375% for PSE.

In effect, Mr. Hill is assuming that his sample companies will earn an ROE exceeding what he has determined to be their cost of equity. In other words, Mr. Hill is assuming that the utilities in his comparable groups will earn an ROE higher than that granted by their regulators and reflected in their rates. While this scenario implicit in Mr. Hill's sustainable growth method may be possible for an unregulated company with substantial market power, it is implausible for a regulated company whose rates are set by its regulator at a level designated to permit the company to earn a return equal to its cost of capital.

In sum, Mr. Hill's implementation of the sustainable growth method is logically circular because he is using an assumed ROE that exceeds his own recommended ROE.

Q. Is the sustainable growth rate technique consistent with empirical evidence?

A. No. Empirical finance literature demonstrates that the sustainable growth rate technique is a very poor explanatory variable of market value and is not as significantly correlated to measures of value, such as stock price and price/earnings ratios.

Q. Are Value Line's ROE and retention ratio estimates representative of the market consensus?

A. No. Mr. Hill's exclusive reliance on Value Line forecasts of ROE and retention ratio runs the risk that such forecasts are not representative of investors' consensus forecast. Moreover, the forecasts of the expected return on equity published by Value Line are based on end-of-period book equity rather than on average book equity. The following formula adjusts the reported end-of-year values so that they are based on average common equity, which is the common regulatory practice:[13]

$$r_a = r_t \frac{2\,B_t}{B_t + B_{t-1}}$$

Where:
r_a = return on average equity
r_t = return on year-end equity as reported
B_t = reported year-end book equity of the current year
B_{t-1} = reported year-end book equity of the previous year

The result of this error is that Mr. Hill's DCF estimates are understated by 10-20 basis points, depending on the magnitude of the book value growth rate forecast.

[13] *See* Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital*, chapter 5 (1994)

5. DCF Growth Rate Estimates

a. DCF Historical Growth Rates

Q. Please discuss the use of historical growth rates in applying the DCF model to energy utilities.

A. Mr. Hill considers historical growth rates in arriving at his proxies for the DCF growth forecast component. It may be reasonable to assume that historical growth rates in dividends/earnings influence investors' assessment of the long-run growth rate forecast of future dividends/earnings if the company and industry is stable. Because of sea changes in the energy industry, however, historical growth rates have little relevance as proxies for long-term growth forecasts. Moreover, historical growth rates are largely redundant because such historical growth patterns are already incorporated in analysts' growth forecasts that should be used in the DCF model.

b. DCF Dividend Growth Rate Forecasts

Q. Should Value Line's dividend growth forecasts be considered in applying the DCF model to electric utilities?

A. No. There are two serious problems with the use of Value Line's dividend growth forecasts. First, heavy reliance on Value Line's in-house growth forecasts runs the risk that such forecasts are not representative of investors' consensus forecast. Second, it is inappropriate to use dividend growth forecasts of energy utilities at this time in the DCF model. Value Line's dividend growth forecasts are largely dominated by the anticipated dividend performance over the next few years, a

period of transition to competition and higher business risk. Again, although Mr. Hill reports and discusses such growth forecasts,[14] it is difficult to discern from his discussion of each company's growth rate to what extent, if any, he places reliance on historical growth rates and dividend growth rate forecasts reported by Value Line.

c. Conclusion

Q. What do you conclude from Mr. Hill's growth rate forecast analysis?

A. Although Mr. Hill reports and discusses historical growth rates and Value Line's dividend growth forecasts in his exhibits,[15] it is difficult to discern from his discussion of each company's growth rate forecast to what extent, if any, he places reliance on such growth rate estimates. To the extent Mr. Hill relied on either of historical growth rates and Value Line's dividend growth forecasts, he did so in error.

One would expect that averages of analysts' earnings growth forecasts, such as those contained in First Call, Reuters, or Zacks, are more reliable estimates of the investors' consensus expectations than either historical growth rates or one particular firm's dividend growth forecast. As discussed in my prefiled direct testimony,[16] the empirical finance literature has demonstrated that consensus analysts' growth forecasts, such as those contained in First Call, Reuters, or Zacks, (i) are reflected in stock prices, (ii) possess a high explanatory power of

[14] *See* Exhibit No. ___(SGH-11) at page 2.
[15] *See id.*
[16] See Exhibit No. ___(RAM-1T) at page 46, line 12, through page 47, line 5.

equity values, and (iii) are used by investors.

Moreover, it is necessary to use earnings forecasts rather than dividend forecasts because of the extreme scarcity of dividend forecasts compared to the availability of earnings forecast. Given the paucity and variability of dividend forecasts, use of dividend forecasts produces unreliable DCF results.

Use of the analyst growth forecasts would have generated a growth rate forecast of 5.4% for the sample group of electric utilities[17] and not the 5.08% used by Mr. Hill. The growth rate forecast of 5.4% would raise Mr. Hill's DCF estimates from 9.37% to 9.8%, exclusive of flotation costs, for his group of electric utilities.

6. DCF Reliability

Q. Is there any statistical evidence that Mr. Hill's DCF estimates are unreliable?

A. Yes, strong statistical evidence exists that suggests that Mr. Hill's DCF estimates are unreliable. For a group of companies to be truly risk-comparable, their costs of common equity should be identical. Alternatively, there must be a one-to-one correspondence between variations among the companies in the group with respect to growth (g) and variations with respect to expected dividend yield (D_1/P). If one runs a statistical regression of growth on dividend yield for a group of truly risk-comparable firms, one should obtain an estimated slope coefficient of dividend yield of -1.0. Otherwise, the sample is not risk comparable.

As demonstrated in Exhibit No. ___(RAM-17), a test of the statistical relationship

[17] *See* Exhibit No. ___(SGH-11) at page 2.

between growth and expected yield for Mr. Hill's DCF analysis shows that Mr. Hill's DCF cost of common equity estimates resulted in slope terms that are statistically significantly different from -1.0. Therefore, the hypothesis that the sample is truly risk-comparable must be rejected for the DCF estimates--the core of Mr. Hill's recommended ROE.

C. MR. HILL'S MODIFIED EARNING-PRICE RATIO ANALYSIS

Q. Please comment on Mr. Hill's Modified Earnings-Price Ratio method as a check on his DCF result.

A. As a check on his DCF results, Mr. Hill employs the Modified Earnings-Price Ratio method. According to this method, the return of earnings to shareholders is the cost to the company of equity funds, and the same rate of return must be earned on equity-financed assets to equal the cost rate.

The Modified Earnings-Price Ratio method was discussed extensively in the corporate finance literature in the 1960s, and enjoyed some brief notoriety in regulatory hearings during that period. Today, the Modified Earnings-Price Ratio method has almost vanished from use because it produces unreliable results. In fact, the Modified Earnings-Price Ratio method constitutes an accurate measure of the cost of equity (and collapses into the standard constant-growth DCF model) under two very limited circumstances:

(1) the firm must pay all earnings out in dividends, and

(2) the firm must be an "ordinary" firm, (i.e., a company without profitable opportunities earning a return on new investments equal

to the cost of equity).

Neither of these circumstances is present here, and Mr. Hill's Modified Earnings-Price Ratio results should be discarded by the Commission. I am unaware of any financial witness and/or regulatory commission that relies on this antiquated methodology.

D. MR. HILL'S MARKET-TO-BOOK RATIO ANALYSIS

Q. Please discuss Mr. Hill's views on Market-To-Book ratios.

A. Mr. Hill argues that investor expected returns can equal costs of equity capital only when Market-To-Book ratios equal 1.0.[18] He also argues that

> the market-to-book / expected return relationship that actually exists today in the market for utility stocks indicates that investors expect that those companies will earn a return on the book value of their equity (ROE) which exceeds the cost of equity capital.[19]

Mr. Hill's testimony implies that regulators should set authorized cost of common equity so as to produce a Market-to-Book ratio of 1.0, despite Mr. Hill's claims to the contrary.

Mr. Hill's argument that investor expected returns can equal costs of equity capital only when Market-To-Book ratios equal 1.0 would be true only if each of the following were true with respect to the utility in question:

(i) all assets of the utility are regulated;

(ii) the rate base of the utility equals invested capital; and

[18] Exhibit No. ___(SGH-1CT) at page 24, lines 2-13.
[19] *Id.* at page 25, lines 3-6.

(iii) there is no inflation.

None of these situations prevail. Indeed, utility stocks have been trading well above book value for over a decade despite inflation throughout that period.

Moreover, a company's actual earnings in any given year are likely to vary from their long-run average. Inflated or depressed Market-to-Book ratios are a function of forces generally outside the control of regulators, such as the general state of the economy and economic or financial circumstances that may affect yields on securities of unregulated and regulated enterprises.

Q. Does the Market-to-Book ratio reflect the replacement cost of a Company's assets?

A. No. The fundamental goal of regulation should be to set the expected economic profit for a public utility equal to the level of profits expected to be earned by firms of comparable risk. In short, regulation should emulate results naturally achieved in competitive markets.

In an unregulated industry, the competitive market ensures that the market value of a firm's securities equals the replacement cost of its assets. This suggests that a fair and reasonable price for a public utility's common stock is one that produces equality between the market price of its common equity and the replacement cost of its physical assets. The latter circumstance will not necessarily occur when the Market-to-Book is 1.0.

In an inflationary period, the replacement cost of a firm's assets may increase

more rapidly than its book equity. To avoid confiscation of shareholders' investment in real terms, the allowed rate of return should produce a M/B ratio that provides a Q-ratio[20] of 1 or a Q-ratio equal to that of comparable firms. It is quite plausible and likely that Market-to-Book ratios will exceed one if inflation increases the replacement cost of a firm's assets at a faster pace than historical cost (book equity). This may explain, in part, why utility Market-to-Book ratios have remained well above 1.0 over the past two decades.

Q. Are Mr. Hill's views on the Market-to-Book Ratio consistent with his DCF analysis?

A. No. In his sustainable growth DCF model, Mr. Hill uses assumed equity returns that are considerably higher than his recommended cost of equity of 9.375% for PSE.[21] In other words, Mr. Hill assumes that his sample group of utilities will earn a return in excess of their cost of equity forever (i.e., the Market-to-Book ratios of these companies would perpetually exceed 1.00). This is inconsistent with Mr. Hill's inference that Market-to-Book ratios should converge towards 1.00 if allowed returns are equated to the cost of equity capital.

Q. Do you have any more comments on Mr. Hill's Market-to-Book views?

A. Yes. It is unusual for utility share prices to equal book value. Mr. Hill's views on the role of the Market-to-Book ratio are not corroborated by historical facts. Exhibit No. ___(MPG-9) demonstrates that the historical Market-to-Book ratio

[20] The Q-ratio is defined as the ratio of the market value of a firm's securities to the replacement cost of its assets.

[21] *See* Exhibit No. ___(SGH-11) at pages 1 and 3.

for utilities has been well above 1.0 for the past two decades. The Commission should ignore both Mr. Hill's views on the Market-to-Book ratio and those costs of equity estimates based on the Market-to-Book ratio.

E. MR. HILL'S CAPM ANALYSIS

Q. Does Mr. Hill employ a CAPM estimate?

A. Yes. As a check on his DCF estimate, Mr. Hill performs a flawed CAPM analysis of the cost of common equity. First, Mr. Hill's use of the yield on Treasury-Bills is not a valid proxy for the risk-free rate component of the CAPM. Second, Mr. Hill's beta estimates are understated. Third, Mr. Hill erroneously relies upon a geometric average of realized returns for his market risk premium. Fourth, the use of the plain vanilla CAPM understates the cost of capital, as discussed in my prefiled direct testimony[22] and Exhibit No. ___(RAM-4).

1. Risk-Free Rate

Q. What risk-free rate does Mr. Hill use in his CAPM analysis?

A. As a proxy for the risk-free rate, Mr. Hill employs a range of 4.69% to 4.97%, with the low end of the range based on the yield on short-term Treasury bills and the high end of the range based on the yield on 20-year Treasury bonds. The yield on 90-day Treasury Bills is a very poor proxy of the risk-free rate in the CAPM because common stocks are very long-term instruments more akin to very long-term bonds. Therefore, Mr. Hill's CAPM estimates based on the yield on

[22] Exhibit No. ___(RAM-1T) at page 34, line 1, through page 36, line 5.

90-day Treasury Bills shown on Exhibit No. ___(SGH-14) should be discarded.

Q. What is an appropriate proxy for the risk-free rate in the CAPM?

A. The ideal proxy for the risk-free rate in the CAPM would have a term to maturity equal to the security being analyzed. Because common equity has an infinite life-span, the inflation expectations embodied in its market-required rate of return will be equal to the inflation rate anticipated to prevail over the long-term. Among U.S. Treasury securities, 30-year U.S. Treasury bonds have the longest term to maturity. Therefore, 30-year U.S. Treasury bonds will most closely incorporate within their yield the inflation expectations that influence the prices of common stocks.

