BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,	
Complainant,	
v.	Docket No. UE-090704 Docket No. UG-090705
PUGET SOUND ENERGY, INC.,	
Respondent.	

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

DECEMBER 17, 2009

PUGET SOUND ENERGY, INC.

PREFILED REBUTTAL TESTIMONY (NONCONFIDENTIAL) OF
DR. ROGER A. MORIN

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PUGET SOUND ENERGY, INC.

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I.   INTRODUCTION

Q.   Are you the same Dr. Roger A. Morin who provided in this proceeding

prefiled direct testimony, Exhibit No. RAM-1T, on May 8, 2009, on behalf of

Puget Sound Energy, Inc. ("PSE")?

A.   Yes.

Q.   What is the purpose of this prefiled rebuttal testimony?

A.   This rebuttal testimony responds to the testimony of Mr. Stephen G. Hill, witness

for the Public Counsel section of the Washington State Attorney General's Office

("Public Counsel"), Exhibit No. SGH-1HCT, and the testimony of Mr. David C.

Parcell, for the Staff of the Washington Utilities and Transportation Commission

("Commission Staff"), Exhibit No. DCP-1T, with respect to rate of return on

common equity capital ("ROE") for PSE.

Q.   Please describe how your rebuttal testimony is organized.

A.   My rebuttal testimony is organized in two sections, corresponding to each of the

aforementioned individuals. I also provide the Commission with an updated

recommendation in view of the appreciable changes that have occurred in capital

1   markets since I prepared my direct testimony, Exhibit No. RAM-1T.

2   **Q.   What ROE are you now recommending for PSE for the rate year?**

3   A.   Based on the results of all my analyses, the application of my professional

4   judgment, and the risk circumstances of PSE, it is my opinion that a just and

5   reasonable ROE for PSE is 10.95%.

6   **Q.   Please summarize the ROE recommendations of the witnesses you are**

7   **rebutting in this case.**

8   A.   The ROE recommended by each witness I am rebutting in this case is as follows:

9   Mr. Hill   9.5%

10   Mr. Parcell   9.5% -10.5%

11   I note that Mr. Parcell's upper range (10.5%) is within reasonable striking

12   distance of my own updated recommendation of 10.95%, while Mr. Hill's ROE

13   recommendation is more extreme and outside reasonable limits of probability. I

14   shall therefore devote the majority of my rebuttal to Mr. Hill's testimony.

15   **II.   REBUTTAL TO MR. HILL'S TESTIMONY**

16   **Q.   Please summarize the recommended ROE of Public Counsel.**

17   A.   Mr. Hill recommends a ROE for PSE of only 9.50%, which is the midpoint of

18   Mr. Hill's range of 9.25% – 9.75%. *See* Exhibit No. SGH-1HCT at page 5,

19   lines 11-15.

1	Mr. Hill relies primarily on two discounted cash flow ("DCF") analyses of a
2	group of eleven electric utilities, the first being the traditional constant growth
3	DCF analysis and the second being a two-stage DCF analysis. To my knowledge,
4	this is the first proceeding in which Mr. Hill has relied on the latter methodology,
5	which, not surprisingly, produces lower results than the traditional DCF analysis
6	on which Mr. Hill has always relied upon in the past. The two DCF studies
7	produce an estimated ROE of 9.87% and 9.57%, respectively. *See* Exhibit
8	No. SGH-1HCT at page 39, lines 3-4 (traditional DCF analysis) and at page 40,
9	lines 18-19 (two-stage DCF analysis)
10	Mr. Hill performs three checks on his DCF estimates, based on the Modified
11	Earnings Price, Market-to-Book ("M/B"), and Capital Asset Pricing Model
12	("CAPM") methodologies. *See, e.g.,* Exhibit No. SGH-1HCT at page 55,
13	Table III.
14	From these various analyses, Mr. Hill concludes that the ROE for PSE is 9.50%.
15	*See* Exhibit No. SGH-1HCT at page 5, lines 11-15.
16	**Q.** **Does Mr. Hill's testimony suggest whether he believes that capital costs have**
17	**increased or decreased?**
18	A. Mr. Hill's testimony provides several contradictory statements, so it is impossible
19	to determined from his testimony whether he believes that capital costs have
20	increased or decreased.

1   Mr. Hill makes certain statements that would lead one to believe that Mr. Hill

2   believes that capital costs have decreased or will decrease. For example, Mr. Hill

3   points out that long-term Treasury bond yields dipped below the lower end of

4   their historical range as a result of the recent economic downturn. *See* Exhibit

5   No. SGH-1HCT at page 21, lines 1-3. Mr. Hill also states that "investors'

6   required return for a risk-free investment remains low by historical

7   standards . . . ." Exhibit No. SGH-1HCT at page 25, lines 21-22.

8   Mr. Hill, however, makes other statements that would lead one believe that Mr.

9   Hill believes that capital costs have increased or will increase. For example, Mr.

10   Hill states that "long-term Treasury bond yields have increased from their lowest

11   point established at the end of 2008." Exhibit No. SGH-1HCT at page 25,

12   lines 12-13. Mr. Hill also incorporates the position of Value Line that "increasing

13   inflation pressures with energy, food and commodities indicate that the next

14   interest rate move by the Fed will be toward tightening credit (i.e., increasing

15   interest rates)." Exhibit No. SGH-1HCT at page 26, lines 9-11.

16   In sum, it is difficult to decipher the position of Mr. Hill with respect to the

17   direction of capital costs for utilities.

18 **Q.   Please summarize your specific concerns with Mr. Hill's recommended ROE**

19   **of 9.50% for PSE.**

20 A.   The ROE recommended by Mr. Hill significantly understates an appropriate ROE

21   for PSE for the following reasons:

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	(i)	**Mr. Hill's recommended ROE for PSE is outside of the mainstream for utilities.** The ROE recommended by Mr. Hill for PSE is well below the range of currently authorized ROEs for utilities in the United States and below the zone of currently authorized ROEs for Mr. Hill's sample of comparable companies.
	(ii)	**Mr. Hill uses an ambiguous and arbitrary growth rate for each utility in his DCF analysis**. Mr. Hill's DCF estimates are unreliable because he has selected a growth rate for each company in his comparable group that is ambiguous, arbitrary and impossible to replicate.
	(iii)	**Mr. Hill erroneously relies on historical growth rates in his DCF analysis.** Mr. Hill understates his DCF estimates by using historical growth rates that have little relevance as proxies for future long-term growth forecasts in the DCF model.
	(iv)	**Mr. Hill erroneously relies on dividend growth forecasts in his DCF analysis.** Mr. Hill understates his DCF estimates by improperly using dividend growth forecasts during a period in which utilities are expected to continue to lower their dividend payout ratio over the next several years as capital spending intensifies. Using the appropriate growth rate forecasts, Mr. Hill's DCF estimates increases from 9.87% to 10.87% for his group of utilities.
	(v)	**Mr. Hill uses the wrong long-term growth rate of the U.S. economy in his two-stage DCF analysis.** Mr. Hill understates his DCF estimates by using the wrong long-term growth rates of the U.S. economy.
	(vi)	**Mr. Hill improperly uses disguised versions of the DCF as "checks" on his DCF analysis and, as a result, are redundant.** The Modified Earnings-Price Ratio and M/B methodologies use by Mr. Hill as checks on his DCF results are disguised versions of the DCF model and do not constitute independent stand-alone checks.
	(vii)	**Actuarial data utilized for pension fund accounting are irrelevant in estimating a utility's cost of capital.** Actuarial data utilized for pension fund accounting are by nature very conservative, consistent with Generally Accepted Accounting Principles ("GAAP") guidelines, and

| 1 | | are not suited for assessing the cost of equity capital in a |
| 2 | | rate proceeding. |

3   Correction of the above-described infirmities would likely increase the ROE

4   recommended by Mr. Hill by at least 150 basis points, from 9.5% to 11.0%.

5   **A.**   **Mr. Hill's Recommended ROE for PSE Is Outside of the Mainstream**
6   **for Utilities**

7   **Q.**   **Please comment on recent decisions regarding authorized ROEs for utilities**

8   **like PSE.**

9   A.   Authorized ROEs, although not a precise indication of a utility's cost of equity

10   capital, are nevertheless important determinants of investor growth perceptions

11   and investor expected returns. They also serve to provide some perspective on

12   the validity and reasonableness of Mr. Hill's recommended ROE. Using SNL

13   reported data for ROE decisions rendered for 2008, the average authorized ROE

14   for utilities was 10.5% and approximately 10.7% for vertically-integrated electric

15   utilities like PSE. For 2009 to date, the corresponding numbers are 10.4% and

16   10.6%. These ROE decisions substantially exceed Mr. Hill's recommended

17   9.5%.

18   **Q.**   **Is Mr. Hill's recommended ROE for PSE consistent with the average**

19   **authorized ROE of the utilities in Mr. Hill's comparable group?**

20   A.   No. Mr. Hill's recommended ROE for PSE is inconsistent with the average

21   authorized ROE of the utilities in Mr. Hill's comparable group. The AUS Utility

1   Reports survey for December 2009 reports that the average authorized ROE is

2   10.7% for both the combination gas and electric industry and the overall electric

3   utility industry. All but one of the 59 authorized ROEs reported by AUS Utility

4   Reports exceed Mr. Hill's 9.5% recommendation. If one were to remove the less

5   risky transmission and distribution only ("wires") electric utilities from the AUS

6   sample, the currently authorized returns are higher.

7   Moreover, Mr. Hill's recommended ROE for PSE is below the authorized ROE of

8   each utility in Mr. Hill's comparable group and far below the average authorized

9   ROE of 10.7% for the same group, as shown on the table below. If one were to

10 eliminate the "wires" company from the group (Northeast Utilities), the average

11 authorized ROE is 10.7%.

12 Although decisions of other regulatory bodies regarding authorized ROEs do not

13 bind this Commission, one cannot overlook the significant difference between

14 Mr. Hill's recommended ROE and the ROEs currently authorized for the utility

15 industry.