2. Beta Estimates

Q. Do you believe Hill's beta estimates to be understated?

A. Yes. Mr. Hill reports that his samples of electric and natural gas utilities have a beta of 0.82 and 0.81, respectively.[23] The current issue of Value Line, however, reports an average beta of 0.84 and 0.85 for those two groups of utilities. These differences in beta amount to an understatement of ROE by approximately 20 basis points.

[23] *See* Exhibit No. ___(SGH-14).

3. Market Risk Premium Estimate

Q. How does Mr. Hill estimate the market risk premium component of the CAPM?

A. Mr. Hill relies on the following historical estimates of the market risk premium over the 1926-2005 period:

	Arithmetic Average	Geometric Average
Treasury Bills	8.6%	6.7%
Treasury Bonds	6.5%	4.9%

The first and second rows represent the realized (historical) market risk premium over Treasury Bills and Treasury Bonds, respectively. The first column is the realized market risk premium based on an arithmetic average, and the second column is the realized market risk premium based on a geometric average.

It should be noted that the above-referenced market risk premiums are the historical market risk premiums published by Ibbotson Associates that Mr. Hill criticizes at length in his testimony.[24] It is unclear as to why Mr. Hill would criticize those market risk premiums as too high in portions of his testimony yet use those very same estimates in other portions of his testimony.

Q. Is it appropriate to use geometric averages in measuring expected return?

A. No. Arithmetic means are appropriate for forecasting and estimating the cost of

[24] *See* Exhibit No. ___(SGH-1CT) at page 11, line 27, through page 14, line 14.

capital, and geometric means are not.[25] Indeed, the Ibbotson Associates publication from which Mr. Hill's market risk premium estimate is derived contains a detailed and rigorous discussion of the impropriety of using geometric averages in estimating the cost of capital. There is no theoretical or empirical justification for the use of geometric mean rates of returns. Please see Exhibit No. ___(RAM-18) for a discussion regarding the theoretical underpinnings, empirical validation, and the consensus of academics on why geometric means are inappropriate for forecasting and estimating the cost of capital.

Q. What is the effect of Mr. Hill's use of the geometric mean market risk premium?

A. Mr. Hill's use of the geometric mean market risk premium of 4.9% rather than the arithmetic mean of 6.5% significantly understates the market risk premium, which suggests an understatement of PSE's cost of equity by approximately 130 basis points (assuming for purposes of argument Mr. Hill's beta for PSE of 0.82):

$$\beta_{PSE} \times (\text{Arithmetic Mean} - \text{Geometric Mean})$$
$$0.82 \times (6.5\% - 4.9\%)$$
$$0.82 \times (1.6\%)$$
$$1.31\%$$

Using Mr. Hill's long-term Treasury yield of 4.97%, the revised average beta of 0.84 and the arithmetic mean market risk premium of 6.5%, the CAPM estimate is 10.5% without flotation cost and 10.8% with flotation cost.

[25] *See* Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital*, chapter 11 (1994); Roger A. Morin, *The New Regulatory Finance: Utilities' Cost of Capital*, chapter 4 (2006); Richard A Brealey, *et al.*, *Principles of Corporate Finance* (8th ed. 2005).

4. CAPM And The Empirical CAPM

Q. Do you agree with the use of the plain vanilla version of the CAPM used by Mr. Hill to estimate the cost of capital?

A. No. As discussed in detail in my prefiled direct testimony and supporting exhibits, empirical evidence demonstrates that the plain vanilla CAPM understates the cost of capital for low-beta securities, such as electric and natural gas utilities, and overstates the return from high-beta securities.[26] Mr. Hill's use of the plain vanilla CAPM understated PSE's ROE by approximately 50 basis points.

F. MR. HILL'S PROPOSED CAPITAL STRUCTURE

Q. What is Mr. Hill's recommended capital structure?

A. Mr. Hill recommends the following capital structure for ratemaking:[27]

Type of Capital	Amount Outstanding	Percent to Total
Short-Term Debt	$251,028	4.67%
Long-Term Debt	$2,575,027	47.88%
Preferred Securities	$37,750	0.70%
Preferred Stock	$201,889	3.75%
Common Equity	$2,312,717	43.00%
Total Capital	$5,378,411	100.0%

Q. Do you agree with Mr. Hill's capital structure recommendation?

A. No. Mr. Hill's capital structure is improper for five reasons. First, Mr. Hill relied on a different group of companies than Mr. Hill's sample of electric and natural

[26] *See* Exhibit No. ___(RAM-1T) at page 34, line 1, through page 36, line 5; *see also* Exhibit No. ___(RAM-4).
[27] Exhibit No. ___(SGH-8) at page 3.

gas utilities to assert that PSE's requested capital structure contains more equity and less debt than average. Second, PSE's capital structure (exclusive of short-term debt) is more leveraged than Mr. Hill's sample of electric and natural gas utilities. Third, Mr. Hill should have adjusted his ROE recommendation upward, and not downward, to recognize PSE's more leveraged capital structure. Fourth, the investment community evaluates the impact of purchased power on a company's risk on the basis of a company's effective debt ratio adjusted for its purchased power obligations and not on a purchased power expenses per dollar of plant basis. Finally, as discussed in my prefiled direct testimony, PSE's business risks exceed the industry average because of its significant construction program planned over the next several years.

1. Mr. Hill's Comparables

Q. Did Mr. Hill compare his recommended capital structure with that of his comparable groups?

A. No. Without explanation, Mr. Hill compared his recommended capital structure with the forty-one combination gas and electric utilities listed at page 2 of Exhibit No. ___(SGH-8) rather than the two samples of electric and natural gas utilities used throughout his testimony. Only four companies of these forty-one companies appeared in Mr. Hill's original samples of utilities.

Q. How does the Company's capital structure compare with Mr. Hill's sample of electric utilities?

A. The following table reports the Value Line common equity ratios of the thirteen

companies in Mr. Hill's sample of electric utilities:

	Company	% Equity
1	Ameren Corp.	53.3%
2	Cen. Vermont Pub. Serv.	61.8%
3	Cleco Corp.	52.0%
4	DPL Inc.	37.9%
5	Empire Dist. Elec.	49.0%
6	Entergy Corp.	45.5%
7	FirstEnergy Corp.	52.4%
8	Green Mountain Pwr.	58.6%
9	Hawaiian Elec.	53.3%
10	Pinnacle West Capital	56.8%
11	PNM Resources	42.3%
12	Progress Energy	43.3%
13	UniSource Energy	24.7%
	AVERAGE	**48.5%**
	TRUNCATED MEAN	**49.5%**
	MEDIAN	**52.0%**

The central tendency of the common equity ratio of Mr. Hill's sample group of electric utilities is approximately 50%, as corroborated by the average, median, and truncated average. PSE's requested capital structure (with an equity component of 45%) contains more leverage than the capital structures of the utilities in Mr. Hill's sample group of electric utilities.

Q. How does PSE's requested capital structure compare with Mr. Hill's sample group of natural gas utilities?

A. The following table reports the Value Line common equity ratios of the thirteen companies in Mr. Hill's sample of natural gas utilities:

	Company	% Equity
1	AGL Resources	48.1%
2	AtmosEnergy	42.3%
3	Cascade Nat Gas	40.6%
4	Laclede Group	51.8%
5	New Jersey Ress	58.0%
6	Nicor	62.5%
7	Northwest Nat Gas	53.0%
8	Peoples Energy	47.2%
9	Piedmont Nat Gas	58.6%
10	South Jersey Industries	55.1%
11	Southwest Gas	36.2%
12	WGL Holdings	58.6%
	AVERAGE	**51.0%**
	TRUNCATED MEAN	**49.5%**
	MEDIAN	**52.4%**

Again, the central tendency of the common equity ratio of Mr. Hill's sample group of natural gas utilities is approximately 50%, as corroborated by the average, median, and truncated average. PSE's requested capital structure (with an equity component of 45%) contains more leverage than the capital structures of the utilities in Mr. Hill's sample group of natural gas utilities.

2. Capital Structure Adjustment

Q. Did Mr. Hill adjust his recommended ROE to account for greater leverage in PSE's capital structure than that in Mr. Hill's sample groups of electric and natural gas utilities?

A. No. Mr. Hill should have increased his recommended ROE of 9.375% to reflect the higher relative risk associated with PSE's more leveraged capital structure. It is a rudimentary tenet of basic finance that the greater the amount of financial risk borne by common shareholders, the greater the return required by shareholders in

order to be compensated for the added financial risk imparted by the greater use of senior debt financing. In other words, the greater the debt ratio, the greater is the return required by equity investors.

Q. What is the magnitude of the required adjustment to account for PSE's more leveraged capital structure?

A. Several researchers have studied the empirical relationship between the cost of capital, capital-structure changes, and the value of the firm's securities.[28] The results of these studies suggest that when the debt ratio increases from 40% to 50%, required equity returns increase between 34 to 237 basis points. The empirical studies suggest an average increase of 76 basis points, or 7.6 basis points per one percentage point increase in the debt ratio. The theoretical studies suggest an average increase of 138 basis points, or 13.8 basis points per one percentage point increase in the debt ratio. In other words, equity return requirements increase between 7.6 and 13.8 basis points for each increase in the debt ratio by one percentage point, and more recent studies indicate that the upper end of that range is more indicative of the repercussions on required equity returns.

The average equity ratio for each of Mr. Hill's sample groups of electric and natural gas utilities is 50%, and the equity ratio requested by PSE in this proceeding is 45%. The above-described research suggests that Mr. Hill should

[28] *See* Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital*, 409-33 (1994) for a summary of the comprehensive and rigorous empirical studies of the relationship between cost of capital and leverage for public utilities.

adjust his recommended ROE upward by approximately 40 basis points (7.6 x 5) to 70 basis points (13.8 x 5) to reflect PSE's more leveraged capital structure.

3. Purchased Power Risk

Q. How does Mr. Hill compare PSE's purchased power risks to those companies in his sample group of electric utilities?

A. Mr. Hill compares each utility's purchased power expense per dollar of plant and asserts that "the purchased power expense of the companies selected for my cost of equity analysis is 23% of utility plant—75% higher than the amount spent by Puget."[29] Mr. Hill's comparison purchased power expense per dollar of plant is irrelevant. The investment community evaluates the impact of purchased power on a company's risk on the basis of a company's effective debt ratio adjusted for its purchased power obligations and not on a purchased power expenses per dollar of plant basis. Obligations pursuant to long-term purchased power contracts are analogous to long-term debt and are treated as such by investors and bond rating agencies. The risk perceptions of the investment community and bond rating agencies are such that incremental long-term fixed obligations associated with acquiring energy through off-system purchases increase a utility's financial risk.

To assess the impact of purchased power contracts, bond rating agencies begin with a calculation of the net present value (typically using a 10% discount rate) of the total capacity payments for long-term purchased power contracts. Then, the rating agencies apply a factor of 30% to 50% to this net present value. The

[29] Exhibit No. ___(SGH-1CT) at page 33, lines 7-9.

resulting amount is then imputed as additional long-term debt into the utility's capital structure.

As demonstrated in my prefiled direct testimony, the inclusion of PSE's purchased power contracts as debt equivalent lowers PSE's common equity ratio from 45% to approximately 43%, a decrease of 2%.[30]

G. ACTUARIAL DATA UTILIZED FOR PENSION FUND ACCOUNTING ARE IRRELEVANT IN ESTIMATING A UTILITY'S COST OF CAPITAL

Q. Did you detect any logical inconsistency in Mr. Hill's recommended ROE for PSE?

A. Yes, I detected several logical contradictions. On page 6, line 21, through page 9, line 6, of his prefiled response testimony, Mr. Hill tests the reasonableness of his 9.375% recommended ROE by comparing it to expected stock market returns of 8.0% - 9.0% that he claims are implied in pension fund actuarial data, in investment reports such as A.G. Edwards, and in the most recent academic research, Mr. Hill concludes that his proposed cost of equity of 9.375% is consistent with such data. This is blatantly incorrect for several reasons.

First, the return figures cited by Mr. Hill are for the total equity market. PSE and utilities generally are less risky than the overall market. PSE's beta is 0.82 according to Mr. Hill, meaning that PSE is 82% as risky as the overall stock market, and, therefore, should have a lower expected return than the overall market. Yet, Mr. Hill's recommended ROE for PSE is the middle portion of the

[30] *See* Exhibit No. ___(RAM-1T) at page 69, line 19, through page 70, line 7.

aforementioned range of expected return for the market as a whole. This is patently illogical. In order to be consistent with his view of stock market returns of 8.0% - 9.0% and PSE's beta of 0.82 Mr. Hill should have recommended a ROE of 6.6% - 7.4%, that is 0.82 times 8.0% - 9.0%. That result is preposterous, of course.

Q. Is actuarial data relevant in estimating the cost of equity capital?

A. Second, Mr. Hill tests the reasonableness of his recommended ROE of 9.375% by comparing this recommendation to expected stock market returns of 8.0% - 9.0% that he claims are implied in PSE's pension fund actuarial data. This comparison, in the context of a rate proceeding, is highly unusual. I cannot recall any cost of capital witness comparing an individual utility's ROE to its pension fund's actuarial data. Additionally, I am unaware of any regulatory commission that has relied on such data.

Actuarial data utilized for pension fund accounting are by nature very conservative, consistent with Generally Accepted Accounting Principles (GAAP) guidelines, and are not well suited for assessing the cost of equity capital in a rate proceeding. By virtue of the very long-term nature of pension fund assets, projected returns on pension fund assets are not indicative of the cost of equity in the context of a regulatory proceeding. Moreover, the actuarial data on which Mr. Hill relies--namely one particular corporate actuary's assumptions--are highly selective.

Q. Are actuarial pension fund projected returns based on arithmetic or geometric averages?

A. The actuarial pension data arbitrarily selected by Mr. Hill are based on geometric mean returns rather than on arithmetic mean returns because of the very long-term nature of pension fund assets. As discussed earlier in this rebuttal testimony and in Exhibit No. ___(RAM-18), only arithmetic means are appropriate for forecasting and estimating the cost of capital.

H. LOGICAL INCONSISTENCIES IN MR. HILL'S TESTIMONY

1. Market Risk Premium

Q. Did you detect any logical inconsistency in Mr. Hill's CAPM market risk premium?

A. Yes. As discussed earlier, Mr. Hill devotes a substantial portion of his testimony criticizing the historical market risk premium published by Ibbotson Associates. Yet, Mr. Hill uses the same Ibbotson market risk premium range of 6.5% - 8.6% for his CAPM without explaining this contradiction.[31]

Q. Does Mr. Hill recognize in his testimony that his recommended return on equity for PSE is substantially lower than authorized returns on equity for other utilities?

A. Mr. Hill's testimony concedes that "[u]tility equity return awards in the U.S. over the past year have averaged about 10.5%." Exhibit No. ___(SGH-1CT) at page 6,

[31] *See* Exhibit No. ___(SGH-14).

lines 11-12. This concession supports evidence provided by PSE in this proceeding. *See* Exhibit No. ___(DEG-4).

Q. How does Mr. Hill reconcile his suggested equity return of 9.375% with the fact that regulatory commissions have, on average, authorized equity returns over the past year of 10.5%?

A. Mr. Hill suggests that regulatory commissions have authorized returns on equity over the past year that are allegedly in excess of investor expectations out of ignorance of "new research":

> I believe that regulatory commissioners are generally not aware of the significant new research regarding the market risk premium and the reduction of long-term investor return expectations. As that information becomes more widely known, I would expect allowed returns to decline.[32]

Q. Would you agree with Mr. Hill's assertion that "regulatory commissioners are generally not aware of the significant new research regarding the market risk premium and the reduction of long-term investor return expectations"?

A. No. Regulatory commissioners are neither ignorant nor misinformed. Expert witnesses on cost of capital issues appear in nearly every rate proceeding litigated before regulatory commissions, and these expert witnesses inform the commissions of any "new research regarding the market risk premium".

[32] Exhibit No. ___(SGH-1CT) at page 16, lines 18-21.

Q. Does Mr. Hill cite any "new research regarding the market risk premium" in his testimony of which he suggests that "regulatory commissioners are generally not aware"?

A. Yes. Mr. Hill cites eight sources that he alleges support the assertion that "risk premium investors expect for the future . . . is lower than even long-term historical experience would indicate":[33]

(1) Leonard Hyman, "Letters to the Editor," *Public Utilities Fortnightly* (Aug. 2004);[34]

(2) Shawn Tully, "Can Stocks Defy Gravity?", *Fortune* (June 16, 2003);[35]

(3) Elroy Dimson, *et al*., "Risk and Return in the 20th and 21st Centuries," *Business Strategy Review*, Vol. 11(2) (2000);[36]

(4) Jeremy Siegel, *Stocks for the Long Run: A Guide to Selecting Markets for Long-Term Growth* (1994);[37]

(5) Eugene Fama & Kenneth French, "The Equity Premium," *Journal of Finance*, Vol. 57(2) (Apr. 2003);[38]

(6) John Graham & Campbell Harvey, "The Equity Risk Premium in January 2006: Evidence from the Global CFO Outlook Survey" (Dec. 19, 2005), available at http://ssrn.com/abstract=871105;[39]

(7) Ivo Welch, "Views of Financial Economists on the Equity Premium and Other Issues," *Journal of Business* 73 (Oct. 2000);[40] and

(8) Roger Ibbotson & Peng Chen, "Long-Run Stock Returns:

[33] Exhibit No. ___(SGH-1CT), at page 14, lines 12-14.
[34] *See id.* at page 10, lines 7-19.
[35] *See id.* at page 11, lines 3-25. Please note that Mr. Hill's testimony incorrectly cites the illustrator Gene Greif as the author of the article.
[36] *See id.* at page 12, line 17, through page 14, line 14.
[37] *See id.* at page 14, lines 3-8.
[38] *See id.* at page 14, line 21, through page 15, line 4.
[39] *See id.* at page 15, lines 5-16; *see also id*. at page 101, lines 6-15. Although Mr. Hill's testimony does not provide a citation to the Graham and Hill study, Mr. Hill did provide a copy of the article with his workpapers.
[40] *See id.* at page 15, line 17, through page 16, line 2.

Participating in the Real Economy," *Financial Analysts Journal* (Jan./Feb. 2003).[41]

Q. Do you believe that regulatory commissioners are "generally not aware" of the eight sources cited by Mr. Hill?

A. No. In PSE's last general rate proceeding (WUTC Docket Nos. UE-040640, *et al.*), Mr. Hill cited many of these same sources when he testified on behalf of Public Counsel that the historical average market return of 10.4%-12.4% calculated by Ibbotson Associates was "somewhat overstated":

> Moreover there exists recent research on the subject of market risk premiums that indicate the Ibbotson Associates data may be somewhat overstated. For example, Siegel (Siegel, J., Stocks for the Long Run, 1994, Irwin, Chicago IL, p. 20) shows that over the very long-term history (reaching back into the 1800s), a more normal risk premium between stocks and bonds is 2% to 3%. Fama (Fama, E. and French, K., "The Equity Premium," *The Journal of Finance*, Vol. LVII, No, 2, April 2002, pp. 637-659) found a representative risk premium to range from 2.5% to 4.3%, again well below the Ibbotson estimates. Also, Dimson, et al, (Dimson, March and Staunton, Triumph of the Optimists 4 5 6 7 8 9 , Princeton University Press, Princeton NJ, Oxford England, 2002) found that even the return data in the Siegel publication is questioned as being too high, due to "survivor bias." That phenomenon, according to Dimson, exaggerates historical stock returns by one to two percentage points.

Exhibit No. ___(RAM-19).

Similarly, Mr. Hill provided testimony regarding the alleged overstatement of market risk premium on behalf of Public Counsel in Pacific Power & Light Company's last rate proceeding (WUTC Docket Nos. UE-050684 and UE-050412) nearly identical to the testimony he offers in this proceeding. *See* Exhibit No. ___(RAM-20).

[41] *See id.* at page 16, lines 3-11.

Given Mr. Hill's previous testimony regarding the alleged overstatement of market risk premium before this Commission, Mr. Hill cannot assert that the Commission was "generally not aware" of the alleged overstatement of market risk premium asserted by Mr. Hill when the Commission granted PSE and Pacific Power & Light Company authorized returns on equity substantially higher than the 9.375% recommended by Mr. Hill in this proceeding.

Q. Is Mr. Hill's assessment of the "new research" on the market risk premium complete and accurate?

A. No. Mr. Hill has selectively chosen published studies that purport to show that the historical market risk premium published by Ibbotson Associates is high. His assessment of the state of research regarding market risk premium is inaccurate and misleading.

At page 13 of his prefiled response testimony, Mr. Hill cites a published work by Dimson, Marsh, and Staunton[42] who report on returns over the period 1900 to 2000 for twelve countries, representing 90% of today's world market capitalization. They report an average risk premium over long bond returns over all countries of 5.0%. What Mr. Hill omits to mention is that Dimson, Marsh, and Staunton report a market risk premium of 7.0% for the U.S. Moreover, they report that the market risk premium was generally higher for the second half century than for the first. For example, the market risk premium in the U.S. was 5.00% in the first half of the 20th century and 7.50% in the second half of the 20th

[42] Elroy Dimson *et al*., "Risk and Return in the 20th and 21st Centuries," *Business Strategy Review* 11(2): 1-18 (2000).

century. Brealey, Myers, and Allen have updated the Dimson results to 2003.[43] According to that research, Treasury bills have provided an average return of 4.1% since 1900 and common stocks provided an average return of 11.7% over the same period. This suggests a market risk premium of 7.6% (11.7% – 4.1%).

At page 14 of his prefiled response testimony, Mr. Hill cites quotes Professor Siegel[44] who has examined historical data over an even longer time series, including some data dating back to 1802. First, it is unclear whether data on capital market behavior from the 19th century are relevant for estimating cost of capital requirements in the 21st century. Second, the reliability of the Siegel data, the older data in particular, is of some question. The stock market of the early 1800s was very limited, embryonic in scope, with very few issues trading, and few industries represented. Dividend data were unavailable over most of this early period, and stock prices were based on wide bid-ask spreads rather than on actual transaction prices.[45]

At page 15 of his prefiled response testimony, Mr. Hill cites the Welch surveys of academics and investment professionals. Although the survey technique is forward-looking, it suffers many shortcomings inherent in survey techniques. First, return definitions and risk premium definitions differ widely. Second, survey responses are subject to bias. Third, subjective assessments about long-term market behavior may well place undue weight on recent events and

[43] Richard A Brealey, *et al.*, *Principles of Corporate Finance* 155 (8th ed. 2005).

[44] Jeremy Siegel, "The Shrinking Equity Premium," *Journal of Portfolio Management* 26(1): 10-17.

[45] See G. W. Schwert, "Indexes of U.S. Stock Prices from 1802 to 1987," *Journal of Business* Vol. 63, No. 3 (1990) regarding the difficulties inherent in stock market data prior to the Great Depression.

immediate prospects. For example, the arithmetic mean long-term expected market risk premium of respondents to the Welch survey was 7.1% in 1998 when the equity markets were performing very well, and the arithmetic mean long-term expected market risk premium of respondents to the Welch survey was 5.5% in 2001 when the equity markets were performing very poorly.

Q. Is your market risk premium estimate supported by the finance literature?

A. Yes. The market risk premium estimate provided in my prefiled direct testimony is the result of both historical and prospective studies and is consistent with the finance literature on the subject. Similarly, the arithmetic mean market risk premium of 6.50% used by Mr. Hill in Exhibit No. ___(SGH-14) is also consistent with the finance literature on the subject.

2. CAPM Risk-Free Rate

Q. What does Mr. Hill argue to be the appropriate risk-free rate proxy for use in the CAPM analysis?

A. At page 5 of Exhibit No. ___(SGH-5), Mr. Hill correctly states that "the use of a long-term Treasury bond produces a more accurate estimate of investors' cost of equity." In his implementation of the CAPM in Exhibit No. ___(SGH-14), however, Mr. Hill employs both the yield on short-term Treasury bills and the yield on long-term Treasury bonds as the risk-free rate proxy. Consistent with the quoted portion of Exhibit No. ___(SGH-5), the CAPM results based on short-term T-Bills should be discarded.

3. DCF Model

Q. Is there a logical contradiction in Mr. Hill's views on the DCF model?

A. Yes. As Mr. Hill notes at page 8 of Exhibit No. ___(SGH-5), the Modified Earnings-Price ratio model only works when the Market-to-Book ratio is 1.0. When stocks are trading above book, as they have been and continue to do so, the Modified Earnings-Price ratio understates investor return. As discussed above, the Modified Earnings-Price ratio model reduces into the DCF model when the Market-to-Book ratio is 1.0. Therefore, it follows that if the Modified Earnings-Price ratio model understates investor return, the same must be true for the DCF model. Although Mr. Hill admits that the market return for a Modified Earnings-Price ratio model must be increased in order to properly estimate investor return when the Market-to-Book ratio exceeds 1.0, he does not similarly do so for the DCF model.

I. RESPONSES TO MR. HILL'S CRITICISMS

1. DCF and Market-To-Book Ratios

Q. Mr. Hill claims that there are inconsistencies in your published works regarding the DCF model and Market-to-Book ratios. Is he correct?