Table 1

**Authorized ROEs of Each Utility in
Mr. Hill's Group of Comparable Utilities**

	Company Name	% Authorized ROE
1	Central Vermont P. S.	10.71
2	FirstEnergy Corp.	10.67
3	Northeast Utilities	9.72
4	American Electric Power	10.71
5	Cleco Corporation	10.70
6	Empire District Electric	10.80
7	Entergy Corp.	10.76
8	Westar	10.00
9	Hawaiian Electric	10.82
10	Idacorp	10.50
11	Pinnacle West	10.75
	AVERAGE	**10.56**
	AVERAGE w/o Northeast	**10.71**

Source: AUS Utility Reports 12/2009

B. **Mr. Hill Uses an Ambiguous and Arbitrary Growth Rate for Each
Utility in His DCF Analysis**

Q. **What specific DCF methodology does Mr. Hill use to estimate an ROE for
PSE?**

A. Mr. Hill applies a DCF analysis to one sample of eleven utilities. Mr. Hill bases
the expected dividend yield component on a 6-week average stock price.
See Exhibit No. SGH-9. For the growth component, Mr. Hill examines a broad
array of growth rate estimates, including (i) historical and forecast sustainable
growth rates, (ii) historical growth rates in book value, earnings, and dividends,
(iii) Value Line growth forecasts, and (iv) the consensus growth forecasts
reported in Zacks and IBES. *See* Exhibit No. SGH-8. Mr. Hill then arbitrarily

1   selects a growth rate for each company. Adding the dividend yield component to

2   the arbitrary growth component selected for each company, Mr. Hill produces a

3   DCF estimate of 9.87% for the group of utilities. *See* Exhibit No. SGH-10.

4 **Q.   Did you attempt to replicate Mr. Hill's DCF analysis for a specific company**

5   **to illustrate Mr. Hill's methodology?**

6 A.   Yes. I unsuccessfully attempted to replicate Mr. Hill's DCF analysis for a

7   specific company to illustrate Mr. Hill's methodology. Mr. Hill selects American

8   Electric Power ("AEP") as his "case study" to derive his DCF growth rate

9   forecast and cites the following growth rate estimates for AEP:

10   **Table 2**

11   **Growth Rate Proxies for AEP Presented by Mr. Hill**

AEP Growth Proxies	Estimate	Reference
5-yr historical sustainable	5.36%	SGH-7 page 2
2009 sustainable	4.34%	SGH-7 page 2
2010 sustainable	4.69%	SGH-7 page 2
projected sustainable 2012-14	5.03%	SGH-7 page 2
5-yr historical Book Value	2.50%	SGH-8 page 2
5-yr historical Dividend	-6.00%	SGH-8 page 2
5-yr historical Earnings	n/a	SGH-8 page 2
5-yr Compound Hist Book Value	5.15%	SGH-8 page 2
5-yr Compound Hist Earnings	2.13%	SGH-8 page 2
5-yr Compound Hist Dividends	3.22%	SGH-8 page 2
VL Projected dividend	3.00%	SGH-8 page 2
VL Projected earnings	3.00%	SGH-8 page 2
VL projected Book Value	5.00%	SGH-8 page 2
analyst IBES projection	3.75%	SGH-8 page 2
analyst Zacks projection	3.30%	SGH-8 page 2

28   Mr. Hill declares that "the simple five-year average sustainable growth value is

29   used as a benchmark against which I measure the company's most recent growth

30   rate trends." Exhibit No. SGH-1HCT at page 32, lines 2-4. Yet, from this array

1		of growth rate estimates, Mr. Hill arbitrarily selects, with little formal
2		substantiation, a DCF internal growth rate forecast of 4.49% as his final growth
3		rate for AEP. *See* Exhibit No. SGH-8 at page 1. It is unclear how the benchmark
4		of 5.36% squares with the final choice of a 4.49% internal growth rate.

| 5 | **Q.** | **Were you able to determine how Mr. Hill arrives at a DCF growth rate** |
| 6 | | **forecast of 4.49% for AEP?** |

7	A.	No. I was unable to determine how Mr. Hill arrives at a DCF growth rate forecast
8		of 4.49% for AEP. The average of all the growth rates for AEP displayed on
9		Table 2 is 3.2%, the median is 3.5%, and the midpoint of the range is -0.32%. I
10		was unable to replicate or decipher how Mr. Hill arrived at a 4.49% growth rate
11		forecast from this vast list of growth rates. As shown below, the most meaningful
12		growth proxies for utilities' growth rates are the analysts' growth projections in
13		the range of 5.5% – 6.0% reported on page 2 of Exhibit No. SGH-8 for Mr. Hill's
14		sample of companies.

| 15 | **Q.** | **Were you able to determine how Mr. Hill arrives at a DCF estimate of 9.99%** |
| 16 | | **for AEP?** |

17	A.	No. Mr. Hill asserts that the DCF estimate of ROE for AEP is 9.99%, the sum of
18		a dividend yield of 5.50% plus a growth rate forecast of 4.49%. See Exhibit
19		No. SGH-10. Mr. Hill derives the growth rate forecast of 4.49% directly from the
20		last column of page 1 of Exhibit No. SGH-8, which computes the sustainable
21		growth rate forecast ($g = br + sv$) for AEP as the sum of a sustainable internal

1   growth rate (4.25%) and a sustainable external growth rate (0.24%).

2 **Q.**   **How does Mr. Hill arrive at a sustainable internal growth rate of 4.25% and**

3   **an external growth rate of 0.24% for AEP?**

4 A.   It is unclear how Mr. Hill arrived at these two growth rates. The "internal

5   growth" and "external growth" figures are presumably derived from the upper

6   panel of page 2 of Exhibit No. SGH-7, under the headings "internal growth" and

7   "external growth." The internal growth rate of 4.25% for AEP, however, cannot

8   be found anywhere on the upper panel of page 2 of Exhibit No. SGH-7. The

9   sustainable internal growth rate of 4.25% is contained within the qualitative

10   narrative of AEP's sustainable growth rate on page 2 of Exhibit No. SGH-4 and is

11   arbitrarily characterized as "reasonable".

12   In short, from a vast array of some fifteen growth estimates, Mr. Hill arbitrarily

13   selects a growth rate forecast of 4.49% for AEP with little quantitative support or

14   academic empirical evidence as to the optimal growth rate proxy in the DCF

15   model.   In short, Mr. Hill's choice of growth rates is extremely confusing and

16   contradictory.

17 **Q.**   **Were you able to replicate Mr. Hill's growth rate forecasts for any of the**

18   **companies contained in Mr. Hill's sample?**

19 A.   No. I was unable to replicate Mr. Hill's final choice of growth rate estimates of

20   any utility in Mr. Hill's sample of utilities from the vast array of growth rate

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1   estimates provided in Exhibit No. SGH-8. The growth estimates simply appear

2   without scientific foundation, derivation or ability to be replicated.

3 **Q.   What is the sustainable growth rate technique used by Mr. Hill to implement**

4   **the DCF model?**

5 A.   Mr. Hill appears to rely heavily on the so-called sustainable (or internal) growth

6   method. In the sustainable growth method, the internal growth rate forecast is

7   based on the equation g = b(ROE), where b is the percentage of earnings retained

8   and ROE is the expected rate of return on book equity. Mr. Hill also accounts for

9   the impact of external stock financing on growth by adding an external growth

10   term (g = sv). *See* Exhibit No. SGH-1HCT at page 27, line 23, through page 39,

11   line 4; *see also* Exhibit No. SGH-7 and Exhibits No. SGH-8.

12 **Q.   Is the sustainable growth methodology an appropriate technique to**

13   **implement the DCF model in this proceeding?**

14 A.   No. The sustainable growth methodology used by Mr. Hill in this proceeding

15   contains a logical contradiction because the method requires an explicit

16   assumption on the ROE expected from the retained earnings that drive future

17   growth. Mr. Hill bases his ROE estimate on (i) achieved ROEs in the past five

18   years 2004-2008 and (ii) Value Line forecast ROEs for 2009, 2010, and the 2012-

19   2014 period.

20   In brief, Mr. Hill's implementation of the sustainable growth method, to the

1		extent relied upon, is logically circular because it *assumes* a ROE in a regulatory
2		process that is designed to estimate the fair and reasonable ROE.
3	**Q.**	**Is the sustainable growth rate technique consistent with empirical evidence?**
4	A.	No. Empirical finance literature demonstrates that the sustainable growth rate
5		technique is a very poor explanatory variable of market value and is not
6		correlated significantly to measures of value, such as stock price and
7		price/earnings ratios.
8	**Q.**	**Are the Value Line estimates of ROE and retention ratio representative of**
9		**the market consensus?**
10	A.	No, not necessarily. Mr. Hill's exclusive reliance on Value Line forecasts of
11		ROE and retention ratio runs the risk that such forecasts are not representative of
12		investors' consensus forecast. Moreover, the forecasts of the expected ROE
13		published by Value Line are based on end-of-period book equity rather than on
14		average book equity. The following formula adjusts the reported end-of-year
15		values so that they are based on average common equity, which is the common
16		regulatory practice:

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

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

1   This one error alone—failing to use average common equity—understates

2   Mr. Hill's DCF estimates by approximately 10-20 basis points, depending on the

3   magnitude of the book value growth rate forecast.

4 **C.   Mr. Hill Erroneously Relies on Historical Growth Rates in His DCF**
5 **Analysis**

6 **Q.   Please discuss the use of historical growth rates in applying the DCF model**

7 **to utilities.**

8 A.   Although it is not clear as to what weight Mr. Hill accords historical growth rates

9   given the arbitrary nature of his final choice of growth estimates, Mr. Hill

10   considers historical growth rates in arriving at proxies for the DCF growth

11   forecast component. It may be reasonable to assume that historical growth rates

12   in dividends/earnings influence investors' assessment of the long-run growth rate

13   forecast of future dividends/earnings if the company and industry are stable.