A. No. At pages 70-72 of his prefiled response testimony, Mr. Hill argues that the 1984 edition of my book did not criticize the ability of the DCF model to accurately estimate the cost of equity depending on the Market-to-Book ratio of utilities. Similarly, at page 70 of his prefiled testimony, Mr. Hill asserts the

following:

> Dr. Morin's first text on the cost of capital, Utilities' Cost of Capital, was published in 1984, and was conceived and written during a difficult time period for electric utilities in which interest rates were very high and market prices were generally below book value. There is not one word in that text criticizing the ability of the DCF to accurately estimate the cost of equity depending on the market-to-book ratio of utilities. There is certainly nothing in that text that indicates that when market prices are below book value (as they were at that time), the DCF overstates the cost of equity (as is now Dr. Morin's claim).

Mr. Hill fails to recognize, however, that the ability of the DCF model to accurately estimate the cost of equity depending on the Market-to-Book ratio of utilities was simply not an issue for utilities a quarter century ago because they were trading at market prices very close to book value. Perhaps Mr. Hill should have consulted my 1994 and 2006 editions of my book,[46] each of which discusses at length the chronic inability of the DCF model to accurately estimate investor returns when Market-to-Book ratios deviate markedly from unity.

2. CAPM Assumptions

Q. At page 76 of his prefiled response testimony, Mr. Hill suggests that you misquoted Dr. Phillips' opinion regarding the CAPM. Is he right?

A. No. Page 19 of my prefiled direct testimony discusses Dr. Phillips' warnings regarding sole reliance on the CAPM or any other methodology:

> Dr. Charles F. Phillips also discusses the dangers of relying solely on the CAPM model because of the lack of realism of certain of its stringent assumptions, as is the case for any model in the social sciences.

[46] *See* Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital*, chapter 10 (1994); Roger A. Morin, *The New Regulatory Finance: Utilities' Cost of Capital*, chapter 12 (2006).

Sole reliance on any one model, whether it is DCF, CAPM, or Risk Premium, simply ignores the capital market evidence and investors' use of the other theoretical frameworks. The DCF model is only one of many tools to be employed in conjunction with other methods to estimate the cost of equity. It is not a superior methodology that should supplant other financial theory and market evidence. The same is true of the CAPM.

3. CAPM vs DCF Assumptions

Q. On pages 76-82 of his testimony, Mr. Hill claims that the assumptions underlying the CAPM are far more restrictive than those that support the DCF. Do you agree?

A. No, I do not. On pages 76-82 of his testimony, Mr. Hill launches a lengthy verbal denigration of the CAPM paradigm of modern finance by describing the assumptions that enable the existence of the CAPM analysis are far more restrictive than those that support the DCF. I disagree. I submit that the DCF model is at least as fragile, if not more, as the CAPM in view of the clear lack of realism of the assumptions underlying the DCF model relative to those underlying the CAPM.

The crucial assumptions of the general DCF model are:

1. Investors evaluate common stocks in the classical valuation framework and trade securities rationally at prices reflecting their perceptions of value.

2. Investors discount the expected cash flows at the same rate of return ("K") in every future period (assume a flat yield curve).

3. The discount rate, K, obtained from the fundamental DCF equation corresponds to that specific stream of future cash flows alone, and no other.

The crucial assumptions of the standard constant growth variation of the DCF model are:

Assumption #1. The three assumptions discussed in conjunction with the general DCF model still remain in force.

Assumption #2. The discount rate, K, must exceed the growth rate forecast, g.

Assumption #3. The growth rate forecast, g, is constant in every year to infinity and applies to dividend, earnings and book value.

Some, if not all, of these assumptions can be unrealistic in a given capital market environment. For example, the standard constant growth DCF model assumes a constant market valuation multiple (i.e., a constant Price-Earnings ratio). In other words, the model assumes that investors expect the ratio of market price to dividends (or earnings) in any given year to be the same as the current Price-Dividend (or earnings) ratio.

The inability of the standard DCF model to account for changes in relative market valuation and the questionable applicability of the model when Market-to-Book ratios deviate substantially from 1.00 are additional examples of the potential shortcomings of the DCF model. The DCF model is not equipped to deal with sudden surges in Market-to-Book and Price-Earnings ratios, as was experienced by several utility stocks in recent years.[47]

Many of the assumptions necessary for the DCF model are simply unrealistic.

[47] *See* Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital*, chapter 9 (1994) for a discussion of the realism of the DCF assumptions; *see also* Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital*, chapters 12 and 15 (1994) for a discussion of the assumptions underlying the CAPM.

The constant growth form of the DCF requires future earnings per share, dividends per share, book value per share, and price per share to grow at the same constant rate. There is no evidence that these conditions actually prevail in the equity market. Indeed, Exhibit No. ___(SGH-11) demonstrates that these steady-state growth conditions represent unrealistic assumptions. As Mr. Hill himself acknowledges, "the DCF theory does not exactly 'track' reality. Payout ratios and expected equity returns do change over time."[48] Despite this admission, Mr. Hill relies almost exclusively on the sustainable growth version of the DCF methodology, which rests on the assumption of constant growth.

In addition, the DCF method can produce returns that are severely distorted when a utility's stock price and book value diverge significantly. Although the DCF method may provide an estimate of investor expected returns on the market value of a company's stock, that estimate cannot be applied to a utility's book value when market value exceeds book value.

Q. Are the CAPM assumptions restrictive relative to those that underlie the DCF model?

A. No. The CAPM model assumptions are not nearly as restrictive relative to the DCF model assumptions. The CAPM can be considered a special case of the broader Arbitrage Pricing Model, which has far less restrictive assumptions than the CAPM. The Arbitrage Pricing Model requires only two major assumptions:

(i) that security returns are linear functions of several economic factors

[48] Exhibit No. ___(SGH-1CT) at page 39, lines 15-17.

and

(ii) that no profitable arbitrage opportunities exist since investors are able to eliminate such opportunities through riskless arbitrage transactions.

The more minor assumptions required by the Arbitrage Pricing Model are (i) that investors are self-interested; (ii) that investors are risk averse; (iii) that investors can diversify company-specific risks by holding large portfolios; and (iv) that enough investors possess similar expectations to trigger the arbitrage process.

The Arbitrage Pricing Model relationship asserts that the return on any risky security is equal to the risk-free rate plus a linear combination of risk premiums. Each risk premium is the expected return in excess of the risk-free rate associated with an asset that has a systematic risk with respect to that factor only. The CAPM is a special case of the Arbitrage Pricing Model if in which market portfolio is the sole factor influencing security prices. Under this circumstance, the Arbitrage Pricing Model collapses into the CAPM, with the beta coefficient transformed into the traditional security beta.

In sum, Mr. Hill's discussion of the list of assumptions that underlie the CAPM is vastly overstated and should be ignored.[49]

Q. Is Mr. Hill's suggestion in footnote 24 of his prefiled direct testimony that the CAPM is not a special case of the Arbitrage Pricing Model correct?

A. No. As discussed above, the CAPM can be considered a special case of the broader Arbitrage Pricing Model, which has far less restrictive assumptions than

[49] *See id.* at page 77, lines 15-34.

the CAPM.

The person who developed the Arbitrage Pricing Model, Professor Steve Ross, refers to the one-factor Arbitrage Pricing Model equation as follows: "the equation is identical to that of the CAPM."[50] Another advanced graduate corporate finance textbook states in a chapter on the CAPM and Arbitrage Pricing Model that "the CAPM may be viewed as special case of the APM when the market rate of return is assumed to be the single relevant factor."[51] In conclusion, Mr. Hill errs in his views on the Arbitrage Pricing Model--the CAPM is indeed a sub-species of the Arbitrage Pricing Model.

Q. Is the CAPM widely used in practice?

A. Yes. Since its introduction in 1964, the CAPM has gained immense popularity as the practitioner's method of choice when estimating cost of capital under conditions of risk. The intuitive simplicity of its basic concept (that investors must get compensated for the risk they assume) and the relativel ease of application of the CAPM are the main reasons behind its popularity.

The CAPM continues to be widely used by analysts, investors, and corporations. A comprehensive survey[52] of current practices for estimating the cost of capital found that 81% of companies used the CAPM to estimate the cost of equity, 4% used a modified CAPM, and 15% were uncertain. In another comprehensive survey conducted by Graham and Harvey (incidentally the same survey cited by Mr. Hill in

[50] Stephen Ross, *et al.*, *Corporate Finance* (6th ed. 2003).
[51] Thomas Copeland, *et al.*, *Financial Theory and Corporate Policy*, 219 (3d ed. 1992)
[52] Robert F. Bruner, *et al.*, "Best Practices in Estimating the Cost of Capital: Survey and Synthesis," *Financial Practice and Education,* Vol. 8, No. 1 (Spring/Summer 1998).

a different context at page 101 of his prefiled response testimony), the managers surveyed reported using more than one methodology to estimate the cost of equity, and 73% used the CAPM.[53] It seems from those results that Mr. Hill's approach to cost of capital estimation is outside the mainstream of corporate practices.

4. CAPM Validation

Q. Do you agree with Mr. Hill's criticism of your CAPM analysis?

A. No. At pages 79-80 of his prefiled response testimony and at pages 2-3 of Exhibit No. ___(SGH-5), Mr. Hill selectively chooses a 1992 study by Fama & French that questions the importance of beta in explaining observed returns. Generally, financial theory has shown that beta is a sufficient risk measure for diversified investors, and most of the empirical literature has confirmed its importance in determining expected return. There is a notable exception--the one selectively chosen by Mr. Hill. In the cited article, the authors found little explanatory power in the relationship between *realized* returns and beta, but the CAPM specifies a relationship between *expected* returns and beta.

Moreover, Mr. Hill neglects the fertile academic literature published in journals on this subject since the publication of the Fama-French results in 1992. Since the publication of the Fama-French paper in 1992, the CAPM and its primary risk measure (beta) have received renewed support. In a 1993 paper, Chan and

[53] John R. Graham & Campbell R. Harvey, "The Theory and Practice of Corporate Finance: Evidence from the Field," *Journal of Financial Economics*, Vol. 61, 187-243 (2001).

Lakonishok[54] found a strong relationship between beta and return for the years of their study. In a prominent paper in the same journal, Fischer Black[55] also refuted the conclusions of Fama and French and stated that "beta is alive and well." In March 1995, Kothari, Shanken, and Sloan[56] demonstrated that beta receives statistically significant return compensation when betas are estimated from time-series regressions of annual portfolio returns on the annual return on an equally weighted market index. In a December 1995 paper, Kim[57] found that, once corrected for the errors in variables problem, there was more support for the role of beta. In yet another 1996 paper, Jagannathan & Wang[58] showed that when betas are allowed to vary over the business cycle, the empirical support of the CAPM is very strong. Fama and French themselves revisited the issue in 1994 and proposed a three-factor model for security returns that included beta as a factor. In their annual survey of capital market returns,[59] Ibbotson Associates compare Fama-French results with CAPM results and determines that the results, for large-capitalization companies, are virtually indistinguishable. Finally, Nobel Price winning economist William Sharpe refuted the Fama-French criticism in "Revisiting the CAPM," *Dow Jones Asset Manager* (May-June 1998)..

[54] Louis K.C. Chan & Josef Lakonishok, "Are Reports of Beta's Death Premature?" *Journal of Portfolio Management*, 51-62 (Summer 1993).

[55] Fischer Black, "Beta and Return," *Journal of Portfolio Management*, 8-18 (Summer 1993).

[56] S.P. Kothari, *et al*., "Another Look at the Cross-Section of Expected Stock Returns," *Journal of Finance* Vol. 50, No. 1 (1995).

[57] Dongcheol Kim, "The Errors in the Variables Problem in the Cross-Section of Expected Stock Returns," *Journal of Finance* Vol. 50, No. 5 (1995).

[58] Ravi Jagannathan & Zhenyu Wang, "The Conditional CAPM and the Cross-Section of Expected Returns," *Journal of Finance* Vol. 51, No. 1 (1996).

[59] Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation 2005 Yearbook: Valuation Edition*, 146-147 (2005).

5. Empirical CAPM

Q. Please comment on Mr. Hill's assessment of the empirical CAPM used in your testimony.

A. At pages 90-91 of his prefiled response testimony, Mr. Hill erroneously asserts that use of "adjusted" betas with an Empirical CAPM analysis "double-counts the effect of changing the slope of the capital market line." The Empirical CAPM is not an adjustment (increase or decrease) in beta. Instead, the Empirical CAPM is a formal recognition empirical evidence demonstrates that the observed risk-return tradeoff is flatter than predicted by the CAPM.

The Empirical CAPM and the use of adjusted betas comprise two separate features of asset pricing. Assuming *arguendo* a company's beta is estimated accurately, the CAPM will still understate the return for low-beta stocks. Furthermore, if a company's beta is understated, the Empirical CAPM will also understate the return for low-beta stocks. Both adjustments are necessary.