14   Because of structural changes in the energy industry, however, historical growth

15   rates have little relevance as proxies for long-term growth forecasts. Moreover,

16   historical growth rates are largely redundant because such historical growth

17   patterns are already incorporated in analysts' growth forecasts that should be used

18   in the DCF model.

D. **Mr. Hill Erroneously Relies on Dividend Growth Forecasts in His DCF Analysis**

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

A. No. Value Line dividend growth forecasts should not be considered in applying the DCF model to utilities. First, heavy reliance on Value Line 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 utilities at this time in the DCF model. The Value Line dividend growth forecasts are largely dominated by the anticipated dividend performance over the next few years and higher business risk. 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 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.

First, reliance on "near-term" dividend growth is improper because it is expected that utilities will continue to lower their dividend payout ratios over the next several years in response to increased business risk. Second, in the current environment where utilities, including PSE, are substantially increasing their capital expenditures, dividends cannot be expected to grow at the same rate that investors expect earnings to grow.

1   Therefore, earnings and dividends are not expected to grow at the same rate in the

2   future. Mr. Hill's own growth rate data on page 2 of Exhibit No. SGH-8 clearly

3   demonstrate this phenomenon because both historical and projected utility

4   dividend growth rates are less than the earnings growth rate forecast. As

5   discussed on pages 45-46 of my prefiled direct testimony, Exhibit No. RAM-1T,

6   the use of consensus analysts' earnings growth forecasts in the DCF model

7   mitigates this potential bias—an approach supported by empirical literature.

8 **Q.   What does the published academic literature say on the subject of analysts'**

9 **growth rate forecasts in the DCF model?**

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

11   rate forecasts are reasonable indicators of investor expectations and (ii) investors

12   rely on such forecasts. Cragg and Malkiel present detailed empirical evidence

13   that (i) the average analysts' growth rate forecast is a better predictor of investor

14   expectations than are historical growth rates; (ii) the average analysts' growth rate

15   forecast represents the best possible source of DCF growth rate forecasts; and

16   (iii) historical growth rates do not contain any information not already included in

17   analysts' growth rate forecasts.[1] Other studies confirm the superiority of analysts'

18   growth rate forecasts over historical growth extrapolations.[2]

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[1] John G. Cragg & Burton G. Malkiel, *Expectations and the Structure of Share Prices* (1982).
[2] James H. Vander Weide & Willard T. Carleton, *Investor Growth Expectations: Analysts vs. History*, 14 The Journal of Portfolio Management 78 (1988); Stephen G. Timme & Peter C. Eisemann, *On the Use of Consensus Forecasts of Growth in the Constant Growth Model: The Case of Electric Utilities*, Financial Management 18 (Winter 1989).

1   **Q.   What do you conclude from Mr. Hill's DCF growth rate analysis?**

2   A.   Although Mr. Hill reports and discusses historical growth rates and dividend

3   growth rate forecasts, it is difficult to discern from the discussion of each

4   company's growth rate to what extent, if any, Mr. Hill relies on historical growth

5   rates and dividend growth rate forecasts reported by Value Line. To the extent

6   Mr. Hill relies on either of historical growth rates and Value Line's dividend

7   growth forecasts, he does so in error.

8   One would expect that averages of analysts' earnings growth forecasts, such as

9   those contained in IBES, First Call, Reuters, or Zacks, are more reliable estimates

10   of the investors' consensus expectations than either historical growth rates or one

11   particular firm's dividend growth forecast. As discussed on pages 44-45 of my

12   prefiled direct testimony, Exhibit No. RAM-1T, consensus analysts' growth

13   forecasts (i) are reflected in stock prices, (ii) possess a high explanatory power of

14   equity values, and (iii) are used by investors. Moreover, it is necessary to use

15   earnings forecasts rather than dividend forecasts because of the extreme scarcity

16   of dividend forecasts compared to the availability of earnings forecasts. Given

17   the paucity and variability of dividend forecasts, use of dividend forecasts

18   produces unreliable DCF results.

19   Use of the analyst growth forecasts would have generated an average growth rate

20   forecast in the range of 5.3%–6.1% (midpoint 5.7%) for Mr. Hill's sample group

1   of utilities,[3] not the 4.67% average used, as shown on the first column of numbers

2   page 2 of Exhibit No. SGH-8. If Mr. Hill were to have used the midpoint growth

3   rate forecast of 5.7% instead of his arbitrary growth rate forecast of 4.67%,

4   Mr. Hill's DCF estimate increases by 100 basis points, from 9.87% to the 10.87%

5   for his group of utilities.

6   **E.   Mr. Hill Uses the Wrong Long-Term Growth Rate of the**
7   **U.S. Economy in His Two-Stage DCF Analysis**

8   **Q.   Is Mr. Hill's two-stage DCF analysis consistent with his past practices?**

9   A.   No. Over the years, Mr. Hill has always performed a traditional DCF analysis in

10   most, if not all, of his testimonies for utilities in retail jurisdictions and has never

11   relied on the two-stage DCF model to the best of my knowledge. In fairness to

12   Mr. Hill, however, he appears to ignore the results of this particular analysis.

13   **Q.   Do you agree with Mr. Hill's two-stage DCF analysis?**

14   A.   No. Mr. Hill implements a two-stage DCF analysis that produces a ROE estimate

15   of 9.57%. He appears to place no weight on this estimate because it does not

16   appear on his summary of results. See Exhibit No. SGH-1HCT at page 55,

17   Table III.

18   Although I certainly agree with the validity of the two-stage DCF methodology, I

19   disagree with the key input data Mr. Hill uses in the second growth stage—the

    _____

       [3] *See* Exhibit No. SGH-8 at page 2. The average analysts' growth forecasts are 5.32% from Value
    Line, 6.11% from IBES, and 5.9% from Zacks.

long-term growth estimate. Mr. Hill bases the latter on the Congressional Budget

Office's ("CBO") long-term GDP growth forecast of 4.2% for the U.S. economy

over the period 2009-2019.

Q. **Is the use of the CBO long-term GDP growth forecast as a proxy for the**

long-term growth estimate in the two-stage DCF analysis appropriate.

A. No. The CBO long-term GDP growth forecast is an inappropriate proxy for the

long-term growth estimate in the two-stage DCF analysis. First, Mr. Hill's long-

term growth forecast of 4.2% is inconsistent with the long-term historical growth

of the economy (approximately 6%). Second, I believe that Mr. Hill has cherry-

picked the 4.2% forecast shown on Table 2-6 of the January 2009 edition of the

CBO's economic projections and failed to mention that right alongside the CBO

forecast of 4.2% is the Blue Chip forecast of 5.1% and the Administration's

forecast of 4.9%.

Third, Mr. Hill should have compared the utility growth rate forecasts with the

historical long-term growth of the economy as a whole and/or the long-range

growth forecasts in GDP projected for the very long-term. The former has been

approximately 6% while the latter is in the 5.5% - 6.0% range.[4] Mr. Hill's

comparison to a short-term growth rate forecast (the next ten years) is

inappropriate because the growth term of the DCF model is perpetual in nature.

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[4] A long-term forecast of nominal growth in GDP can be formulated by combining a long-term inflation estimate (2.0% - 2.5% according to the CBO projections) with a long-term real growth rate forecast of 3.5%, and the long-term expected GDP nominal growth is 5.5% - 6.0%.

1   In short, Mr. Hill's second-stage growth forecast of 4.2% for his comparable

2   group of electric utilities slightly understates the long-term expected GDP

3   nominal growth by at least 130 basis points (5.5% - 4.2% = 1.3%).

4   **Q.   How would Mr. Hill's DCF results change if the appropriate long-term GDP**

5   **growth forecast were used in the two-stage DCF analysis?**

6   A.   Use of the GDP long-term growth forecast of 5.5% in Mr. Hill's second-stage

7   DCF analysis instead of the medium-term forecast of 4.2% would raise Mr. Hill's

8   DCF estimates by 130 basis points, from 9.57% to 10.87%.

9   **F.   Mr. Hill Improperly Uses Disguised Versions of the DCF As "Checks"**
10   **on His DCF Analysis**

11   **Q.   Does Mr. Hill employ checks on his DCF results?**

12   A.   Yes. As one of his three checks on the DCF results, Mr. Hill employs the

13   Modified Earnings-Price Ratio method. According to this method, the return of

14   earnings to shareholders is the cost to the company of equity funds, and the same

15   rate of return must be earned on equity-financed assets to equal the cost rate.

16   **Q.   Is the modified earnings-price ratio method an appropriate check of DCF**

17   **results?**

18   A.   No. The corporate finance literature in the 1960s extensively discussed the

19   Earnings-Price Ratio methodology that lies at the root of Mr. Hill's Modified

20   Earnings-Price Ratio method. Indeed, the Earnings-Price Ratio method enjoyed

1   some brief notoriety in regulatory proceedings during that period. Today,

2   however, the Earnings-Price Ratio method has vanished from use because it

3   produces unreliable results. In fact, the Earnings-Price Ratio method constitutes

4   an accurate measure of the cost of equity (and collapses into the standard

5   constant-growth DCF model) only under two very limited circumstances:

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

7   (2)   the firm must be an "ordinary" firm, (i.e., a company without
8   profitable opportunities earning a return on new investments equal
9   to the cost of equity).

10   Neither of these circumstances is present here, and therefore the Commission

11   should reject Mr. Hill's Modified Earnings-Price Ratio. Furthermore, the

12   Modified Earnings-Price Ratio, like the retention growth method discussed in

13   Section II.B. above, is logically circular because it requires an assumed ROE,

14   which is the very quantity the model is trying to estimate.

15   I am unaware of any financial witness or regulatory body that has relied on this

16   antiquated methodology.

17 **Q.   Is Mr. Hill's modified earnings-price ratio methodology any different from**

18   **the earnings-price ratio methodology?**

19 A.   No. The modified earnings-price ratio methodology and the earnings-price ratio

20   methodology are equivalent. Indeed, the citation in Mr. Hill's testimony to the

1   formula provided by Elton and Gruber[5] illustrates the relationship between the

2   Earnings-Price Ratio and the Modified Earnings-Price Ratio. See Exhibit

3   No. SGH-1HCT at page 50, line 16, through page 51, line 9. As cited by

4   Mr. Hill's testimony, Elton and Gruber posit the following formula,

$$k \quad = \quad (1\text{-}b)E/(1\text{-}cb)P$$

6   Where: k   =   the cost of equity capital
7   b   =   the retention ratio
8   E   =   earnings
9   P   =   market price
10   c   =   the ratio of the expected return on equity to
11   the cost of equity capital (ROE/k)

12   Because the process of regulation sets the return on equity equal to the cost of

13   equity (i.e., ROE is set equal to "k" by the regulator), "c" equals 1.0 in the above

14   formula. Thus k = E/P, and the two methodologies are equivalent.

15   **Q.   Does Mr. Hill employ a check other than the Modified Earnings-Price Ratio**

16   **of his DCF results?**

17   A.   Yes. Mr. Hill also uses the Market-to-Book ("M/B") ratio to check his DCF

18   results.

19   **Q.   Is the M/B ratio methodology an appropriate check of DCF results?**

20   A.   No. Mr. Hill admits that the M/B ratio methodology "is derived algebraically

21   from the DCF model and, therefore, cannot be considered a strictly independent

22   check of that method." Exhibit No. SGH-1HCT at page 53, lines 17-18.

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[5] Edwin J. Elton & Martin J. Gruber, *Modern Portfolio Theory and Investment Analysis* 401-404 (5th ed. 1995).

1		Furthermore, the M/B ratio, like both the retention growth method discussed in
2		Section II.B. above and the Modified Earnings-Price Ratio discussed in this
3		Section II.F., is logically circular because it requires an assumed ROE, which is
4		the very quantity the model is trying to estimate.
5	**G.**	**Mr. Hill's CAPM Results Should Be Given Very Little, If Any,**
6		**Weight**
7	**Q.**	**Does Mr. Hill employ a CAPM estimate to check his DCF results?**
8	A.	Yes. As a check on his DCF estimate, Mr. Hill performs a CAPM analysis of
9		ROE. *See* Exhibit No. SGH-12.
10	**Q.**	**Is Mr. Hill correct that the results of a CAPM analysis are less reliable than**
11		**those from a DCF analysis?**
12	A.	Yes. I share Mr. Hill's misgivings with respect to the reliability of the CAPM
13		given current market conditions. As stated in my prefiled direct testimony in this
14		proceeding, "CAPM estimates are not significantly above the cost of new debt
15		capital and likely understate the cost of equity capital under current unsettled
16		capital market conditions." Exhibit No. RAM-1T at page 37, lines 15-17.
17	**Q.**	**How much weight should be accorded to the CAPM results under current**
18		**market circumstances?**
19	A.	Less weight should be accorded to the CAPM results under present circumstances
20		for two reasons:

1   First, because the betas employed in the CAPM analysis are
2   estimated over five-year historical periods, the impact of the
3   ongoing financial crisis is not yet fully captured in the five-year
4   historical betas. Second, government interest rates have decreased
5   substantially following the Federal Reserve's expansionary
6   policies designed to jumpstart the stalled economy, thus lowering
7   the CAPM results.

8   Exhibit No. RAM-1T at page 37, line 17, through page 38, line 2.

9 H.   Actuarial Data Utilized for Pension Fund Accounting Are Irrelevant
10   in Estimating a Utility's Cost of Capital

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

12   PSE?

13 A.   Yes, I did. Mr. Hill tests the reasonableness of his 9.50% recommended ROE by

14   comparing it to expected stock market returns in the range of 8% - 9% that are

15   implied in utility pension fund actuarial data. Mr. Hill then concludes that his

16   proposed cost of equity of 9.5% is consistent with such pension fund data.

17   *See* Exhibit No. SGH-1HCT at page 57, lines 1-10. This is incorrect for several

18   reasons.

19   The return figures cited by Mr. Hill are for the total equity market. PSE and

20   utilities generally are less risky than the overall market. According to Exhibit

21   No. SGH-12, PSE's beta is 0.73, which suggests that PSE is 73% as risky as the

22   overall stock market, and, therefore, should have a lower expected return than the

23   overall market. Yet, Mr. Hill's recommended ROE for PSE exceeds the

24   aforementioned range of expected return for the market as a whole. This is

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1 patently illogical. To be consistent with his view of stock market returns of 8%–

2 9% and with PSE's beta of 0.73, Mr. Hill should have recommended an ROE in a

3 range of 5.8%–6.6% (i.e., the product of 0.73 and the range of 8%–9%). That

4 result is preposterous, of course, and below the cost of long-term debt for PSE.

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

6 A.   No. Actuarial data are irrelevant in estimating the cost of equity capital. Mr. Hill

7 tests the reasonableness of his recommended ROE of 9.50% by comparing this

8 recommendation to expected stock market returns of 8%–9% that he claims are

9 implied in pension fund actuarial data. This comparison, in the context of a rate

10 proceeding, is highly unusual. I am unaware of any regulatory commission that

11 has relied on such data. Indeed, the California Public Utilities Commission

12 recently considered similar arguments and concluded as follows:

13   The objectives of a pension fund are fundamentally different from
14   that of an equity investor in a single utility and the risk profiles are
15   not comparable. The Employee Retirement Income Security Act
16   dictates that pension funds must be diversified whereas a utility's
17   ROE is based on risks specific to that utility's operations.

18   More importantly, pension fund returns are related to market value
19   of assets held in the pension fund while a utility's ROE is applied
20   to a book value rate base. This difference can best be illustrated by
21   dividing an average pension fund return by PG&E's market-to-
22   book ratio. Based on ATU's 9.62% calculated average pension
23   fund return and DRA's market-to-book ratio of 1.9 for PG&E,
24   PG&E would only need to earn a 5.06% ROE on its rate base to
25   equal the 9.62% average pension fund return. However, a 5.06%
26   ROE is 116 basis points below its long-term debt cost, effectively
27   eliminating PG&E's ability to support its credit and to raise the
28   equity necessary to fulfill its public utility responsibilities as
29   required by Bluefield and Hope. Pension return assumptions are
30   not comparable to the ROE used in utility ratemaking. Having

1		resolved this issue, PG&E should not be required to continue
2		comparing its pension return assumptions to its ratemaking ROE in
3		future ROE proceedings.

4   *In re S. Cal. Edison Co.,* 262 P.U.R. 4th 53, 72 (Ca. Pub. Utils. Comm'n. 2007).

5   **Q.**   **Do you find the reasoning of the California Public Utilities Commission**

6   **convincing?**

7   A.   Yes. Actuarial data utilized for pension fund accounting are by nature very

8   conservative, consistent with GAAP guidelines, and are not well suited for

9   assessing the cost of equity capital in a rate proceeding. By virtue of the very

10   long-term nature of pension fund assets, projected returns on pension fund assets

11   are not indicative of the cost of equity in the context of a regulatory proceeding.

12   Moreover, the actuarial data on which Mr. Hill relies, namely one particular

13   corporate actuary's assumptions, RV Kuhns & Associates, is highly selective.

14   **Q.**   **What else is wrong with Mr. Hill's reliance on pension fund actuarial data**

15   **and financial advisors' estimates?**

16   A.   The return figures cited by Mr. Hill are market returns and not book returns. The

17   manner in which the regulator applies market-based returns to book equity

18   understates the cost of equity under current capital market conditions.

19   Application of market-based returns produces estimates of common equity cost

20   that are consistent with investors' expected return only when stock price and book

21   value are reasonably similar (i.e., when the M/B ratio is close to unity).

1	Application of market-based returns to equity book values does not account for
2	the investor's expected return when the M/B ratio of a given stock deviates from
3	unity. The reason for the distortion is that the market-based return is applied to a
4	book value rate base by the regulator, that is, a utility's earnings are limited to
5	earnings on a book value rate base. The return given to equity investors is lower
6	than what they actually require when M/B ratios exceed unity. This is neither
7	equitable for the existing stockholders nor efficient from the point of view of
8	attracting capital to cover the significant capital expenditures that need to be
9	undertaken.
10	In short, this Commission, like the California Public Utilities Commission, should
11	ignore Mr. Hill's views on the applicability of actuarial pension returns and
12	individual financial advisory returns in determining a utility's allowed ROE.
13	**Q.** **What do you conclude from Mr. Hill's recommended ROE?**
14	A. Mr. Hill understates the appropriate ROE for PSE. The following table
15	summarizes the principal reasons why Mr. Hill's DCF-based recommended ROE
16	understates an appropriate ROE for PSE:

Source	Basis Points
Sustainable Growth Calculation	20
Analysts Growth Rate Forecasts	100

20	Correction of these understatements would increase Mr. Hill's recommended
21	ROE based upon his traditional DCF study, the mainstay of his recommendation,
22	from 9.5% to 10.7%, which is comparable to my own recommendation.

1		Moreover, Mr. Hill's two-stage DCF results increase to nearly 11% from using
2		the proper long-term GDP growth rate.
3	**Q.**	**Would the adoption of Mr. Hill's recommended ROE endanger PSE's credit**
4		**quality?**
5	A.	Yes, it certainly increases the probability of a deterioration in PSE's credit
6		quality. Extreme decreases in PSE's authorized ROE, such as the decreases
7		recommended by Mr. Hill, could alarm the investment community and threaten
8		PSE's credit ratings. A weakening of PSE's credit ratings and earnings power at
9		a time when PSE needs to attract significant external capital on reasonable terms
10		is ill-advised in the current capital market environment of turmoil and uncertainty.
11	**I.**	**Mr. Hill's Criticisms of My Direct Testimony Are Unwarranted**
12	**Q.**	**Is Mr. Hill's criticism that you multiplied the spot dividend yield by one plus**
13		**the expected growth rate (1 + g) warranted?**
14	A.	No. The basic annual DCF model ignores the time value of quarterly dividend
15		payments and assumes dividends are paid once a year at the end of the year.
16		Because the appropriate dividend to use in a DCF model is the prospective
17		dividend for all companies that have positive growth rate forecasts, the dividend
18		for all companies should be increased by the (1 + g) factor. Multiplying the spot
19		dividend yield by (1 + g) is actually a conservative attempt to capture the reality
20		of quarterly dividend payments and understates the expected return on equity.