The graph on page 3 of Exhibit No. ___(RAM-4) demonstrates that the Empirical CAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Moreover, the use of adjusted betas compensates for interest rate sensitivity of utility stocks not captured by unadjusted betas.

With respect to the empirical validity of the plain vanilla CAPM, empirical studies of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM have supported the conclusion that (i) beta is related to security returns, (ii) the risk-return tradeoff is positive, and

(iii) the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as predicted by CAPM. In other words, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn returns somewhat less the CAPM would predict.

In sum, a plain vanilla CAPM will understate the return required for low-beta securities and overstate the return required for high-beta securities. The Empirical CAPM refines the plain vanilla CAPM to account for this phenomenon.

6. Historical Risk Premium Method

Q. How do you respond to Mr. Hill's criticism of your risk premium method?

A. Mr. Hill criticizes my risk premium method by arguing that (i) because risk premium analyses look backward in time, they assume "past is prologue" and (ii) implicit in the use of an average historical return premium of equities over debt is the assumption that the risk premium is constant over time.

Mr. Hill's first criticism is unwarranted. My prefiled direct testimony employs returns realized over long time periods rather than returns realized over more recent time periods, such as those sub-periods selectively chosen by Mr. Hill at pages 95-97 of his profiled response testimony. Realized returns can vary substantially from prospective returns anticipated by investors, especially when measured over shorter time periods. A risk premium study should consider the longest possible period for which data are available. Short-run periods during which investors earned a lower risk premium than they expected are offset by short-run periods during which investors earned a higher risk premium than they

expected. Only over long time periods will investor return expectations and realizations converge. The use of the entire study period in estimating the appropriate market risk premium minimizes subjective judgment and encompasses many diverse regimes of inflation, interest rate cycles, and economic cycles.

Mr. Hill's second concern is also unwarranted. To the extent that historical risk premium estimates follow what is known in statistics as a "random walk," one should expect the equity risk premium to remain at its historical mean. In other words, the best estimate of the future risk premium is the mean historical risk premium. As explained in my prefiled direct testimony, I found no evidence that the market price of risk or the amount of risk in common stocks has changed over time. Because no significant serial correlation exists in successive market risk premiums from year to year, it is reasonable to assume that the mean historical risk premium will remain stable in the future.

In an attempt to support his critique, Mr. Hill quotes an article published by Professor Brigham in 1985.[60] However, Mr. Hill neglects to mention more recent publications with respect to risk premium studies. In the most recent edition of Professor Brigham's textbook *Financial Management: Theory and Practice*,[61] Professor Brigham strongly recommends the use of risk premium studies similar to those used in my prefiled direct testimony. Furthermore, the most recent edition of Professor Brigham's textbook describe the risk premium approach in

[60] Exhibit No. ___(SGH-1CT) at pages 94-95.

[61] *See* Eugene Brigham & Michael Ehrhardt, *Financial Management: Theory and Practice*, (11th ed. 2005).

much the same way as that applied in my prefiled direct testimony.

Q. Are risk premium methods widely used?

A. Yes. Risk premium analyses are widely used by analysts and investors, as well as cost of capital witnesses in regulatory proceedings. Most college-level corporate finance and/or investment management texts contain detailed conceptual and empirical discussion of the risk premium approach. Indeed, the risk premium method is typically recommended as one of the three leading methods of estimating the cost of capital.[62] Risk premium analysis techniques are also widespread in investment community reports. Professional certified financial analysts are well versed in the use of this method, and Mr. Hill's critique is unwarranted.

7. Risk Premium vs Interest Rates

Q. Please discuss the relationship between the level of interest rates and utility risk premiums.

A. At pages 97-100 of his prefiled response testimony, Mr. Hill criticizes the allowed risk premium study presented in my prefiled direct testimony and questions the inverse relationship between the level of interest rates and risk premiums. As demonstrated in my prefiled direct testimony, authorized risk premiums vary inversely with the levels of interest rates and this relationship is statistically significant. In other words, regulators have systematically increased the authorized risk premium when interest rates declined and decreased the

[62] *See id.*

authorized risk premium when interest rates increased.

When interest rates rise, bondholders (whose interest rates are fixed) often suffer a capital loss due to a decrease in the market value of their bonds. This is referred to as interest rate risk. Stockholders, on the other hand, are more concerned with the firm's earning power. To avoid interest rate risk in an environment of rising interest rates, stockholders tend to become more willing to undertake equity investments that, although subject to some earning power risk, are less sensitive to interest rate risk. The resulting increase in the supply of funds available for such equity investments causes a downward pressure on the market price for equity. Therefore, bondholders' aversions to interest rate risk generally exceed stockholders' aversions to earning powers, and the risk differential will narrow and the risk premium will shrink.

Q. Does the financial literature support this inverse relationship?

A. Yes. Contrary to Mr. Hill's unsupported assertions, empirical evidence demonstrates that the risk premium varies inversely with interest rate levels. Published studies by a variety of experts in the field demonstrate that, beginning in 1980,[63] market risk premiums varied inversely with interest rates (i.e., market premiums (i) increase when interest rates decrease and (ii) decrease when interest rates increase).

[63] Eugene Brigham, *et al.*, "The Risk Premium Approach to Measuring a Utility's Cost of Equity," *Financial Management,* 33-45 (Spring 1985); Robert Harris, "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return," *Financial Management,* 58-67 (Spring 1986). Robert Harris & Felicia Marston, "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," *Financial Management,* 63-70 (Summer 1992); Farris Maddox, *et al.*, "An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry" *Financial Management,* 89-95 (Autumn 1995).

Q. Does the Graham and Harvey survey cited by Mr. Hill counter the empirical evidence that market risk premiums varied inversely with interest rates?

A. No. Mr. Hill uses the Graham and Harvey survey in an attempt to counter the empirical evidence that market risk premiums varied inversely with interest rates. The Graham and Harvey survey, however, states that the market risk premium for *the equity market* varies directly with interest rates, not that the market risk premium for the *utility industry* directly varies with interest rates. As discussed above, market risk premium for the *utility industry* varies inversely to interest rates, and the Graham and Harvey survey does not suggest otherwise.

8. Expected Dividend Yield

Q. Is Mr. Hill's criticism that you multiplied the spot dividend yield by one plus the expected growth rate (1 + g) warranted?

A. No. The plain vanilla annual DCF model ignores the time value of quarterly dividend payments and assumes dividends are paid once a year at the end of the year. Because the appropriate dividend to use in a DCF model is the prospective dividend for all companies that have positive growth rate forecasts, the dividend for all companies should be increased by the (1 + g) factor. Multiplying the spot dividend yield by (1 + g) is actually a conservative attempt to capture the reality of quarterly dividend payments and understates the expected return on equity. Use of this method is "conservative" in the sense that the annual DCF model ignores the more frequent compounding of quarterly dividends.

Q. Does Mr. Hill multiply the spot dividend yield by one plus the expected growth rate (1 + g)?

A. Yes. Mr. Hill multiplied the spot dividend yield by one plus the expected growth rate (1 + g) for those companies expected to raise their quarterly dividends in the third quarter of calendar year 2006. Indeed, Exhibit No. ___(SGH-12) demonstrates that Mr. Hill used this methodology for two companies (South Jersey Industries and WGL Holdings, Inc.) in his sample group of natural gas utilities.

9. DCF Growth Rate Forecasts

Q. Is reliance on analysts' earnings growth forecasts in the DCF model problematic?

A. Mr. Hill states as follows with respect to my exclusive use of analysts' earnings growth forecasts in the DCF:

> exclusive reliance on earnings growth, absent any examination of the underlying fundamentals of long-run growth, can lead to inaccurate equity cost estimates. For example, reliance on projected earnings growth in a situation in which projected earnings were expected to recover from reduced levels would include in any DCF result the assumption that equity returns will increase at the same exaggerated rate every five years into the indefinite future.[64]

In other words, the intermediate growth rate in dividends cannot equal the long-term growth rate when the dividend payout ratio is expected to change because projected dividend growth and earnings growth must adjust to the changing

[64] Exhibit No. ___(SGH-1CT) at page 103, lines 4-9.

payout ratio. This "problem" is not unique to analysts' earnings growth forecasts and is also inherent in the use of historical growth rates to forecast growth rates.

As discussed previously in this prefiled rebuttal testimony, reliance on "near-term" dividend growth is improper because it is expected that energy utilities will continue to lower their dividend payout ratio over the next several years in response to increased business risk. Therefore, earnings and dividends are not expected to grow at the same rate in the future. Pages 1 and 2 of Exhibit No. ___(SGH-11) demonstrate this phenomenon because both historical and projected utility dividend growth rates are far less than the earnings growth rate forecast. As discussed in my prefiled direct testimony, used consensus analysts' earnings growth forecasts in the DCF model to mitigate potential bias--an approach supported by empirical literature.

Q. Is your growth rate analysis "mechanistic in that it simply plugs selected projected data into a formula to produce a growth rate with no underlying analysis of either the historical or projected growth rate fundamentals"?[65]

A. No. My prefiled direct testimony devotes several pages to an analysis of historical growth rates and analysts' growth forecasts. Given this analysis, Mr. Hill's statement that I undertook "no underlying analysis of either the historical or projected growth rate fundamentals" is patently false.

Moreover, Mr. Hill continues to state that "Dr. Morin, in his own published work,

[65] *Id.* at page 102, lines 11-13.

warns against this type of analysis."[66] This is another example of Mr. Hill selectively citing materials out of context. The passage cited by Mr. Hill immediately preceded the following section of my book:

> A note of caution is also necessary when dealing with historical growth rates and their use in the DCF model. Historical growth rates can be downward-biased by the impact of diversification and restructuring activities and by the impact of abnormal weather patterns in the case of energy utilities. Acquisitions, start-up expenses, and front-end capital investments associated with diversification and restructuring efforts, and unfavorable weather patterns can retard and dilute historical earnings growth, and such growth is not representative of a company's long-term growth potential. Therefore, caution must be exercised when applying any of the growth estimating techniques directly to recent historical utility company data.
>
> *Given a dramatic change in a utility's operating environment, the need to be forward-looking is apparent. Historically-based measures of risk and growth can be downward-biased in assessing present circumstances . . . .* The fundamental risks and growth prospects of electric utilities are also changing rapidly following the passage of the Energy Bill in 1993. These shifts in growth prospects take some time before they are fully reflected in the historical growth rates. Hence, *backward-looking growth and statistical analysis may fail to fully reflect the fact that the risks and growth prospects of utilities have escalated*, and may only provide limited evidence that the risk and the cost of capital to these utilities have increased. Of course, the converse may also be true under certain circumstances.[67]

Indeed, the same chapter contains an entire section that comprehensively discusses the hazards of relying on historical growth rates. *See* Exhibit No. ___(RAM-21).

Q. What does the published academic literature say on the subject of analysts' growth rate forecasts in the DCF model?

A. Published studies in the academic literature demonstrate that (i) analysts' growth

[66] *Id.* at page 102, lines 13-14.

[67] Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital*, 237-38 (1994) (emphasis added).

rate forecasts are reasonable indicators of investor expectations and (ii) investors rely on such forecasts. Cragg and Malkiel present detailed empirical evidence that (i) the average analysts' growth rate forecast is a better predictor of investor expectations than are historical growth rates; (ii) the average analysts' growth rate forecast represents the best possible source of DCF growth rate forecasts; and (iii) historical growth rates do not contain any information not already included in analysts' growth rate forecasts.[68] Other studies confirm the superiority of analysts' growth rate forecasts over historical growth extrapolations.[69]

IV. REBUTTAL TO MR. GORMAN'S TESTIMONY

Q. Please summarize Mr. Gorman's rate of return on equity recommendation.

A. Mr. Gorman recommends an authorized ROE of 9.9% for PSE. In determining his recommended ROE, Mr. Gorman applies a DCF analysis to a group of fourteen investment-grade electric utilities. The DCF analysis for the proxy companies produces a cost of equity estimate of only 9.6%.[70]

Mr. Gorman also applies a risk premium analysis based on the difference between the ROE awards of regulators for utilities and the contemporaneous level of interest rates. This analysis produces an allowed risk premium in the range of 4.4% to 5.9% over the yield on long-term Treasury bonds, with an average of

[68] Burton Malkiel & John Cragg, *Expectations and the Structure of Share Prices* (1982).

[69] James Vander Weide & Willard Carleton, "Investor Growth Expectations: Analysts vs. History," *The Journal of Portfolio Management* (Spring 1988); Stephen Timme & Peter Eisemann, "On the Use of Consensus Forecasts of Growth in the Constant Growth Model: The Case of Electric Utilities," *Financial Management* (Winter 1989).

[70] *See* Exhibit No. ___(MPG-7)

5.0%.[71] Adding the forecast long-term bond yield of 5.3% to the yield of 5.0% produces a common equity return of 10.3%. Repeating the same process using the yield on "A" rated utility bonds, Mr. Gorman obtains a common equity return of 10.2%.