1	Use of this method is conservative in the sense that the annual DCF model
2	ignores the more frequent compounding of quarterly dividends.
3	**Q. Did you double-count the expected dividend yield for growth?**
4	A. No. Contrary to assertions on page 68 of Mr. Hill's testimony, I did not overstate
5	the dividend yield by double-counting the dividend increase. This is because I
6	used the "current dividend yield" as defined by Value Line in the Value Line
7	Investment Analyzer software and then grossed up the current dividend yield to
8	produce the expected dividend yield required by the DCF model.
9	**1. Reliance on Analysts' Earnings Growth Forecasts in the DCF**
10	**Model Is Not Problematic**
11	**Q. Is reliance on analysts' earnings growth forecasts in the DCF model**
12	**problematic?**
13	A. No. Reliance on analysts' earnings growth forecasts in the DCF model is not
14	problematic. Mr. Hill erroneously asserts as follows with respect to my use of
15	analysts' earnings growth forecasts in the DCF:
16	…exclusive reliance on earnings growth, absent any examination
17	of the underlying fundamentals of long-run growth, can lead to
18	inaccurate equity cost estimates. For example, reliance on
19	projected earnings growth in a situation in which projected
20	earnings were expected to recover from reduced levels would
21	include (in any DCF estimate) the assumption that equity returns
22	will increase at the same exaggerated rate every five years into the
23	indefinite future.
24	Exhibit No. SGH-1HCT at page 71, lines 20, through page 72, line 4.

1   In other words, the intermediate growth rate in dividends cannot equal the long-

2   term growth rate when the dividend payout ratio is expected to change because

3   projected dividend growth and earnings growth must adjust to the changing

4   payout ratio. This "problem" is not unique to analysts' earnings growth forecasts

5   and is also inherent in the use of historical growth rates to forecast growth rates.

6   Reliance on "near-term" dividend growth is improper because it is expected that

7   utilities will continue to lower their dividend payout ratios over the next several

8   years in response to increased business risk and the need to alleviate reliance on

9   external financing. Therefore, earnings and dividends are not expected to grow at

10   the same rate in the future. The growth rate data provided on page 2 of Exhibit

11   No. SGH-8 clearly demonstrate this phenomenon because projected utility

12   dividend growth rate forecasts are less than the earnings growth rate forecast. As

13   discussed on pages 45-46 of my prefiled direct testimony, Exhibit No. RAM-1T,

14   I used consensus analysts' earnings growth forecasts in the DCF model to

15   mitigate potential bias—an approach supported by empirical literature.

16   **Q.   Is your growth rate analysis "mechanistic in that it simply plugs selected**

17   **projected data into a formula to produce a growth rate with no underlying**

18   **analysis of either the historical or projected growth rate fundamentals"?**

19   **(Exhibit No. SGH-1HCT at page 71, lines 14-16.)**

20   A.   No, it is not. Contrary to this assertion, my direct testimony devotes several

21   pages to an analysis of historical growth rates and analysts' growth forecasts.

1   *See, e.g.,* Exhibit No. RAM-1T at page 44, line 11, through page 49, line 13.

2   Given this analysis, Mr. Hill's statement that I undertook "no underlying analysis

3   of either the historical or projected growth rate fundamentals" is patently false.

4   Mr. Hill continues state that "Dr. Morin, in his own published work, warns

5   against this type of analysis." Exhibit No. SGH-1HCT at page 71, lines 16-17.

6   This is a clear example of Mr. Hill selectively citing materials out of context. The

7   referenced passage cited by Mr. Hill in footnote 21 immediately precedes the

8   following section of my book:

9   A note of caution is also necessary when dealing with historical
10   growth rates and their use in the DCF model. Historical growth
11   rates can be downward biased by the impact of diversification and
12   restructuring activities and by the impact of abnormal weather
13   patterns in the case of energy utilities. Acquisitions, start up
14   expenses, and front end capital investments associated with
15   diversification and restructuring efforts, and unfavorable weather
16   patterns can retard and dilute historical earnings growth, and such
17   growth is not representative of a company's long term growth
18   potential. Therefore, caution must be exercised when applying any
19   of the growth estimating techniques directly to recent historical
20   utility company data.

21   Given a dramatic change in a utility's operating environment, the
22   need to be forward looking is apparent. Historically based
23   measures of risk and growth can be downward biased in assessing
24   present circumstances… The fundamental risks and growth
25   prospects of electric utilities are also changing rapidly following
26   the passage of the Energy Bill in 1993. These shifts in growth
27   prospects take some time before they are fully reflected in the
28   historical growth rates. Hence, backward looking growth and
29   statistical analysis may fail to fully reflect the fact that the risks
30   and growth prospects of utilities have escalated, and may only
31   provide limited evidence that the risk and the cost of capital to
32   these utilities have increased. Of course, the converse may also be
33   true under certain circumstances.

1		Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital* 237-38 (1st ed.
2		1994) (emphasis added). Indeed, the same chapter contains an entire section that
3		comprehensively discusses the hazards of relying on historical growth rates.

4 **Q. What does the published academic literature say on the subject of analysts'**

5 **growth rate forecasts in the DCF model?**

6 A. As discussed earlier in my rebuttal testimony, published studies in the academic

7 literature demonstrate that (i) analysts' growth rate forecasts are reasonable

8 indicators of investor expectations, and (ii) investors rely on such forecasts.

9 I also note that while Mr. Hill criticizes my DCF growth analysis because it relies

10 exclusively on earnings growth forecasts (see Exhibit No. SGH-1HCT at page 71,

11 line 18, through page 72, line 10), Mr. Hill ends up relying exclusively on the

12 same growth forecasts in his two-stage DCF analysis. *See* Exhibit No. SGH-11

13 (first three columns of numbers are earnings growth forecasts).   In short,

14 Mr. Hill's criticisms of my DCF growth forecasts are unfounded.

15 **Q. Mr. Hill criticizes your DCF analysis because it relies on earnings growth**

16 **projections and he believes that such forecasts are overly optimistic. How do**

17 **you respond?**

18 A. Mr. Hill denounces the use of financial analysts' earnings forecasts on the

19 grounds that such forecasts are overly optimistic. See Exhibit No. SGH-1HCT at

20 page 72, lines 11-15. I disagree, at least for utility stocks. Using virtually all

1   publicly available analyst earnings forecasts for a large sample of companies

2   (over 23,000 individual forecasts by 100 analyst firms), a study by Lys and Sohn

3   shows that stock returns respond to individual analyst earnings forecasts, even

4   when they are closely preceded by earnings forecasts made by other analysts or

5   by corporate accounting disclosures.[6] Using actual and IBES data from

6   1982-1995, a study by Easterwood and Nutt regresses the analysts' forecast errors

7   against either historical earnings changes or analysts' forecasting errors in the

8   prior years.[7] Results show that analysts tend to under-react to negative earnings

9   information but overreact to positive earnings information.

10   The more recent studies provide evidence that analysts make biased forecasts and

11   misinterpret the impact of new information.[8] For example, several studies in the

12   early 1990s suggest that analysts either systematically underreact or overreact to

13   new information. The study by Easterwood and Nutt discriminated between these

14   different reactions and reported that analysts underreact to negative information,

15   but overreact to positive information. The recent studies do not necessarily

16   contradict the earlier literature. The earlier research focused on whether analysts'

17   earnings forecasts are better at forecasting future earnings than historical

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[6] Thomas Lys & Sungkyu Sohn, *The Association Between Revisions of Financial Analysts' Earnings Forecasts and Security Price Changes*, 13 Journal of Accounting and Economics 341 (1990).

[7] John Easterwood & Stacey Nutt, *Inefficiency in Analysts' Earnings Forecasts: Systematic Misreaction or Systematic Optimism?*, 54 The Journal of Finance 1777 (1999).

[8] Other relevant papers corroborating the superiority of analysts forecasts as predictors of future returns versus historical growth rates include: Dov Fried & Dan Givoly, *Financial Analysts Forecasts of Earnings: A Better Surrogate for Earning Expectations*, 4 Journal of Accounting and Economics 85 (1982); R. Charles Moyer, Robert E. Chatfield & Gary D. Kelley, *The Accuracy of Long-Term Earnings Forecasts in the Electric Utility Industry*, 1 International Journal of Forecasting 241 (1985); and David A. Gordon, Myron J . Gordon, & Lawrence I . Gould, *Choice Among Methods of Estimating Share Yield*, 15 The Journal of Portfolio Management 50 (1989).

1   averages, whereas the recent literature investigates whether the analysts' earnings

2   forecasts are unbiased estimates of future earnings.

3   It is possible that even if the analysts' forecasts are biased, they are still closer to

4   future earnings than the historical averages, although this hypothesis has not been

5   tested in the recent studies. One way to assess the concern that analysts' forecasts

6   may be biased upward is to incorporate into the analysis the growth forecasts of

7   independent research firms, such as Value Line, in addition to the analyst

8   consensus forecast. Unlike investment banking firms and stock brokerage firms,

9   independent research firms such as Value Line have no incentive to distort

10   earnings growth estimates in order to bolster interest in common stocks.

11   Mr. Hill argues that analysts tend to forecast earnings growth rates that exceed

12   those actually achieved and that this optimism biases the DCF results upward.

13   The magnitude of the optimism bias for large rate-regulated companies in stable

14   segments of an industry is likely to be very small. Empirically, the severity of the

15   optimism problem is unclear for regulated utilities, if a problem exists at all. It is

16   interesting to note that Value Line forecasts for utility companies made by

17   independent analysts with no incentive for over- or understating growth forecasts

18   are not materially different from those published by analysts in security firms

19   with incentives not based on forecast accuracy, and may in fact be more robust.

1   **2.   Use of the S&P Utility Index Ensured Continuity and**
2   **Timeliness of Risk Premium Data**

3   **Q.   Why did you rely on the S&P Utility Index instead of the Moody's Electric**

4   **Index in calculating the historical utility returns?**

5   A.   Mr. Hill expresses concerns with my historical risk premium analysis on the

6   grounds that I now rely on the S&P Utility Index instead of the Moody's Electric

7   Index, on which I relied in the past for purposes of calculating historical utility

8   returns. *See* Exhibit No. SGH-1HCT at page 63, lines 15-24.

9   As explained in my direct testimony, I have relied on the Moody's Electric Utility

10   Index to perform my historical risk premium study in past testimonies. Following

11   the acquisition of Moody's by Mergent in 2002, publication of the electric utility

12   index was discontinued. Therefore, I chose to rely on the S&P Utility Index

13   instead of the Moody's Index to ensure continuity and timeliness of the risk

14   premium data. I also noted that the use of S&P Utility Index instead of the

15   Moody's Index is consistent with the use of the utilities that make up the S&P

16   Utility Index as one of my two proxy groups. In any event, the results using the

17   S&P Index are not materially different from those using the discontinued

18   Moody's index. *See* Exhibit No. RAM-1T at page 39, lines 9-17.

19 **Q.   Why did you change the base yield onto which the risk premium is added in**

20   **calculating the historical utility risk premiums?**

21 A.   Mr. Hill expresses concerns with my historical risk premium analysis on the

1 grounds that I now rely on long-term utility bond yields whereas in the past I

2 relied on long-term T-Bonds as the base yield onto which the risk premium is

3 added.   Mr. Hill suggests that I relied on this procedure in order to produce a

4 higher cost of equity estimate risk premium. *See* Exhibit No. SGH-1HCT at

5 page 63, lines 1-24. This suggestion is patently false. The cost of equity

6 estimates from this method are indeed higher for the simply reason that the cost of

7 equity capital has increased relative to the level of Treasury yields following the

8 financial crisis that began in October 2008.

9 As explained in my direct testimony, trends in utility cost of capital are directly

10 reflected in their cost of debt and are not directly captured by a risk premium

11 estimate tied to government bond yields. This was especially germane since the

12 commencement of the financial crisis where corporate spreads reached record

13 levels, and remain high relative to historical level, although somewhat improved.

14 Because a utility's cost of capital is determined by its business and financial risks,

15 it is reasonable to surmise that its cost of equity will track its cost of debt more

16 closely than it will track the government bond yield. To guard against this

17 possibility, I implemented my historical premium analysis using the utility bond

18 yield instead of the government bond yield.

1   **3.**   <u>**No Flotation Cost Adjustment is Advocated for PSE in This**</u>
2   <u>**Proceeding Because of the Unique Ownership Structure of**</u>
3   <u>**PSE**</u>

4 **Q.**   **What allowance for flotation costs does Mr. Hill make with respect to his**

5   **recommended ROE for PSE?**

6 A.   Mr. Hill devotes a considerable portion of his testimony in arguing that an explicit

7   adjustment to the cost of equity capital for flotation costs is unnecessary for PSE.

8   *See* Exhibit No. SGH-1HCT at page 58, line 14, through page 61, line 17. In

9   doing so, Mr. Hill disregards the fact that, although the market-based ROE

10   estimates reported in my prefiled direct testimony included an adjustment for

11   flotation cost, I am not advocating a flotation cost adjustment for PSE in this

12   proceeding because of the unique ownership structure of PSE:

13   Although flotation cost adjustments are necessary for privately
14   held subsidiary utilities, I am not advocating a flotation cost
15   adjustment for PSE in this proceeding because of the unique
16   ownership structure of PSE. PSE's ultimate parent, Puget
17   Holdings LLC, is owned by infrastructure investors that are
18   predominantly pension funds. These pension funds do not issue
19   equity to obtain funds and instead obtain funds from participants to
20   a pension plan that must pay into such plan. In obtaining funds,
21   these pension plans do not incur the types of costs that are
22   normally associated with the flotation cost allowance.
23   Additionally, is my understanding that neither PSE nor any
24   affiliate of PSE has any current plans to issue equity. In other
25   words, it is unlikely that any equity injected into PSE for the
26   foreseeable future will be funded by any equity issuance by PSE or
27   any affiliate entity. For this reason, I do not advocate a flotation
28   cost adjustment for PSE in this proceeding.

29   Exhibit No. RAM-1T at page 54, line 14, through page 55, line 5.

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1   Because PSE is not advocating for a flotation cost adjustment in this proceeding, I

2   have moved my rebuttal of Mr. Hill's arguments regarding flotation costs

3   adjustment in a separate exhibit. Please see Exhibit No. RAM-20.

4   ### III.   REBUTTAL TO MR. PARCELL'S TESTIMONY

5   **Q.   Please summarize Mr. Parcell's ROE recommendation.**

6   A.   Mr. Parcell recommends an ROE in a range of 9.5%–10.5% for PSE. In

7   determining PSE's cost of equity, Mr. Parcell applies a DCF analysis to three

8   groups of utilities. For the growth component of his DCF analysis, Mr. Parcell

9   uses a blend of analysts' growth forecasts, historical growth rates, and the

10   earnings retention method. From his DCF estimates, Mr. Parcell concludes that

11   the DCF estimate of PSE's cost of equity lies in a range of 9.5%–10.5%.

12   Mr. Parcell also applies a CAPM analysis to the same three groups of companies,

13   using long-term Treasury bond yields as proxies for the risk-free rate and Value

14   Line beta estimates. Mr. Parcell seems to place little, if any, weight on the

15   CAPM results of 7.9%–8.2% because they are barely above PSE's cost of long-

16   term debt.

17   Finally, Mr. Parcell performs a Comparable Earnings analysis on a sample of

18   utilities and a sample of unregulated industrial companies.

19   From these various analyses, Mr. Parcell concludes that ROE for PSE lies in the

20   range of 9.5%–10.5%. Mr. Parcell proposes a ROE at the midpoint of this

1   proposed range, 10.0%.

2   Q.   **Please summarize your specific concerns with Mr. Parcell's testimony.**

3   A.   Although I agree with several of Mr. Parcell's methodologies, I have the

4   following comments:

5   1.   <u>**Mr. Parcell understates dividend yield by using a spot**</u>
6   <u>**dividend yield inflated by one-half of the expected**</u>
7   <u>**dividend growth.**</u> Mr. Parcell's dividend yield component
8   is understated because it is not consistent with the annual
9   form of the DCF model. It is inappropriate to increase the
10   dividend yield by adding one-half of the future growth rate
11              $(1 + \frac{1}{2} g)$ to the spot dividend yield. The appropriate
12   manner of computing the expected dividend yield when
13   using the basic annual DCF model is to add the full growth
14   rate rather than one-half of the growth rate. This
15   adjustment also allows for the failure of the annual DCF
16   model to allow for the quarterly timing of dividend
17   payments. This error understates the DCF results by some
18   20 basis points.

19   2.   <u>**Mr. Parcell uses the retention growth method, a method**</u>
20   <u>**that should be given little, if any, weight.**</u> The retention
21   growth method for estimating the growth component of the
22   DCF calculation is suspect because one is forced to assume
23   the answer to implement the method. From Mr. Parcell's
24   own evidence, investors expect substantially higher returns
25   for utilities than what he recommends.

26   3.   <u>**Mr. Parcell's historical growth rates should be given**</u>
27   <u>**little, if any weight.**</u> Investors are expecting substantially
28   higher growth rates than Mr. Parcell's growth rates for the
29   sample companies. Using analysts' consensus growth
30   forecasts increases the DCF estimate of the cost of common
31   equity by 130 basis points (1.30%).

32   4.   <u>**Mr. Parcell's CAPM results should be given very little,**</u>
33   <u>**if any, weight.**</u> CAPM results should be accorded little, if
34   any, weight.

5. **Mr. Parcell's risk-free rate proxy in his CAPM analysis is slightly stale.** Mr. Parcell's risk-free rate proxy is slightly stale since it relies on the average yield on 20-year Treasury bonds over a 3-month period instead of the current yield on 20-year Treasury bonds. Yields on long-term Treasury securities have increased substantially over the 3-month period, and are expected to increase further. Using the appropriate risk-free rate, Mr. Parcell's CAPM estimates must be raised by 20 basis points for this correction alone.

6. **Mr. Parcell's market risk premium of 5.32% understates the market risk premium.** There are conceptual blemishes in Mr. Parcell's three market risk premium proxies.

7. **Mr. Parcell's criticisms of my testimony are largely unfounded.**

A. **Mr. Parcell Understates Dividend Yield by Using a Spot Dividend Yield Inflated By One-Half of the Expected Dividend Growth**

Q. **Please discuss Mr. Parcell's dividend yield component in the DCF model.**

A. The annual DCF model states very clearly that the expected rate of return on a stock is equal to the expected dividend at the end of the year divided by the current price of the stock, plus the expected growth rate. Thus, the appropriate dividend to use in a DCF model is the full prospective dividend to be received at the end of the year. Mr. Parcell understates the dividend yield by halving it. Mr. Parcell uses a spot dividend yield inflated by one-half of the expected dividend growth, $D_0(1 + 1/2\ g)$, rather than the correct expected dividend yield that is inflated by one full year of growth, $D_0(1 + g)$. *See* Exhibit No. DCP-1T at page 31, line 15, through page 32, line 3.