Finally, Mr. Gorman applies a CAPM analysis to the same proxy group of fourteen investment-grade electric utilities as used in his DCF analysis and obtains a return on equity of 10.4% as shown.[72]

Mr. Gorman then estimates an ROE for PSE in the range of 9.6% (Mr. Gorman's DCF result) to 10.4% (Mr. Gorman's CAPM result), with a midpoint of 10.0%. Mr. Gorman recommends an ROE of 9.9%, which he erroneously claims is the midpoint of this range; the true midpoint of the range is 10.0%, not 9.9%.

A. MR. GORMAN'S DCF ANALYSIS

1. DCF Dividend Yield And Flotation Costs

Q. What allowance for flotation costs does Mr. Gorman recommend in this proceeding?

A. Mr. Gorman's recommended ROE does not include any allowance whatsoever for flotation costs (e.g., issuance expenses). To correct for this omission, the expected dividend yield component of Mr. Gorman's DCF model should be adjusted for flotation cost by dividing it by (1 – f), where "f" is the flotation cost factor. This omission understates Mr. Gorman's recommended ROE by

[71] *See* Exhibit No. ___(MPG-1CT) at page 16.
[72] *See* Exhibit No. ___(MPG-11).

approximately 30 basis points.

Mr. Gorman's sole argument against my flotation cost adjustment is that it is "not based on PSE-specific costs."[73] That argument is specious because PSE's common equity capital is raised by its parent, Puget Energy Inc. The parent-subsidiary relationship does not eliminate the costs of common stock issues, but merely transfers them to the parent.

It would be unfair and discriminatory to subject parent shareholders to dilution while individual shareholders are absolved from such dilution. Fair treatment must consider that if the utility subsidiary had gone to the capital marketplace directly, flotation costs would have been incurred. Moreover, basing a flotation cost allowance on a one-company sample (although company specific) would not provide a sufficiently reliable statistical and economic basis to infer a utility's appropriate flotation cost allowance. Although it may be conceptually proper to rely on the particular company circumstances in quantifying the flotation cost allowance, it is not a practical alternative. The flotation cost allowance is a weighted average cost factor designed to capture the average cost of various equity vintages and types of equity capital raised by the company.

As stated in earlier in my rebuttal of Mr. Hill's prefiled response testimony, the issue of flotation cost is most germane at this time because the Company is scheduled to issue significant amounts of new common equity capital to finance a considerable construction program.

[73] Exhibit No. ___(MPG-1CT) at page 31, lines 7-8.

2. DCF Growth Rate Forecasts

Q. Is Mr. Gorman's growth rate forecast of 4.77% for his comparable group of companies "reasonably consistent with five-year projected GDP growth of 5.2% and higher than the five-year projected GDP inflation rate"?[74]

A. No. First, Mr. Gorman's growth rate forecast of 4.77% is 43 basis points lower than the five-year GDP growth forecast of 5.2%. I cannot characterize a difference of 43 basis points in growth rate forecasts as "reasonably consistent."

Second, Mr. Gorman should have compared his utility growth rate forecasts with the historical long-term growth of the economy as a whole and/or the long-range growth forecasts in Gross Domestic Product ("GDP") projected for the very long-term. Mr. Gorman's comparison to a short-term growth rate forecast (the next five years) is inappropriate because the growth term of the DCF model is perpetual in nature.

Long-term forecasts of nominal growth in GDP are available from commercial sources, such as Standard & Poor's DRI and Blue Chip Forecast. Additionally, a long-term forecast of nominal growth in GDP or can formulated by combining a long-term inflation estimate with a long-term real growth rate forecast as follows:

GDP Nominal growth = GDP Real Growth + Expected Inflation

The growth rate in U.S. real GDP has been reasonably stable over time. Therefore, its historical performance is a reasonable estimate of expected long-term future performance. The growth in real GDP for the 1929-2005 period was

[74] *Id.* at page 13.

approximately 3.4%.

The long-term expected inflation rate can be obtained by comparing the yield on long-term U.S. Treasury bonds with the yield on inflation-adjusted bonds of the same maturity. The current yield on 20-year Treasury bonds is 5.2%, and the yield on inflation-adjusted bonds ("Treasury Inflation Protected Securities," or "TIPS") for the same maturity is 2.4%. The difference between the two securities yields an approximate inflation rate of 2.8% (5.2% – 2.4% = 2.8%).

Using the above formula, the long-term expected GDP nominal growth is approximately 6.2% (3.4% + 2.8% = 6.2%). In sum, Mr. Gorman's growth forecast of 4.77% for his comparable group of electric utilities understates the long-term expected GDP nominal growth by approximately 140 basis points.

Q. How would Mr. Gorman's DCF results change if more current and reasonable growth forecasts are used?

A. Yes. Both the current Value Line earnings growth forecasts and consensus analyst growth forecasts average 5.2% for Mr. Gorman's comparable group of electric utilities:

	Value Line Growth	Zacks Growth
American El. Power	4.0	3.3
Ameren Corp.	1.5	6.0
Cleco Corp.	4.5	8.0
DTE Energy	4.5	5.5
Empire Dist. Elec.	6.5	Nma
Energy East Corp.	4.0	4.5
FirstEnergy Corp.	11.5	4.9
IDACORP, Inc.	4.5	4.7
NiSource Inc.	3.5	3.3

OGE Energy	4.0	4.0
Pepco Holdings	7.5	4.7
Pinnacle West Capital	6.0	6.8
Puget Energy Inc.	5.0	7.0
Xcel Energy Inc.	6.0	4.6
AVERAGE	**5.2**	**5.2**

Source: Value Line and Zacks Investment Research Web site.

Thus, Mr. Gorman's recommended growth rate forecast of 4.77% understates both the current Value Line earnings growth forecasts and consensus analyst growth forecasts by approximately 40 basis points. Correcting for this understatement in growth rate forecast alone would increase Mr. Gorman's DCF estimate of the cost of common equity from 9.6% to 10%.

B. MR. GORMAN'S CAPM ANALYSIS

1. Beta Estimate

Q. Do you agree with Mr. Gorman's beta estimate in his CAPM analysis?

A. No. The average beta of Mr. Gorman's comparable group of electric utilities is 0.90.[75] Mr. Gorman then asserts, without support or explanation, that "[a] normal utility beta estimate is approximately 0.70 based on a long-term assessment of utility beta estimates."[76] Ultimately, Mr. Gorman bases his CAPM analysis on the beta estimate of a single company--Puget Energy (0.80).[77]

Q. Has Mr. Gorman relied on a company-specific beta in the past?

A. No, not to my knowledge. In numerous past testimonies, Mr. Gorman has relied

[75] *See* Exhibit No. ___(MPG-14).
[76] Exhibit No. ___(MPG-1CT) at page 35, lines 17-18.
[77] Interestingly, Mr. Gorman used the average of his comparable group of electric utilities for his DCF analysis and did not rely solely on Puget Energy's DCF results. If he had, Mr. Gorman's DCF result for Puget Energy would have been 10.29%. *See* Exhibit No. ___(MPG-7).

on the average beta of his proposed comparable group and not on a company-specific estimate.

Q. Should Mr. Gorman have relied on the average beta of his comparable group of electric utilities rather than on a company-point estimate?

A. Yes. Mr. Gorman's own past practice has been to rely on the average beta of his comparable group of electric utilities rather than on a company-point estimate. Betas for individual companies can contain measurement errors, and the empirical financial literature demonstrates that the standard error of beta estimation is considerably smaller for portfolios (e.g., comparable groups and/or industries) than for individual company observations. Utilizing a portfolio of similar companies reduces the chance of either overestimating or underestimating the beta of an individual company. If the comparable companies are truly identical to the subject utility, then the estimation error of the average decreases at a rate proportional to the square root of the number of companies in the sample.[78] In sum, betas for groups of securities are more stable and more accurate than betas for individual securities.

[78] From basis statistics, if σ_i^2 represents the average variance of the errors in a group of N companies, and σ_{ij} the average covariance between the errors, then the variance of the error for the group of N companies, σ_N^2 is given by:

$$\sigma_N^2 = \frac{1}{N}\bar{\sigma}_i^2 + \frac{N-1}{N}\bar{\sigma}_{ij}$$

If the errors are independent, the covariance between them is zero, and the variance of the error for the group is reduced to:

$$\sigma_N^2 = \frac{1}{N}\sigma_i^2$$

As N gets progressively larger, the variance gets smaller and smaller

Q. What beta estimate did Mr. Gorman recommend in a recent proceeding regarding PacifiCorp before this Commission?

A. In a recent proceeding regarding PacifiCorp before this Commission (Docket No. UE-050684), Mr. Gorman recommended reliance on the group average beta estimated for his comparable group of utilities: "I relied on the group average beta estimate for the comparable group." *See* Exhibit No. ___(RAM-22).

Q. What beta estimate did Mr. Gorman recommend in a recent proceeding regarding Delmarva Power & Light before the Delaware Public Service Commission?

A. In a recent proceeding regarding Delmarva Power & Light before the Delaware Public Service Commission (Docket No. 05-304), Mr. Gorman recommended reliance on the group average beta estimated for his comparable group of utilities: "I relied on the group average beta estimate for the comparable group."

Q. What beta estimate did Mr. Gorman recommend in a recent proceeding regarding Baltimore Gas & Electric before the Maryland Public Service Commission?

A. In a recent proceeding regarding Baltimore Gas & Electric before the Maryland Public Service Commission (Docket No. 9036), Mr. Gorman recommended reliance on the group average beta estimated for his comparable group of utilities: "I relied on the group average beta estimate for the comparable group." *See* Exhibit No. ___(RAM-23).

Q. Does Mr. Gorman explain his deviation from his general practice of relying on the group average beta estimated for his comparable group?

A. Mr. Gorman's primary justification for his deviation is the false assertion that I did not rely on group betas testimonies provided in the late 1990s and early 2000s:

> Dr. Morin specifically rejected his electric utility proxy group's betas and used alternative means for estimating an appropriate beta estimate for use in his electric utility CAPM return studies.[79]

This is incorrect. I have never relied exclusively on a beta estimate derived from a one-company sample in the testimonies cited by Mr. Gorman. Instead, I have consistently relied on beta estimates of large groups of utilities as well as on individual company estimates.

For example, Mr. Gorman alleges that I rejected an electric utility group beta estimate and instead relied on other proxy groups or my judgment to select a beta estimate for Detroit Edison Company in a proceeding before the Michigan Public Service Commission in Case No. U-13808.[80] In that proceeding, I relied on the average betas of two groups of utilities. *See* Exhibit No. ___(RAM-24). The same is true in the two other testimonies cited by Mr. Gorman.

In the late 1990s and early 2000s, I did caution against the use of historical betas because historical beta estimates did not reflect changes in the electric utility industry's risk posture from restructuring. At the time, historical beta measures

[79] Exhibit No. ___(MPG-1CT) at page 21, lines 6-8.
[80] *Id*. at page 20, line 24, through page 21, line 6.

were understated because backward-looking statistical analysis did not fully reflect the fact that the risks of electric utilities had escalated because of restructuring. Contrary to Mr. Gorman's assertion, I do not recall specifying a beta estimate based only on a one-company sample.

Q. Does Mr. Gorman offer any other explanation for his deviation from his general practice of relying on the group average beta estimated for his comparable group?

A. Mr. Gorman provides two additional rationales.

First, Mr. Gorman also asserts that he did not use the group average beta estimated for his comparable group, in part, because "several of the companies have betas of 0.90 or higher." Additionally, Mr. Gorman states that several of the companies in his "comparable" group face significantly different risk profiles. For example, Mr. Gorman points out that (i) Avista Corporation faces significant risk due to its trading operations; (ii) PG&E Corporation was recently under bankruptcy protection; (iii) PNM Resources is involved in mergers and acquisition activities; and (iv) TECO Energy has recently experienced financial distress due to unregulated merchant investment activities.

It is difficult to comprehend why Mr. Gorman included the above-listed companies within his comparable group of electric utilities if he felt that their risk profiles precluded him from using them for his CAPM analysis. This suggests that Mr. Gorman doubts whether several of the companies included in his comparable group of electric utilities are truly comparable to PSE.

Second, Mr. Gorman falsely suggests that electric utility betas are overstated at this time because "of the lackluster performance of the market, and the relatively strong performance of the utility stocks over this same time period . . . ."[81] Beta is a measure of co-movement (correlation) between a given stock and the overall equity market. If the overall market performance has been lackluster while electric utility stocks have outperformed the market, this suggests a negative correlation and a beta less than 1.0. In other words, the observed beta understates the true beta under Mr. Gorman's argument.

Q. What would Mr. Gorman's CAPM estimates be had he followed his past practice and relied upon the group average beta estimated for his comparable group?