1		This mathematical adjustment fails to measure the full dividend flow expected by
2		the investor and underestimates the cost of equity by approximately 20 basis
3		points. For example, for a spot dividend yield of 5% and a growth rate of 5%,
4		Mr. Parcell's estimated dividend yield is 5%(1 + .05/2) = 5.1%. The correct
5		dividend yield to employ is 5%(1 + .05) = 5.3%, which is about 20 basis points
6		higher.
7	**B.**	**Mr. Parcell Uses the Retention Growth Method, a Method that**
8		**Should Be Given Little, If Any, Weight**
9	**Q.**	**Please describe Mr. Parcell's methodology for specifying the growth**
10		**component of the DCF model.**
11	A.	Mr. Parcell employs five proxies as a proxy for the expected growth component
12		of the DCF model: (i) historical earnings retention ratio, (ii) projected earnings
13		retention ratio, (iii) five-year historical growth rates in dividends, earnings, and
14		book value, (iv) projected growth rates in dividends, earnings, and book value,
15		and (v) analysts' forecasts of EPS growth as reported in First Call. *See* Exhibit
16		No. DCP-1T at page 32, line 19, through page 33, line 16.
17	**Q.**	**Can you comment on Mr. Parcell's earnings retention growth estimate in the**
18		**DCF model?**
19	A.	As discussed in Section II.B. above, the retention growth method has several
20		conceptual and empirical infirmities, and the results of this method should be
21		given little, if any, weight.

C. **Mr. Parcell's Historical Growth Rates Should Be Given Little, If Any, Weight**

Q. **Are the historical growth rates of electric utilities reliable proxies for expected future growth?**

A. No. Historical growth rates of electric utilities are not reliable proxies for expected future growth. Mr. Parcell uses historical growth rates in dividends, earnings, and book value as proxies for expected growth, as shown in the first three columns of page 3 of Exhibit No. DCP-11.

If historical growth rates are to be representative of long-term future growth rates, they must not be biased by non-recurring events. This is certainly the case for utilities, where growing competition, diversification programs, acquisitions, restructurings and write-off activities have exerted a dilutive effect on historical earnings and dividends. In such cases, it is obvious that analysts' growth forecasts provide a more realistic and representative growth proxy for what is likely to happen in the future than historical growth.

In any event, historical growth rates are somewhat redundant given that analysts formulate their growth expectations based in part on historical patterns. I note that several historical growth rates shown in the first three columns of page 3 of Exhibit No. DCP-11 are negative, which is quite contrary to the constant perpetual positive growth assumption that underlies the DCF model.

In conclusion, Mr. Parcell's historical growth rates should be given considerably

1   less weight, if any.

2 Q.   **Do you see any dangers in relying on Value Line as an exclusive source of**

3   **forecasts in applying the DCF model?**

4 A.   Yes. As discussed earlier, one would expect that averages of analysts' growth

5   forecasts, such as those contained in First Call and/or Zacks, are more reliable

6   estimates of investors' consensus expectations than one particular firm's forecast.

7 Q.   **What does the published academic literature say on the subject of growth**

8   **rates in the DCF model?**

9 A.   As discussed earlier, published studies in the academic literature demonstrate that

10   (i) analysts' growth rate forecasts are reasonable indicators of investor

11   expectations and (ii) investors rely on such forecasts

12 Q.   **Are investors expecting growth rates equal to Mr. Parcell's range?**

13 A.   No. The best evidence shows that investors are expecting growth rates higher

14   than Mr. Parcell has found. For his first, and preferred, group of utilities,

15   Mr. Parcell has found median growth rates ranging from 2.3% to 5.8%, with a

16   mean of only 3.5%. *See* Exhibit No. DCP-11 at page 4.

17   As indicated in Section II.B. above, the retention growth estimate should be

18   discarded from the analysis and historical growth rates should be given

19   considerably less weight, which leaves us with the Value Line growth forecast of

20   5.0% and the consensus analyst forecast of 5.8%, that is a range of 5.0% - 5.8%

1   (midpoint 5.4%).   Even if Mr. Parcell were to take the low point of the range

2   (5.0%,), that is 150 basis points (1.5%) above Mr. Parcell's median estimate of

3   3.5%. This understatement alone causes Mr. Parcell's DCF cost of equity

4   estimates for this first group of companies to be downward-biased by 150 points,

5   even without factoring in the appropriate expected dividend yield component. To

6   different degrees, the same is true for Mr. Parcell's DCF estimates for the second

7   and third group of companies, which are also downward-biased by similar

8   amounts.

9   **Q.   Please comment on Mr. Parcell's criticism of your DCF analysis.**

10 A.   Mr. Parcell takes issue with the fact that I have used only one indicator of growth

11   in the DCF analysis—analyst growth projections—and that I have ignored

12   historical and projected growth rates in dividends and book value. *See* Exhibit

13   No. DCP-1T at page 35, lines 4-11.

14   Please see Exhibit No. RAM-1T at page 47, line 21, through page 48, line 21, for

15   a discussion of the impropriety of relying on "near-term" dividend growth

16   because: (i) earnings growth drives dividend growth, (i) of the scarcity of

17   dividend forecasts, and (iii) it is widely expected that utilities will continue to

18   lower their dividend payout ratio over the next several years in response to

19   increased business risk and external financing requirements, and that earnings and

20   dividends are not expected to grow at the same rate in the future.

21   Please see Exhibit No. RAM-1T at page 49, lines 1-13, and Section II.D. above

1   for a discussion of the merits of using consensus analysts' earnings growth

2   forecasts in the DCF model and the supportive empirical literature.

D.   **Mr. Parcell's CAPM Results Should Be Given Very Little, If Any,**
4   **Weight**

5 **Q.**   **How much weight should be accorded to the CAPM results under current**

6   **market circumstances?**

7 A.   As stated in Section II.D. above and at page 37, line 17, through page 38, line 2,

8   of my direct testimony, Exhibit No. RAM-1T, less weight should be accorded to

9   the CAPM results under present circumstances because (i) betas employed in the

10   CAPM analysis do not yet fully capture the impact of the ongoing financial crisis

11   and (ii) government interest rates have decreased substantially following the

12   Federal Reserve's expansionary policies designed to jumpstart the stalled

13   economy.

14   To the extent that Mr. Parcell has accorded any weight to his CAPM results (and I

15   do not believe that he did), he should have recommended a ROE at the upper end

16   of his range. If the Commission were to accord any weight to Mr. Parcell's

17   CAPM results, the following comments on Mr. Parcell's CAPM analysis are

18   germane.

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1 **E.** **Mr. Parcell's Risk-Free Rate Proxy in His CAPM Analysis Is Slightly**
2 **Stale**

3 **Q.** **Do you agree with Mr. Parcell's risk-free rate proxy in his CAPM analysis?**

4 A. No. Mr. Parcell's risk-free rate proxy in his CAPM analysis is slightly stale. As

5 a proxy for the risk-free rate, Mr. Parcell uses 4.2%, which is the average yield on

6 20-year Treasury bonds for the 3-month period August 2009 – October 2009.

7 The latest Value Line issue reports a yield of 4.5% on zero-coupon 30-year

8 Treasury bonds, an increase of 30 basis points.

9 **F.** **Mr. Parcell's Beta Estimate in His CAPM Analysis Is Reasonable**

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

11 A. Yes. I agree with Mr. Parcell's beta of 0.76. *See* Exhibit No. DCP-16.

12 **G.** **Mr. Parcell's Market Risk Premium of 5.32% Understates the**
13 **Market Risk Premium**

14 **Q.** **How does Mr. Parcell estimate the market risk premium component of his**

15 **CAPM analysis?**

16 A. In order to determine the market risk premium component of his CAPM analysis,

17 Mr. Parcell relies on three estimates. First, he examines the difference between

18 the accounting returns on book equity for the S&P 500 Index companies group

19 over the 1978-2007 period and the contemporaneous level of 20-year Treasury

1   bond yields. The average spread (market risk premium) is 6.45%. Second, he

2   relies on the long-term 5.6% historical market risk premium reported in the

3   Morningstar Valuation 2009 Yearbook for the 1926-2008 period based on

4   arithmetic averages. Third, he relies on the long-term 3.9% historical market risk

5   premium reported in the same publication for the same period but this time based

6   on geometric averages. From these three estimates, Mr. Parcell concludes that the

7   market risk premium is 5.32%, that is, the average of the three market risk

8   premium estimates. *See* Exhibit No. DCP-1T at page 37, line 18, through

9   page 38, line 22. I seriously disagree with these estimates for several reasons.

10   Q.   **Do you agree with Mr. Parcell's first estimate of 6.45% for the market risk**

11   **premium in his CAPM analysis?**

12   A.   Yes, I agree with Mr. Parcell's first estimate of 6.45% for the market risk

13   premium in his CAPM analysis. *See* Exhibit No. DCP-1T at page 38, lines 3-9.

14   Q.   **Do you agree with Mr. Parcell's second estimate of 5.6% for the market risk**

15   **premium in his CAPM analysis?**

16   A.   No. Mr. Parcell's second estimate of 5.6% for the market risk premium in his

17   CAPM analysis is understated. For his second market risk premium proxy, Mr.

18   Parcell used a historical risk premium of 5.6%. This estimate is drawn from

19   Morningstar in the *Stock, Bonds, Bills and Inflation, 2009 Yearbook*. Over the

20   period 1926 through 2008, Morningstar estimated that the arithmetic average of

21   the achieved total return on the S&P 500 was 11.7%, and the total return on long-

term Treasury bonds was 6.1%. The indicated equity risk premium is 5.6%

(11.7% - 6.1% = 5.6%). *See* Exhibit No. DCP-1T at page 38, lines 10-17.

As I discussed in my direct testimony, 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 (1926-2008) market risk premium

(based on income returns, as required) is 6.5%, rather than 5.6%. *See* Exhibit

No. RAM-1T at page 29, line 5, through page 30, line 1.

Morningstar 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).[9] In

other words, bond investors focus on income rather than realized capital

gains/losses.

Use of the long-term market risk premium of 6.5% (based on income returns)

increases Mr. Parcell's CAPM estimate by approximately 68 basis points (the

difference between 6.5% and 5.6% times Mr. Parcell's beta of 0.76 shown on

Exhibit No. DCP-16).

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[9] *See* Morningstar, *Stocks, Bonds, Bills, and Inflation 2008 Yearbook: Valuation Edition* 66.