A. Use of the group average beta of 0.90 for Mr. Gorman's comparable group products CAPM estimates of

(i) 11.2% (when a market risk premium of 6.5% is used) and

(ii) 11.0% (when a market risk premium of 6.3% is used).

The average CAPM estimate is thus 11.1%, which is 70 basis points higher than 10.4%.

[81] *Id*. at page 36, lines 5-6.

2. CAPM Market Risk Premium

Q. Do you agree with Mr. Gorman's historical market risk premium of 6.5% for the CAPM?

A. No, not quite. Mr. Gorman uses a historical risk premium of 6.5% for the CAPM:

> The historical estimate of the market risk premium was also estimated by Ibbotson and Associates in the Stock, Bonds, Bills and Inflation, 2006 Year Book. Over the period 1926 through 2005, Ibbotson's study estimated that the arithmetic average of the achieved total return on the S&P 500 was 12.3%, and the total return on long-term Treasury bonds was 5.8%. The indicated equity risk premium is 6.5% (12.3% - 5.8% = 6.5%).[82]

The more accurate way to estimate the market risk premium from historic data is to use the *income* return, not *total* returns, on government bonds. The long-term (1926-2005) market risk premium (based on income returns, as required) is 7.1%, rather than 6.5%.

Ibbotson Associates recommends use of the *income* return on government bonds as a more reliable estimate of the historical market risk premium because the income component of total bond return (*i.e.* the coupon rate) is a better estimate of expected return than the total return (*i.e.* the coupon rate + capital gain).[83] In other words, bond investors focus on income rather than realized capital gains/losses. This correction alone increases Mr. Gorman's CAPM estimate by approximately 50 basis points (the difference between 7.1% and 6.5% times a beta of 0.80).

[82] *Id*. at page 22, lines 3-8.
[83] *See* Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation 2005 Yearbook: Valuation Edition*, 66 (2005).

Q. Do you agree with Mr. Gorman's projected market risk premium of 6.3% for the CAPM?

A. No. Mr. Gorman calculates a prospective risk premium of 6.3%, which combines the historical real return on stocks (9.1%) with the medium-term consumer price index forecast (2.3%) to project market returns of 11.6%.[84] Mr. Gorman's use of a medium-term inflation rate forecast fails to recognize that equity has an infinite life.

Mr. Gorman should have used long-term consumer price index forecasts, which is closer to 2.75%[85] than 2.3%. This 45 basis point differential (2.75% - 2.3%) raises Mr. Gorman's prospective market risk premium from 6.3% to about 6.75%. The impact on Mr. Gorman's CAPM estimate is approximately 32 basis points (the difference between 6.3% and 6.75% times a beta of 0.80).

3. CAPM Bias

Q. Does Mr. Gorman's version of the CAPM understate the appropriate cost of capital?

A. Yes. As discussed earlier, empirical evidence demonstrates that the plain vanilla CAPM understates the return required from low-beta securities and overstates the return from high-beta securities. Therefore, Mr. Gorman's version of the CAPM underestimates equity costs by approximately 50 basis points.

[84] Exhibit No. ___(MPG-1CT) at page 21, line 17, through page 22, line 2.
[85] Based on yield differential as of August 16, 2006, between the 20-year Treasury bond (5.08%) and the 20-year Treasury Inflation Protected Securities (2.32%).

Q. Please comment on Mr. Gorman's assessment of the Empirical CAPM used in your prefiled direct testimony.

A. Mr. Gorman argues that my Empirical CAPM analysis is erroneous because the "analysis double-counts the impact on a CAPM return estimate created by using Value Line's adjusted beta."[86] As discussed earlier in greater detail, the Empirical CAPM is not an adjustment (increase or decrease) in beta. Instead, the Empirical CAPM is a formal recognition empirical evidence demonstrates that the observed risk-return tradeoff is flatter than predicted by the CAPM.

The Empirical CAPM and the use of adjusted betas comprise two separate features of asset pricing. Assuming *arguendo* a company's beta is estimated accurately, the CAPM will still understate the return for low-beta stocks. Furthermore, if a company's beta is understated, the Empirical CAPM will also understate the return for low-beta stocks. Both adjustments are necessary.

As discussed above and in Exhibit No. ___(RAM-4), the Empirical CAPM is based upon significant empirical studies that demonstrate that low beta stocks offer higher returns than the plain vanilla CAPM would predict. Mr. Gorman's suggestion that my use of the Empirical CAPM was to somehow "manipulate" the data to increase the return estimate is unprofessional and inappropriate because it questions objectivity and independence in this proceeding. My methodologies, regardless of the proceeding, are guided by theoretical and empirical studies and evidence, not by the direction and magnitude of the results produced or the

[86] Exhibit No. ___(MPG-1CT) at page 37, lines 16-17.

identity of the client.

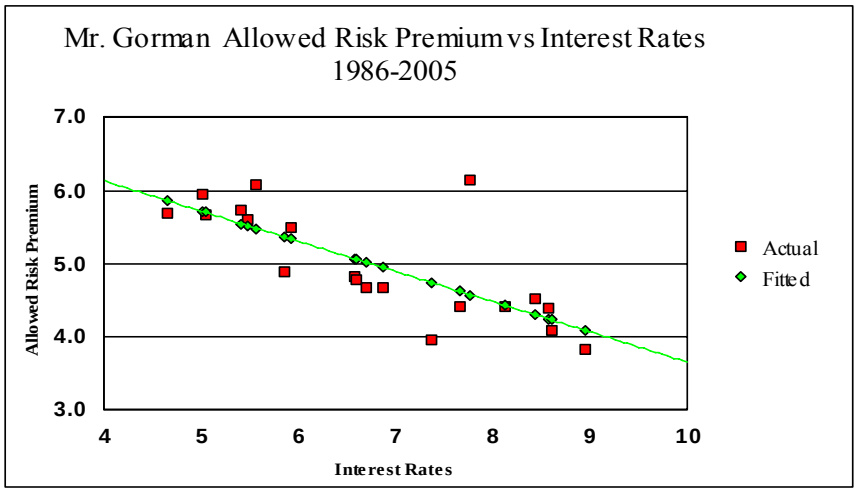
C. AUTHORIZED RISK PREMIUM

Q. Please describe Mr. Gorman's authorized risk premium analysis.

A. Mr. Gorman examines the historical risk premiums implied in the ROEs authorized by regulatory commissions over the period 1986-2005, relative to the contemporaneous level of long-term Treasury and "A" rated utility bond yields. Mr. Gorman then derives an authorized risk premium of 5.0% over long-term Treasury yields.[87]

Q. Do you agree with Mr. Gorman's authorized risk premium analysis.

A. No. A careful review of ROE decisions relative to interest rates reported in Exhibit No. ___(MPG-10) reveals an inverse relationship between authorized risk premiums and interest rates. In other words, the authorized risk premium decreases when interest rates are high and increases when interest rates are low:



Source: Exhibit No. ___(MPG-10)

[87] *Id*. at page 15, line 20, through page 16, line 19.

The following statistical relationship between the risk premium and Treasury bond yields emerge over the 1986-2005 period:

$$RP = 7.8689 - 0.4232\ YIELD \qquad R^2 = 0.60 \quad (t = 5.2)$$

The relationship is statistically significant as indicated by the high R^2 and statistically significant t-value of the slope coefficient.

Inserting Mr. Gorman's long-term Treasury bond yield of 5.3% in the above equation suggests an authorized risk premium estimate of 5.6%, which would result in an authorized ROE for PSE of 10.9% (5.3% + 5.6%). For calendar year 2005, Exhibit No. ___(MPG-10) reports an authorized risk premium for calendar year 2005 (5.90%). Coupled with Mr. Gorman's long-term Treasury bond yield of 5.3%, the implied cost of equity is 11.2% (5.3% + 5.9%). In other words, Mr. Gorman's recommended ROE of 9.9% is approximately 100 basis points lower than the ROE range of 10.9% - 11.2% suggested by Mr. Gorman's authorized risk premium analysis.

D. CAPITAL STRUCTURE ADJUSTMENT

Q. Did Mr. Gorman adjust his recommended ROE for more leveraged capital structure he attributes to PSE?

A. No. Mr. Gorman should have adjusted his recommended ROE of 9.9% to reflect the higher relative risk associated with PSE's capital structure.

Q. What is the magnitude of the required adjustment to account for the more leveraged capital structure Mr. Gorman attributes to PSE?

A. Mr. Gorman attributes a capital structure for PSE that consists of 44% common equity, compared to an average capital structure that consists of 49% common equity for the electric utilities in Mr. Gorman's comparable group. Therefore, the differential between the common equity component of Mr. Gorman's proposed capital structure for PSE and the common equity component of the average capital structure for the electric utilities in Mr. Gorman's comparable group is 5.0%. As discussed earlier in my rebuttal of Mr. Hill, such a differential warrants an upward adjustment to the ROE of approximately 40 to 70 basis points (7.6 to 13.8 basis points multiplied by 5 percentage points). Therefore, Mr. Gorman should have adjusted his recommended ROE by approximately 40-70 basis points to reflect PSE's more leveraged capital structure. If Mr. Gorman adjusted his recommended ROE by the midpoint of this range (55 basis points), the ROE for PSE would be 10.5%.

Mr. Gorman erroneously argues that PSE's more leveraged capital structure is comparable to the average capital structure of his proxy group of electric utilities because "the proxy group has greater business risk, as demonstrated by a somewhat higher S&P business profile score than PSE."[88] The S&P business profile score for PSE fails to demonstrate that PSE has less risk than Mr. Gorman's proxy group. Mr. Gorman's own prefiled response testimony

[88] *Id*. at page 9, lines 18-20.

acknowledges that PSE's bond rating is below the industry average.[89] Moreover, PSE has been unable to earn its authorized return for several years.

Assuming *arguendo* that Mr. Gorman were correct that PSE's more leveraged capital structure is comparable to the average capital structure of his proxy group of electric utilities because of PSE's S&P business profile, this S&P business risk profile does not compensate for its more leveraged capital structure. PSE's S&P business risk profile of 4 is only one notch above the average S&P business risk profile Mr. Gorman's proxy group.

According to S&P guidelines, the difference in required debt ratio between adjacent risk categories is 3-4%. In other words, for a utility with a business risk score of 5 would have a 3-4% higher common equity component of capital structure than a utility with a business risk score of 4. In contrast, the equity component of the average capital structure of Mr. Gorman's proxy group is 5% greater than the equity component of Mr. Gorman's proposed capital structure for PSE.

[89] *See id*. at page 29, line 8.

E. RESPONSES TO MR. GORMAN'S CRITICISMS

1. Company Sample

Q. Do you agree with Mr. Gorman's criticism that your group of comparable companies "included companies with significant nonregulated business risk"?[90]

A. Although several companies in my comparable group do have nonregulated business risk, Mr. Gorman's own prefiled response testimony demonstrates that the electric utility industry has recently been more focused on electric utility operations.[91]

Moreover the same criticism is applicable to Mr. Gorman's group of companies. The following table lists the percentage of revenues attributable to electric utility operations for Mr. Gorman's comparable group of electric utilities:

		% Utility Revenue
1	American El. Power	95%
2	Ameren Corp.	79%
3	Cleco Corp.	95%
4	DTE Energy	55%
5	Empire Dist. Elec.	93%
6	Energy East Corp.	56%
7	FirstEnergy Corp.	79%
8	IDACORP, Inc.	98%
9	NiSource Inc.	16%
10	OGE Energy	31%
11	Pepco Holdings	67%
12	Pinnacle West Capital	74%
13	Puget Energy Inc.	61%
14	Xcel Energy Inc.	75%
	AVERAGE	**69%**

[90] *Id*. at page 30, lines 1-2.
[91] *Id*. at page 2, line 11, through page 3, line 16.

The average electric regulated portion is 69%, implying that Mr. Gorman's group of companies derives 31% of their revenue from non-electric regulated businesses on average.

2. Historical Risk Premium

Q. Why does your historical risk premium analysis exclude data from 2002, 2003, 2004, and 2005?

A. Mr. Gorman questions the exclusion of data from 2002 – 2006 from my historical risk premium analysis of the electric utility industry.[92] The historical risk premium analysis for the electric utility industry stops in 2001 because the annual Moody's Public Utility Manual from which the data were drawn was discontinued following the acquisition of Moody's by Mergent in 2002. Given the rising authorized risk premium discussed earlier, however, it would be reasonable to expect that the current utility risk premium exceeds the historical average. Examination of more recent historical bond return and equity return data based on the S&P Utility Index (instead of Moody's Electric Utility Index) suggest that the addition of data for 2002-2005 would raise the historical risk premium slightly.

Q. Do you agree with Mr. Gorman's criticism that the historical achieved risk premium is the result of declining interest rates and reduced inflation expectations?