1   **Q.   Do you agree with Mr. Parcell's third estimate of 3.9% for the market risk**

2   **premium in his CAPM analysis?**

3   A.   No. I strongly disagree with Mr. Parcell's third estimate of 3.9% for the market

4   risk premium in his CAPM analysis. For his third market risk premium proxy,

5   Mr. Parcell uses a historical risk premium of 3.9% based on the aforementioned

6   Morningstar historical market risk premium study, only this time relying on the

7   geometric average of historical returns instead of the arithmetic average of

8   historical returns. *See* Exhibit No. DCP-1T at page 38, lines 10-17.

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

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

11   capital, while geometric means are not.[10] Indeed, the Morningstar publication

12   cited by Mr. Parcell contains a detailed and rigorous discussion of the impropriety

13   of using geometric averages in estimating the cost of capital.

14   There is no theoretical or empirical justification for the use of geometric mean

15   rates of return. Briefly, the disparity between the arithmetic average return and

16   the geometric average return raises the question as to what purposes should these

17   different return measures be used. The answer is that the geometric average

18   return should be used for measuring historical returns that are compounded over

19   multiple time periods. The arithmetic average return should be used for future-

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[10] *See* Roger A. Morin, *The New Regulatory Finance*, chapter 11 (2006); Richard Brealey,
Stewart Myers, & Franklin Allen, *Principles of Corporate Finance* (8th ed. 2006).

1   oriented analysis, where the use of expected values is appropriate.

2   It is inappropriate to average the arithmetic and geometric average return; they

3   measure different quantities in different ways. Please see Roger A. Morin, *The*

4   *New Regulatory Finance*, chapter 11 (2006) for a discussion regarding the

5   theoretical underpinnings, empirical validation, and the consensus of academics

6   on why geometric means are inappropriate for forecasting and estimating the cost

7   of capital.

8   **Q.   What is the effect of Mr. Parcell's use of the geometric mean instead of the**

9   **arithmetic mean market risk premium?**

10   A.   Mr. Parcell's use of the geometric mean market risk premium of 3.9% rather than

11   the arithmetic mean of 5.6% significantly understates the market risk premium,

12   which suggests an understatement of PSE's cost of equity by 130 basis points

13   (1.3%) using Mr. Parcell's beta for PSE of 0.76:

14   β_{PSE} x   (Arithmetic Mean – Geometric Mean)

15   0.76 x $(5.6\% - 3.9\%)$ = $0.76 \times (1.7\%)$ = 1.3%

16   **Q.   Should the historical market risk premium be estimated using the income**

17   **component of bond returns or the total return component?**

18   A.   The historical market risk premium should be computed using the income

19   component of bond returns because the intent, even using historical data, is to

20   identify an expected market risk premium. As discussed earlier, the use of the

1   latter is a more reliable estimate of the historical market risk premium because the

2   income component of total bond return (i.e., the coupon rate) is a far better

3   estimate of expected return than the total return (i.e., the coupon rate plus capital

4   gains), because realized capital gains/losses are largely unanticipated by

5   investors.

6   **Q.   Is Mr. Parcell correct that the empirical CAPM inflates the CAPM result for**

7   **the selected company or industry?**

8   A.   The empirical CAPM does not inflate the CAPM result for the selected company

9   or industry. For companies with betas less than one, the CAPM understates the

10   return; for companies with betas greater than one, the CAPM overstates the

11   return. Please see Exhibit No. RAM-6 for a discussion of the conceptual and

12   empirical foundations of the empirical CAPM.

13   **Q.   Mr. Parcell disagrees with the risk premium methodology because economic**

14   **conditions today are different and risk premiums are unstable from year to**

15   **year. How do you respond?**

16   A.   Mr. Parcell critiques the risk premium method on two grounds: (i) the method

17   assumes that past is prologue, and (ii) the method assumes that the risk premium

18   is constant over time whereas in fact the risk premium results are dominated by

19   the influence of capital gains in many years. See Exhibit No. DCP-1T at page 48,

20   line 21, through page 49, line 15.

The first criticism is unwarranted. I employed returns realized over long time

periods rather than returns realized over more recent time periods. Realized

returns can be substantially different from prospective returns anticipated by

investors, especially when measured over short 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, or else, investors would never

commit any funds.

I have ignored realized risk premiums measured over short time periods because

they are heavily dependent on short-term market movements. Instead, I have

relied on results over periods of enough length to smooth out short-term

aberrations, and to encompass several business and interest rate cycles. By using

the entire study period to estimate the appropriate market risk premium,

subjective judgment is minimized and many diverse regimes of inflation, interest

rate cycles, and economic cycles spanned.

Mr. Parcell's second concern is unwarranted as well. The influence of

unexpected capital losses offsets the influence of unexpected capital gains. To

the extent that the estimated historical equity risk premium follows what is known

in statistics as a random walk, one should expect the equity risk premium to

remain at its historical mean. Thus, the best estimate of the future risk premium is

1   the historical mean. As I explained in my direct testimony, since there is no

2   evidence that the market risk premium in common stocks has changed over time

3   (i.e., no significant serial correlation in the Morningstar study), it is reasonable to

4   assume that these quantities will remain stable in the future. *See* Exhibit

5   No. RAM-1T at page 31, lines 10-15.

6   **Q.   What do you conclude from Mr. Parcell's ROE recommendation?**

7   A.   Mr. Parcell's recommended ROE is understated. Recognition of the proper

8   functional form of the DCF model (20 basis points), a far greater emphasis on

9   analysts' growth forecasts in the DCF analysis (150 basis points), and the

10   appropriate historical market risk premium in the CAPM analysis (70–130 basis

11   points), would suggest much higher returns that are quite close to my own ROE

12   recommendation for PSE.   At the very least, Mr. Parcell should have

13   recommended the top of his range.   Lastly, I note that neither Mr. Parcell nor

14   Mr. Hill account for PSE's higher relative risks, as discussed in my direct

15   testimony.

16   **IV.   UPDATED ROE RECOMMENDATION OF**
17   **10.95% FOR PSE**

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

19   A.   The purpose of this section is to review my original ROE recommendation in light

20   of the changes in capital markets that have occurred since I field my direct

21   testimony on May 5, 2009. My updated ROE recommendation for PSE is

1		10.95%.
2	Q.	**Can you briefly describe the behavior of interest rates since you filed your**
3		**original testimony based on earlier data?**
4	A.	Yes. Significant changes have occurred in capital market conditions since I
5		prepared my original testimony for PSE based on earlier data. The current level
6		of U.S. Treasury 30-year long-term bond yield is 4.4%, versus 3.6% when I
7		prepared my direct testimony. The increase in interest rates raises the CAPM and
8		Risk Premium estimates, which are based on the risk-free rate and brings them
9		closer to the DCF estimates.
10	Q.	**What has happened to utility betas since you prepared your direct**
11		**testimony?**
12	A.	Betas have basically remained the same, decreasing slightly from the 0.76 level to
13		the 0.74 level. I note, however, that betas are estimated on five-year historical
14		periods, and therefore do not capture the current increased risk environment faced
15		by utilities.
16	Q.	**How much weight should be accorded to the CAPM results under current**
17		**market circumstances?**
18	A.	As stated above in Section II.D. and at page 37, line 17, through page 38, line 2,
19		of my direct testimony, Exhibit No. RAM-1T, less weight should be accorded to
20		the CAPM results under present circumstances because (i) betas employed in the

1   CAPM analysis do not yet fully capture the impact of the ongoing financial crisis

2   and (ii) government interest rates have decreased substantially following the

3   Federal Reserve's expansionary policies designed to jumpstart the stalled

4   economy.

5 **Q.**   **Please describe what has happened to the DCF results since the financial**

6   **crisis began.**

7 A.   Utility stock prices are recovering as the financial crisis gradually unwinds,

8   implying higher dividend yields, which, in turn, imply lower DCF estimates.

9   Since May 2009, the DCF results for utilities have decreased significantly (by

10   100 basis points) in response to higher stock prices (lower dividend yields).

11 **Q.**   **What input data did you use in the CAPM analysis to arrive at your updated**

12   **ROE?**

13 A.   For the risk-free rate, I used 4.5% based on the current and prospective level of

14   long-term Treasury interest rates. For beta, I used 0.74 and for the market risk

15   premium, I used 6.5%.

16 **Q.**   **Did you make any substantive methodological changes in your historical risk**

17   **premium analysis of the utility industry?**

18 A.   No.

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1	**Q.**	**Did you make any methodological changes in your DCF analyses?**
2	A.	No. I relied on November 2009 stock prices in order to update the analysis.
3	**Q.**	**Please summarize your updated results from the various methodologies.**
4	A.	The revised ROE estimates for the average risk electric utility are summarized in
5		the table below.

STUDY	Updated ROE
CAPM	9.60%
Empirical CAPM	10.00%
Risk Premium Electric	10.64%
DCF Vert. Integrated Electric Utilities Value Line Growth	11.20%
DCF Vert. Integrated Electric Utilities Zacks Growth	11.20%
DCF S&P Electric Utilities Value Line Growth	10.60%
DCF S&P Electric Utilities Zacks Growth	11.60%

15 The results range from 9.6% to 11.6%, with a midpoint of 10.6%. The overall

16 average result is 10.7%, and the truncated mean is also 10.7%. From these

17 results, I conclude that a ROE of 10.7% is reasonable for the average risk utility.

18 **Q.** **Have you adjusted the cost of equity estimates to account for the fact that**

19 **PSE's risk is higher than the industry average, as you did in your direct**

20 **testimony?**

21 A. Yes, I did. As I explained fully in my direct testimony, I applied a 25 basis

22 points risk premium in order to allow for PSE's greater investment risk relative to

23 the industry, mainly due to PSE's large capital spending program for the next

24 several years and the various risks associated with such an ambitious construction

1   program.

V. CONCLUSION

3   **Q.   What is your final conclusion regarding PSE's updated ROE?**

4   A.   Based on the results of all my analyses, the application of my professional

5   judgment, and the risk circumstances of PSE, it is my opinion that a just and

6   reasonable ROE for PSE is 10.95%.

7   **Q.   Does this conclude your rebuttal?**

8   A.   Yes, it does.

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