A. No. Mr. Gorman's basic premise that the risk premium is the result of declining interest rates is erroneous. The lengthy historical period used in my risk premium

[92] *See id*. at page 41, lines 2-5.

study, 1931-2001, is long enough to smooth out short-term aberrations and encompass several business and interest rate cycles. Moreover, declining interest rates are associated with rising bond prices and high achieved bond returns, which, in turn, reduce the risk premium between utility stocks and bonds.

Q. Do you agree with Mr. Gorman that the your historical risk premium analysis overstates cost of common equity because "the achieved return on electric utility stocks and utility bond yields over the last several years has been driven by high expectations of large profits produced by competitive operations related to wholesale market trading and merchant plant development"?[93]

A. No. As discussed above, my historical risk premium analysis analyzed a long period of data (1931-2001). Wholesale market trading and merchant plant development were virtually non-existent activities throughout the vast majority of that period.

Q. Did Mr. Gorman substantiate his claim that the use of average annual return data instead of year-end data would produce different results in your historical risk premium analysis?

A. No. Mr. Gorman criticizes my historical risk premium analysis because my "estimated equity risk premium may be higher than average for 12-month holding periods simply by using end of year data."[94] Mr. Gorman, however provides no

[93] *Id*. at page 41, lines 17-21.
[94] *Id*. at page 41, lines 8-10.

empirical evidence to substantiate this assertion. It is standard practice when performing historical risk premium studies to employ consistent calendar year stock price data because the investor is assumed to purchase the stock at the same time every calendar year, usually year-end. This procedure maintains consistency with the bond return calculation and maintains the investor-holding period at a consistent one-year interval.

3. Allowed Risk Premium

Q. Please comment on Mr. Gorman's criticism of your allowed risk premium analysis.

A. Mr. Gorman criticizes my authorized risk premium analysis because "commission-authorized returns typically are conservative in nature in estimating changes to investor return requirements."[95] Mr. Gorman fails to recognize that my analysis adjusted the authorized risk premium to the level of interest because of the tendency of commission-authorized returns to moderate the impact of interest rate movements on authorized returns.

Furthermore, Mr. Gorman' criticism that my authorized risk premium analysis does not comport with observable market data or commission-authorized returns[96] is baseless, given that my analysis relies on hundreds of observed actual commission-authorized returns and observed actual interest rates.

4. DCF Results

[95] *Id*. at page 45, lines 7-9.
[96] *Id*. at page 44, lines 5-6.

Q. Does your use of both Zack's and Value Line growth rate projections produce a wide divergence of projected DCF returns, as suggested by Mr. Gorman at page 46, lines 19-20?

A. My prefiled direct testimony and supporting exhibits present four ranges of ROE estimates derived from my DCF analyses:

	Low	Average	High
DCF - Value Line Growth (Combination Utilities)	6.51%	10.11%	15.12%
DCF - Zacks Growth (Combination Utilities)	7.96%	10.15%	12.06%
DCF - Value Line Growth (Gas Utilities)	8.50%	9.60%	11.10%
DCF - Zacks Growth (Gas Utilities)	8.70%	11.20%	13.10%

Mr. Gorman's DCF estimates ranged from a low of 7.38% to a high of 12.58%[97] and also produces a wide range of cost of common equity estimates. These wide ranges in results simply attest to the volatility and lack of reliability of the DCF model.

5. PSE's Specific Risks

Q. Do you agree with Mr. Gorman's assertion that your proposed upward adjustment to PSE's estimated ROE by 25 basis points to account for PSE's higher relative risks is unreasonable?

A. No. As discussed in my prefiled direct testimony, four major factors drive PSE's higher risk profile relative to other utilities: (i) construction risk, (ii) purchased power risk, (iii) regulatory lag, and (iv) financial risk. Moreover, the Company's exposure to regulatory lag remains substantial relative to other utilities, and PSE

[97] *See* Exhibit No. ___(MPG-7).

has been unable to earn its allowed return for the past five years.

Q. Do you agree with Mr. Gorman's statement that PSE's construction risk is "reflected in Dr. Morin's proxy groups, utility bond yields, and utility contemporary risk data."?[98]

A. No. Mr. Gorman fails to evaluate PSE's unique circumstances and the magnitude of the construction risk faced by PSE. A comparison of information derived from the most recent Form 10-Ks for each company in my proxy electric utility group demonstrates that PSE incurred greater capital expenditures than any other company in that group if one compares (i) utility construction and capital expenditures to (ii) net utility property, plant and equipment:

Company	Net Property, Plant and Equipment	Utility Construction and Capital Expenditures	Ratio of CapEx to Net Plant
Puget Energy	$4,630,918.00	$583,594.00	12.60%
Northeast Utilities	$6,417,230.00	$752,124.00	11.72%
Wisconsin Energy	$6,362,900.00	$745,100.00	11.71%
Consol. Edison	$15,244,000.00	$1,617,000.00	10.61%
NSTAR	$3,701,757.00	$383,556.00	10.36%
Alliant Energy	$4,471,500.00	$457,200.00	10.22%
Avista Corp.	$2,126,417.00	$213,652.00	10.05%
Cinergy Corp.	$10,513,082.00	$1,049,723.00	9.98%
Exelon Corp.	$21,981,000.00	$2,165,000.00	9.85%
PG&E Corp.	$19,955,000.00	$1,804,000.00	9.04%
Xcel Energy Inc.	$14,696,310.00	$1,304,468.00	8.88%
Public Serv. Enterprise	$13,336,000.00	$1,024,000.00	7.68%
Entergy Corporation	$19,197,045.00	$1,458,086.00	7.60%
PNM Resources	$2,984,092.00	$211,160.00	7.08%
Ameren Corporation	$13,572,000.00	$947,000.00	6.98%
PEPCO Holdings	$6,698,300.00	$467,100.00	6.97%
TECO Energy	$4,566,900.00	$295,300.00	6.47%
Energy East Corporation	$5,783,454.00	$331,294.00	5.73%
PPL Corp.	$10,916,000.00	$593,000.00	5.43%
AVERAGE	**$9,850,205.53**	**$863,281.95**	**8.89%**

[98] Exhibit No. ___(MPG-1CT) at page 28, lines 17-18.

Q. What conclusions would you draw regarding PSE's construction risk from the above table?

A. The above table, in part, confirms Mr. Gorman's assertion that

> the utility industry in general is in the midst of significant construction programs and many utilities are attracting capital to make significant investments in generation, transmission, and distribution assets.[99]

The average utility construction and capital expenditure of the companies in my proxy electric utility group is significantly higher (almost 150% higher) than Puget Energy's utility construction and capital expenditure over a similar period. This could lead to the wrong conclusion that the Company's construction risks are less than the industry average because the Company's utility construction and capital expenditure are, in an absolute sense, less than that found in the industry.

If the Company's utility construction and capital expenditures, however, were compared to the Company's significantly smaller net property, plant and equipment,[100] then it is apparent that the Company's utility construction and capital expenditures per dollar of net property, plant and equipment is the highest among the companies in my proxy electric utility group and over 140% of the average for the same group. The above table demonstrates that Puget Energy is currently investing more in utility construction and capital expenditures per dollar of net property, plant and equipment than any company in Dr. Morin's proxy electric utility group.

[99] *Id*. at page 28, lines 12-14.

[100] Puget Energy's net property, plant and equipment is about 47% of the average net property, plant and equipment of the companies in Dr. Morin's proxy electric utility group.

Q. Do you agree with Mr. Gorman's suggestion that PSE's purchased power risk is reflected in your electric proxy group?

A. No. As discussed in the prefiled rebuttal testimony of Donald E. Gaines, PSE has greater purchased power risk than any utility included in my electric proxy group.

V. ESTIMATE OF THE EFFECT OF NOT ADOPTING THE TRACKERS PROPOSED BY THE COMPANY

Q. Do you have an estimate of the effect of not adopting the trackers proposed by the Company, such as the power cost adjustment, decoupling mechanism and depreciation tracker on the Company's cost of common equity?

A. In my judgment, the removal of such trackers would increase the Company's cost of common equity by 25 to 50 basis points on account of additional risk faced by the Company. I arrived at this range based on three considerations. First, the yield differences between bonds of adjacent credit rating categories. The current spread between utility bonds rated Baa and A is approximately 40 basis points. Second, it is reasonable to assume that a company with both a purchased gas adjustment and a decoupling mechanism would be assigned a one-step reduction change in the S&P Business Risk Score rankings. As discussed above, each one-step change in the S&P Business Risk Score is approximately equivalent to a 3%-4% reduction in the common equity ratio for the company to maintain the same bond rating.

Several researchers have studied the empirical relationship between the cost of capital and capital-structure changes. Comprehensive and rigorous empirical

studies of the relationship between cost of capital and leverage for public utilities are summarized in my book

The results of these studies indicate that equity costs increase from a low of 34 to a high of 237 basis points for each 1% increase in the debt ratio. The average increase is 138 basis points from the theoretical studies and 76 basis points from the empirical studies, or a range of 7.6 to 13.8 basis points per one percentage point increase in the debt ratio. The more recent studies indicate that the upper end of that range is more indicative of the repercussions on equity costs. If the presence of adjustment mechanisms allow for a 3%-4% decrease in the equity ratio (i.e., increase in the debt ratio), the required downward adjustment to the cost of equity ranges from 7.6 to 13.8 basis points times 3%-4%, which equals approximately 30-40 basis points.

Third, given the observed range in the betas of electric utilities, it is reasonable to state that in the absence of the adjustment mechanisms, PSE's beta factor would increase by 0.05. The Capital Asset Pricing Model ("CAPM") formula can then be used to approximate the return (cost of equity) differences implied by the increase in beta. The basic form of the CAPM states that the return differential is given by the differential in beta times the excess return on the market, (RM - RF). The return differential implied by an increase in beta of 0.05 is given by 0.05 times the market risk premium (RM - RF). Using an estimate of 7% for (RM - RF), the return adjustment is 35 basis points. Based on all these considerations and various frameworks, an increase of 25-50 basis points is not unreasonable.

VI. CONCLUSION

Q. What do you conclude from Mr. Hill's cost of equity analyses?

A. The following table summarizes the various understatements of PSE's cost of common equity by Mr. Hill that I have addressed throughout my lengthy rebuttal. The first two pertain to his overall recommendation, the next three to his DCF estimates, and the last three to his CAPM estimates.

Source	Basis Points
Flotation Cost Allowance	30
Capital Structure Adjustment	55
Analysts Growth Rate Forecasts	40
Sustainable Growth Calculation	15
Beta Adjustment	20
Arithmetic vs Geometric mean	125
Empirical vs Raw CAPM	50

Correction of the flotation cost allowance, capital structure adjustment and understatements related to the DCF analysis (analysts' growth rate forecasts and sustainable growth calculation) would increase Mr. Hill's recommended ROE by 140 basis points, from 9.375% to 10.775%.

Q. Has Mr. Hill presented any arguments in his prefiled response testimony that would cause you to alter any of your recommendations and methodologies?

A. No, he has not.

Q. What do you conclude from Mr. Gorman's cost of equity analyses?

A. The following table summarizes the various understatements of PSE's cost of common equity (the first two pertain to his overall recommendation, the next three to his DCF estimates, and the last three to his CAPM estimates).

Source	Basis Points
Flotation Cost Allowance	30
Capital Structure Adjustment	55
Analysts Growth Forecasts	40
Allowed Risk Premium	100
Beta Adjustment	70
Market Risk Premium	50
Empirical vs Raw CAPM	50
TOTAL	**400**

The total understatement amounts to approximately 4%. If the understatements associated with flotation cost allowances, capital structure and DCF are corrected, Mr. Gorman's recommendation would increase from 9.9% to 11.2%.

Q. Has Mr. Gorman presented any arguments in his prefiled response testimony that would cause you to alter any of your recommendations and methodologies?

A. No, he has not.

Q. Do you agree with Messrs. Hill and Gorman that severe reductions in PSE's ROE will not endanger credit quality?

A. No. Both Messrs. Hill and Gorman are incorrect in their claim that their severe reductions to the ROE would not endanger PSE's current bond rating. The

extreme decreases in PSE's authorized ROE would alarm the investment community, lower stock price and threaten the Company's credit ratings. A weakening of the Company's credit ratings, stock price, and earnings power at a time when the Company needs to attract significant external capital on reasonable terms is ill-advised. As discussed in my prefiled direct testimony, PSE's risks will only increase with the Company's significant capital investments necessary to provide service to its customers. Neither Mr. Hill nor Mr. Gorman address PSE's increased risks arising from its inability to fully fund its sizeable construction program with internal funds. A reduction in authorized ROE of the magnitude recommended by Mrs. Hill and Gorman can only aggravate the situation.

Q. Does that conclude your prefiled rebuttal testimony?

A. Yes.